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Collaboratively Exploring the History of Education for Community of Practice Formation in Undergraduate Initial Teacher Education

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A thesis submitted September, 2016, to the School of Education, National University of Ireland Galway, for the degree of Doctor of Philosophy

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List of Acronyms and Abbreviations

CAO   Central Admissions Office

CID   Contract of Indefinite Duration

CPD   Continuing Professional Development

CSCL   Computer Supported Collaborative Learning Environment

DBR   Design-Based Research

ITE   Initial Teacher Education

NFTL   National Forum for Teaching and Learning

NQT   Newly Qualified Teacher

NUIG   National University of Ireland - Galway

PBL   Problem Based Learning

PDST   Professional Development Service for Teachers

PST   Pre-Service Teacher

SIG   Special Interest Group

TEL   Technology Enhanced Learning

VLE   Virtual Learning Environment

ZPD   Zone of Proximal Development

Declaration

I declare that the work presented in this thesis is, to the best of my knowledge and belief, original and my own work, except as others acknowledged in the text. The material has not been submitted, either in whole or in part, for degree at this or any other university.

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Paul Flynn

September 2016

Abstract

At the beating heart of recent developments in initial teacher education (ITE) are efforts to establish a cultural shift within the teaching profession, to a point where professional learning communities may flourish. Successive reports on teacher education have highlighted the importance of establishing communities of practice during both preservice and inservice career stages. However, historically teachers have operated as individuals; as conduits for student engagement with the education system (Darling-Hammond 2006; Conway, Murphy, Rath & Hall 2009; Caena 2014)). Isolated and observed as individuals by students (Lortie 1975), this persona perpetuates such an approach to teaching through what Lortie (1975) describes as the 'Apprenticeship of Observation' experienced by prospective teachers as they move through formal compulsory education. Therefore, new entrants to ITE are both emergent members of the teaching profession and recent observants of same. Their embryonic status locates them at the nexus of the student-teacher relationship and consequently as potential agents of change. This juxtaposition is particularly acute at the point of entry to undergraduate ITE (Lortie 2002), accentuated by values established through prior experiences (Ficsher, Rhode & Wulf 2007). It precedes, therefore, that such communities may be established during initial teacher education (ITE). Pre-service teachers (PSTs) retain tacit experiences of the teaching profession which have shaped their perception of what it means to be a teacher (Lortie 1975). The History of Education as a non-elective module in ITE and a requirement for professional registration represents an opportunity to explore such tacit biographical experiences, exploring multiple possibilities and viewpoints (Alheit 2009). However, the current of such foundational studies in ITE, from the perspective of PSTs, has been in decline for the last half century where student teachers have become overwhelmed by concerns regarding subject expertise, classroom management and 21st Century skills as soon as they enter into the practice of teaching. The corollary of this dynamic is that the history of education has become a peripherality in ITE and is struggling to communicate its importance.

Reported here is a design-based research (DBR) (Brown 1992; Barab & Squire 2004) study, exploring how a collaborative exploration of the history of education, in a technology enhanced learning environment (TELE), can act as a catalyst for the development of an emergent community of practice in a pre-professional teaching programme. Inspired by social constructivist thinking (Bruner 1996; Lave & Wenger 1991; Vygotsky 1986) this DBR intervention invited participants to collaboratively explore their biographical histories of education and situate those negotiated biographical experiences (Alheit 1994, 2009) in their contemporary, naturalistic context (Barab 2006) with the aim of establishing: how a collaborative engagement the history of education can aid community of practice formation for ITE participants as they move towards professional practice?

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For Bridie

Chapter 1 - Introduction

1.1   Chapter Introduction

This, the opening chapter of this thesis establishes both the rationale for undertaking this research project and the context of the research project. Collaboration, not only in Initial Teacher Education (ITE) but also in continuing teacher education has been long lamented as an under developed aspect of the teaching community. This chapter outlines the importance of collaboration in the teaching community, the challenges that the establishment of collaborative communities face and the impact that technology is having on attempts to establish collaborative relationships.

An innovative approach to the development of collaborative practice is introduced where the concept of community of practice formation within ITE is founded upon an exchange of a common history of education, which facilitates the establishment of collaborative communities of practice within ITE.

The conclusion of this chapter provides a synopsis of the structure of this thesis and elucidates how the narrative style of this thesis enhances the response to the underpinning research question - How can a collaborative engagement with the history of education help to establish an emergent community of practice in undergraduate initial teacher education?

1.2   Collaboration in Teacher Education

1.2.1   Collaboration for professional teaching practice

Dan Lortie's 1978 identification of the solitary nature of the teaching profession at second level education took time to resonate (Lortie, 1975). His coining of the term 'The Apprenticeship of Observation' eventually gained traction within the teacher education community in the mid 1990's and early 2000's with Darling-Hammond (2000, 2006) and

Conway *et al* (2009) publishing position papers that place the culture or hidden curriculum of the teaching profession under scrutiny; placing the solitary existence of teachers within networks of caves of classrooms at the core of contentious issues in the teacher education dynamic. In particular, Conway *et al* highlight the importance of rupturing the hold this culture has on the prevalence of individualism in the teaching profession, across a career that typically spans over 25 years. Anecdotally at least, a practicing teacher after completing teaching practice under supervision can continue over the lifespan of this career working in isolation without any input into their practice of teaching and without the need or desire to look for help. While collaborative practice is often viewed as staffroom collegiality, it is evident in the literature that such practice is not truly collaborative rather it is social and not professionally collegiate leaving the relatively static environment of employment for educators as stale and musty.

It is widely acknowledged that collaboration is a most desirable characteristic in Newly Qualified Teachers (NQTs) and in-service practitioners (Darling-Hammond, 2000, 2006; Conway et al, 2009; Ceana, 2014). The European Commission and the OECD have published numerous reports explicitly stating that collaboration as a characteristic is a prerequisite for collegiality, teaching and learning (Rizza, 2011; Ceana, 2014).

Environments that are conducive to, or facilitative of, collaboration are also subject to the developing impact of technology, mobile or otherwise, is having on education. Computer Supported Collaborative Learning (CSCL) environments as well as Technology Enhanced Learning Environments (TELEs) are emergent and forging a path into education under rigorous design research models (Stahl, 2002, Wang & Hannafin, 2005). The field of the Learning Sciences is growing and our understanding of social learning theory is being stretched as educationalists develop adaptable and adoptable design research models. This social learning movement is characteristically collaborative and is permeating the traditional strata of the teaching and learning continuum. However, an understanding of

what collaboration entails is only partially evident in second level teaching communities and is viewed with a high degree of scepticism, suspicion and reluctance to change.

However, what is becoming evident is that the perforation of the traditional school - community boundaries by mobile technology in particular, is forcing educators to think again about the role of collaboration in their daily work as well as in their own lives. The prevalence of teaching communities on social networking platforms indicates a willingness to participate however this is not reflective of the wider community. Conway *et al* (2009) identify the importance of ICT in the formation of learning environments not only for teachers but the students that they engage with. They call in this report for teachers to lead by example and to establish the very communities that they themselves would like to see their students reflect. This suggests that there is not a clear vision of what collaboration might mean to educational professionals, what collaboration might look like in professional educational settings or indeed how collaborative learning environments can be established in the gestative period of initial teacher education (ITE) where emergent teaching professional identities are formed.

1.2.2   The role of collaboration

Examined in more detail in Chapter 2, the concept of collaboration for transition into ITE reflects Hargreaves' suggestion that collaboration within the teaching profession is an aspect of teaching culture that is primarily framed by professional interests and that are both spontaneous and structured where location and time remain as flexible aspects of interaction (Hargreaves, 1994). Teaching practice is, by its physical nature, a solitary practice however the concepts of collegiality, community and culture are prevalent in the literature about teacher professional development and interaction. Common to all is the practitioners relationship to what Mcloughlin & Talbert (2001) refers to as a psychological setting where this setting may include but not be limited to the the physical space and increasingly the digital space within which teachers interact to establish professional communities (McLoughlin & Talbert, 2001).

This apparent juxtaposition is important in the context of this thesis as it represents a point of transition that is mirrored by two competing philosophical positions. One of individualism as experienced by the daily practice of teaching mirrored by the practice of student learning in Irish schools. Second, the collaborative aspects of teaching communities where the needs of the individual practice are established before a culture of collaboration can take hold. This juxtaposition returns, therefore, to the central research question of this thesis where new entrants to undergraduate ITE are transitioning from second level education, an individual learning experience, into an expectant collaborate environment and returning again to an individual teaching experience where no formal or structured collaborative communities are formed for long term participation.

Hargreaves addresses this conflict of individualism and collaborative behaviour by suggesting that any form of individualism within this domain is one of a calculated decision to engage in individualism in an effort to focus individual energies on selected individual tasks (Hargreaves, 1994). Nias *et al* in a study of primary teachers go further and suggests that such self-selective individualisation can also be affected by the physical teaching environment where practitioners can be forgotten about through prolonged individual practices of teaching and eventually feeling isolated and forgotten (Nias, Southworth & Yeomans, 1989).

This returns the researcher to the concept of establishing a culture of collaboration manifest as an emergent community of practice at the point of entry to undergraduate ITE, where there exists both time and space for collaborative practice to take hold. The individual practice of teaching remains however the space that ITE programs provide in terms of time that can facilitate the development of a community of practice (Lave & Wenger, 1991). It is within this space that the creation of a contrived collaborative community of practice may, despite the limitations that Hargreaves identifies in such actions (Hargreaves, 2000) 'act as a "bridging" process towards more collaborative cultures in providing opportunities for development' (Day, 1999, p.81).

1.2.3   Individual v Collaborative Teaching Practice

The practice of teaching is a dynamic and very challenging profession where decisions are made moment-by-moment based on experience, beliefs about content and methodology as well as the individual demands of the students (Brophy, 2008). Developments in teacher education have asked practicing teachers to reflect on their established practice with a view to improving that practice for the benefit of both teacher and students; most evident in the emergence of reflective practice in ITE (Ghaye & Ghaye, 1998; Schön, 1983, 1987; Kinsella, 2009).

Hiebert, Gallimore & Stigler (2002) suggest that it is only through collaboration that improvements in practitioner and professional knowledge can be established and outline that the concept of individualism in the classroom may only lead to a self reinforcing cycle of insularity (Hiebert, Gallimore & Stigler, 2002).

Conway, Murphy, Rath & Hall (2009) set out that the concepts of collegiality, culture and collaboration must become more central to ITE rather than the peripherality that such concepts experience at present (Conway *et al*, 2009). This is most evident in the literature surrounding the individual persona of in-service teachers where the 'Apprenticeship of Obersvation' (Lortie, 1975) has been identified as perpetuating the individualisation of teachers within the profession (Darling-Hammond, 2000, 2006; Conway *et al*, 1999; Ceana, 2014). Calls for the development of collaborative practice among teachers, pre-service and inservice, suggest that in order to enhance the development of professional practice and ameliorate the perpetuated individualism of the practice of teaching (European Commission, 2012) a change in teacher training programmes may be required.

1.2.4   Developing collaborative skills in pre-service teachers

At the heart of any development towards establishing collaborative communities of practice in the pursuit of collaborate knowledge building within the continuum of

teaching practice must be an environment that can facilitate such practice (Gilbert &
Driscoll, 2002). Detailed further in Chapter 2, undergraduate ITE participants are ideally
placed in the continuum of teacher education to introduce important skills as part of the
development of a contrived collaborative community of practice (Lave & Wenger, 1999;
Day, 1999) with a view to fostering more spontaneous and unpredictable interactions
(Hargreaves, 1994) that are not within the domain of such contrived environments.

The individual nature of the second level education system from which new entrants to
undergraduate ITE emerge is reflective of the individual nature of teaching (Lortie, 1975;
Darling-Hammond, 2000). It is therefore the most obvious place to begin to establish the
skills of collaboration as these students embark upon their undergraduate training
programmes. By contriving or designing an environment within which collaborative
activity can be fostered then these student teachers may begin to establish a collaborative
community of practice that fosters both scheduled and spontaneous professional
interactions that are indicative of collaborative communities in the profession of teaching
(Day, 1999; Hargreaves; 1999; Darling-Hammond, 2000, 2006; Conway *et al,* 2009;
European Commission, 2012).

1.2.5   Challenges to collaborative practice in ITE

There are significant challenges to the development of collaborative communities of
practice within the teaching continuum and these are also relevant to the participants of
ITE programs. Such challenges include: a clear understanding of collaboration in
education and the profession of teaching (Fielding, 1999); the established practice of
deference to established practice by Newly Qualified Teachers (NQTs) within the in-
service community as observed by student teachers on teaching practice school placement
(Clarke, Lodge & Shevlin, 2012; Lortie, 1975); pressures on students teachers to cope
with the socio-economic demands as prospective practitioners and NQTs (McCulloch,
2011); the significant effect of the 'Apprenticeship of Observation' (Lortie, 1975) on
students perceptions of the teaching profession prior to entry to undergraduate ITE.

1.2.5.1   Understanding Collaboration Teacher Education

Understanding the term collaboration requires an understanding of what collaboration is, rather than what it might mean. To tease this out further perhaps it is useful at this point to establish that collaboration in an educational setting, for the purpose of this thesis, is characterised as the participation of groups of student teachers in a shift in focus on individual knowledge to a focus on jointly constructing interpretations of experience subsequently negotiated, developed and presented in a public space (Gilbert & Driscoll, 2002).

This act of constructing knowledge represents, therefore, in this context a shift from the individual interpretation of knowledge to a collaborative interpretation of knowledge manifested in the development of an co-owned artefact in a public space for the common good of all or; to a constructivist learning perspective (Brown, 1994; Brown & Campione, 1990; Bereiter & Scardamalia, 1992; Wenger, 1998).

1.2.5.2   Deference to Established Practice

ITE participants go through a series of on-site training weeks or teaching practice blocks as part of teacher training programs. During this period they are expected to develop specific skills and are very often overwhelmed by the demands of realtime teaching and the preparation required (Darling-Hammond, 2000, 2006). For many student teachers they are also only beginning to cope with the demands of third level education and living away from home (Smyth, Banks & Calvert, 2015). In short, this is a dynamic and complex period for these ITE participants as they begin to form their identities as educators.

Under such pressures, it is no wonder that student teachers turn to those whom they view as most experienced in teaching and who are embedded into the education system that

they wish to be part of. Indeed, most student teachers consider in-service teachers to be the first person to turn to for help (Clarke, Lodge & Shevlin, 2012).

By moving away from this reliance on the experience of the individual and realigning it to take a more supporting role rather than a dominant role in supporting trainee teachers this thesis moves towards student teachers being reliant on a network or community of practice where multiple supports are available, where new paradigms can be discussed and problems ameliorated through a collective experience. Such a network might include: co-operating teachers, in-service teachers, fellow students, course lecturers, tutors (Clarke, Lodge & Shevlin, 2012) and increasingly, external digital communities.

1.2.5.3   Socio-economic demands of ITE

Most new entrants to ITE take the predominant postgraduate route to becoming a second level teacher and are already established as third level students having completed an undergraduate degree program. However it is quite different for new entrants to undergraduate ITE programs as they, in most cases, have only exited compulsory education a little over three months prior to third level registration. These students are expected to cope with the professional demands of a teacher education program and at the same time develop the nuances of survival at third level education, very often feeling alone and overwhelmed. A similar experience is documented as NQTs enter the education system for the first time as mainstream teachers as they struggle to establish themselves and cope with the socio-economic demands of life after university (McCulloch, 2011). In all instances the focus is once again on the individual and the individual is fundamentally concerned with survival (Hyland, 2011; Smyth, Banks & Calvert, 2015).

1.2.5.4   Deference to past experience and observation

Explored in further detail in Chapter 2, the impact of the 'Apprenticeship of Observation' (Lortie, 1975) plays a significant role in the development of attitudes and

perceptions of the teaching profession prior to entry to undergraduate ITE programmes (Conway *et al,* 2009; European Commission, 2012). Student teachers have deeply rooted perceptions of teachers' behaviour both inside and outside of the classroom setting. Inside the classroom the teaching style or methodology employed by in-service teachers can in some instances define the teaching style of the student teacher as they revert to what they believe to 'work' when under pressure to perform on a scheduled block of teaching practice.

1.3.1   Learning communities and collaboration

This thesis seeks to establish a number of learning communities (Lenning & Ebbers, 1999) that are representative of the formation of a fluid and dynamic community of practice (Lave & Wenger, 1999) predicated upon the fundamental underpinning of a constructivist learning methodology (Wenger, 1999; Brown, 1994). At the core of this aspiration is, therefore, a thread that is required for interaction - collaborative knowledge building for transition. Learning communities (Lenning & Ebbers, 1999), further elaborated upon in Chapter 3, have the potential to help undergraduate student teachers transition into third level education and in particular professional programmes such as ITE not as individuals but as a group of interdependent individuals or a community of practice (Lave & Wenger, 1999).

1.3.2   Communities of Practice - A new beginning?

A core aspiration of initial and continuing teacher education providers going forward is the question of how to establish a culture or environment that is conducive to collaborative activities. This concern is to the fore of international research in teacher education and educational technology is considered critical to any developments in this area. Currently the development of collaborative skills are often rooted in the development of a collaborative document for academic submission and such interactions rarely require the establishment of any enduring relationships between participants or

indeed with the concept of continuing self development or professional interaction post ITE graduation.

Lave & Wenger (1999) outline, as will be explored in Chapter 3, the underpinning principles of what constitutes a community of practice. However in short, the relationships required to establish a constructivist learning environment are somewhat stifled by the physical restraints of school buildings. Technology has a role to play here where the gradual development of subject specific learning communities to a point where learning communities overlap to form a holistic entity or community of practice may be possible. Crucially the environment into which PSTs enter does not facilitate or encourage interaction particularly within the second level education system in the Republic of Ireland. A disruptive action is therefore required in order to stimulate such action, interaction and to develop such a cultural shift. It is the contention of this thesis that a community of practice that transcends the boundaries of classroom 'caves' facilitated by technology and developed by practitioners with a shared vision - may establish a community of practice in action.

1.3.3   Building a community of practice on a shared History of Education

Developing a shared vision of educational practices will require a significant buy-in from participants. They will need to feel that their is a significant relevance not only to their professional development, but also to their personal aspirations and desires to become part of something important not only to them but to education in general. Building relationships professional or otherwise requires a common purpose and in the case of initial teacher education this is a common aspiration to teach second level students. This valuable and important role in society is also a profession that is constantly evolving and changing to the needs of society. With this in mind it is important to consider the evolution of the education system a student teacher is fundamentally part of - at the centre of. PSTs are primary school veterans, secondary school graduates and new entrants to third level education. They will, as part of their professional career, be engaged with

education at all levels. Primary school students will become their first year students an they will help senior secondary school students graduate to third level education whilst at the same time engage in ongoing training and development throughout their career. They will be in constant contact with all levels of education and therefore it is imperative that they understand the evolution of those sectors. This is a core reason for the mandatory completion of the History and Structure of the Irish Education System module by PSTs as directed by the Teaching Council of Ireland for professional registration with same.

Given the importance of this appreciation, it therefore resonates with the researcher and this thesis that any shared vision of the future may be built on the commonalities of the past where participation within similar systems of education provides opportunities to explore differences and similarities of personal experiences in those systems and as a consequence drawing student teachers together as a community. Such a collaborative exploration of the History of Education can set in place a strong foundation upon which any future engagement with education may be collaboratively explored and negotiated as an emergent community of practice (Lave & Wenger, 1999).

1.4   Biographical Motivation

Having completed second level education I progressed to third level education to study engineering and subsequently work in the construction industry for a little under ten years. I chose engineering because it was easier than developing even more coping skills for dyslexia than I had struggled to establish during my time in secondary school. In later years I would regret not pursuing my passion for history and a difficult pursuit of understanding the world around me. To this end, on the back of the mid 2000's recession which crippled the construction industry in Ireland, I returned to third level education to study english and history with a view to teaching second level students how to interpret the world around them. An idealistic goal perhaps, but a worthy goal nonetheless. I believe that studying history allows us to make sense of the world that envelopes us. It had been my long held belief that our past is not just ours alone for we develop with other

people, around other people and because of other people. During my initial teacher training I had the opportunity to explore social learning theory and develop a distant appreciation of the role such theory plays in the development of learning communities and communities of practice. It struck me that this lay in stark contrast to my experience of teaching in classrooms where I was isolated and in many ways disengaged from any true collegiate activity. The teaching profession struck me as one of isolation and individualism. This vision of the career I wanted to engage in left me perturbed and questioning the contribution I could make to such an environment as a person who believes wholeheartedly in being part of a community, a part of a whole. So how can one effort change in the dynamic observed above? As history is interpretive it does perhaps allow for a certain negotiation between an individuals pursuit of a common vision or goal. I have also, always had a passion for technology and the more I engage with pedagogy the firmer my conviction becomes that educational technology must play a central role in the development of all pedagogical dynamics. I believe that technology has the potential to draw all of these components together at the nexus of teaching and learning framed by a collaborative exploration of the history of education.

1.5   Research Questions

This research study is framed by one principal research question: How can a collaborative engagement with the history of education help to establish an emergent community of practice in undergraduate initial teacher education?

This overall goal is supplemented by two supporting questions and one objective.

1. Does a collaborative engagement with the history of education enhance collaborative practice and the development of 21st century skills within a designed learning environment?

2. If so, what kind of learning communities are formed within this dynamic?

3. Finally, this thesis seeks to establish a set of design sensitivities that can act as resources for others with similar aims and objectives to adapt and adopt in cognate settings.

1.6   Research Study Structure

This thesis is structured as a narrative of the evolution of this research study. This narrative format delineates the evolution of its design outputs and a reciprocal relationship with theories of education. Chapter 1 details the rationale for this research study and includes the journey to formulating the research questions that drive the research. A key component of this, is the biographical motivation of the researcher to simply try and make things a little better - to make a positive contribution.

Chapter 2 shines a spotlight on the Irish education system as a continuum and situates the teacher education process within that continuum. The overarching focus of this research study is that of transition from second level to third level education and into an emergent community of practice. Consequently, also detailed are the difficulties that students and institutions face in dealing with this identified issue in Irish education. Also identified is the potential for a designed transitive environment at the point of entry to undergraduate initial teacher education to help participants develop the very skills, 21st century skills, that they require to make this difficult transition. Identified within published reports is the subject area of history as being a fertile ground within which such an environment may flourish. Finally, a set of characteristics typical of an environment conducive to developing the skill sets that would enable a smooth transition into a third level education and pre-professional community of practice, are outlined for investigation.

Chapter 3, a literature review, is an investigation into relevant literature in this area based upon the emergent considerations of Chapter 2 and was thematically framed by the aforementioned characteristics. This literature review identified what other researchers and educators had found in relation to this area and what relationships exist between the

development of learning communities to effect progress in the development of
collaborative practice and 21st century skills for transition into undergraduate initial
teacher education and towards professional practice. Resultant was a direction for a
methodological approach that could be adopted for the design of a learning environment
that could enhance a collaborative engagement with the history of education for
community of practice formation in undergraduate teacher training programmes.

The characteristics identified in Chapter 2 and thematically explored in Chapter 3 are
grounded in the selection of a methodological approach in Chapter 4. The methodological
approach identified is that of Design-Based Research (DBR) which:

> 'is used to study learning environment that are designed and systematically
> changed t the researcher. DBR is not a fixed "cookbook" method; it is a
> collection of approaches that involve a commitment to studying activity in
> naturalistic settings, with the goal of advancing theory while at the same
> time directly impacting practice.'
>
> (Barab, 2014, p.151)

Further discussed in Chapter 4, and highlighted by Barab (2006), is the relationship
between the emergent design through iterative refinement and the foundation of theory
upon which it stands. DBR as an iterative process converses with informal theoretical
positions, effecting practice through the application of the design. In a reciprocal
relationship, the outputs of the design, at all stages of the iterative process flow back
through the DBR process and allow for theory to emerge. This cyclical iteration allows
for the fine tuning of the design within the environment it was intended to effect change
in, whilst concomitantly contributing to the field of theory that supports both design and
learning environment.

Having identified and discussed DBR as an appropriate methodology in Chapter 4, Chapter 5 grounds this thesis in a conceptual framework that shapes the design model emergent from Chapters 2 and 3. These design themes, guided by the conceptual framework inform the design process and allow for the aforementioned reciprocal relationship to flourish and grow. Emergent from Chapter 5 is a framework for the design model: TWO-CENTs, which acts as a tangible construct for the cyclical, iterative design process. Further elaborated on in Chapter 6, the design model TWO-CENTs consists of five design considerations or interdependent variables: transition, collaboration, engagement, narrative construction and technologies. As is explored in the analysis phases of Design-Cycle 1, transition was an emergent variable - informing both the conceptual framework supporting the design and the application of the design in practice. The TWO-CENTs design model (Transition With Others through Collaboration, Engagement, Narrative Construction and Technologies) was predicated upon the key challenges found to be pertinent to new entrants to third level education and undergraduate initial teacher education and was further supported by a review of the relevant literature in Chapter 3.

The chapters that follow, Chapter 6 & 7, delineate the hands-on, practical application of the research and the design process employed to iteratively enhance undergraduate pre-service teachers' engagement with the history of education through collaboration, engagement, narrative construction and the use of technologies whilst concomitantly establishing an emergent community of practice as participants move towards professional practice. This process, as delineated in the aforementioned chapters, consisted of two design and implementation cycles. These design cycles allowed the researcher to look under the bonnet of the design development process to iteratively improve its effectiveness and also to delineate how the process helped to establish an emergent community of practice within the naturalistic context of the designed learning environment.

This doctoral research study was carried out within an undergraduate mathematics initial teacher education programme, the Bachelor of Mathematics and Education at NUIG. This is a four year programme where the foundational studies in education (History, Philosophy, Sociology & Psychology of Education) are introduced on an incremental, annual basis. As a result of the findings of this research study, the emergent community of practice being formed as result of the designed learning environment, indicates that a longitudinal study to track the progress and sustainability of such a community would be beneficial to those engaged in the development of ITE programme an may form the basis for future studies.

This research journey focused on how a collaborative exploration of the history of education could enhance engagement with that field within a designed learning environment. Emergent from this process and an informant of the process was the development of an emergent community of practice within an undergraduate initial teacher education programme. Chapter 8 outlines the findings of the research and summarises how the TWO-CENTs design model, contributes to the development of the aforementioned emergent community of practice.

Design-based research, as Barab (2014) contends, is a dual process of theoretical advancement and concomitant practical impact within the environment within which it is enacted. This iterative process culminated in the development of a rigorously designed and robust design model - TWO-CENTs for adaptation and adoption by others in cognate settings. This design model allowed new entrants to undergraduate initial teacher education to collaboratively engage with the history of education in a personal and professionally meaningful way, mediated by the development of a collaborative digital artefact and resultant in the development of an emergent community of practice. As identified in the literature review chapter of this thesis no model, prior to the development of the TWO-CENTs model, existed that helped students to transition into such professional programmes and towards professional practice.

Chapter 8 responds to the research questions established at the outset of this thesis and outlines how they have been addressed through the development and result of the TWO-CENTs design model and the DBR process that facilitated its development. Future research possibilities are discussed and recommendations for the future of the TWO-CENTs design model are made.

1.7 Ethical considerations

The development of this design-based research doctoral study required data to be collected through a number of different methods for triangulation. Data was collected from the participants by the researcher and the researcher also taught the module - the History and Structure of the Irish Education System. Permission was sought and obtained from the School of Education at the host institution to carry out this research project as well as the Director of the Bachelor of Mathematics and Education Programme. Methods of data collection included: questionnaires; social media posts; assessment rubrics to analyse student digital artefacts, student submitted digital portfolios, student reflective essays; ethnographical observations and the researcher's reflective journal. Data collection was carried out in compliance with protocols as set out by the BERA (British Educational Research Association) Revised Ethical Guidelines of Educational Research (2004). A detailed ethics proposal for the research study was submitted to the host institution's Ethics Review Committed for approval prior to any research being carried out and was subsequently approved. The ethical considerations of this research study are detailed further in Chapter 4 of this thesis.

1.8 Chapter Summary

The rationale for undertaking this research project has been detailed in this chapter as well as the background that frames the study. A brief introduction to the challenges that new entrants to undergraduate initial teacher education in the Republic of Ireland was outlined and the skills, attributes and qualities that are expected of them in professional practice were identified. The conclusion of the chapter summarises the structure of the

thesis and outlines the narrative format which responds to the principal question - how can a collaborative engagement with the history of engagement help new entrants to third level education transition into undergraduate ITE and towards professional practice?

Chapter 2 details the existent challenges that face students who transition into third level education and illustrates the additional demands that are placed on these who enrol in undergraduate ITE programmes. Emergent from Chapter 2 are key issues that inform the development of criteria for transition that resulted in the development of the TWO-CENTs design model and the implementation of this model as a transitional module within an undergraduate initial teacher education programme in the Republic of Ireland.

Chapter 2: Transition into Undergraduate ITE

2.1 Chapter Introduction

The concept of transition in the context of progressing from second to third level education is evident in the literature examined in this chapter. Also explored are the skills, attributes and qualities expected of new entrant to third level education and undergraduate initial teacher education as well as the challenges that they face. This chapter delineates these challenges and groups them thematically as key issues. Furthermore this chapter sheds light on a dearth work in the field of transitioning students from second to third level education and in particular the provision of opportunities for such students to develop the skills that are demanded of them.

2.2 The Continuum of Education in the Republic of Ireland

2.2.1 Primary Education in the Republic of Ireland

Primary education in the Republic of Ireland commences for most children at the age of four or five. Children are largely introduced to education in a mixed gender environment. Emphasis is placed on numeracy and literacy. In 2011, approximately 60,0000 primary school students embarked on an educational journey that would, for some, last for the rest of their lives. At any one time there are just over half a million students in enrolled the primary education system distributed amongst 3,305 schools and staffed by over 31,000 full and part-time teaching professionals (DES, 2011). Typically children in primary school will spend an entire academic year, each year, in one room with a dedicated teacher at the head of the classroom. Assessment in the primary education system is largely focused on standardised testing closely aligned to specific aspects of established numeracy and literacy strategies. Indeed, the first contact that students will have with a formal examination process will be, for many, the Junior Certificate Examination process during their third year of the secondary school experience.

2.2.2   Second Level Education in the Republic of Ireland

Second level education in the Republic of Ireland follows on directly from the primary education system. Typically students will begin secondary school at the age of twelve or thirteen. Unlike the largely mixed gender experience that students are engaged in at primary school a significant number of secondary schools in Ireland are single gender schools. At any one time there are over 312,000 students attending second level education taught by over 25,000 full time or equivalent contracted, registered teachers (Clarke, Lodge & Shevlin, 2012). Standard practice in Irish secondary schools is for the students to rotate from classroom to classroom every 35 to 45 minutes. Teachers in this sector are largely guided by the demands of the examination process that the syllabi direct participating students towards. Assessment at second level education in divided into two distinct cycles.

The Junior Cycle is a three year programme initiated upon entry and terminating in year three with the Junior Cycle terminal examinations. Typically students will undertake ten examinations in a variety of subjects. While this examination process is under reform at the time of writing this thesis it is largely regarded as a dress rehearsal for the demands of the Senior Cycle terminal exam process- The Leaving Certificate. The Leaving Certificate examination process is supported by a two year senior cycle that follows directly after the Junior Cycle. It should be noted that many students choose to participate in a transitional year between junior and senior cycle programmes for a variety of reasons, however participation in this programme is not mandatory and there is no requirement for any individual school to run such a programme. The Leaving Certificate Examination process, while a formal assessment model for determining the successful graduation form second level education, is directly linked to entry to third level education where a points system is synchronised with attainment rates leaving students to compete for places in courses offered in third level institutions.

2.2.3 Third Level Education in the Republic of Ireland

The third level education system is Ireland has four distinct sectors within it. Seven universities spread across the country serve a full and part-time student population of approximately 113,000 in 2014 (HEA, 2013). Fourteen Institutes of Technology are also distributed across the state and at any one time will have over 91,000 students enrolled on campus (HEA, 2013). The third identifiable sector are the distinct colleges of education. These colleges exist for the education and training of primary school teachers. Finally a fourth identifiable sector are colleges established to support the increasing demand for third level qualifications. Such colleges are very often established by private enterprise and their qualifications are sanctioned by, or linked to, an associated university or awarding institution. Typically students will study for three or four years to attain an undergraduate award with increasing numbers continuing on to engage in postgraduate education and research.

2.2.4 Fourth Level Education in the Republic of Ireland

Emergent in recent years has been the identification of a distinct sector within the education system that would have traditionally come under the umbrella of the third level institutions. This is the relationship between postgraduate education and continuing education in a professional capacity or what is widely referred to as Continuing Professional Development or CPD. As third level institutions increasingly align themselves with industry and in particular the direction that postgraduate research programmes are funded, a distinct relationship is emerging between postgraduate study and continuing education throughout the careers of graduates. In this light, any engagement with formal informal training or education, after the completion of an undergraduate degree programme, may be considered fourth level education.

2.3   Initial Teacher Education in the Republic of Ireland

2.2.4   Undergraduate Initial Teacher Education

The predominant model of primary teacher education is the undergraduate format or what is known as the concurrent model of Initial Teacher Education (ITE). Participants in such programmes are awarded a Bachelor of Education (B.Ed.) by their host institution or college of education. No postgraduate qualifications are required by The Teaching Council of Ireland for professional registration in this sector. A limited number of undergraduate ITE programmes are in existence for second level teacher training. Also referred to as concurrent ITE programmes, graduates from such programmes are typically certified by The Teaching Council of Ireland to teach one subject at second level education. An example of such a programme is the B.A. Mathematics & Education at NUIG.

2.2.5   Postgraduate Teacher Education

The most popular route to becoming a second level educator is the full-time consecutive model where students will initially study to undergraduate level, typically graduating with two recognised teaching subjects which are closely aligned to the second level curriculum, and then elect to pursue a Professional Master of Education (PME) entitling them to apply for registration as a second level teacher with The Teaching Council of Ireland. It is notable that since the formation of the Department of Education (DES) in 1924, ITE programmes have always placed the educational sciences at the heart of teacher training (Coolahan, 2004) and not the subject methodology of topics studied at undergraduate level.

2.2.5.1   Non-Institutional Teacher Education

A recent arrival is the development of part-time, blended Master of Education offered by private colleges within the State and approved for registration by the Teaching Council of Ireland. An example of one of these colleges is Hibernia College Dublin.

2.3   Issues of Transition into Third Level Education Education

Resultant from a targeted conference in 2011, *From Transaction to Transition: Outcomes of the Conference on the Transition from Second to Third Level Education in Ireland* (Hylnd, 2011) a commitment was given from the education authorities in Ireland to explore how best to improve the transition of students from second level education to third level education, including:

1. A commitment to address any problematic predictability denoted in an analysis of predictability in the Leaving Certificate examination;

2. A commitment to reduce the number of grading bands in the Leaving Certificate examination;

3. A commitment to significantly reduce the number of programme offerings for a broader undergraduate entry to level 8 honours bachelor degree programmes in the universities and to review leave 8 programmes with denominated and generic entry.

(HEA, NCCA, 2013, p.3)

The aforementioned report explicitly states that it is concerned with the mechanisms that surround the Leaving Certificate Examination process and how that mechanism related to the points system or matriculation to third level education, and while there is a brief reference to the process of transition into the third level environment the report also explicitly states that it shall not be a focus of works to be carried out as part of the Transitions programme (NEA, NCCA, 2013). It is envisioned by the report that changes in the examination system in Ireland will have a trickle-down effect to how students are prepared for the examination process due to a lack of predictability (HEA, NCCA, 2013). The report also point to areas that should be considered for further research and development:

1. The first year experience and foundation skills;

2. Access and the transition experience;

3. The role of the National Forum for the Enhancement of Teaching and Learning in Higher Education;

4. Greater clarity on course content and learning culture of higher education programmes;

5. Greater coherence and alignment of learning outcome across different levels of education.

(HEA, NCCA, 2013, p.27)

A report commissioned by the Economic and Social Research Institute (ESRI) preceded the HEA, NCCA 2013 report calling for:

'a need to embed key skills, such as critical thinking, learning to learn and ICT skills, in the curriculum in order to equip young people for the future … and the need to move to a broader range of assessment modes, which reflect the full range of skills and knowledge developed within schooling. Such a shift in approach is likely to enhance student engagement and provide young people with richer educational experiences as a preparation for adult life.'

(Smyth, Banks & Calvert, 2001, p. 237)

It is notable that the 2013 report has scant reference to teaching and learning at second level education, rather it focuses on getting students through the examination system and into third level education through a reform of the examination process. It is evident therefore that learning within the Irish second level education system is an inherently individual pursuit and that when students enrol at third level institutions the concept of collaborative practice is novel.

The National Forum for Teaching and Learning at Higher Education was established in 2012 and as key enhancement theme *Teaching for Transitions* was established as core area for research. This project sought to examine the views of students on their transition from second level education into third level education in Ireland. Some of the key findings of the this enhancement theme report are detailed as follows:

'Time management was identified as themes significant element of the transition from second level to higher duration, followed by written assessments, critical thinking and conducting independent research … time management was found to be the challenge which take the longest to overcome, followed by making friends'

'Other areas identified as challenging included increased personal responsibility, financial an social challenges … commuting distances were also found to have a significant impact on transition, with those committing longer distances finding the transition more challenging than the living closer to campus'

Measures suggested by students included:

'[increased] higher education supports, second level academic supports, managing expectations and engagement, and general skills preparation … greater support by higher education institution regarding the social aspects of the transition, use of social media'

Suggestions by academics within the third level institutions included:

'in terms of being confined in their own opinions and developing necessary

skills for higher education, there were many suggestions recommending

greater use of group work, presentations and computers at second level …

In particular the research project in the History curriculum of the Leaving

Certificate was cited by many students as being good preparation for the sort

of critical thinking and research required at higher education.'

(National Forum for Teaching & Learning, 2015, pp.57-59)

It is clear, therefore, that the concept of transition within the education system is quite

fragmented and is not likely to see a significant, coherent reform in the immediate future

as no action plans, beyond this enhancement theme which closed in 2015, have been

established.

These suggestions and comments from both students and academics resonate with the

difficulties highlighted by Smyth *et al* (2011) report and consequently this research study

identifies the following issues as particularly pertinent to students transitioning from

second level education into undergraduate initial teacher education and towards

professional practice:

- Transition in its own right, forms a holistic challenge for students entering

    third level education for the first time;

- Collaborative activity is relatively new to new entrants;

- Engagement with modules challenges students who are required to think

    critically, perhaps for the first time in relation to set module content;

- Narrative construction based on critical thinking and group processes is

    not evident at second level education in Ireland and is a key attribute as

    students move towards professional practice;

- Technology is a significant challenge for students not only or institutional engagement but also as a mode of academic expression.

The above issues and challenges are also pertinent to calls made by research in the field of initial teacher education.

2.4 Specific Challenges for ITE Providers

The challenges that are faced by providers of ITE are numerous. Conway *et al*, in a a nine-country cross-national study identify a number underpinning principles of initial teacher education:

- A common, clear vision of good teaching practice integrated across course modules and teaching practice in schools.

- Clearly defined and agreed criteria for 'good teaching' linked to wider professional expectations and codes of conduct.

- Teaching of curriculum permeated by an understanding of the contingent nature of learning and the impact of both the immediate and wider social context on learning and teaching.

- Strategic initiatives to integrate foundation, curriculum/meths and teaching practice as the three core components of ITE.

- Given the long term influence of the 15,0000 hours student teachers have already spent in the classrooms proper tenting ITE, there must be significant opportunity to make explicit the impact of these experience on learning, teaching and curriculum.

- Strategies to highlight the impact of culture (cultural homogeneity, diversity and change) in teacher education coursework and teaching practice.

- Well-structured alliance between universities and school built around
  strong relationships, common knowledge and shared beliefs to support
  ITE. (This also applies to induction and CPD)

- Use of case studies, portfolios and other projects focused on supporting the
  integration of different knowledge sources on teaching learning and
  curriculum emerging from schools and universities.

(Conway, Murphy, Rath & Hall; 2009, p.xix)

Developing a strategy to facilitate these principles has at its heart, the aim of building an 'awareness of the complexities of teaching' within trainee teachers, that 'involves the whole person - attitudes, beliefs and emotions' (European Commission; 2014. p.1), where 'learning to teach involves not only preparation for life in the classroom but for active engagement in teaching as a professional community.' (Conway et al, 2009. p.xix).

Teacher training programmes that strive to build such awareness and prepare PSTs for in-service teaching have been identified as developing a number of core PST competencies and reflect the Conway *et al's* aforementioned underpinning principles:

- Sound knowledge frameworks, supported by effective knowledge
  management strategies

- A deep knowledge of how to teach specific subjects, connected with
  digital competencies and students learning

- Classroom/teaching management techniques

- Interpersonal, reflective and research skills, for cooperative work in
  schools as professional communities of practice

- Critical attitudes towards their own professional action based on sources
  of different kind-students' outcome, theory and professional dialogue -
  to engage innovation.

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- Positive attitudes to continuous professional development, collaboration, diversity and inclusion

- The capability of adapting plans and practices to context and students needs.

(Ceana, 2014, pp.2-3)

A key aspect of ITE that runs through all of these principals and competencies, is the expectation of professional educators to function as active members of collaborative communities of practice.

2.5   Transition into Undergraduate ITE Programmes

As outlined the ability of students to make a successful transition into third level education form secondary school are complex as are the conclusions drawn in associated reports and emergent research (Hyland, 2011; HEA & NCCA 2013; Smyth, Banks & Calvert, 2011). These reports indicates a number of specific areas that challenge new entrants to third level education and it is also evident that these are concerns shared by new entrants to undergraduate initial teacher training programs.

2.5.1   New Entrants to Undergraduate ITE Programmes

New entrants undergraduate ITE, as explored, share the same holistic concerns that the wider cohort of new entrants to third level education experience. Also explored is a dearth of work in relation to constructing learning environments that help students negotiate the transition into third level education and in particular the demanding environment of ITE. The environment of undergraduate ITE is complex. Participants, recent observants of inservice teaching, are expected to develop 21st century skills quickly, as many of them will return to second level education within twelve months of third level enrolment in order to complete their first teaching practice experience.

2.5.2   21st Century Skills

The development of 21st Century Skills are considered a priority in the Irish education system (DES, 2015). However, the development of a learning environment that facilities the development of such skills is complicated by defining exactly what those skill are. This research study considers the following to frame a loose definition of what 21st Century Skills are:

Ways of thinking:

- Creativity and innovation

- Critical thinking , problem solving, decision making

- Learning to learn, metacognition

Ways of working:

- Communication

- Collaboration

Tools for working:

- Information literacy

- ICT literacy

(Binkley, Erstad, Hermen, Raizen, Riply & Miller-Ricci, 2011, p.18)

Given the review of reports pertinent to the transition of second level students into third level education earlier in this chapter, it is evident that while many of these skills have been acknowledge as desirable, little has been done to ameliorate this dynamic. A myriad of challenges await those who pursue the profession of teaching directly from second level education - contained within the complex environment of undergraduate ITE.

2.6   The Learning Environment & Social Learning Theory

The development of a learning environment, grounded in theory in Chapter 5 and designed in Chapter 6, must take note of the professional skills that participants are required to perform when they leave the programme they are enrolled in. As Bell (2010) contends:

'in the future [students] must enter the workforce in which they will be judged on performance. They will be evaluated not only on their outcomes, but also on their collaborative, negotiating, planning, and organisational skills.'

(Bell, 2010, p.43)

A learning environment that nurtures such skills will require all of the components of that environment to be engaged in a social enterprise of mutual benefit. Bell (2010) in her research study, where she explores utilising Problem Based Learning (PBL), identifies that a learning environment that is social in nature is creative, innovative, collaborative and accountable (Bell, 2010). Within this study participants were highly scaffolded in their engagement with assigned projects and roles within those assignments developing an engagement based on

'accountability … through the daily goal setting, as well as through expectation of their peers. When students work collaboratively their is an expectation that each [student] will contribute to the project equally. the group dynamic creates an interdependent team in which students must each do their part, and as a result, a natural consequence exists for these students who do not demonstrate accountability - others may no longer want to be [grouped] with students who do not so their fair share. Therefore, peer pressure contributes to the accomplishment of ongoing group tasks

throughout the learning process and the culmination of a shared final product.'

(Bell, 2010, p.40)

Explored in more depth in Chapter 5, these group dynamics focused around the development of a project or constructed artefact have the potential for shared meaning making (Heidegger, 1962, Stahl, 1993). Contained within this process of understanding, the group processes within a collaborative task can open up avenues of development that stretch the collective zone of proximal development (ZPD) (Vygotsky, 1978) within the group and the larger, associated cohort. These valuable skills lie at the very heart of the challenges that new entrants to undergraduate ITE face as they navigate their way towards professional practice. It follows therefore, that introducing them into an environment that nurtures those skills as early as possible may prove beneficial over a long term engagement with education. A subject area identified as being conducive to developing these skills is the subject of History at second level education (NFTL, 2015).

2.7   Community Building & Social Learning Theory

Students transitioning from second to third level education are faced with significant individual challenges, however they are also faced with the prospect of participating in group or collaborative work as part of assessment practices in varying institutions and their specific programmes. The aforementioned overt constructivist (Vygotsky, 1978) dimension in the development of 21st century skills is significant in the development of learning environments. The development of understanding through meaning making is a socially negotiated process between actors engaged in negotiated learning environment (Stahl, 1992, 2000). It is clear therefore that such collaborative environments are inherently communicative in nature.

The accountability that Bell (2010) describes is further evidence that within collaborative learning environments relationships between participants exist and develop. It follows that a community of learners exist with a common purpose or vision when they are physically situated together for an assigned task. However, the commonality of vision or goals may be determined by the long term aspirations of the participants. In undergraduate ITE this common vision or goal exists at an individual level and has the potential to form learning communities (Lenning & Ebbers, 1999) through engagement with a collaborative process. The building of a community may be possible when that interaction is associated with the development of 21st century skills - skills that demand the characteristics of community participation and interaction (Lave & Wenger, 1991).

2.10   Designing for Transition

Helping students transition from second level to undergraduate ITE and towards professional practice is, as explored, a complex and dynamic challenge however what is clear is that the point of entry to that environment is the most obvious place to introduce this process given the identified lack of continuity between second level and third level education within the Irish education system. Student teachers in undergraduate initial teacher education programmes are inducted into their host institution and then introduced to the programme content. It is the contention of this research that, from the outset, participants should enter an environment that is designed to support the development and construction of collaborative community building centred around the development of 21st century skills and grounded in a topic that they can negotiate together.

All of the conceptual and practical challenges identified merge together to form the context within which this research study is situated. This dynamic environment also forms the backdrop to which the criteria and considerations of any engagement with the such an environment must be framed. These considerations are summarised as follows:

- Transition: this concept has ben identified as a key consideration within the education continuum and a significant challenge to new entrants to undergraduate initial teacher education;

- Collaboration: a core component of the conceptual underpinnings of this research study, collaboration is also recognised as a key skill for the 21st century - a skill that pre-service teachers and inservice teachers alike are expected to nurture in the students that they engage with at second level education;

- Engagement: as identified, intersubjective engagement through collaboration is a social process, however at both a collaborative and individual processing level the key skills of interpretation and understanding are also at the core of 21st century skills development. A key subject in the development of such skills is considered to be History;

- Narrative Construction: learning to interpret information in all formats and coherently develop a narrative that is critical and insightful forms the basis for both academic attainment in the 21s century and for employment;

- Technological literacy: perhaps the most fluid of all the identified skills required for the transition of second level students into third level education and in particular undergraduate initial teacher education. It is clear that digital literacy and the integration of technologies into pedagogical practice are pertinent to teacher education, however establishing practices that can help the transitional process and contribute to the future career of participants is also important.

2.10   Chapter Summary

This chapter introduced the continuum of the Irish education system and outlined the concept of transition in the context of that continuum. At the core of difficulties highlighted, within the concept of inter-level transition from second to third level education, are the development of 21st century skills. These skills were outlined and

related to the challenges that new entrants to undergraduate initial teacher education experience and the demands that are placed upon them when they are pre-service teachers, as well as in the future as in-service practitioners. The development of these skills was situated in the context of undergraduate ITE and history as a subject was identified as a field favourable to developing 21st century skills. Expanded in more detail in Chapter 3, research indicates that it is within social learning environments that the development of collaborative skills, metacognitive processes and technological literacies can flourish.

Also identified within the context of the education continuum was a dearth of research or practical innovation to establish a transitional programme that deals with new entrants to third level education in a holistic fashion, rather than as a part of matriculation process. This begs the question: is there an approach that can be taken that blends the practical demands of acquiring 21st century skills, the demands of a busy undergraduate initial teacher education programme and the difficulties that students experience upon entry into third level education. It is clear that some success has been had in the development of collaborative environment and that communities, when formed, can act as a powerful support to members of those communities. It occurs to the researcher that designing an environment that is meaningful to participants both in a personal and professional capacity whilst developing 21s century skills as part of that process may lead to the development of a community of practice that could possibly support community members as they move together towards professional practice.

In the chapter that follows, the literature on the development of such an environment will be reviewed and act as a frame to guide the development of the characteristics of such an environment as identified in this chapter. Furthermore the possibility of using the history of education, a non-elective module in undergraduate initial teacher education, as a module for the development of this environment will be explored and the possibility of

developing a module that can help students collaboratively transition into undergraduate

ITE and towards professional practice will be investigated.

Chapter 3: Literature Review

3.1 Chapter Introduction

As discussed in Chapter 2, the concept of transition within the continuum of education, with particular focus on the role of educators, is filled with complexity. New entrants to undergraduate initial teacher education (ITE) face the concomitant challenge of negotiating their transition into third level education and the expectations of their position within a professional undergraduate programme. As highlighted during this discussion what became clear, by examining this complex area from the perspective of social learning theory, were a number of key and inextricably linked concepts that frame this difficult transitionary process.

This chapter investigates the extant literature on the four key aspects emergent from Chapter 2 - engagement with foundational studies, collaboration, narrative construction and the role of technology in ITE. This chapter presents a picture of a dearth of research carried out in this area, an absence of research projects undertaken and highlights repeated calls for such projects to be developed.

As will be presented, this literature review establishes this doctoral research project as the first of its kind in designing a teaching and learning environment specifically targeted at helping new entrants to undergraduate ITE transition into third level education and towards professional practice by collaboratively exploring the history of education for community of practice formation.

3.2 A Shared History of Education

3.2.1 The Foundational Studies in Initial Teacher Education

The foundational studies in initial teacher education (ITE) include, but are not limited to, the sociology, psychology, philosophy and history of education. These fields of study,

placed at the heart of teacher training programmes represent the connection between methodology, subject expertise and the conditions that shape the required outcomes of such programmes (Greenberg, 1965). Greenberg contends that it is only through an examination of societal issues through the associated fields of the foundation studies, that emergent challenges in the classrooms can be met and that only introspective examination under intercultural conditions can facilitate development in this area (Greenberg, 1965).

Despite such discourse, the role or effectiveness of the foundational studies in ITE has been debated for decades. Numerous reports indicate that ITE participants in both primary and secondary teaching programmes feel that such studies bare no particular relevance to the everyday practice of teaching (Holligan, 1997). Indeed successive investigations conclude it is notoriously difficult to establish links between academic performance in the foundational studies and the practice of teaching (Cortis & Slattery, 1968; Jencks, 1972; Holligan, 1997). Holligan goes further, and suggests that the weight placed on classroom performance in ITE removed the consideration of 'who' and 'why' and a concentration on the mechanics of 'how' prevent explorations as 'autonomous professionals' capable of introspective investigations of their own fundamental principles (Holligan, 1997) or to learn to 'teach against the grain' (Cohran-Smith, 1991, 2001, 2004). Floden & Meniketti (2005) also suggest that there is a dearth of research into the impact that studying the foundations of education can have on the teacher knowledge or practice (Floden & Meniketti, 2005).

In many instances each of the foundational studies are taught as non-elective, stand-alone modules and are prerequisites for professional registration as a second level teacher (Teaching Council, 2011). However, the definition, role or indeed perceived relevance of the foundational studies are not only debated by the students that take these classes but also in the academic papers of teacher educators. Some believe that the role of the foundations of education is fundamental and are inseparable or indistinguishable from teacher education (Broudy, 1968). Contemporary developments in teacher education now

tend towards the use of narrative inquiry and the exploration of the self within the context of teaching (Schön, 1983; Petty, 2014). Such inquiry demands that the trainee teacher be cognisant of the holistic demands of teaching. This perception of the foundational studies lies in contrast to the thoughts of Warren (1982), who suggests that any investigation into the practice of teaching may be framed through contextualisation in the foundational studies however they are not central to the practice of teaching (Warren, 1982). Sirotnik (1990) stands with Broudy (1968) and is harsh in his criticisms of the use of foundational studies in initial teacher education, suggesting that students are rarely challenged to think critically and is dismayed that this problem is decades old and unrelenting (Sirotnik, 1990). It is evident that the long lamented individualisation of teachers within teacher training programmes has not been mitigated by opportunities to think critically about practice through in-depth exploration of foundational studies to such a degree that participants see a real and tangible relevance to the process. To suggest that the foundational studies in education are not a core component of, not only teacher training but professional practice, is to suggest that the practitioner is immune from the naturalistic context of their profession and that the practice of teaching stands apart from societal developments (Butin, 2005).

3.2.2   Foundational Studies in Undergraduate ITE

Where as many new entrants to post-graduate ITE may have studied one or more of the foundational studies as part of their undergraduate education, this is not the case in the instance of new entrants to undergraduate ITE. Such trainee teachers have recently exited the second level education system and will not have chosen to study such subjects, indeed for many, such studies would not have been offered to them during compulsory education. Subjects such as philosophy, psychology and sociology are new fields for new entrants to third level education in the Republic of Ireland. For some the exploration of such subjects are novel and interesting. However the same cannot be said of the history of education as a foundational subject. At second level education in Ireland, the subject of history is viewed as interesting although ultimately far too broad to warrant the investment of time and energy required to complete the demanding second level syllabus

and is very often overlooked for STEM alternatives. The nature of the teaching style for history at second level education, shaped by a rigid examination process does nothing to mitigate this view of the subject. Perhaps further evidence of the origins of the individualisation of teachers, discussed previously (Butin, 2005). New entrants to undergraduate initial teacher education are surprised at the prospect of being required to study the history of education as an non-elective module and that it is required for professional registration (Flynn, 2015).

3.2.3   The Case of the History of Education

The history of education, above all of the aforementioned foundational studies and as a non-elective module, ranks amongst the least favourable of all non-electives to ITE participants (Evans & Trible, 1986; Sirotnik, 1990; Floden & Meniketti, 2005; Clarke, Lodge & Shevlin, 2012). Formal discourse on the relevance of foundational studies to ITE indicates that engagement with the history of education has been in decline over recent decades (Beach & Bagley, 2012; Kerr, Mandzuk & Raptis, 2011; Crook, 2002). The topic is considered difficult to reconcile to the practice of teaching (Flynn & Hall, 2015). Historically interventions to address engagement in this area have focused on reflective practice (Schon, 1983; Sales, Traver & García, 2011), narrative inquiry projects (Heikkinen, Huttunen & Syrjälä, 2007; Heikkinen, Huttunen, Syrjälä & Pesonen, 2011) and the encouragement of individual students to make sense of events experienced on periods of teaching practice (Loughran,1995; Kottkamp,1990).

Engagement with the history of education has the potential to facilitate key learning outcomes for pre-service teachers (PSTs) as an undergraduate community before they transition into in-service positions where they very often are overwhelmed by the economics of survival as a professional and can see no identifiable or tangible reason for studying the history of education (Elliot. 1977; McCulloch, 2011). However, to dismiss the history of education as intangible in terms of teaching practice is to assume that the world of the in-service teachers is contained within the walls of the classroom and that

such an environment is untouched by external influence. Indeed, that is to say that what is observable as a students would hold true as a teacher (Lortie, 1975).

It is by studying the history of education, rooted in personal experience that opportunities exists to relate personal experience to the role of a teacher and to challenge pre-conceptions regarding what it means to be part of the teaching community. A community where intercultural relations are often covert to the observing student population (Lortie, 1975, Darling-Hammond 2006).

3.2.4   Sharing history for community building though collaboration

Establishing community relations by exploring and relating a shared history is not a new concept. The development of such practice is evident in the roots of civilisations around the globe. The Aboriginal people of Australia share, tell and retell stories and embed their sense of the world within their constructed narratives passing on valuable lessons to generation after generation where everyday occurrences are explained in the stories they tell (Geia, Hayes & Usher, 2013). The effect therefore is that the legacy, contemporary presence and future engagement of a community exists through historical narrative. Ellis, Bruckman & Satterwhite (1999) in their research project, The Palaver Tree Online, established an online forum where young and old could share their experiences. In this online space participants came to understand that despite their differences and points of view that they were a community (Ellis & Bruckman, 2001) rather than a collection of individuals with a shared history, contemporary community identity and that they had a future together as a community. Sharing their history allowed them to both explore and realise that reality. Such collaborative engagements demonstrate the power of communicating our history in the pursuit of a common purpose, even if that purpose is tacit. It is the collaborative process that facilitates the construction of this shared sense of community, expanded on the continuum of past, present and future - mediated by the negotiation of a collaboratively constructed environment (Stahl, 1993, 2000).

3.3   Collaboration in Initial Teacher Education

3.3.1   Collaborative Practice in Initial Teacher Education

As discussed in Chapter 2 the role of social learning theory in the development of collaborative practice is one of fundamental importance where the situation of internal dialogue in a social, collaborative process may open up possibilities for new meanings to emerge (Stahl, 2000). Collaborative activities in ITE are largely based on the completion of task orientated projects where the goal is to complete the task rather than result in a shared meaning or the development of a community. Indeed such interactions are often guided by efforts to resolve such internal dialogue through reflective practice by participating in a collaborative activity (Stahl, 2000). Problematically, the collaborative activity is rarely a collaborative process and consequently the meanings are not shared, undermining the social theory that underpins the validity of the designed process. Ultimately such activities become co-operative rather than collaborative. Consequently, efforts to tackle the issue of the Apprenticeship of Observation (Lortie, 1975) and the inherently individualistic nature of teaching become frustrated at the very point of entry in to ITE where it may be possible to challenge such practice.

Contemporary learning outcomes for student teachers are centred around reflective practice and the development of the reflective practitioner (Schön, 1984; Petty, 2014). However it is the contention of the researcher that without contrast in the form of a designed collaborative process individualistic reflections can often result in a dearth of intersubjective challenge and instead become part of the process of extending the individual nature of the teaching profession. In addition, it is apparent that such activities rarely extend beyond the ITE environment. The pointed end of collaboration is often blunted by its repetitive activity rather than its constructive processes.

3.3.2   Collaborative Communities in ITE

The literature is awash with recommendations, action plans and data regarding the induction of Newly Qualified Teachers (NQTs) into the professional teaching environment or into communities of practice (Conway *et al,* 2009; European Commission, 2012; Ceana, 2014; Darling-Hammond, 2006). However, there is a dearth of work relating to the development of collaborative communities within initial teacher education programmes or indeed the skills to effectively negotiate the transition from individualism (Hargreaves, 1994) to the embryonic stages of professional practice as a member of a professional teaching community (Conway *et al,* 2009), or a community of practice (Lave & Wenger, 1991).

Opportunities to collaborate in initial teacher education do exist in projects that are focused on challenging the preconceptions of student teachers, whilst concomitantly developing students research skills and report writing, however, due to the nature of the tasks assigned to participant intersubjective exchanges for meaning making (Heidegger, 1962) are limited. Olson (2000) engaged in a longitudinal study of the impact of narrative inquiry practice (Connelly & Clandinin, 1990; Knowles & Cole, 1994) on pre-service teachers' preconceptions of the practice of teaching (Lortie, 1975; Olson, 1994, 2000; Conway *et al*, 2009) using a co-ordinated alignment of four versions of narrative enquiry: 1) response to practicum experiences; 2) responses to readings; 3) small and large group discussion; 4) refection papers. This structure aimed to explore tacit narrative knowledge that is:

> 'constructed from the contextual contingencies and complexities of our
> individual biographies in integration with sociocultural and historical
> contexts in which we live'

> (Olson, 1994, p.26)

The aforementioned study acknowledged that new entrants to initial teacher education present with a vision of the kind of teacher that they wish to become (Joram & Gabriele, 1998; Mayer, Moon & Widen, 1994) formed during their 'Apprenticeship of Observation' (Lortie, 1975) - a term used to describe the impression made upon students regarding what it means to be a teacher during their time as students, discussed later in this chapter.

In this study pre-service teachers were asked to deconstruct their preconceptions and then construct a vision of the kind of teacher that they wished to become through a designed narrative enquiry process that supported participants efforts to view prior experiences from different perspective or what Conle (1996) terms as 'resonance' (p.229) offering participants 'opportunities to awaken to new understandings and begin to tell and live our teaching stories in more informed or transformed ways.'(Olson, 2000, p.111).

The four versions of narrative inquiry were engaged in the following manner:

1. Responses to Practicum Experiences: Participants were asked to make entries into a daily log while on teaching practice placement delineating their personal experiences and feelings regarding their engagement with in-service practice. Olson uses these comments as entry points to help student teachers articulate viewpoints of teachers that they may have taken-for-granted but found those viewpoints to be not quite as expected.

2. Responses to Readings: Participants are given to a small number of targeted readings to explore as "Conversation Starters" and asked to give a written response to a chapter per class - six chapters per term. Participant responses were focused by prompt questions to avoid a summary of the chapter being read and was a graded task.

3. Small and Large Group Discussions: The small group discussions were intended to let participants voice their opinions on the "Conversation Starters" and then draw in their experiences from their teaching practice diaries for discussion. This was intended to elucidate differences not only in experience on placement but also with

their individual preconceptions of what it means to be an in-service teacher. Large group discussions were used as an arena for important small group focus points to be aired a little more publicly and for the cohort as a whole to learn from each others experiences through a process of 'scaling'.

4. Reflection Papers: These are assignments that asked individual participants to explore an "issue that is of interest to them: gather data on this issue through observations with other, and through other relevant personal and professional experiences; an interpret the data that has been collected through perspectives and relevant readings" (p.122). These reflection papers were also graded tasks.

(Adapted from Olson, 2000)

During this quite structured process of individual narrative enquiry, opportunities for collaborative engagement are evident. The small and large group discussions are fertile ground for such engagement, however opportunities for the development of a shared understanding or meaning making are limited, as the focus of such interactions is to inform the development of the final, more personally relevant reflection paper. Olson (2000) concludes that the overt purpose of this process is to encourage participants to develop a practice of constant reflection.

'Staying open to learning from their own experiences, from the experiences others, and from professional knowledge sources requires continual questioning, thinking about, and revising what we believe we know. Then we will be able to imagine and live new stories of practice rather than just unconsciously teach as they believe that they were taught.'

(Olson, 2000, p.125)

Such instances of innovation in initial teacher education are important for the development of alternate understandings of what it means to be a teacher and to challenge

the preconceptions that Olson's participants commonly held. However, it is the contention of the researcher that such engagements, while important, are unsupported post the point of contact pertinent to the individual and therefore their is an absence of impetus to develop relationships away from the supports of the initial teacher training programme. Such tentative interactions are very often left to be developed by the participant or to self-establish, most evident in the notion of the in-service 'champion teacher' or pioneer educators who paves the way for others to follow. This research study is concerned with building on the connections that Olson's participants make between theory and practice through shared meaning making (Heidegger, 1962; Stahl, 1993) for community of practice formation (Lave & Wenger, 1991) during ITE so that the supports established in ITE may permeate into in-service practice.

3.3.3   Collaboration In-Service Practice

Upon graduation from ITE programmes newly-qualified teachers (NQTs) are eligible to apply for conditional professional registration with the Teaching Council of Ireland (Teaching Council, 2016). When they have secured permanent Contracts of Indefinite Duration (CID) with the Department of Education and Skills (DES) they are then considered to be in-service teachers.

As initial members of the professional grouping, new entrants to the profession are very often confronted with the reality of teaching to a maximum student capacity across multiple subjects and to a full spectrum of age ranges at second level eduction. Their initial instincts are for survival and for this they often turn to more experienced teachers for guidance, reflective of their actions as ITE participants (Clarke, Lodge & Shevlin, 2012). This action is in many ways an emergency response to issues as and when they arise rather than a natural action of established habit. The socio-economic pressures of establishing oneself as an in-service teacher (McCulloch, 2011; Putman, 2012) and the emotional pressures that process of self-establishment can bring (Hoekstra, Beijaard,

Brekelmans & Korthagen, 2007), can very often outweigh any notion of collaborative practice during this phase of an educators career.

However, some opportunities to collaborate do exist within the in-service community in the form of Special Interest Groups (SIGs) and / or secondment to national government sponsored development organisations such as the PDST or Project Maths. These specific and targeted project groups allow teachers with common interests to apply for a temporary release from their day-to-day classroom activities to become part of such groups in a full-time capacity or through peripheral membership in a part-time capacity. These groups, however, are not representative of the day-to-day interaction of in-service teachers. What defines the everyday practice of teaching professionals is on-site communication centred around emergent issues that require solving rather than communal interactions that exist due to policy or established traditions. Teachers want their professional development to mean something to them in terms of their personal development, but also in terms of how that development can relate to their practice in the classroom (Cameron, Mulholland & Branson, 2013):

> 'teachers when planning their professional growth, should be free to choose
> at least some learning opportunities focused on their personal needs as well
> as opportunities with direct relevance to their classroom and pedagogy.
> These perennial choices motivate the practitioner to engage in authentic
> learning and should balance some of the demands made by education
> systems.'

> (Cameron *et al*, 2013, p.391)

In the development of their proposed framework for conceptualising teacher framework Cameron *et al* (2013) investigated the solitary nature of teaching and the impact that this has on the learning cycle of educational practitioner concluding that two significant factors contributed to the solitary nature of the second level teaching profession. Initially

geographical location is identified as a significant factor in the isolation of teachers within schools however, a "culture of individualism" (p.381) was also blamed for the perpetuation of individual practice (Cameron *et al*, 2013). Trauth (1999) discusses the development of a shift towards organisational knowledge building rather than collective individualism in the Information Technology domain and suggests that cultures of individualism can frustrate the development of collaborative or organisational knowledge building (Truath, 1999). This observation is further evident in professional teaching practice where ambiguity concerning what collaborative practice entails can entrench individualism (Little, 1990) and where the 'horizon of observation' (Hutchins, 1996), or extent to which a physical leaning environment can be construed as a learning environment, is unclear, blurred or perhaps so starkly established that it prohibits intersubjective behaviour (Cameron *et al*, 2013).

Efforts to establish collaborative moments within practicing teaching environments are few and far between and as Cameron *et al* (2013) delineate, such effort are routinely undermined by issues that form the complexity of the environment of employment in the second level education sector, particularly issues 'associated within isolation, the costs of professional learning, and the nexus between professional and personal needs.' (Cameron *et al*, 2013). The absence of research in this area is notable and most likely reflective of the difficulty of conducting research that can be adapted and/or adopted in cognate settings.

3.4   Technology Enhanced Collaboration

3.4.1   Computer Supported Collaborative Learning (CSCL)

Virtual Learning Environments (VLEs) emerged on the foot of advances in technology where students have the capacity and ability to remotely access information regarding the course they were enrolled in. Such environments provide administrative and didactic support for all participants both academic and student body for the completion of the programmes of learning that they are engaged in (Fry, Ketteridge & Marshall, 2009;

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Weller, 2007) and of particular importance was their use in the development of teacher

student relationships based on content and assessment (Ozkan & Koseler, 2009). This

approach is termed as a 'monolithic or integrated approach' (Mason, Pegler & Mason,

2005, p.253) allowing for the holistic view of student online behaviour (Weller *et al*,

2005). However the role of the VLE has largely remained an academic administrative

tool and is not widely viewed by students as an arena within which students, and in

particularly students enrolled in professional programs are comfortable with. It is notable,

however that while VLEs are widely viewed as being in the world of academia (Timmis,

O'Leary, Weedon, Harrison & Martin, 2004), they are considered to be 'reassuring as it

made them [students] feel part of a wider university, with the associated support' (Weller

et al, 2005, p.257) Indeed, Weller *et al* (2005) conclude that:

> 'The results of this research may indicate a convergence in learning
>
> environments between technological developments and a growing maturity
>
> in the use of online technologies by learners and educators. The move
>
> towards interoperable, service-based solutions makes the notion of a more
>
> fluid VLE, which offers different components within the same overall
>
> technical framework, viable. In parallel, as learners and educators become
>
> more sophisticated with their use of online technologies, the need for
>
> systems that are easily reconfigurable to suit the demands of a particular
>
> leaner of cohort becomes more apparent'

(Weller *et al*, 2005, p.258)

Arising out of the networks within academia and the education system or the VLEs that

exist and connect institutions, Computer Supported Collaborative Learning (CSCL)

(Stahl, Koschmann & Suthers, 2006) environments have made significant inroads into

connecting participants and educators in a collaborative space where the hierarchical

nature of VLEs have been mitigated through design. Thus allowing content to migrate

beyond the classroom (McCrea, Gay & Bacon, 2000) and stretch our preconception of not

only what teaching and learning are but also the dimensions within which such learning occurs.

In efforts to establish the foundations of such a dynamic engagement with education CSCL has emerged from the learning sciences as a distinct entity concerned with bringing people together, to learn together and from each other with the help of computers (Stahl, *et al*, 2006) where,

> 'the idea of encouraging students to learn together in small groups has also become increasingly emphasised in the broader learning sciences … [and] the ability to combine these two ideas (computer supported collaborative learning and collaborative learning, or technology and education) to effectively enhance learning remains a challenge - a challenge that CSCL is designed to address.'

(Stahl *et al*, 2006, p.1)

To this end CSCL environments are markedly different from that of the aforementioned VLE's in that they conceive the role of the computer in teaching and learning as supporting collaborative practice and scaffolding of the learning rather that of a didactical engagement (Stahl *et al,* 2006), where:

> "in most cases, the role of the computer is secondary to the interpersonal collaboration process among the students (and, ofter, the teacher, tutor or mentor). The software is designed to support not replace these human group processes"

(Stahl *et al*, 2006, p.7)

and provides an environment wherein learning is represented as a convergence of otherwise divergent meanings (Hicks, 1996). Ultimately, therefore, the development of a CSCL environment is dependent upon the focus of engagement being on the,

> 'meaning-making practices of collaborating groups and on the design of technological artefacts to mediate interaction, rather than a focus on individual learning'

(Stahl *et al*, 2006, p.15)

and where,

> 'particularly in the context of collaboration - meanings exist in the intersubjective world and that they are interpreted from a personal perspective.'

(Stahl, 2002, p.3)

3.4.1.1   Technology Enhanced Learning Environments

Technology Enhanced Learning Environments (TELEs), as Wang & Hannifin (2005) suggest,

> 'technology-based learning and instructional systems through which students acquire skills or knowledge, usually with the help of teachers or facilitators, learning support tools, and technological resources'

(Wang & Hannafin, 2005, p.5).

This summary reflects a number of theoretical frameworks developed in the 1990's (Hannafin, Land & Oliver, 1999; Savery & Duffy, 1996) that have driven technological integration in the education sector. However, the development of theoretical frameworks that form the foundations upon which potential TELEs may flourish have struggled to take hold. This is perhaps best evidenced in two distinct areas. Firstly the development of

designed innovations has been largely focused on a traditional linear format of design, research and report (Cuban, 1986, 2001; Kent & McNergney, 1999) very often resulting in the design innovation either being rejected or in many successful cases being regarded as dated or outmoded by practitioners. Secondly, the advent of mobile technology and accessibility to information systems and in particular off-site access to TELEs has meant that the pace of technological advancement very often outstrip the capacity of educators to keep pace with the very change that is trying to be affected.

While clearly technology has had a positive impact on education the environment required to support technological engagement must seep beyond the traditional walls of the education systems we inhabit (Mishra & Koehler, 2006; Kornbluh, 2008; Ayers, 1999). Therefore the development of such environments are complex (Stahl *et al*, 2006). At this juncture it is helpful to consider framing a TELE in the context of ITE. Pre-service teachers, given the professional nature of the programmes they are engaged exist in multisite education. Very often the technology that they use in their host institution will not reflect the technology available to them at schools and this is also the case regarding the technology available to PSTs in their personal lives. Again these technologies may not be available to them in a professional capacity. So, what we see is a complex and diverse pre-service and in-service teaching environment that lends itself to technological individualisation and can render the development of TELEs ineffective suggesting that the very existence of technology for specific purposes does not infer the effectiveness of such technology in practice (Collins & Halverson, 2009). Research into the impact of TELEs in second level education or teaching practice reflects this assertion (Law, Pelgrum and Plomp, 2008) and in a study of collaboration between second level mainstream and special educational needs teachers the development of collaborative relationships was found to be limited at best (Hamill, Jantzen & Bargerhuff, 1999) indicating that TELEs at third level education and in particular initial teacher education programmes face significant challenges (Kirschner & Davis, 2003; Wood, 1998).

The integration of technologies, or as described elsewhere as ICT, into VLEs as either intranet communications that serve the institutions or as repositories for students to access lecture notes and to deposit assignments and project work for assessment is typical of what Kirschner & Davis (2003) describe as the root of issues relating to the integration of technologies into teaching and learning. They write:

> 'as long as institutions for teacher education see the computer or ICT as an addition to teacher training and not as something fundamental to it, the computer [will] never become an integral well-used part of the teaching/ learning process.'
>
> (Kirschner, 2015, p.310)

Kirschner (2015) problematises the concept of TELEs further by arguing that in a true teaching/learning environment stating 'from the viewpoint of teacher competences, there is really no need for specific attention to TEL. TEL is an artefact of the times …' (Kirschner, 2015, p.312) building on previous work that stated,

> 'teachers need to integrate ICT competence into their core teaching competences and the equational system must integrate it into the heart of learning and teaching. What really counts at the end of the day is if teachers and learners feel that ICT tools are a 'normal' part of their competencies and not an add-on, either in a positive or negative sense.'
>
> (Van den Dool & Kirschner, 2003)

It in incumbent, therefore, on the designers of any digitally supported learning environment that the relationship between the learner, the teachers and the tools that connect them are balanced and integrated, rather than bolted on or retrospectively connected (Kirschner, 2015).

3.4.4.2   Social media in educational collaborative activities

As problematised by Kirschner (2015) the role of technologies in the teacher's toolbox is complex and he points out that technologies should be as much a part of teachers' repertoire as the use of a text book or whiteboard (Kirschner, 2015). This begs the question: what technologies can be truly integrated into a model of teaching and learning?

Recently we have witnessed the tenth anniversary of Twitter and its meteoric rise to prominence. The establishment of Facebook as a social norm has further cemented the role of social media in the everyday lives of people with a large majority of students enrolled in U.S. universities actively engaged with Facebook accounts (Aydin, 2012) and as an educational environment Facebook has an impact upon all strata of academia (Bugeja, 2006). Roblyer, McDaniel, Webb, Hermen & Witty (2010) indicate that Facebook, when a concerted effort to integrate Facebook into a designed learning environment is made, can be established as a rich and valuable resource for the connected teaching and learning community (Roblyer *et al,* 2010). A study conducted by McCarthy (2010) relating to the induction of first year students into a university culture, found that the use of social media within a designed environment supported the aims of the study and lead to enhanced social and academic interaction between student peers (McCarthy, 2010).

It is evident in the literature that the issue transitional practice prevails in higher education and the introduction of new methodologies and technologies that can support learning has been slow to materialise (Ajjan & Hartshorne, 2008; Coddington, 2010; Moran, Seaman & Tinti-Kane, 2011; Poore, 2011). However, also evident is the transformative potential of such measures within faculty research - if not readily rolled out to engagement with the student population (Conole, 2011; Oblinger, 2010; Veletsianos, 2012). These findings also support the aforementioned issues raised by

Kirschner (2015) and the use of VLEs as components of 'convenience and control' (Kennedy, Judd, Churchwood, Gray & Krause, 2006, p.15).

A pervasive communication tool, Twitter is representative of the development of a movement towards online democratic participation in a myriad of spheres (Coiro, Knobel, Lankshear & Leu, 2008). However the very pervasiveness of this type of social media has placed demands upon users of same to develop digital and/or 21st century skills that allow them to effectively engage with such technologies (Coiro, 2003, Smolin & Lawless, 2003). Nicholson & Galguera (2013) explore the experiences of student teachers use of Twitter as part of their initial teacher training, delineating the diversity of their reactions and the potential benefits of using Twitter as a tool in this complex environment as well as problematising its presence. They highlight findings from the Pew Research Centre's Internet and American Life Project where Twitter use is twice as high in young adults (18-29 years) as in older age groupings - the typical age profile of trainee teachers (Smith & Brenner, 2012).

However, as Coddington (2010) alludes to, university institutions are slow to both recognise and harness the potential of micro-blogging concepts such as Twitter (Kassens-Noor, 2012) despite the appetite for such engagement from the student population (Hannay & Fretwell, 2011). Furthermore is is evident that the ability to harness such platforms, micro or otherwise, is highly desirable by the prospective employers of new graduates (Wankel, 2009). Importantly, in instances where Twitter groups were formed as part of a university college course, students spontaneously continued to communicate about class content after class had concluded resulting in a strengthening of the students' relationships both with each other and the facilitator/teacher of the that programme (Junco, Heiberger & Loken, 2011). In addition, a separate study found that the introduction of Twitter's 140 character communication limit was effective in supporting participants collaborative activities and negotiation of shared meaning, also resulting in increased participation beyond the demands of mandatory participation (Kassens-Noor,

2012). The use of Twitter in programmes that are pre-professional found that the use of the platform allowed participants to engage with established professional communities beyond the boundaries of the learning environment allowing participants to feel like they were emergent members of those established professional communities (Dunlap & Lowenthal, 2009). In addition, the use of Twitter has also been found to reduce feelings of isolation due to the sense of community established through various levels or participation in these more established networks of professionals and students (Wright, 2010).

Returning to Nicholson & Galguera (2013), their study asked student teachers to set up a Twitter account as part of their engagement with an education programme with the aim of getting participants to engage in policy discussions that were pertinent to their professional work. The establishment of a Twitter account was introduced on the first day of class and highlighted as an important tool for the students to get the most out of the course that they were enrolled in. Students, after a short period, were required to send tweets and re-tweets to their fellow students routed through a designated hashtag. At the end of each month participants were required to reflect on the content of the hashtag and what they had gleaned from the engagement. The findings are pertinent to the development of this research study where the authors state:

> 'The first month students students primarily focused on learning the
> technical spaces of the tool and observing the process of integration and
> knowledge sharing on Twitter. Month two led to more exploration and
> understanding of the different functional uses of the tool and more awareness
> of the challenges associated with its use. The final month inspired increased
> risk-taking in addition to students' strengthened awareness of the benefits
> and limitations Twitter offered for supporting they professional work'
>
> (Nicholson & Galguera, 2013, p.14)

The authors of this study are, however, quick to point out that while the introduction of Twitter to the programme had significant benefits in terms of reducing feelings of isolation and increased participation within educational communities, that some students did not engage with the platform past the requirements of the programme. The authors conclude that this is due to a number of factors. Scaffolding of both the technical aspects of using Twitter as well as the mode of contribution regarding tweets and retweets etc is critical in supporting students at all levels of experience with such communication tools. They also point to the content provided on Twitter from the course facilitator as being an important factor in student participation. Posted content must be not only relevant - but engaging. This brings with it an inferred requirement, although not an academic requirement, upon the students that their content must be of a similar standard requiring specific skills that participants may not yet have and this factors must be calculated when constructing scaffolds for students engaged in such activities (Nicholson & Galguera, 2013).

3.4.4.3   Teachers and Technology Self-Efficacy

Mishra, Koehler & Kereluik (2009) content that educational technology can be broadly defined 'as the study and practice of facilitating learning and improving performance by creating, using and managing technological processes and resources' (Mishra *et al*, 2009). They argue that technological innovations very often do not permeate education systems or teaching practice as:

> 'using the newest technologies such as mobile phones in ways that are
> instructionally effective requires specific knowledge of how the technology
> can be used for pedagogical purposes. Teachers are busy people with many
> goals competing for their time. Educators who are not skilled beyond basic
> usage will need to learn both the technology as well as how to use it
> instructionally - a completely different skill.'

(Mishra *et al*, 2009)

The rapid rate of change of technology (Kurzweil, 2005), is particularly relevant when discussing teachers' levels of technological self-efficacy. This rate of change can discourage teachers to engage with emergent task specific technologies as they can feel that the technology will very soon become obsolete. Indeed, in order to keep up with any technology teachers are required to engage in a rate of continual learning or they will fall behind and ultimately lack the technology implementation skills required to meaningfully integrate technology into their pedagogical practices (Goldin & Katz, 2008; Kirschner, 2015).

The development of technological self-efficacy in educators must therefore move away, in general, from task specific technologies (Kenway, 1996) to those that are pervasive (Selywn, 2000, 2011). Aligning the development of technical competence and efficacy with technologies that are present in the professional and private lives of pre-service and in-service teachers is to acknowledge the impact that technological advancements have had is not contained within domains, rather it is pervasive (Mishra *et al*, 2009; Qvortrup, 1984). This pervasiveness blurs the distinction, therefore, of what educational technology means to the teaching profession (Mishra et al, 2009; Selwyn, 2011). This 'confusion' is pertinent to discussions regarding pre-service teachers' technological self-efficacy as the technology they perceive as being educational can very often be present in their personal lives (Smith & Brenner, 2012). To this end, self-efficacy is discussed in relation to technologies that are not task specific or purpose built - bespoke.

Self-efficacy is considered a fundamental competence belief in one's ability to control processes (Zimmerman & Schunk, 2006). Elsewhere, self-efficacy is defined as 'belief in one's capabilities to organise and execute the course of action required to manage prospective situation' (Bandura, 1995, p.2). These perspectives on self-efficacy indicate that confidence in ones abilities is that of a belief in one's self to complete a task within a

specific domain (Wang, Shannon & Ross, 2013), which in turn influences the performance of all participants within educational settings (Pajares & Schunk, 2002).

Educational settings as highlighted by the aforementioned literature are complex and diverse, increasingly so with the proliferation of technology that is not necessarily domain specific. In light of this, the threshold of technological difficulty that any research study employs may have a significant impact on the success or otherwise on the teaching and learning outcomes within that context. It is therefore incumbent on designers to consider the practical aspects of technological engagement in educational settings as:

> 'external (first-order) and internal (second-order) barriers … If pre- and inservice teachers are to become effective users of technology, they will need practical strategies for dealing with the different types of barriers they will face'

> (Ertmer, 1999, p.47)

Ertmer (1999) elaborates further by delineating what such barriers constitute and offers suggested strategies for overcoming identified first and second order barriers. First-order barriers relate to obstacles that are non-essential to the transitional dynamic of teaching and learning in second level classrooms (Ertmer, 1999) and often take the form of resources that are absent or poorly structured within the environments of the technologies' intended implementation (Ertmer, 1999; Means & Olson, 1997). There is also a perception amongst teachers that access to hardware and software alone is the main barrier to the integration of technology in educational settings (Means & Olson, 1997) belying the presence of, or indeed enhancing the impact of, second-order barriers that may exist within that dynamic (Ertmer, 1999; Mishra *et al*, 2009). Second-order barriers are described as obstacles that relate to pre-service and inservice teachers preconceptions regarding teaching and learning. These beliefs or preconceptions may indeed not be apparent to those facing such barriers (Kerr, 1996; Ertmer, 1999). There is therefore a

reciprocal relationship between such barriers that cannot be ignored in the design of educational environments that integrate technology into the process of teaching and learning. It is clear from the literature that a common vision or goal is an important factor in the successful integration of technology into the pedagogical practices of educators and in overcoming the aforementioned barriers (Ertmer, 1999; Kerr, 1996; Roblyer, 1993; Mishra, 2009; Kirschner, 2015).

In addition Ertmer (1999) calls for the development of such integrated pedagogical practices in the development or refinement of teacher education programmes and suggests that:

> 'without these skills, and strategies for accomplishing them, teachers may
> find integrated technology use too distant a goal to achieve … by arming our
> current and future teachers with knowledge barriers, as well as effective
> strategies to overcome the, it is expected that they will be prepared to both
> initiate and sustain effective technology integration practices'

> (Ertmer, 1999, p.58-59)

An observation echoed some ten years later by Mishra *et al* (2009). It is clear from the literature regarding teachers technological self-efficacy that a balance must be struck between the thresholds that teachers will experience and the development of pedagogical practices that they can emulate through participation either in initial teacher education or during in-service continuing professional development.

3.5   Collaborative learning communities

The establishment of collaborative learning communities in educational settings has been a long held ambition of government educational departments and influencing bodies for a number of decades (Conway *et al*, 2009; Ceana, 2014). As explored in Chapter 2 and in

earlier parts of this chapter, the advent of technology has begun to offer possibilities for the establishment of sustainable learning communities that have a shared vision or goal (Gilbert & Driscoll, 2002). Platforms such as Facebook and Twitter when employed in educational settings have been identified as potential arenas for the development of communities engaged in the practice of learning and with common aspirations, desires and goals (Nicholson & Galgeura, 2013). In the pages of this thesis that follow, the environments that such engagements can flourish within are explored. In particular, the formation of communities of practice (Lave & Wenger, 1991) and the constituent learning communities of such environments (Lenning & Embers, 1999).

3.5.1   Communities of Practice

Conway *et al* (2009) refer to culture in the principles they set out as necessary for successful ITE programmes in terms of diversity, change and homogeneity. Day (1999) suggests that while defining culture in relation to professional education environments is difficult, it may be referred to as an environment 'where people in the organisational setting, characterised by the ways in which values, beliefs, prejudices and behaviour are played out within the micro-political processes of school life' (Day, 1999. p.78).

Given the variation in approaches to ITE across and within continents, from school to school (Darling-Hammond & Lieberman, 2012), it is evident that culture, regardless of its exact definition, plays a key role in shaping collaborative communities of practice.

Introducing, therefore, new entrants to educational communities is an important process given the multitude of micro-cultures that can exist from school to school, college to college etc. Processes of induction allow new members of such communities to familiarise themselves with the nuances of the community and vice verse (Nias, Southworth & Yeomans, 1989). However familiarisation is not induction into a community of practice, rather induction into a collegiate environment or what Fielding (2000) elucidates as a 'functional relationship' (MacMurray, 1961) within which change

can dissolve relationships and where communal or 'personal relationships' (MacMurray, 1961) are enriched by change (Fielding, 2000).

Wenger (1998) in *Communities of Practice*, espouses a theory of social learning where participation is key to a constructed meaning between participants. Actively participating in a learning community is therefore a manner of social development and educational endeavour (Wenger, 1998). Lave & Wenger (1991) have defined learning communities as a 'set of relations among persons, activity and world, over time and in relation with other and overlapping communities of practice' (Lave & Wenger, 1991. p.98) where scaffolded peripheral participation in a community is the foundation upon which full participation can be built. Encouraging initial peripheral participation is therefore a key tenet of developing learning communities or communities of practice.

Hargreaves (1994) discusses the nature of educational communities in terms of individualism and collaboration. He describes individualism in such an environment as essentially taking three distinct forms:

- Constrained Individualism - the individual rooted in situational or imposed constraints;

- Strategic Individualism - the individual is measured in responding to the demands of their working environment;

- Elective individualism - it is the preference of the individual to work alone with all of the time of some of the time.

(Adapted from Hargreaves, 1994, p.172)

Hargreaves' identification of these strata of community based individualism are made, not withstanding the physical condition of the employment site where individuals may be

physically isolated from a community due to the position of buildings and remote interaction (Nias et al, 1989).

Also evident in the work of Hargreaves is the concept of collaborative cultures in education communities where relationships are founded upon spontaneous events that occur regardless of location and time (Hargreaves, 1994). Hargreaves also discuss the impact of directives that stipulate individuals participation with other individuals and labels it 'contrived collegiality' where participants are compelled to participate in incidents of collaborative activities which can often result in longer term inflexibility and inefficiency (Hargreaves, 1994). While not in opposition to Hargreaves' position, Day (1999) suggests that despite the coercive nature of 'contrived collegiality' or contrived collaborative situations, these situations may act as instances where participants can make inroads to becoming active members of more spontaneous communities of practice (Day, 1999; Hargreaves, 1994).

The relationship between collaboration and collegiality is fraught with tension over definition. Fielding (1999) questions the interchangeability of the terms collaboration and collegiality. He goes further during an investigation into student/teacher relationships, and contends that an environment of 'intermingling and interdependence' where a 'joyfully felt mutuality' is experienced by all participating, a radical collegiality, is transformative and transcends the boundaries of collaboration and collegiality defined elsewhere. (Fielding, 2004, 1999)

Lenning and Ebbers (1999) contend that any transcendence of collegiate boundaries in pursuit of the establishment of a holistic learning community or community of practice is dependant upon the formation of four distinct learning communities:

- **Curricular Learning Communities** - such communities consist of students who are enrolled together in two or more modules that draw on different disciplines.

- **Situational Learning Communities** - are a community of learners where the classroom or situation is the axis around which all interaction is based. In this environment co-operation and group activities are shaped by pedagogical direction.

- **Student-Type Learning Communities** - this distinct learning community grouping defines the group as having a common purpose or goal. A shared interest and reason for enrolling in a programme or co-enrolling in a number of modules.

- **Residential Learning Communities** - are learning communities that provide opportunities to engage in learning content and activity away from the physical constraints of the classroom, usually when living in close proximity to one another.

(Adapted from Lenning & Ebbers, 1999, p.15-48)

Leaning and Ebbers' description of learning communities are further enhanced by developments in recent decades with regard mobile technology particularly in relation to residential learning communities where communication between community members is not bound by physical presence or instances of face-2-face interaction and is a further example of the prevalence of Wengers' contention (Wenger, 1998).

3.6 Storytelling for Community Building

Explored in detail in Chapter 5 of this thesis, narrative is 'concerned with the production, interpretation and representation of storied accounts of lived experience' (Shacklock & Thorp, 2005, p.156). By engaging in storytelling as a communicative process then participants in that process can come to an understanding of other peoples lives (Phoenix, 2008; Riessman &

Speedy, 2007). Storytelling as a process of narrative inquiry in an educational setting is therefore an inherently engaging and participatory process. Our lived experiences can be narrated in many forms however oral history has become prevalent in recent years (Thompson, 2000) where biographical interviewing has become a mainstay of qualitative research in that field (Roberts, 2002). Fundamentally the development or communication of narrative is a means of making sense of the world and relating that meaning to others (Bruner, 1986, 1990; Squire, 2008) - the building of communities.

3.6.1 Autobiographical Narration

Autobiographical narrative construction is situated within the experiences of the individual and is constructed in a manner through which that individual makes sense of the world at the moment of telling (Bignold & Su, 2013). It is the immediate telling of story that Bignold & Su (2013) acknowledge as contributing to the limitations of autobiographical story telling in their research study and describe the difficulties associated as being 'open to fabrication, inaccurate memories and concealment of event and facts.' (Bignold & Su, 2013, p.406). They introduce an interview process into their research methodology in order to mitigate this difficulty and gain a fuller, clearer insight into the historical educational experiences of the participants in their study.

In the course of their discussion the researchers highlight three challenging areas when using narrative approaches in educational contexts. The first challenge they highlight is how best to present the participants' historical experiences within the designed educational environment - to ensure that the participants voice remains that of their own - remain authentic and suggest a structured refinement process that involves the original author questioning assumption and or conclusions. Secondly, the role of the narrator in actually reflecting the contextual complexities of the historical experiences. In order to mitigate this concern the authors suggest grounding any historical autobiographical construct in established research concerning the internal fabric of the narrative. The third concern voiced by the authors of this research study is that of how to ensure the validity of the narratives stating that as a researcher one's own position is 'crucial to the validity

of the studies, particularly given the close involvement with the participants a members of the [two] communities being researched' (Bignold & Su, 2013, p.410).

In the case of this research project, interviews validated the content of the autobiographies and careful negotiation of the interview process in line with established methodology for such engagement is suggested as a measure to be taken by others engaged in such activity (Bignold & Su, 2013).

3.6.2   Collaborative Story Building

"How people are positioned in any situation depends on the personal characteristics of all individuals concerned, their personal history, their preferences and their capabilities"

(Barnes, 2004, p.3)

Autobiographical narration can be considered a form of self-study where an individual can participate in a process of reflection, self-examination and self-evaluation allowing a participant to come to an understanding of how and why they hold certain beliefs and take particular position in relation to their engagement with educational environments (Pinnegar & Hamilton, 2009). A study conducted into how teachers learn about their sexual identities through collaborative storytelling extends introspective dynamic to that of a group dynamic and aimed to examine personal experiences to create new meaning though participation in a designed learning environment (Masinga, 2014).

Pithouse (2011) suggests that storytelling can help teachers to remember and and interact with memories in manner that can facilitate challenge not just to the memories being explored but to the impact of those memories and experiences on preconceptions of teaching and learning (Pithouse, 2011). In her study, Masinga (2014) asked participants to share their stories. These stories were then compared to the stories of others in the group

offering opportunities for a 'collective examination of the memories in which the memories are theorised and new meanings result.'(Onyx & Small, 2001, p.775, cited in Masinga, 2014, p.38). She then describes a process of collaborative reconstruction of the collective histories being narrated as a process collaborative negotiation for meaning making (Masinga, 2014). Underpinning the development of this collaborative reconstruction is the work of Lapadat, Black, Clark, Gremm, Karanja & Quinlan (2010). The authors contend that 'the telling of one's story is both a construction of self and a performance of self, in which the listener/reader/viewer is implicated as witness, audience, collaborator, and co-constructer.'(Lapadat et al, 2010, p.78). During the course the study participants developed a deeper understanding of themselves informed by those who listened, gave feedback, constructively challenged and collaboratively reconstructed their perceptions of their lived lives up to that point - all though a process of collaborative story building (Masinga, 2014).

3.8 Building a Clear Vision of Professional Teaching Environments

The role that the development of professional experience in school-based placement plays in the development of trainee teachers has been a contentious issue in ITE for decades (Southgate, Reynolds & Howley; 2013). Questions regarding how student teachers best learn how to teach, where school placement should occur, the duration of placement, whether this experience should be an individual or collaborative experience, are prevalent in the literature and remain unresolved (Manndag, Deinum, Hofman & Buiting; 2007). Darling-Hammond and Lieberman (2012) in their edited study of eight high performing OECD countries: Australia, Canada, Finland, Hong Kong, Singapore, United Kingdom and the United State of America, conclude that their are a signifiant variations in how countries approach these issues (Darling-Hammond & Lieberman; 2012). However within theses variances there exits a consistent theme, that of how to enable pre-service teachers to successfully negotiate the transition between ITE and professional teaching environments. As Hammerness suggests:

> 'the well documented prospective teachers' experience of reality shock could
> be the result of only learning about the bureaucratic nature of schools, the

isolation of the profession and the ambiguous nature of teaching … but

could also result from the gap between teachers' own visions and their

current realities'

(Hammerness, 2003, p.54)

This 'reality shock' is also evident in the transition between second level education and third level education, particularly within the continuum of the Irish Education System (Hyland, 2011).

Strategies such as gradually integrating PSTs into in-service action research groups have been successful in Finland (Sahlberg, 2012). Gently and carefully constructed vision of in-service professionalism in a global context helps student teachers in Singapore to transition into professional teaching environments (Goodwin, 2012). In the United States movements towards alternatives to formal teacher training colleges in a decentralisation of teacher training, is underway (Imig,Wiseman & Imig, 2011). Here too, a central concern of ITE providers is the introduction of NQTs to life as a professional second level educator.

Darling-Hammond & Lieberman pay particular attention to the culture of professionalism in teacher education programs and the role that action research in educational communities can play in the successful transition from teacher training to a professional teaching environment (Darling-Hammond, 2012; Salhberg, 2012). It follows therefore that the development of a culture of community practice is at the very core of the aspirations Conway *et al* (2009) set out.

3.9   Chapter Summary

What is clear from this review of relatable literature is that the concept of

autobiographical storytelling has the potential, when carried out in a designed,

collaborative learning environment, to help participants challenge preconceptions of what it means to be an educator, particularly within the second level education system. In addition this process of collaborative storytelling when supported by a CSCL environment and rooted in historical fact has the potential to develop learning communities that when considered as sequentially constructed have the potential to be the foundation upon which an emergent community of practice (Lave & Wenger, 1991) can be formed in an undergraduate initial teacher training programme.

This literature review has also highlighted some key issues that are pertinent to the development of any designed learning environment that wishes participants to engage in a collaborative exploration of the history of education grounded in participants own biographical experiences:

- collaboration is potentially key to challenging preconceptions regarding the practice of teaching;

- engaging with established historical content can aid this collaborative process and intern develop the individual as a learner within this dynamic;

- narrative construction has the potential to present opportunities for both introspective and intersubjective meaning making;

- technologies utilised in such a design learning environment must be relevant to the lives of participants and not task specific - they must be within the domain of the participants.

The complexity of the literature reviewed is reflective of the complexity of the teaching continuum and the experiences of those engaged in that environment. It is evident that any effort to aid the development of collaborative communities of learners at any point in the teaching continuum requires a methodology that can withstand the complexity of such environments and at the same time be responsive to changes that occur within the

learning environment. This review highlights the importance of any research process to be an iterative, collaborative research process between researcher, participants and the designed environment.

As a result, based upon the above key issues emergent from the literature review process; the discussion in Chapter 2 regarding the transition of second level students into the pre-professional dynamic of undergraduate initial teacher education; and the resultant methodological requirements of any research to be carried out, the next chapter delineates the selection of a design-based research approach to addressing the central research question of this thesis: how can a collaborative engagement with the history of education help new entrants to third level education transition into initial teacher educational and towards professional practice?

Chapter 4:   Methodology

4.1   Chapter Introduction

Emergent from the literature review conducted in Chapter 3, are a number of key issues highlighting aspects of concern for educators within the teacher education continuum. As discussed in Chapter 2 where an examination of the continuum of education with a particular emphasis on transition into teacher education, difficulties experienced by students transitioning into undergraduate education as they move towards professionalism were elucidated. This chapter, resultant from the aforementioned, outlines and explains the selection of Design-Based Research (DBR) as a research methodology best suited to addressing the research question at the centre of this doctoral thesis: how can a collaborative engagement with the history of education help new entrants to third level transition into ITE and towards professional practice?

This chapter highlights the necessity of examining the problem being researched in context, explains the relevance of DBR methods to researching in such an environment as well as outlining the limitation and challenges of using such an approach. Data gathering techniques are defined and ethical considerations detailed. The chapter begins by situating the research question in the natural environment of its genesis prior to elucidating considerations given to selecting design-based research as a research methodology.

4.2   The Research Problem in Context

This research study is focused on one central research question: How can enhanced engagement with the history of education help pre-service teachers (PSTs) transition into a professional undergraduate initial teacher education (ITE) programme and towards professional practice? Seeking to understand the impact that a collaborative engagement with the history of education has on the transition of new entrants into undergraduate ITE, this study iteratively developed, in partnership with undergraduate pre-service teachers, a

process of engagement with the history of education in a computer supported learning (CSCL) environment that explicitly facilitates transition into third level education and towards professional practice.

4.3   The Naturalistic Context of the Research Problem

4.3.1   Initial Teacher Education

Across Europe initial teacher education is dominated by the consecutive model of teacher training (Ceana, 2014). The provision of the concurrent model, as a route towards professionalism is limited and country specific. In the Republic of Ireland this trend is evident. Undergraduate initial teacher education in particular is a complex entity. As Schön argues, initial teacher education is a complex and messy environment with multiple stakeholders, demands on pre-service teachers and the professional nature of programmes that they are engaged in (Schön, 1983).

As explored in Chapter 2, concurrent or undergraduate ITE is further complicated by the fact that participants have just exited the second level education system that they will be asked to return to on teaching practice. Such trainee teachers have not had the opportunity to distance themselves from that environment for any significant period of time. The learning environment for an undergraduate pre-service teachers is therefore an extremely dynamic entity that requires participants to adapt quickly and deftly.

4.3.2   The Apprenticeship of Observation

This transition into tertiary education and and towards profession is further complicated by the participants experience of teaching at second level. This period of time can range from twelve to fifteen years and have a significant impact on pre-service teachers perceptions of best professional practice (Lortie, 1975; Darling-Hammond, 2000, 2006). Further to this, the development of teacher training programmes in recent decades has focused on longer and longer periods of teaching practice for pre-service teachers. In the

case of undergraduate trainee teachers this returns them almost immediately to where they observed teaching practice and where they turn to seasoned practitioners to instruct them on methodology and classroom management. They learn on the job from those who are in the job. Consequently undergraduate pre-service teachers establish an attitude of peripherality to the foundational studies in education and see methodology and classroom management as the core elements of teacher training.

The concept of collaboration is therefore reduced to that of a short term knowledge exchange relationship and a return to isolation within the classroom environment. Exceptions to this are, of course, evident in many schools however in the Republic of Ireland the nature of matriculation into third level education has established a culture of teaching to the exam which in turn has further marginalised the foundational studies in education, in particular the history of education, in an environment that views the profession of teaching as an independent activity rather than that of members of learning communities where the active stakeholders include the students.

4.3.3   The Undergraduate Status of Pre-Service Teachers

As explained, the complex nature of the environment of undergraduate initial teacher education for new entrants is, in the case of this research study, further complicated by the fact that new entrants to such programmes are entering into third level education for the first time in comparison to those participating in the dominant consecutive model of teacher training where the majority of participants have acclimated to life at this level over the course of an undergraduate degree and or a postgraduate course of study prior to entry.

Students in such undergraduate ITE programmes are grappling with their new environment, academic demand and new social lives that they did not perhaps have to deal with at second level. Teacher training programmes are professional programmes and new entrants are expected to be able to teach in a functioning second level school at the

end of the programme. Hitting the ground running is imperative. Therefore, the transition that student teachers make from second level into third level and towards professionalism is difficult, messy and utterly complex in undergraduate initial teacher education.

The real world naturalistic context of this research study contains multiple interdependent variables that are complex, dynamic and reflect the reality of the challenges that face both teacher educators and pre-service teachers in real-life in initial teacher education programmes. As a consequence, a methodology that can accommodate such complexity through design flexibility and an iterative process was required. In addition, the design methodology would need to be able to accommodate unforeseen variable as they emerge.

4.3.4   Educational Technology

Educational technology has developed exponentially, particularly in recent decades. The development of investment programmes in ICT for pre-service teacher training and investment in inservice are evident. However it still remains that the pervasiveness of the development of mobile technology in particular, has not penetrated the second level school system in the Republic of Ireland and other European member states to any significant degree (Rizza, 2011). Indeed, the degree to which the pervasiveness of technology has penetrated both private life of the student and the teacher may perhaps mirror the preconception that the history of education has no baring on the professional lives of teachers and perhaps that technology is within the realm of privacy rather than professionalism.

4.4   Responding to the Problem

4.4.1   Linking Theory and Practice

The methodology selected would need to have the capacity to create a fusion of theory and practice at the nexus design and participation. In the case of this research study, addressing the central research question: how can a collaborative engagement with the

history of education help undergraduate pre-service teachers transition into this level educational and towards professional practice?; may lead to a concomitant contribution towards both theory and practice and where participants gain important professional skills in the process.

A key methodological requirement is the ability of a design to be able to respond to near-significant requirements and at the same time have a distant-relevant impact (Barab & Squire, 2004). The complex, fast paced and demanding nature of initial teacher education as a naturalistic context requires a methodology that can satisfy such considerations.

4.4.2   Practical Application

A key consideration is the ability within any research methodology to facilitate practicable impact. The concept of effecting 'near-significance' (Barab & Squire, 2004) where 'the buzzing, blooming confusion of real-life settings where most learning actually occurs' (Collins, 1999) can be explored in depth, while concomitantly examining the 'distance relevance' (Barab & Squire, 2004) the impact of any attempts to affect the central research question. The practical application of any selected methodology would therefore be subject to scrutiny in its attempts to 'generate evidence-based claims about learning that address contemporary theoretical issues and further the theoretical knowledge of the field.' (Barab & Squire, 2004).The methodology selected would need to facilitate the symbiotic relationship between theory and practice as it exists in the world where the ability of innovations are weighed on their effectiveness in the lives of those who participate (Dewey, 1938).

4.4.3   Adaptability and Adoptability

Educational settings are complex environments with multiple stakeholders and a diversity of agency within the everyday setting. The selection of a research methodology must consider the naturalist context not only of the research problem and its proposals to

address the problem but also the problem as it evolves beyond the naturalist context of its contested setting. Therefore the development of a defined solution to the problem must not be the end goal of the research study, rather an iteratively refined design contribution that remains useful even when applied to new local contexts (Barab & Squire, 2004) and as a consequence underpin any theoretical contributions through a robust flexibility in a new local context, facilitating an adoptability and usefulness far beyond the life cycle of the research study.

4.5 Selecting the Methodology

Examining the research problem reveals that the nature of any intervention in an educational environment is dependant on multiple variables and is in a constant state of refinement and improvement. Responding to the problem of engagement with the history of education and the difficult transition that students make from second level into professional programmes, in particular undergraduate initial teacher education, requires a methodology that can cope with the 'complexity, fragility, messiness, and eventual solidity of the design and in doing so in a way that will be valuable to others.' (Barab & Squire, 2004). The exploration of methodologies that may present an opportunity do so included:

- Action research allows a partitioner/researcher to effect change by addressing real-world problems in naturalistic contexts. A change in the learning environment is introduced and the practitioner/researcher documents the ramifications that change to try and understand the impact on the learners and/or their own practice. The practitioner/researcher is not engaged in research with the participants or indeed in the pursuit of making a contribution to theory in the field although may do so by involving researchers post action, with local improvements in the participants field then facilitated through presence of the researcher (Kemmis & McTaggart, 2000).

- Formative research is, as an entity, iterative and involves systematically improving a design applied to improve local practice. However, the goal of formative research is not to generate insights or contributions to theory in the field but rather to improve the practice of design and application.

However both methodologies only provid opportunities to explore certain aspects of the problem identified at specific points or from certain perspectives and contribute in different if complementary arenas. The ability to adapt in-design or to mirror the real-life messiness of initial teacher education, iteratively refine a design intervention and with a common goal of contributing to the theory of the field requires a research methodology that encompasses all that is good about formative and action research. The decision to adopt design-based research as the research methodology to support the researcher was based therefore on it its ability to facilitate the naturalistic context, establish a design model that linked theory and practice while maintaining the goal of contributing to theory in the field of educational research.

The iterative nature of design-based research would support the researcher in efforts to develop and refine the effect of the design intervention to help pre-service teachers to transition from second level education into undergraduate initial teacher training and to establish the history of education as a robust and appropriate space for that transition to occur,

4.6   Design-Based Research

4.6.1   Design-Based Research - Provenance

Not listed as mainstream qualitative research methodology in educational research (Creswell, 2007) design-based research has, in recent years gained considerable traction in educational research literature providing researchers with an opportunity to address complex problems in-situ and take into consideration the naturalistic contexts that

influence not only the problem in hand but the proposed efforts to effect change (Barab, 2006).

It is this recognition of the complexities of educational research and the limitations of effecting change when the initial problem is removed from the naturalistic context that prompted Ann Brown to carry out what she and Allan Collin referred to as 'Design Experiments' (Brown, 1992; Collins, 1992) in an attempt to make, not only a practical impact, but to link theory to practice in a meaningful way so that others may benefit from the insights gained (Brown, 1992; Collins, 1992). The naturalistic context of education is inherently repetitive given curricular and academic assessment regulatory responsibilities and therefore a research methodology that is improvable, adaptable and adoptable over time and from context to context is desirable. Indeed as Cobb et. al. (2003) states: 'the design context is subject to test and revision and the successive iterations that result play a role similar to systemic variation in experiment' (Cobb et. al., 2003) establishing the link between the design context and the theoretical position to which it is anchored is key. Cobb *et al* (2003) make the point that scientific rigour is necessary for the outcomes to be anything other than something that just worked (Cobb et. al., 2003). As Barab (2006) states that 'in complex learning environments it is difficult to test the casual impact of particular variable with experimental designs' (Barab, 2006, p.155), where the individual or group of individuals and the learning environment are inseparable (Brown, Collins & Duguid, 1989). However restricting the insights gained in the localised learning environment does not complete the intention of DBR as Barab & Squire (2004) elucidate:

> "Although providing credible evidence for local gains as a result of a particulate design maybe necessary, it is not sufficient. Design-based research requires more than simply showing a particularising works but demands that the researcher (move beyond a particular design exemplar to) generate evidence based claims about learning that address contemporary theoretical issues and further the theoretical field of knowledge"

> (Barab & Squire, 2004, pp.5-6)

Variants of design based research variants have begun to emerge as 'design predominates as a systematic approach to innovation in contemporary learning technology research' (Long et al., 2015).

Essentially what design-based research is good at, is communicating the contextual particulars of a learning environment and the theoretical insights gained through the process to the wider educational community in the form of an adaptable and adoptable design. Design-based researchers place themselves at the centre of the problem where all of the craziness of life is buzzing around. It is this space where complex educational issues exist and therefore DBR is well positioned to explore pertinent educational challenges. diSessa & Cobb go so far as to say that 'work of this type can be demanding in that it involves 'building the place while flying it'' (diSessa & Cobb, 2004).

4.6.2   A Profile of Design-Based Research

Building on the historical development of design-based research, this now established research methodology (DBRC; 2003) can be defined as 'a series of approaches, with the intent of producing new theories, artefacts and practices that account for and potentially impact learning in naturalistic settings' (Barab & Squire, 2004). Design-based research does not just deal with events, research or work that occur in naturalistic settings 'rather, that the work transacts with these settings such that the design, the problem, and even the theory are fused with these settings in ways that are not easy to disentangle' (Barab, 2006).

Fundamentally design-based research is characterised by its transactions with real-world learning environments (Collins, Joseph & Bielaczyc, 2004). The Design-Based Research Collective (2003) identify the location of a real-world learning environment to be that of an 'authentic setting' (DBRC, 2003) The complexity of such an authentic location or real-

world learning setting is explored further by Wang & Hannafin's (2005) characterisation of design-based research as they set out five key area that define the methodology for researchers (Table 4.1).

Charactertitcs	*Explanations*
Pragmatic	• Design-based research refines both theory and practice. • The value of theory is appeared by the extent to which principles inform and improve practice.
Grounded	• Design is theory-driven and grounded in relevant research, theory and practice. • Design is conducted in real-world settings and the design process is embedded in, and studied through, design-based research.
Interactive, iterative, and flexible	• Designers are involved in the design process and work together with participants. • Processes are iterative cycle of analysis, design, implementation, and redesign. • Initial plan is usually insufficiently detailed so that designers can make deliberate changes when necessary.
Integrative	• Mixed research methods are used to maximise the credibility of ongoing research. • Methods vary during different phases as new needs and issues emerge and the focus of the research evolves. • Rigor is purposefully maintained and discipline applied appropriate to the development phase.
Contextual	• The research process, research findings, and changes from the initial plan are documented. • Research results are connected with the design process and the setting. • The content and depth of generated design principles varies. • Guidance for applying generated principles is needed.

Table 4.1: Characteristics of Design Based Research (Wang & Hannifin, 2005, p.8)

Any theoretical outcomes of a design-based research project are directly measurable to the extent to which fundamentals of the theory develop and apply in practice (Cobb,

Confrey, diSessa, Lehrer & Shauble, 2003). Effectively asking not only if a theory is effective in practice but also the extent to which the theory works in everyday practice (Wang & Hannafin, 2005). Therefore, theory and practice cannot be divorced within a design-based research project (Brown & Campione, 1996).

Design-Based Research Collective (2003) propose five characteristics that constitute good design-based research in practice:

- The central goals of designing learning environments and developing theories or "prototheories" of learning are intertwined.

- Development and research take place through continuous cycles of design, enactment, analysis, and redesign (Cobb, 2001; Collins, 1992).

- Research on designs must lead to shareable theories that help communicate relevant implications to practitioners and other educational designers.

- Research must account for how designs function in authentic settings. It must not only document success or failure but also focus on interactions that refine our understanding of the learning issues involved,

- The development of such accounts relies on methods that can document and connect processes of enactment to outcomes of interest.

<div align="right">(The Design-Based Research Collective, 2003, p.5)</div>

Collins, Joseph & Bielaczyc (1999, 2004) set out seven practical, field characterisations of design-based that embrace the Design-Based Research Collectives' identification of guidelines for conducting good design-based research in practice. (Table 4.2)

Guideline	*Action*
Implementing a design	• Identify the critical elements of the design and how they interact. • Characterise how each was addresses in the implementation.
Modifying a design	• If elements of a design are not working, modify the design. • Each modification starts a new phase. • Characterise the critical elements for each phase. • Describe the reason for making the modifications
Multiple ways of analysing the design	• Cognitive • Resources • Interpersonal • Group or classroom • School of insitution
Measuring dependent variables	• Climate variables • Leanring variables • System variables
Measuring interdependent variables	• Setting • Nature of learners • Technical support • Financial support • Professional development • Implementation path
Reporting on design research	• Goals and elements of the design • Settings where implemented • Description of each phase • Outcomes found • Lessons learned • Multimedia documentation

Table 4.2 Field Characterisation of Design-Based Research in Practice (Adapted from Collins, Joseph & Bielaczyc; 2004, p.33)

The practical application of design-based research is, therefore, dependant on multiple interdependent variables arising out of an authentic complex relearning environment. The iterative nature of the design process or the "progressive refinement" (Collins, et al, 2004) allows the researcher to take stock of the experiment and revisits the transitional relationship that defines design-based research (Barab, 2006) (Figure 4.3).
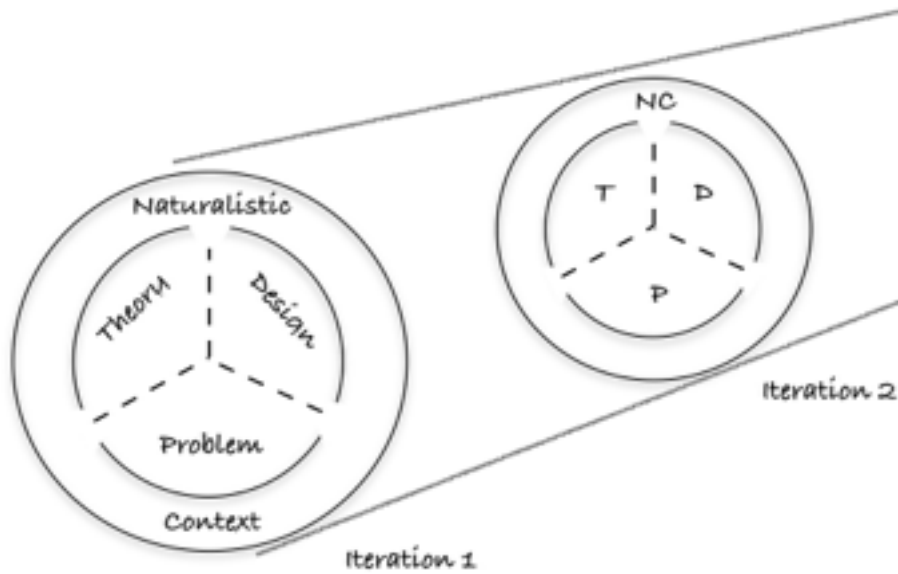
Figure 4.1: General Characterisation of Design-Based Research (Adapted from Barab, 2006, p.157)

4.6.3   Connecting Theory and Practice

A grounded design-based research project 'is conducted in real-world settings and the design process is embedded in' (Wang & Hannafin, 2005, p.8) such settings. This transaction between the problem the research is addressing, the theory and the design is a fluid and interactive relationship (Barab, 2006) that requires a design to argue the design merits in terms of "near significance and distant relevance" (Barab & Squire, 2004, p. 157). Participating in this argument allows the researcher to construct an intervention that can act as an interpreter between the researcher, the problem and the naturalistic context. This dialogue can therefore uncover how teaching and learning took place and what the wider effects of the learning design are. Connecting practice with theory though the design.

A central aims of this research project was design a collaborative story-exchange intervention that would help students make the difficult transition from second level

education into undergraduate education and towards professionalism by forming key interconnected learning communities (Lenning & Ebbers, 1999) in their first three months in undergraduate education. Connecting theory with practice, this central aim would make a significant contribution to the theory of transition into undergraduate learning communities in undergraduate initial teacher education. As explored in Chapter 2, the life of an undergraduate preservice teacher is incredibly complex as are the challenges that they face. Therefore as Barab (2006) suggests, 'from this perspective, examining teaching and learning as isolated variables within a laboratory or other artificial context will necessarily lead to understandings that are incomplete' (Barab, 2006, p.154) and so the development of a DBR intervention must make 'sense of what is happening in the complex, more-or-less real world instructional setting which a design is conducted.' (diSessa & Cobb, 2004, p.99) in any effort to address a real world problem.

Viewing DBR as interventionist (Dede, 2004) where the researcher is embedded in the process this DBR intervention follows a social constructivism approach. As a consequence this research project was well placed in the host universities' School of Education where the development of undergraduate and post-graduate pre-service teachers is inspired and shaped by Vygotskian principles. The complexity described infers a demand that any intervention support ontological multiplicity and, in practice, ontological innovations (diSessa & Cobb, 2004).

4.6.4   Design-Based Research in Practice

The decision by any researcher to engage in design-based research demands that the researcher acknowledge that the epistemological rigidity normally associates with educational research is overpowered by a necessity to embrace a multiplicity of methodologies or as Wang & Hannifin (2005) succinctly point out, 'in many ways, design-based research is intrinsically linked to, and its development nourished by, multiple design and research methodologies.' (Wang & Hannifin, 2005, p.6).

Developing a coherent theoretical framework that from a reciprocal bond between theory and practice is imperative and as such a design-base research project 'that advances theory but does not demonstrate the value of the design in creating an impact on learning in the local context of study has not adequately justified the value of theory' (Barab & Squire, 2004, p.6) or in other words, 'the theory must do real work.' (Cobb et al., 2003, p. 10). This is a fundamental tenet that anchors design-based research in the pragmatism of Dewey (DBRC, 2003, Barab & Squire, 2004). This is further echoed by Edelson, asserting that given the dynamic environment of educational research in practical settings the questions that drive the exploratory nature of the research should be responsive to the data the research generates in that the design should be flexible enough to cope with change in unforeseen circumstances (Edelson, 2002). This position cements the selection of this methodology as constructivist and pragmatically flexible.

Is is this flexibility that characterises design-based research and allows design-based researchers to draw on a mixed methods approach. (Brown,1992; Herrington, et al., 2007; Barab, 2006) In many designs both qualitative and quantitative methods compliment each other and provide a rich interpretation of the outcome of the design intervention. 'In design-based research, methods and analytical procedures are selected and applied because of their utility for furthering the reproach project rather than because of their abstract "power" or refinement.'(Herrington et al., 2007).

In essence what works in the naturalistic context, works. Consequently the techniques used to gather data will vary from project to project and from implementation phase to implementation phase (Herrington *et al.*, 2007). This allows the researcher to act when issues arise within the design and to consider alternate methods of data collection and or a change in the intervention (Collins *et al*., 2004). Here the use of ethnographical data can aid the researcher in developing a 'rich discretion that makes it possible to understand what is happening and why.'(Collins *et al.*, 2004).

Herrington & Reeves (2011) elucidate further and highlight how various forms of data collection processes can make valuable contributions to the iterative refinement of any design-based research project and suggesting that interviews, focus groups, reflective journals or blogs and open ended questionnaire data can provide a rich and triangulated data set (Reeves & McKenney, 2011).

Typically the following qualitative and quantitative methods tat are used in design-based research include field notes, video/audio, portfolio submissions and a constructed artefact rooted in technological innovation (DBRC, 2003; Collins *et al.,* 2004). In effect the naturalistic context will demand what methods, mix of method or weighting towards qualitative or quantitive is appropriate. As Ann Brown (1992) simply states: 'I prefer a mixed approach, suiting the method to the particular data …. in order to describe the phenomena ….' (Brown, 1992, p.156).

However as Barab & Squire (2004) point out the design-based researcher has a significant responsibility in the development of a rich narrative analysis to make the practice of data '…. collection consistent with other qualitative methods. (eg: see Glass & Strauss, 1967; Lincoln & Guba, 1985)' (Barab & Squire, 2004).

4.6.5   Challenges Associated with Design-Based Research

An important aspect of design-based research as an employed methodology is to acknowledge and accept the limitation so the methodology. As Collins *et al* (2004) point out, there are a number of issue that challenge design-based research as a valid methodology:

- Difficulties arising from the complexity of real world situations and there resistance to experimental control

- Large amounts of data form a need to combine ethnographical and quantitative analysis

- Comparing across designs

(Collins et al., 2004)

The difficulties that Collins et al. (2004) allude to are also recognised by the Design-Based Research Collective (2003) as they suggest such difficulties, under data triangulation, 'provide critical evidence to establish warrants for claims about why outcomes occurred.' (DBRC, 2003).

The naturalistic context, that is so important to carrying out design-based research (Barab, 2006) demands that a variety of data gathering methodologies be utilised (DBRC, 2003). A design-based research study faces the challenge of reliability across multiple phases of implementation it is this very triangulation of data and the flexibility it provided that allows design-based researchers to make claims about the effectiveness of their design interventions or what may be considered as credible assertions (Barab & Squire, 2004).

A challenge recognised by the DBRC (2003) and addressed by Barab & Squire (2004) is the issue of consequential validity, where the changes recorded in a system can be drawn on as evidence in support of validity (Messick, 1992). This concept seems inherent in design-based research and the naturalistic setting of any educational environment such are the complexities that define them. However claims about the validity of the research outcomes in a local context must as Barab & Squire (2004) point out, must be tempered by the limitations or scalability of the findings (Barab & Squire, 2004).

Hoadley (2004) identifies issues surrounding the researcher's position as a participant observer, indicating that they must be cognisant of the potential of their position to impact on the results of any design-based research study. The outcome of a study can end up being an unintended glowing report of the success of the study from a particular point of view or emanate from an over-riding desire to make a difference within the context of the

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study. Design-Based Researchers must not only record their perspective or point of origin, but must also document every directional determinant that is plausibly relevant. Interventional strategies and decisions that effect the development of design-based research studies must be documented in details including strategies used not only by participants observed, but also by the researcher (p.205).

In addition to Hoadley's (2004) comments, McNiff et al (2003) in their discussion of action research, suggest with respect to being a participant observer,

> '…'being subjective' can be both an advantage and a limitation. It can be an advantage because you have an insider knowledge of events. It can be a limitation because you may come to biased conclusions about what you are doing'
>
> (McNiff et al, 2003, p. 25).

McNiff et al (2003) also suggest self-validation of data, as well as involving other people who will act as 'critical friends' to critique your representations of data collected, interpreted and presented. They write that validity can be established by

> '… showing how interpretations of experience can be negotiated by different people. This can happen on a number of levels: Self-validation: The initial validation of action research depends on the kind of explanation of their practices that individuals are willing to offer themselves. Peer validation: A second level occurs when co-practitioners, persons who understand the context in which we operate, can work vicariously through the evidence we provide to understand the claims we make. Wider public validation: A third level

is going public, convincing others who may be strangers about the

truth of our claims.'

(McNiff et al, 2003, p. 29)

In employing a DBR approach, this study included number of forms to validate the

research carried out. Firstly the researcher was continually critical of his research

motives, decision making, interpretation of results and evaluation of outcomes. Secondly,

within the School of Education at NUIG, the researcher often sought the opinion of others

within the School. Finally, in dealing with the challenge in the dissemination of the

research findings the researcher provided, as the design evolved 'rich descriptions of

context, guiding and emerging theory, design features of the intervention, and the impact

of these features on participation and learning.' (Barab & Squire, 2004).

Dissemination, beyond the researchers own self-validation of the findings (Hoadley,

2004) is therefore a significant factor in the outcome of the design-based research

process. As Barab & Kirshner (2001) state:

'the goal of the researchers/educators/designers moves beyond offering

explanations of, to designing intervention for. In fact, and consistent with

pragmatists such a Dewey, Pierce and James, to some degree it is the latter

functional constraint that constitutes what is a useful explanation of [a

design]'

(Barab & Kishner, 2001, p.4)

Effectively convincing others of what really works in a process of public validation

(McNiff et al., 2003).

4.7 Data Collection

Data collection in Design-Based Research (Brown, 1992; Collins *et al,* 2004; Barab & Squire, 2004, DBRC, 2003; Herrington *et al,* 2007) typically involves the development of a mixed methods approach involving the collection over both qualitative and quantitative data. In many cases the data collected is likely to vary from iteration to iteration and the method of collection may change through the life-cycle of the study as the research project evolves (Herrington *et al,* 2007). In the case of this research study the data collected was predominantly qualitative, supported by ordinal and nominal quantitative data. Methods of data collection included ethnographic observations, questionnaires, focus group interviews, researcher journal and cometary on the development of the design during the PhD lifecycle. Data collected directly from student participants took the form of a portfolio submission. This submission was divided into distinct although interdependent entities, both individual and collaborative (see Appendix 1).

4.7.1 Questionnaire

In the pursuit of data triangulation the researcher engaged the use of a survey instrument to delve into a deeper understanding of the:

> 'conditions or relationships that exist; practices that prevail, beliefs, points of
> views, or attitudes that are held; processes that are going on; effects that
> being felt, or trends that developing. At times, descriptive research is
> concerned with how what is or what exists is related to some preceding event
> that has influenced or affected a present condition or event'
>
> (Best, 1970 cited in Cohen, Manion & Morrison, p.192)

The use of a post intervention questionnaire was therefore viewed as a reliable indicator of participants perception of the effectiveness of the design intervention and to provide the researcher with an insight of the factors that influenced engagement with the History

of Education and evidence therefore of an emergent collaborative learning community, viewed through the lens of the interdependent variable of the design intervention - Transition, Collaboration, Engagement, Narrative Construction and Technologies. As discussed later in this chapter, ethical approval was sought and granted by the host institution and participants were given the choice of completing the questionnaire create by the researcher. as Cohen *et al* (2007) point out, 'respondents cannot be coerced into completing a questionnaire. They might be strongly encouraged, but the decision whether to become involved and hen to withdraw from the research is entirely theirs.' (Cohen *et al*., 2007, p.318)

In Design-Cycle 1 which was implemented between September and November 2014, 20 participants agreed to complete the designed questionnaire (Appendix 3). This questionnaire was iteratively refined after each implementation phase. The questionnaire consisted of an even distribution of statements and open ended questions regarding the design variables; collaboration, engagement, narrative construction and technologies. A set of questions regarding general feedback on the entire module was also included in the first design iteration. Thirty one of fifty seven opportunities to respond were based on a five point Likert scale of strongly disagree to strongly agree. Within this set of statements, opportunities were offered to respondents to elaborate further on their choice regarding the preceding Likert statement.

The remaining questions were open ended and generated by the researcher in a bid to establish the effectiveness of the multiple interdependent variables from the point of view of the participants. Some example of the questions introduced in this section included:

- What aspects of the collaborative process did you enjoy most?

- How has your perception of the history of education changed over the course of the module?

- In what way did story exchange help you to engage with the module content?

- Why was the use of educational technology important to you in this module?

In designing the research questionnaire the researcher was faced with two significant and interrelated problems. Firstly the number of participants in this initial implementation phase was n=20 and therefore the use of a statistical software package such as NVivo or SPSS was not warranted. Secondly the utilisation of a previously validated survey instrument was limited due to the naturalistic context of the study. The researcher decided therefore to draw upon a number of validated instruments and develop a questionnaire that best suited the need of the research project (Brown, 1992).

Many of the questions used in the survey were adapted from the Wilder Collaboration Scale developed by the Institute for Educational Research and Public Service at the University of Kansas. In addition, other questions and statements were adapted from a survey instrument developed by the Graduate School of Education at the University of Massachusetts which sought to gain an understanding of high school mathematics teachers' perceptions related to the integration of the history of mathematics into their instruction. Other questions contained within the instrument occurred to the researcher during the life cycle of the first iteration and in the analysis has of each design cycle thereafter.

The mode of administration was in paper format. The participants were a small cohort that all took the same classes and modules and so access to the respondents was best organised in a classroom format. The participants, after having chosen to complete the questionnaire, were then left alone in the room to complete the survey and the researcher only returned after the last participants had completed the survey document.

4.7.2 Portfolio Submissions

As a purposeful sample and having consulted the literature, the researcher assumed that participants would not be enthusiastic about the completion of a lengthy academic essay type submission on the History and Structure of Irish Education. Instead students were asked to maintain and submit a working portfolio of their progress through the module culminating in an expression of that progress in a digital, multimodal format. Participants were supported by templates (Appendix 4) and guided by the researcher. Such material is considered effective in the triangulation of data in design-based research projects (Joseph, 2004).

Submitted materials included PDF versions of student created digital artefacts as well as original and functioning digital creations, a short reflective essay on their experience, a video script from the creation of the digital submission, photographs of work completed, StoryXchange templates, bibliographies and references as well as digital versions or links to materials downloaded and/or consulted.

4.7.3 Reflective Essays

The power of reflection in initial teacher education is evident in the literature (Darling-Hammond, 2006; Hagger & McIntyre, 2006; Conway *et al.*, 2009; Ceana, 2014). The participants were asked to focus on three specific areas when setting out to write the essay. Participants were guided towards reflecting on their perception of the history of education prior to enrolling in the programme, how they felt the process helped them to engage with the content and each other, and finally to write about what their perception of the history of education is having completed the module. This element of the portfolio submission would act as a data set for triangulation within the design.

4.7.4   Focus Groups

Identified as increasingly in vogue in educational research focus groups are a form of interviewing a group that facilitated discussion and with disposition towards participant interaction (Cohen et al., 2007). Highlighted as a successful method of data collection in design-based research (Joseph, 2004; Hoadley, 2002; DBRC, 2003) the researcher felt that it would be useful to cary out the focus group interview after the data from the questionnaire administered had been analysed. This allowed the researcher to tease out some of the pertinent issues that arose from that analysis.

Newby (2010) suggests six guidelines for the successful implementation of focus group interviews:

- Setting up a Group - that the group constitutes a sample and just be looked at in this way.

- Giving Thought to the Setting - location should be agreeable to all involved and the layout shout not support hierarchies.

- Conditions for Success - the moderator must facilitate everybody and engage everyone by encouraging them to speak from the beginning.

- Managing the Process - the role of the moderator os crucial. They set the toe, test idea and summaries positions.

- Stimulating Thinking - a successful focus group moves beyond answering questions.

- Producing a Record - It is imperative that the data, the discussion, is recorded and that reflective reviews by the research team at the end of the session are also recoded as such information can enrich the data set.

(Adapted from Newby, 2010, pp.380-381)

4.7.5   Ethnographical Data

Ethnographical data was collected based upon a synthesised table of established methodologies that would suit the naturalistic context of the research problem. (Appendix 5) Design-based researchers often invoke the use of ethnography in their data collection as it can often lead to an understanding of how the design variables interact with the context and the learning process (Collins et al., 2004). The researchers personal reflective journals, in-situ notes, diagrams, sketches and photography all contributed to the development of a narrative reflection of the effectiveness of the design intervention post analysis as discussed in Chapters 6 & 7. This narrative reflection then contributed to the refinement of the design model in subsequent cycles and offered an opportunity for the researcher to elucidate the nuances of the design rooted in the naturalistic context (Hoadley, 2002).

4.8   Data Analysis

Over the course of the four year PhD life cycle a number of valuable data sets were gathered from the participants. The initial intervention drew on data gathered from completed design questionnaires, focus group interviews which were then transcribed, reflective essay submissions and ethnographical data gathered by the researcher.

Given that the participant number for the first iteration was n=20, the researcher felt that the use of specialist statistical software was not warranted. In the subsequent iterations of the research project the numbers of participants remained under 25 and therefore at no point during the life cycle of the project were such packages as NVivo or SPSS engaged. This left the researcher to thematically analyse the data gathered.

4.8.1   Thematic Data Analysis

The thematic analysis of the data was carried out under the ontological framework that the design was founded upon and which emerged from literature and subsequently the

research question. In the initial intervention this began as Collaboration, Engagement, Narrative Construction and Technologies. Particularly in the first implementation, I was looking for indicators within the data collected that could potentially help me improve the design model for subsequent iterations.

4.8.2.1 Concept Driven Coding

The naturalistic nature of the chosen methodology and the modest sample size determined that any form of initial coding would be embedded in the experience of the researcher. Given the highly descriptive nature of the data being collected a method of categorisation within these foundational concept driven codes was required in order to adequately synthesise the emerging data (Crewell, 2005).

4.8.2.2 Data Driven Coding

The emergent nature of data driven coding (Gibbs, 2008) allowed the researcher to develop a more in depth understanding of the mechanic effects of the design intervention. Although the sample size did not support any valid statistical analysis of the data gathered approaching and reviewing the data using such techniques allowed me to view the data as impartially as possible and to identify emergent trends, themes or difficulties experienced by participants.

4.8.2 Analysis of the Questionnaires

Both quantitative and qualitative data was collected from the exit questionnaire administered in the second last week of each design iteration. As discussed, the numbers of participants in the programme did not warrant or justify the use of a statistical package to analysis the data collected. Instead, a Numbers spreadsheet was created to collate the responses of the students. A simple traffic light coding system of positive to negative responses to the survey questions was used to group the responses to the questionnaire. These grouped responses were then cross tabulated for common relationships inline with

Figure 4.2: Initial Concept Driven Codes

the concept driven codes emerging out of the research literature, researcher experience
and discussion with other experienced practitioners. This initial process was framed by
the concept driven codes, outlined in Figure 4.2, emergent from issues identified in
Chapter 2 and refined in Chapter 3.

This process was repeated twice to mitigate errors in transcription and collation. The
development of this questionnaire, in its paper based format worked very well in the first
iteration. Participants completed the questionnaire with little difficulty and with minimal
disruption. However, in keeping with design improvements during the second iteration of
the prototyping phase the second administration of this instrument was digital, utilising
freeonlinsesurveys.com.

4.8.2   Triangulation of Data

In an effort to establish the credibility of any claims made by this research project the
researcher engaged in a process of data triangulation. Here ethnographical data, reflective
essays, questionnaire data and focus group data were cross checked for consistency and
inconsistency. Indeed counter arguments within the data were sought out.

4.9   Ethical Considerations

The British Educational Research Association (BERA) set out five key principles that guide rigorous practice when carrying out educational research:

1. *Minimising Harm*. Is a research strategy likely to cause harm, how serious is this, and is there any way in which it could be justified or excused? Note that harm here could include not just consequence for the people being studied (financial, reputational, etc) but for others too, and even for any researchers investigating the sane setting or people in the future.

2. *Respecting Autonomy*. Does the research process show respect for people in the sense of allowing them to make decisions for themselves, notably about whether of not to participate? This principle is often seen as ruling out any kind of deception, though deception is also sometimes rejected on the grounds that it causes harm.

3. *Protecting Privacy*. A central feature of research is to make matters public, to provide descriptions and explanations that are publicly available. But what should and should not be made public? What does it mean to keep data confidential, and is this always possible or desirable? can and should settings and informants be anonymised in research reports?

4. *Offering Reciprocity*. Researchers depend upon being allowed access to data, and this may involve people cooperating in various ways; for example, giving up time to be interviewed or to fill in a questionnaire. The research process can also disrupt people's lives in various ways and to varying degrees. Given this, what id anything, can participants reasonably expect in return from

researchers; and what should researchers offer them? Should experimental

subjects or informants in qualitative research be paid?

5. *Treating People Equitably.* It maybe argues that the various individuals and

    groups that a researcher comes into contact with in the course of research

    should be treated equally, in the sense that no-one is unjustly favoured or

    discriminated against.

(BERA, 2012)

The development of this research project was informed by these general guidelines and

supplemented by considerations pertinent to educational research conducted in the

naturalistic context of a higher level teaching and learning environment. Practitioner

researchers must be particularly sensitive to such environments where the input from a

researcher contributes to the conditions that facilitate the implementation if the design

innovation (Fishman, Marx, Blumenfeld, Krkjcik & Solway, 2004). Thus the habitat of

the research practitioner is sensitive to the power relations, communications and nuances

of understanding between between student and teacher; between participant and

researcher (Zeni, 1998). Insider researchers must then be cognisant of 'their extensive and

intimate knowledge of the culture and taken for granted understandings of the

actors' (Hawkins, 1990) within the research environment and learn to expertly wild what

Mercer (1997) describes as the 'double edged sword' (p.6) in a concerted effort to

maintain a critical distance between the researcher and the research as well as research

and practice (Biesta, 2007).

During the course of this research project every effort was made to ensure that both

participation and participants contributions were ethically secure. Such efforts included:

- At the outset and during all of the iterations of the design intervention, participants were assured and reassured that their participation was voluntary. All students in the participating cohorts had to complete the assessment model regardless of their participation in the research study. They were reminded that they could withdraw from the research study at any time and that such an action would not effect the outcome of the assessment process.

- All iterations of the design-cycle required participants to write short reflective essays dealing with their preconceptions of the history of education prior to engagement with the module, their thoughts on the processes within the module and where they thought the history of education may be relevant to them in the future, if at all. The reading and analysis of these submissions was delayed until the process of assessment on the participants submitted artefact had been completed and final results communicated to the local programme coordinators.

- The collaborative construction of the designed artefact required input from participants that each participating group constructed. It was clear that some students were initially a little uncomfortable with creating this as the technology was new to them. Supports were put in place to mitigate such concerns.

- A design phase consideration was that participating students may have had a negative experience of their engagement with the education system prior to their arrival at third level education. The researcher was conscious of this possibility and the decision was made to make it explicit that the collaborative aspect of the project and the development of a personal connection with the module content was to be restricted to issues such as school size, location, number of teachers, subject availability, extra-curricular

activities and that any discussion between participants in relation to the module content be professional in nature and strictly avoid personal and probing discussion. This was made clear from the outset of the module and repeated over the duration of the modulate regular intervals.

Clear guidance on data protection research ethics is provided in the BERA publication, Ethical Guidelines for Educational Research (2011). This research project complied with this publication in the relevant areas of voluntary informed consent, openness and disclosure, right to withdraw, detriment arising from participation in research, privacy, and disclosure.

4.9.1   Voluntary Informed Consent

During the first lesson of the module, all potential participant in the research study were informed that it was the researchers' intention to carry out research, with their permission, in relation to the assessment model that they were obliged to engage with for the successful completion of the non-elective module; the History and Structure of Irish Education. The students were informed who would carry out the research, why and how the submission of their assessments would contribute to the research project and how the results of the research would be communicated to the academic and teaching community.

The submission of an artefact for assessment was a prerequisite for the successful completion of the module however it was made clear that the students were not obliged to participate in the research study. It was made clear to the students that non-participation would in no way effect their final grade or subsequent academic award. All potential participants were provided consent forms along with a research project information sheet in line with the host institutions guidelines on ethical procedures (Appendix 6). These consent forms detailed that ethnographical observations, focus groups and note taking would from part of the research environment as the module progressed.

In relation to the age profile of participants. All participants were new entrant to a professional undergraduate mathematics and education programme. A number of the participants were 17 years of age upon registration for the program and at the start of the module. This was highlighted as concern during the process of obtaining ethical approval for the research project where the Research Ethics Committee at the host institution questioned if such students, considered as minors in the Republic of Ireland, should be excluded from the study. A submission was made to the REC in response, accepted and subsequently ethical approval was granted (Appendix 6).

4.9.2   Confidentiality

Participants were informed that the submitted artefact, reflective essays and portfolio of portfolio of work required for the successful completion of the module would be treated with utmost confidentiality at all times and retained and stored in a secure and confidential manner. the researcher took steps to retain anonymity by removing the names and identifying features of all data taken from student submission for the submission of this thesis and ongoing dissemination.

4.9.3   Right to Withdraw

Any student who may have chosen not to participate or who did not choose to return a consent form would be excluded from the research participant pool. The consent form and the research project information sheet made it clear to participants that they could withdraw form the research project at any time and incur no penalty in relation to the mark or final award. Potential participants were given seven days to decide if they wound consent to participate in the research project and return the consent forms signed and dated.

4.9.4 Detriment Arising from Participation in Research

As set out in BERA's ethical guidelines ' researchers must make know to the participants (or their guardians or responsible others) any predictable detriment arising from the process or findings of the research. Any unexpected detriment to participant , which raised during the research, must be brought immediately to their attention or to the attention of their guardians or responsible others a appropriate.' (BERA, 2011, p.7) While participants had been instructed that issue or experiences of a personal nature ere to be excluded from the collaborative process they were engaged in, the fact that a number of the participants were legally minors required the researcher to be conscious of the sensitivities associated with such personal reflections and the possibility that guardians and/or responsible others may need to be informed of any revelations in relation to contact with educational institutions or those in a position of authority. The researcher in in such an instance would be *'in loco parentis'.* In the event of such a requirement communication with relevant stakeholder would need to occur regardless of any declaration of confidentiality agreed at the outset of the research study.

4.9.5 Disclosure

The disclosure of sensitive actions or revelations to relevant authorities regardless of the age of the participant would, as advised in BERA's ethical guidelines, need careful consideration. Any avenue of disclosure would require the researcher to 'apprise the participants or their guardians or responsible others' (BERA, 2011, p.8) of any intention to do so.

Upon completion of this research study and publication of this thesis the findings, publications and public presentations will be available online and participants will be contact where possible to make them aware of such repositories. As the researchers career progresses the development of an online repository of publications will provide a long term reference for any participant wishing to access information pertaining to the research study participated in.

4.9.6   Data Protection

The data gathered as part of this research study was, for the duration of the study, and will be continuing for a period of five year, be kept on hard copy in a secure cabinet. In addition all electrically stored data is kept for the same period on an external hard drive and on DVD in an encrypted format.

4.10   Chapter Summary

This chapter detailed the particulars of the selected research methodology - design-based research and the specific research techniques that were incorporated to respond to, and answer the central research question: how can a collaborative exploration of the history of education help new entrants to undergraduate initial teacher education form an emergent learning community at the point of entry to third level education as they move towards professional practice?

The researchers' rationale for electing DBR as a research methodology was explained and the potential limitations of using such a methodology. Data collection techniques were detailed and analysis techniques explained. Particular attention was paid to ethical considerations afforded to participants and measures to mitigate such considerations were developed and discussed.

Chapter 5, the next chapter, will detail and discuss the theoretical framework underpinning the design model (Reeves & McKenney, 2015), where proximal and distal representations of effectiveness within the domain of the research problem can be measured and discussed within the iterative DBR process outlined.

Chapter 5:   Conceptual Framework

5.1   Chapter Introduction

At the very heart of design-based research (DBR) is the aim of establishing a relationship between theory and practice in a concerted effort to effect change where a problem has been identified. In this process of development, theory is advanced though the development of a technology enhanced learning environment (TELE) and resultant are a set of design sensitivities that are both adoptable and fit for adaptation. These design sensitivities, or design model, are established at the nexus of theory and practice locked in a cyclical process of reciprocative advancement at all times testing the application of theory in practice and informing theory through practice (Reeves & McKenney, 2015).

The first design model or prototype, CENTs, and the refined design model, TWO-CENTs stand directly upon issues emergent from the literature review carried out in Chapter 3 and from a deep dive into issues pertinent to the transition of students into undergraduate initial teacher education and towards professional practice explored in Chapter 2. Considered in concert, five key educational design pillars were identified and established as a theoretical framework inform the resultant design model - 1) transition; 2) collaboration; 3) engagement; 4) narrative construction and 5) technologies. As identified in Chapter 2 and emergent in Chapter 6, Transition as an emergent design variable across the iterative design process is representative of the evolution of there within this design study and became a key interdependent variable establishing the history of education as a apace for transition where learning communities can be established and emergent communities of practice can grow from. The degree to which students make this transition is a key aspect of this design study and consequently will be the first key educational design pillar discussed in this chapter.

5.2 Transition

Of course the immediate proximal concern of this study is to aid the transition of student into undergraduate initial teacher education and towards professional practice. It is however important to consider the concept of transition in a wider sense. Transition, when conceived as a voluntary change in circumstances that brings new socio-economic, academic and professional demands, is holistically evident in this study where participating undergraduate student teachers are experiencing change in all aspects of their lives not just engagement with the programme that they are enrolled in. This holistic experience is therefore challenging and all encompassing for individuals engaged in such processes. This is particularly acute at the point of entry to undergraduate ITE where students are recent observants of teaching practice and recent student participants in the second level education system placing newly enrolled pre-service teachers in a world of change as they embark upon a journey of lifelong engagement with education - both as teachers and as perpetual students.

At this juncture, the work of Peter Alheit is relevant and of particular significant is his emergent theory of 'biographicity' (Alheit, 1992, 1994, 2009) or a 'biographical approach to learning' (Alheit, 1994) where an engagement with the past, with all experiences of education as tacit knowledge, can be explored as a relationship that leaves neither the participant nor the learning environment and those in it, unchanged (Alheit, 2009). What Alheit argues is that while our past experiences are in many ways shaped by the environment within which we exist, we are not bound by that environment rather we are participants in the construct of that environment where the enormity of that construct is such that it is impossible for us to experience or engage with all possibilities at any singular point in time (Alheit,1994).

Bourdieu posits that the structural conditions that are evident in society, and none more so that in the Irish second level education system, leave tacit remnants of those conditions imprinted upon our identities as we move through our lives (Bourdieu, 1987), supporting

the development of Alheit's contention of biographical resonance (Alheit, 1984, 2000, 2009). Alheit refers to this resonance in the context of von Weizsäcker's (1956) work as 'unlived life' (Alheit, 1984) where the development or assimilation of intuitive knowledge, a characteristic of the teaching profession, forms part of the 'practical consciousness' (Giddens, 1988) of a teacher. As Alheit points out -

> 'Biographical background knowledge is … an emergent potential for changing structures. The modification of individual self- and world - referents - even in the limited context of specific life constructions - contains opportunities for the transformation of the institutional framework conditions of social existence. Substantial elements of of these "structures" are the unquestioned certainties functioning in the background to which social individuals relate intuitively when they act on the everyday plane, but also when the act biographically. As soon as such prescripts - or part of them - enter our awareness and become available, then structures begin to change. Unlived life does indeed possess socially explosive force.'

> (Alheit, 1984, p.289)

To this end, Alheit further establishes the development of this concept as 'a process that leaves neither the learning subject nor the surrounding structures context unchanged' (Alheit, 1994, p.289, 2009). Resultant therefore, is a dynamically flexible exchange between structure and subject where 'transition to a new quality of self - and world referentiality' (Alheit, 1994, p.284) defines the outcome of engagement with this process.

Situating this concept in the real-world convergence of second level education and undergraduate ITE demands the existent structures be considered as a naturalistic context where, traditionally, emergent information is stabilised by those established structures. What Alheit suggests is that we look at information through the lens of a reformed or new

contextual condition or structure therefore allowing interrogation without traditional stabilisation or subsumption. From this revisionist perspective an opportunity exists to establish connections with past experiences that can be revisited, opened or closed perhaps even unveiled to the participants as they engage in experiences 'that we could never previously have dreamed could be combined' (Pierce, 1903).

Alheit (1984) explicitly acknowledges the role of sociality in such processes where he positions knowledge as only being 'genuinely transitional if it is biographical knowledge' and where 'specific individuals relate to their lifeworld in such a way that their self-reflexive activities begin to shape' (p.290) the social context of their learning (Alheit, 1992). Biographicity (Alheit, 1992) is established as an iterative design process of interpretation where unlived experiences or tacit knowledge is explored and where the explicit aim of this activity is to 'decipher the surplus meanings of our biographical knowledge' (Alheit, 1994, p.190) as a transitional learning process.

In initial teacher education deconstructing prior experiences, particularly in relation to observed behaviour (Lortie, 1975), is a significant challenge for teacher training programmes and is, as explored in Chapter 2, definitive of the triadic relationship of education, biography and transition that define the teaching profession and mirror the theoretical construct of biographicity (Alheit, 1994). The exploration of tacit knowledge and relationships is of particular relevance to the teaching profession particularly at the point of entry to undergraduate ITE programmes.

5.2.1   Exploring Tacit Experiences

The point of entry to undergraduate ITE, as explored in Chapter 2, is complex. New entrants are faced with a myriad of challenges that form the naturalistic context of their participation and are heavily reliant on past experiences to help them navigate their way into third level education. Pre-service teachers are particularly reliant on such experiences as they begin to develop their emergent identities as developing trainee teachers.

Although the development of such identities are influenced by the past observations of in-service teachers (Lortie, 1975), it is important to remember that such tacit knowledge is constructed as part of a relational community in that the construction of tacit knowledge is dependant upon integration with others.

Heidegger describes the existence of being as a relationship with others mediated through our shared world (Heidegger, 1962). In the context of the education continuum the sinusoidal relationship between education, teacher and student provides opportunities for exploration of this concept in real-world settings. It is, however, important to understand the impact of shared traditions on the development of tacit relationships within these contexts (Heidegger, 1962). Stahl, in his exploration of tacit and explicit understanding, explores how such conceptual negotiation is constructed and suggests, in the same vein as Heidegger (1962), that it is the environment as an artefact that helps us converse with each other - our *situatedness* (Stahl, 1993).

This observational preposition of conversation is referred to by Heidegger as *discourse* where the constructed meaning with the environment may not yet be articulated but is nonetheless evident in the co-habitation of participants in a common space (Heidegger, 1962, 1975; Dreyfus, 1991; Stahl, 1993). This unspoken or tacit relationship, particularly relevant to new entrants to undergraduate initial teacher education, shapes the preconceptions of such new entrants referred to by Lortie as the 'Apprenticeship of Observation' (Lortie, 1975) - explored in Chapter 2. The observations of these new entrants are, as identified in Chapter 3, a significant challenge for teacher training programme providers where the solitary nature of the teaching profession can reinforce this individual and tacit expression of a constructed perception of the practice of teaching or a construct of common consensus as to the persona of a practicing teacher. Such a construct however is not homogenous in nature and indeed on closer inspection the nuances of interpretation from viewpoints and temporal positions emerge. As Stahl

suggests, we tacitly '… understand things from a variety of of shifting perspectives that we share with other people as a result of complex social histories …' (Stahl, 1993).

The individual perspectives that form our core reservoir of tacit connections with our environment in the context of this study represent Heidegger's contention that our relational understanding of tacit knowledge is fundamentally a matter of acknowledging and subsequently opening up possibilities (Heidegger, 1975). In pursuit of such possibilities the development of an environment that facilitates a sharing of traditions or tacit preconceptions can open up that range of possibilities for discovery rather than disclosure (Heidegger, 1962, 1975; Stahl, 1993). However, it is the disclosure of the range that precursors the discovery of the possibilities (Stahl, 1993). In the context of this research study, upon the disclosure of individual educational histories rooted in historical fact the discovery of possibilities within a collaborative dynamic is theorised with the explicit aim of developing explicit relationships that transcend tacit constructs and challenge established trends in professional and pre-professional development where our shared educational experiences are concomitantly our shared educational traditions.

5.2.2   Developing Explicit Relationships

Heidegger's contention of being, as relational to others mediated through our common environment, infers not just a tacit relationship through shared traditions but also an acknowledgment of explicit relationships within that commonly interpreted environment. Stahl's elaboration on Heidegger's disclosure / discover concept is particularly relevant to the environment of undergraduate initial teacher education. As Alheit suggests, possibilities exist in unlived experiences (Alheit, 1992) - or for new entrants to undergraduate initial teacher education, the tacit interpretations of what it means to be a teacher, gathered through years of observing in-service behaviour (Lortie, 1975).

Stahl contends that through a designed environment an effective construct of question and answer can be established where a subjective or interpersonal experience forms a

framework for investigation, however the process of response is that of creative discovery (Stahl, 1993). As Heidegger asserts -

> '[the subject] shapes it and makes himself a part of it. Hence, the sense he makes of the situation must include his own contribution to it. Yet he recognises that the situation, having a life of its own distinct from his intentions, may foil his projections and reveal new meanings'

(Heidegger, 1962, p.163)

In this context, it is conceivable that a collaborative process of response to a designed environment that provokes questioning has the potential to establish lines of investigation that challenge preconceptions about the practice of teaching.

Importantly, the introspective component of such interaction is, therefore, not removed from a designed environment rather it is tacitly part of the environmental discourse particularly when education is conceived as a public space for negotiation. It is this conception of education that allows the potential for explicit relationships to develop between participant or subjects where 'understanding is founded on the disclosure of a network of references that point to the person who understands the ritual and also point to other people as those who share the meaningful world' (Stahl, 1993, p.118).

Hence the development of understanding is inherently collaborative within designed environments regardless of the physical conditions of the context. The focus of such meaningful engagement is the interaction of participants through significant tacit understandings manifest in a designed environment and elucidated through developed explicit relationships explored in the public domain of that same designed environment or what Stahl refers to as 'network significance' (Stahl, 1993, p.118).

Hence, the development meaning in the individual is a reflexive process that cannot be separated from the formative social context. Indeed when viewing the social context as connected to the individual it follows that others in the same context are active participants in the development of meaning for the individual and by the individual (Alheit, 2009). This is particularly relevant when designing a learning environment that is founded upon the life histories of individuals within the environment and can have a powerful effect on members of such communities (Alheit, 2009; Lave & Wenger, 1991). As Alheit states-

> "Learning within and through one's life history is therefore interactive and socially structured, on the one hand, but it also follows its own individual logic that is generated by the specific, biographically layered structure of experience. The biographical structure does not determine the learning process, because it is an open structure that has to integrate the new experiences it gains through interacting with the world, with others and with itself."

<p style="text-align:right">(Alheit, 2009, p.125-6).</p>

Stahl describes such a construct as a 'structure of significance' (Stahl, 1993, p.118) and suggests that through conversation, questioning - disclosure and discovery - potential exists to present the conditions for a shift in perspective with any given constructed situation (Stahl, 1993).

The development of a learning environment that focuses on a common artefact is central to this contention. Through an artefact where tacit understanding forms a basis for explicit knowledge, through negotiated meaning, the tacit can become explicitly known and subsequently has the potential to become part of the environment within which this process is located (Stahl, 1993). Building on Stahl and Heidegger, evident in the work of Lortie (1975), the development of the education system is full of tacit resonance where

observational practice of in-service teachers shapes the pre-conception of the teaching profession and subsequently interpretation of future engagement with education. The critical importance of sociality in engagement within a designed environments is clear as much as is interpretation. For Heidegger the interpretation of the environment is predicated upon the acknowledgment of both others and the environment working in concert (Heidegger, 1962). The corollary of this position is that the dual processes of developing relationships with both others and the environment are co-critical and interdependent. In the context of this research study the development of an explicit awareness of this dynamic is important.

The starting point, for Schön in any engagement for understanding, is point of decision and reflection (Schön, 1983) within a shared environment (Stahl, 1993). The act of decision therefore is to externalise a pre-conception for challenge within the designed environment - within the context of the pre-conceptions existence, in this case the History and Structure of the Irish Education System, from which participants in this study had emerged. As Stahl points out, the process 'begins with uncritically accepted popular prejudices" and move towards "an ongoing analysis and critique of the specific relationships of the situation, of their own perspective and of the conceptual framework being used.' (Stahl, 1993, p.125).

This deliberate movement from the tacit constructs, explored previously, to a more explicit dynamic relationship between subjects within a constructed environment or public space, is for Heidegger important in mitigating the risk of returning to accepted popular prejudices and in nurturing the development of new or alternate understandings (Heidegger, 1927, Stahl, 1993).

5.2.3 Explicit Transition

The degree to which a process of transitional learning is feasible is questioned by Alheit at three significant and interrelated levels and suggests that a paradigmatic shift amongst

educationalists is required for any meaningful engagement with such practice to be achieved (Alheit, 2009) -

- at the social *macro*-level, in respect of new policy for education and training that aims at striking a different balance between economic, cultural and social capital;

- at the institutional *meso*-level, also in respect of a new self-reflexivity of organisations that should conceive of themselves as environments and agencies of complex learning and knowledge resources, and no longer as the administrators and conveyors of codified, dominant knowledge (Field, 2000);

- at the individual *micro*-level, with regards to the increasingly complicated linkages and processing accomplished by the specific actors in the face of social and media-related challenges of late modernity, which call for a new quality in the individual and collective construction of meanings (Alheit, 1999).

(Alheit, 2009, p.126)

Alheit's delineation of these three distinct entities within the relationship between education and social capital is particularly relevant to the development of pre-service teachers as they move towards professional practice. The macro-level permeates all strata of this domain as do the implications of individual stagnation within the collective profession. To effect a contribution within the same domain then individuals are bound to the temporal construct of the environment and that is the history of its development, its current state and what individuals project as their vision of the future of their education system.

In Heidegger's public negotiation of pre-conceptions understanding is 'worked out' with sometimes unforeseen consequences. In addition the development of a shared understanding occurs within the discovery of the artefact being explored within context. To this end the development of an environment as an artefact is in and of itself a environment of discovery. In this context the artefact when discovered as an environment - the education continuum - the environment itself is ripe for deconstruction - to be explicitly understood. 'This is the structure of explicit interpretation: something as something.'(Stahl, 1993).

In this instance, at the point of this occurrence where participants are articulating the environment as an education continuum then they articulate that explicitly. The interpersonal or intersubjective nature of this action is therefore a result of multiple references from multiple viewpoints about the continuum where 'the basis of references in the situation is what permits one to interpret the thing explicitly as something' (Stahl, 1993, p.120).

In this instance, to interpret the history of education explicitly as something through this negotiated process making the explicit expression part of a wider transitional movement where those actors who engage with the designed environment and the design environment itself are explicitly transitioned from tacit pre-conception to explicit understanding.

5.3   Collaboration

The second major theoretical influence on the development of this thesis is is the representation of learning as a social construct and in particular the work of Lev Vygotsky (1978) or in short - the role of collaboration, tacit or explicit, in education. The underpinning principle of Vygotsky's socio-historical theory is that of cognitive development being fundamentally informed and influenced by the social interactions of

actors within a relationship or context (Vygotsky, 1978). This theory of how learning happens, as well as work by Jean Piaget, Jean Lave, Etienne Wenger and Jerome Bruner all converge to from an umbrella under which learning can be understood in and as a result of social contexts. This is particularly important when considering the learning in groups.

Social constructivism is therefore a mediated process of knowledge construction (Vygotsky, 1978; Scardamalia & Bereiter, 1994), hence it is the core of collaborative practice for the development of groups or communities that advance knowledge and expert resources (Lebow, Wager, Marks & Gilbert, 1996). As with Heidegger's contention that pre-conception is prevalent in the development of alternate meaning or shared re-conception at the instance of engagement with a learning environment, as a collaborative process we bring these preconceptions to the environment into which we enter and subsequently to the interactions we have with other social actors within that domain (Mead, 1962,; Vygotsky, 1978). This domain is dynamic and complex and interpretation for knowledge building (Stahl, 2000) or intersubjective meaning making through common ground (Koshmann, , LeBaron, Goodwin & Feltovich, 2011) are fundamentally rooted in the relationships that exist between language, history, culture and politics (Stahl, 2000). These relationships are further problematised by the compounding effect of the many versions, opinions and instances of engagement with others through our life course and consequently our voice within such constructs can be difficult to discover (Bahktin, 1986; Stahl, 1993, 2000). Designed collaborative environments that demand a methodological participation form participants have the potential to uncover the "tacit preconceptions of the individual" (Stahl, 2000). As Stahl suggests, in order 'to resolve the problematic character of our personal understanding internally … we may need to enter into an explicitly social process and create new meanings collaboratively' (Stahl, 2000, p. 72).

5.3.1   Zone of Proximal Development

'the distance between the actual development level as determined by
independent problem solving and the level of potential development as
determined through problem solving under adult guidance, or in
collaboration with more capable peers'

(Vygotsky, 1978, p.86)

Vygotsky's definition is that of individual learners being assisted or given a 'boost'
towards a position of mastery on a particular task and within a particular domain,
suggesting that Vygotsky viewed the learning is a consequence of social interaction and
cultural construction. Ultimately this is typical of community based interaction and
formal learning environments where group exchange is encouraged rather than stifled
under the preconceptions as outlined by Stahl (2000).

The Zone of Proximal Development (ZPD) is, in and of itself, a construct of constructive
interactions where two marked levels exist. The preconditions of learning establish the
actual development level of the learning and the second level is that of the potential
development level of the learner achievable though engagement with another or others.
The distance that exists between these two levels, for any individual, is referred to as the
ZPD. After this distance has been travelled then Vygotsky asserts that the participant
should be able to perform the task, previously beyond the participant, on his/her own in
the future.

' … learning awakens a variety of internal developmental processes that are
able to operate only when the child is interacting with people in his
environment and in co-operation with his peers. Once these processes are
internalised, they become part of the child's independent developmental
achievement'

(Vygotsky, 1978, p.90).

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In the case of this research study the ZPD is directly related not only to the teacher/ facilitator or participant peers but also the constructed Computer Supported Collaborative Learning (CSCL) (Stahl, Koschmann & Suthers, 2006) environment that supports the learners as they navigate their individual ZPD's culminating in a collective movement as a community. Within this community therefore are a collective of ZPD's that pertain to various skills and tasks and it is this collective which forms an environment that facilitates the collaborative dynamics of group work for a shared vision and common purpose.

Therefore a group or collection of groups in this context may be referred to as a knowledge-building community if they display the following traits -

- A focus on knowledge and the advancement of knowledge rather than tasks or projects.

- A focus on problem solving rather than the performance of routines.

- Dynamic adaptation in which advance made by members of the learning community change the knowledge conditions requiring other members to readapt, resulting in continual progress.

- Intellectual collaboration as members pool intellectual resources, making it possible for communities to solve larger problems that can individuals and small groups.

(Bowen, Bereiter & Scardamalia, 1992)

This characterisation of knowledge-building activity by Bowen *et al* (1992) ties in with the revelation of tacit pre-conception for explicit understanding previously explored and is exemplification of a collaborative stretching of individual ZPD for long term internalisation of learning.

This internalisation therefore requires a practice of engagement and the development of traits exemplifying this activity can be examined in detail within group or community dynamics when framed by Wenger's three interacting dimension: 1) mutual engagement; 2) joint enterprise; 3) shared repertoire (Wenger, 1998) within a designed CSCL environment (Stahl, Koshmann & Suthers, 2006; Gilbert & Driscoll, 2002). Within this dynamic knowledge-building process or community formation is represented in artefacts collaboratively created by community members that reflect meaning making within an environmental context (Bereiter, 1995) or in the case of this research study the movement from tacit interpretation to explicit understanding (Heidegger, 1962; Stahl, 1993).

The culmination of all of these frameworks result in the characterisation of collaborative environments and in particular CSCL environments as set out by Gilbert & Driscoll (2002) -

- Scaffolds must be implemented at several levels to accommodate freedom and learning orientation; and that promote higher-order thinking and guide rather than drive the learning process to support students in self regulated learning.

- Use self-report techniques to measure the quality of the individual learning experience and use the information to guide intervention as appropriate.

- Promote productive discomfort and establish strategies to measure relevance and motivation relative to class activities by evaluating confidential reports and class discussion as well as using other instruments that might be useful or gathering this type of information.

- Use instructional strategies and technological tools that promote a buy-in from the students, across group collaboration, and quick interchange of ideas at the group and community levels.

- teacher and students identify key concepts or ideas in the content domain
  and use generative learning strategies and discourse to promote their
  acquisition.

(Gilbert & Driscoll, 2002)

Concentrating this framing of such an environment even further is the representation of such engagement in an artefact. Drawing on Heidegger (1962), Stahl contends that collaborative understandings are very often enshrined in the development of a cultural artefacts which preserves the explicit expression of understanding as meaning from the position of individual tacit interpretation (Stahl, 1993, 1999, 2000). This development as part of a collaborative process is representative of a collective movement from actual developmental level to a potential developmental level (Vygotsky, 1978). The collaborative process within a designed environment facilitates this development however as explored, also facilitates a continual development (Gilbert & Driscoll, 2002) as the ZDP of members of a learning community propel each other forward to the next potential level of development. Hence, in a designed collaborative environment the ZPD of the individual is stretched across multiple levels simultaneously as the community develops understanding as meaning (Stahl, 2000).

5.3.2   Collaborative Settings

Stahl maintains that the negotiation of an environment with others can help inhabitants of that environment to move from tacit interpretation or pre-conception to explicit understanding as meaning (Stahl, 1993). Both the physical environment and the CSCL environment that participants inhabit is therefore central to the development of any challenge to pre-conceptive thinking. Tharpe & Gallimore refer to such environments as 'activity settings' or constructed contexts that facilitate collaborative interactions (Tharpe & Gallimore, 1988). However, the 'activity settings' that Tharpe & Gallimore (1998) espouse are focused on the stretching of the individual rather than that of the progression of the community although many of the components of such settings are designed to

promote intersubjective participation. To this end the application of the framework offered by Gilbert & Driscoll (2002) to such a setting provides bolsters the construction of an environment coherently focused on collaborative practice when supported by technologies that are evident in the lives of learners.

5.3.3   Scaffolding

Learners engaged in the process of knowledge-building are being stretched through their evolving ZPD in the social interactions of education. Scaffolding can be explained as the supports that are put in place within a learning environment to help a student move towards completing a task or achieving a goal that would not have been achievable without that help (Wood, Bruner & Ross, 1996). In the context of this study it is important to reach beyond the traditional sense of a scaffolded intervention being that of a tutor-to-student dynamic and even beyond a peer-to-peer dynamic. In a collaborative learning environment, the environment in and of itself is a scaffold when it is a CSCL environment as it can extend beyond the bounds of classroom based interaction to support the off-site development of a participant for as long as that participant wants that support. Typically therefore the development of a CSCL environment is that of a relational engagement with a learners development across a shifting ZDP in tandem with others as they work together within that scaffolded environment towards a common vision or goal (Gilbert & Driscoll, 2002; Dillenbourg, 1999). To this end, therefore, scaffolding in a collaborative environment is not temporal rather it is dynamic, orbital and flexible. In this type of environment meaning making is shared as part of a collaborative social negotiation and itself acts as a scaffold to the group (Stahl, Koshmann & Suthers, 2000).

In contrast to this, Roschelle & Teasley (1995) define collaboration as 'synchronous activity' and related to a physical 'task at hand' focused on the meaning established within the individual subsequently shared with others within that environment (Roschelle & Teasley, 1995). This viewpoint places scaffolding as a reserved intersubjective dynamic

restricted to the individual rather than that of an enhanced knowledge-building community (Gilbert & Driscoll, 2002).

To facilitate the development of a collaborative learning environment the scaffolds created for participants in this study would need to be supported not just in a traditional format where peer-to-peer and tutor-to-student integration forms the core of this dynamic rather the design model would need to harness the shared meaning collaboratively constructed as a scaffold in its own right. This would also need to be flexible enough to allow for renegotiation and facilitate asynchronous engagement.

The development of the design model to aid students transition into undergraduate ITE and towards professional practice would therefore require a process of digitally supported scaffolding that provided support to students both in face-to-face engagement and also as part of a dynamic CSCL environment open to asynchronous access. 'Therefore the role of the computer shifts from providing instruction … to supporting collaboration by providing media of communication and scaffolding for productive student interaction' (Stahl, Koschmann & Suthers, 2000) unbounded by temporal conditions.

5.4   Engagement

Engagement forms the third pillar of this research study and in this instance defining engagement is founded on three concepts: 1) engagement with the history of education module content; 2) engagement with each other as part of a collaborative learning community; 3) engagement beyond the learning environment. However establishing a definition of engagement within a collaborative setting is inherently problematic given the presence of multiple actors and their interactions not only with each other but the learning environment that they inhabit and shape.

The integration of technologies (explored further later in this chapter) into this dynamic helps to ameliorate this issue. Shneiderman (1998) suggests that the development of positive educational engagement or the development of experiences should be a series of instances of intrinsic motivation to complete an activity or solve a problem that they feel is worth completing or solving - that the activity be important to them (Shneiderman, 1998). For pre-service teachers self-efficacy in both established and emergent technologies is important. It is therefore important that this research study incorporates technology into its pedagogical structures so that the activities intended to bring participants from individual tacit preconception to explicit understanding as a community for meaning, are indeed perceived as tangibly beneficial.

Establishing a basis for recognition of engagement therefore is made somewhat more manageable if such engagement is evident within the participants interactions where the utilisation of technologies is part of a designed process of meaning making for explicit understanding.

5.4.1   Engagement with Content

Traditionally the amount of time a student spends on a particular task has been deemed a strong indicator of engagement with the concept or material being explored (Wilson, 1987; Sandholtz, Ringstaff & Dwyer, 1994). This is an inherently individual measurement of engagement. It is evident that individual engagement with the History of Education has been in decline for over half a century with pre-service and inservice teachers struggling to reconcile the field to the practice of teaching (Flynn & Hall, 2015).

Enhancing engagement with the History of Education is therefore a primary concern within this research study however the development of that engagement is as previously discussed rooted in the desire of the researcher to establish an environment conducive to meaning making for explicit understanding not only of the content but also of the potential of exploring the unrealised experiences that reside within the individual

educational history of the participant and for the benefit of the community. This can only be drawn out as part of a collaborative process - previously discussed. By rooting any exploration of the module content into the personal histories of the participants - their tacit experiences, there exists within a collaborative environment an opportunity for explicit understanding, as meaning making or connection to the factual history of education as delineated within the module content.

Establishing a mechanism to determine the level of engagement with module content is therefore made considerably more manageable as the connection between personal experience, collective experience, collaborative resolution and collaborative expression is supported by the CSCL environment and the constructed process of StoryXchange discussed in Chapter 6.

5.4.2   Learning Community Engagement

As discussed in Chapter 3, the development of learning communities is a complex entity. Within a collaborative environment some of the characteristics of learning communities are perhaps natural, given the context and demands placed upon students by host institutions for attainment and matriculation, for example the development curricular and situational learning communities (Lenning & Ebbers, 1999) within an undergraduate initial teacher education programme. Understandably therefore the transition from a second level education system of individual learning practices to the more collaborative environment of third level institutions is a significant challenge for student teachers. The dynamic of the classroom and cohort structure is familiar however the expectations of engagement are sometimes overwhelming particularly since participant in such programmes have only left the second level education system a matter of months prior to enrolment in third level education.

It is therefore conceptualised here, that the development of learning communities are somewhat structured within education whether that structure is imposed for the purpose

of learning community construction or if the nature of the community formation is imposed by the context of enrolment. There exits therefore a correlation between educational structures and community and as explored, between interpretation and understanding within negotiated spaces (Stahl, 1993). It is the negotiated process of understanding that, in this instance, facilitates a measure of engagement with four identifiable learning communities (Lenning & Ebbers, 1999) pertinent to the teaching profession and in particular, undergraduate pre-service teachers.

Heidegger's conceptualisation of situation, illustrated by Stahl (1993, 1999), being perspective driven, is particularly relevant in this regard (Heidegger, 1962). Undergraduate pre-service teachers are thrust together and they retain tacit preconceptions of expectation. Although graduates of the same second level education system their experiences are individualistic in nature and subjective. The transition of an individual into a learning community, is therefore, a movement from individualistic interpretation or preconception to a condition of shared understanding or membership of a learning community that is founded upon meaning. The degree to which membership of a learning community is relevant, relates to the degree of that understanding relative to a common vision or goal (Gilbert & Driscoll, 2002). In essence the more commonly shared and deeply held the vision or goal, the more established the community becomes.

In the case of this research study the development of four distinct learning communities (Lenning & Ebbers, 1999), discussed in Chapter 3, are considered sequential in the context of undergraduate initial teacher education. This constructed environment facilitates the development and deepening of a shared vision or goal as preconceptions are interpreted or teased out as understanding is developed within that sequence.

The module content of the History and Structure of the Irish Education System provides a framework for discussion based on a commonality of experience. This shared space is then fertile ground for negotiation of interpretation within which participants can be

surprised as to what they tease out (Stahl, 1993). This dynamic allows for unexpected meaning to emerge and perhaps challenge the preconceptions that may have been brought to the learning community and through this process the community is strengthened.

The degree to which this occurs is rooted in the division of the module content into primary, secondary, tertiary and fourth level education (Flynn & Hall, 2015). Alheit's contention of unrealised experience - biographicity (Alheit, 2009), for pre-service teachers, is fundamentally rooted in their individual educational biographies and therefore the closer they get to their contemporaneous position, within the constructed environment, the more they are able to engage in meaning making for understanding and ultimately the challenging of pre-conceptions of teaching. This negotiated understanding, as a collaborative activity - a transitive process - marks them as an emergent community of practice (Lave & Wenger, 1999).

5.4.3   Engagement beyond the Learning Environment

Lave & Wenger (1999) establish a set of descriptive criteria for the identification of a community of practice, discussed in Chapter 3. The formation of the above four distinct learning communities is therefore representative of the development of an emergent community of practice in undergraduate initial teacher education (Figure 5.1). Of particular interest therefore is the establishment of the fourth learning community - a residential learning community (Lenning & Ebbers, 1999) as this permeates beyond the constructed environment of the research study.

Figure 5.1: Structured development of learning communities for emergent

community of practice formation

In the context of this research study this is an important consideration. The teaching

community is a continuum and as such each part of the whole is connected to and reliant

on the other for advancement and understanding. For example in initial teacher education

pre-service teachers are exposed to new teaching methodologies and such methodologies

are acted upon in a professional setting. The advancement of the teaching profession is

therefore predicated upon the communicative processes that exist within that continuum.

It is however, as identified within the literature, that this communicative process is a

fragmented entity and much of this fragmentation is in part due to the physical

fragmentation of classroom where teachers remain isolated for much of their teaching

career.

Technology has, however, provided an opportunity for these walls to become perforated

and for the divide between school and community; between teacher and student; and

between teacher and pedagogical advancement to be narrowed (Kornbluh, 2008). It is

clear as technology advances that the teaching profession and education in general face

significant challenges integrating change into practice. Residential learning communities

have the potential to help in this regard.

As Lenning & Ebbers (1999) suggest, the development of a residential learning community is predicated upon community contact away from the formal setting of learning i.e. the classroom. Typically they describe campus engagement or situations where learners are in close proximity which allows for informal connections to be made at unscheduled times (Lenning & Ebbers, 1999). Technology, in particular mobile technologies, has extended the potential for informal contact to occur through asynchronous engagement not only with each other as learners but also with the learning environment that they are formally attached to. Establishing this connection, as a practice of engagement, that of a social media 'style' engagement, has the potential to establish a learning community that bridges the gap between formal and informal communication developing traditional linear engagement into a dynamic and ever expanding community of practice that is engaged with new developments as well as in-service practice through the connections that they bring into the formal setting from their residential engagements.

Heidegger's hermeneutic circle (Heidegger, 1962), within in this dynamic is therefore returned to for further exploration. The reciprocity that exists between context and social interaction, as mediated by common artefacts, is therefore related to the development of learning communities that are established upon the premise of collaborative engagement and in particular where that engagement is unrestrained by formal settings. Participants in such communities of practice (Lave & Wenger, 1999), therefore form part of the world, and acknowledge that it is the real-world their construct that exists rather than being a processes of knowing the relatedness of that world (Heidegger, 1962; Gadamer, 1989) where participants seize ownership of their part in such communities and propel themselves forward. Stahl highlights a danger within constructed environments where it is possible for participants to return to preconceptions where the environment is not related to authentic real-world engagement (Stahl, 1993; Heidegger, 1962)

This research study mitigates this by routing the completion of Heidegger's hermeneutic circle through real-world or residential community engagement that is actually part of the

in-service community - that of personal experience, historical context, social media and the internet. The result of this is that the constructed environment within the participants initial teacher education programme becomes an active and contributive part of the in-service teacher dynamic through the participants collaborative negotiation of their tacit preconceptions and resultant understanding as meaning for challenge to those initial, identified preconceptions - rooted in the historical content of the module.

5.5   Narrative

At the heart of this research study is the idea of storytelling or the development, construction and sharing of narrative interpretation. The constructed environment of the study is that of the History and Structure of the Irish Education System. For participants, this is a system that they have been engaged with for the majority of their collective lives and as in-service teachers will continue to be engaged with for the majority of the remainder of their lives to come. As recent second level students and contemporary third level students, undergraduate student teachers bring with them preconceptions of what it means to be a teacher - to be part of the teaching continuum. As explored in Chapter 3, for the vast majority of new entrants to initial teacher training at undergraduate or postgraduate level these preconceptions are that of individual practice within a confined and restrictive education system.

The module content, as historical content, documents the development of the Irish education system and for the participants in this study this content offers them an opportunity to explore the environment that had shaped their passage to their contemporary position and to investigate the influence that environment will have on their future careers as inservice teachers. As recent observants, or apprentices of the education system (Lortie, 1975), new entrants to undergraduate initial teacher education programmes bring with them preconceptions about what means to be a teacher (Lortie, 1975; Darling-Hammond, 2000, 2006) - explored in detail in Chapter 3. Teasing out what these preconceptions are from participants as individuals through a collaborative process

of negotiation centred around the construction of an artefact, provides an opportunity for theses participants to understand what it means to be a teacher beyond their observation as students. Narrative is a key component of this process and the work of Jerome Bruner informs the development of this conceptual framework in this respect.

Bruner views culture as man-made however asserts that it is also it both a resultant of the workings of the hunan mind and an informant of the mind (Bruner, 2009). Learning, for Bruner, is situated within cultural settings and therefore dependent upon the resources available within any learning context (Bruner, 1990, 2009). Indeed, Bruner goes on to suggest that 'even individual variation in the nature and use of mind can be attributed to the varied opportunities that different cultural settings provide' (Bruner, 2009). This is particularly relevant within education systems where the development of the student is related to the cultural setting, however the structures around those settings in terms of curriculum, buildings, gender etc are relatively generic. These subtle differences offer opportunity for preconceptions within a collaborative exploration of the history of education to fuel narrative construction offering opportunities for intersubjective interpretation for understanding (Heidegger, 1962; Stahl, 1993, 1999), centred around the development of an artefact - the designed environment and the students reciprocal, cultural relationship to it. Bruner's contention is that education is inseparable from culture and with this contention any educational endeavour cannot remove itself from the culture within which it exits. He suggests that two distinct tasks befall culturalism:

> 'On the "macro" side , it looks at the culture as a system of values, rights, exchanges, obligations, opportunities, and power. On the "micro" side, it examines how the demands of a cultural system affect those who must operate within it. It is in the latter spirit, it concentrates on how individual human beings construct "realities" and meanings that adapt them to the system, at what personal cost, with what expected outcomes.'

(Bruner, 2009, p.167)

Bruner identifies, quite perfectly, the complexity of the relationship between education and the world within which we live. Teachers very often bridge these two worlds dealing with the bi-directional challenges that Bruner highlights. There is however an opportunity to establish a relationship between these two tasks through a collaborative exploration of the histories of individuals - their histories education. It is at this point that Bruner's theories on narrative become explicitly pertinent.

Bruner contends that we live our lives through narrative and that our reality is constructed through a narrative of "lived time" (Bruner, 1986, 1987). Alheit agrees that the development of our biographies are narrative in form, however argues that they are traditionally linear, thus opportunities exist to explore the 'unlived' experiences (Alheit, 1999, 2009) or in contrast to Bruner's "lived time" (Bruner, 2009), to explore alternate narratives for meaning making (Heidegger, 1962). Simply put, Bruner's culturalism wraps a warm blanket around Heidegger's hermeneutic circle when dealing with Alheit's concept of biographicity within this design research study.

5.5.1 Narrative Construction

Narrative is, as described by Bruner, the 'coin and currency' (Bruner, 2002, p.15) of the world within which we live. As such, their is a reciprocal relationship between narrative and culture, as culture provides us with modes of narrative expression and, in turn, those expressions impact upon and shape that very culture. It follows therefore, that exchanges of narrative are inherently educational, informative and interpretational - all at once. Narrative, as cultural currency, is a collaboratively mediated understanding of our individual preconceptions. To this end, this research study considers the construction of narrative central to the development of meaning making.

McAdams (1993) agrees with Bruner, in so far as 'the human mind … is a vehicle for storytelling' (p.28) and suggest that the construction of narrative, or storytelling, is our most basic and intuitive way of expressing ourselves within our culture and the broader

sense of culture, the world within which we live (McAdams, 1993). This is particularly relevant to undergraduate pre-service teachers who are beginning to form their emergent identities as educators in an environment that is alien to them - third level education. Their modes of expression are that of secondary school students and the world within which they find themselves is constructed differently. In so far as both Bruner and McAdams claim that narrative is wholly of the world, so are the changes in culture between established environments and this is where narrative wins out. The development of narrative within a designed environment can hep such students engage in the construction of narratives that they have an ownership over - their histories of education and are supported in the development of those narratives for transition into their level education and towards professional practice. Schank (1990) is particularly relevant in this regard stating that 'stories give life to past experiences. Stories make the event in memory memorable to other and to ourselves' (Schank, 1990, p.10). In this context narrative is a fundamental pillar upon which any preconception can be challenged and must be supported by collaborative exchange with others who can tell their stories for comparison and contrast within the context of education. Indeed, narrative construction lies at the heart of the research study.

5.5.2   Introspective Narration

Within the context of this research study the term introspective refers to the process of internal reflection upon one own tacit historical engagement with the structure of the Irish education system for the explicit purpose of narrating that experience to the learning community through the learning environment. This is an important step within this research study as this forms the basis for two distinct although interdependent processes, perviously discussed.

Initially, introspective narrative construction informs the learning community and highlights the differences and similarities within the community and the education system for interrogation by the community. However this initial engagement also serves to draw

out within the learning community and designed process the preconceptions of the actors (Heidegger, 1962; Stahl, 1993). During this process participants are beginning to develop relationships with each other within their new environment and are as a consequence beginning to establish new modes of narrative expression akin to what is expected of them in both third level education and the expectations of professional practice that will, in the future, be expected of them (Bruner, 2009).

Secondly this initial engagement draws participants into Heidegger's hermeneutic circle where prior experiences are exposed for discussion, negotiation, interpretation and meaning making. Within the research study this negotiation is mediated through the collaborative construction of a narrative pertinent to the experiences of the community, rooted in the historical content of the module - again reinforcing the initial interdependent process.

5.5.3   Intersubjective Narration

The aforementioned collaborative construction of a narrative pertaining to prior experiences is an important process in revealing differences in experiences and directing participants to look for interpretation within, although not limited to, the module content and each other. Importantly, the development of such interception is focused around the construction of a shared online space and as such is a negotiate space. This is important in light of both Heidegger's and Stahl's contention regarding shared meaning making. Heidegger considers that meaning constructed within an environment mediated through artefacts leave neither the environment nor the participants unchanged (Heidegger, 1962). Stahl explores this further and suggests that the development of understanding is dependent upon negotiated interpretation (Stahl, 1993). This study follows suit, in that any consideration of negotiation is between members of the learning community being established, founded upon common histories of education and where expression of that common experience is dependent up on a shared understanding - a making of meaning (Heidegger, 1962; Stahl, 1993, 2000).

The expression of this negotiated meaning, in the context of the designed environment, is considered to be an intersubjective expression of shared meaning - an intersubjective narration of the participants collective agreement, within the designed environment.

5.5.4 Intercultural Narration

As Bruner suggests, culture and education - indeed culturalism as an entity - are bound by a reciprocal relationship between narrative and culture (Bruner, 1986, 1987, 2009). The above intersubjective narration is, as discussed, developed within the designed environment and therefore does not ultimately connect with the reciprocal relationship that Bruner outlines. Crucially, therefore, narrative construction within the dynamic of the design environment and in support of the development of an emergent community of practice requires an explicit connection with the culture to which the communities wish to connect. In order for a residential learning community to be formed the design must facilitate the development of an intercultural connection. The term intercultural suggests that multiple cultures exit within this dynamic and this is accurate.

Initially, upon entry to undergraduate initial teacher education participants are exposed to the culture of third level education and over the first few months of their enrolment they develop the capacity to engage with that culture through narrative (Bruner, 1987; McAdams, 1993). The ambition of this research study is to connect the participants with culture in a wider sense; that of the world of in-service teaching practice as an emergent community of practice (Lave & Wenger, 1991). This requires a connection between cultures. That of the institution and that of the world within which they will enter post institution.

The 'Apprenticeship of Observation' (Lortie, 1975) is particularly relevant at this point as preconceptions of what it means to be a teacher are rooted within the introspective narrative formed by the participants. Linking therefore the culture of the designed environment and that of the in-service world is a key concern among teacher educators, as

Walkington (2005) points out '[teacher educators] must seek to continually encourage the formation of a teacher identity by facilitating pre-service teacher activity that empowers them to explicitly build upon and challenge their experiences and beliefs' (Walkington, 2005, p.63).

Prior experience and beliefs are narratives, shaped by the culture within the designed environment and are also open to intersubjective challenge within the design environment. A new collaborative consensus among participants can be achieved through the construction of a shared online space and through the development of a residential learning community that is connected to the culture of teaching beyond the bounds of the design environment. Crucially, the development of an emergent community of practice is predicated upon the construction of a narrative that is situated within this emergent dynamic. This narrative format, a conversation between a series of constructed learning communities established in a restricted culture and the development of an emergent learning community established through connection to unrestricted culture, is Heidegger's hermeneutic circle in motion. The narrative formed by the participants as a community is a process of exploration, interpretation and understanding where participants engage in meaning making informed by and informing the culture they establish contact with beyond the context of the design.

5.6   Technology

The fifth key conceptual tenet of this design-based research study is technology. The integration of technology into educational practice is the subject of international attention both in theory and in practice (Conway *et al*, 2009; European Commission, 2014; Ceana, 2014; OECD, 2015; Teaching Council of Ireland, 2011, 2015). Technology utilised in educational environments is commonly referred to as Information and Communication Technology (ICT). However, for the purpose of the research study the term technology or technologies will be maintained, as will be explored in the sections to follow.

Significant variance exists in the use and availability of technologies within secondary schools across the OECD (OECD, 2015), the very schools that participants in this research study will eventually be employed in. Factors such as affordability, resources, practitioner commitment, practitioner self-efficacy, broadband availability etc all mitigate the findings of the 2015 OCED report. Indeed the report repeatedly points to the availability of technology being the dominant factor in the success or otherwise of school strategies for the integration of technology into teaching and learning practices (OECD, 2015).

It is therefore incumbent on the design of any learning environment to take note of the findings of this report. Of particular relevance are the findings relating to the intense of student engagement with computers, which in general while improving - is quite limited (OECD, 2015). This informs this reproach study in two ways. Firstly the development of the designed environment must take note of the limited experience that participants will have with technology in general and that the efficacy of participants with both software and hardware will be very limited. Secondly, the designed environment must integrate technology in order to begin to prepare participants for the technological expectations of future employers - where technology is available. There exists therefore a tension between the efficacy of participants and the expectations of employers that they will engage with in a few short years. Indeed many of the participants in such teacher training programmes will engage in teaching practice within twelve months of enrolment. There is a responsibility on the researcher to take note of this tension and design accordingly. This concern is echoed by the Irish Department of Education and Skills (DES) inspectorate report (2008) in relation to the integration of technology or ICT into schools in Ireland. This report recommended that, 'there needs to be an increased emphasis on the application of ICT in teaching and learning in teacher education at pre-service, induction and continuing professional development stages.' (DES, 2008, p.xix).

In addition the report pointed to the isolationist nature of technology integration where support mechanisms for teachers engaging in educational technology innovation was not widespread (DES, 2008). The 2015 DES publication *Digital Strategy for Schools 2015-2020* also points to the difficulties that teachers experience in the integration of technology into their teaching practice (DES, 2015). The 2015 report also, explicitly, points to a constructivist (Piaget, 1959; Piaget & Cook, 1952; Vygotsky, 1978; von Glaserfield, 1990) pedagogical approach rather than that of a constructionist (Papert, 1993) framework for teaching and learning where the design and construction of objects that are personally meaningful acts as a mechanism for learning (Papert, 1990).

The aforementioned tension in the design learning environment between pre-service efficacy and in-service expectation is heightened by the desire of the research or to engage participants in personally meaningful activity. However, this tension need not be a barrier to the aims and objectives of this research study. It is the contention of this research study that the development of a shared online space for intersubjective and intercultural expression by an emergent community of practice, founded upon a personalised collaborative exploration of the history of education is in and of itself a constructivist methodology and thus reflective of the environment of in-service practice while concomitantly being personally meaningful in the constructionist sense of teaching and learning within the designed learning environment. It is at this point that discussion around the term and application or integration of ICT in learning environments is important.

5.6.1   Defining technology

The constructivist school of thought in the 2015 DES publication allows for a clear discussion on the application or integration of ICT in Irish schools. This overt stance indicates that the ICT, in the Irish context at least, are viewed as a tool for use rather than as part of an integrative approach to learning. Given the findings of the 2008 DES report, OECD 2015 report and the 2015 DES publication this design-based research study

contends that if the demands upon new entrants to the teaching profession are going to be overtly constructivist then the development of any educational technology orientated learning environments must reflect that in-service environment.

However, the conceptual framework of this design-based research study demands that in order for participants to challenge preconceptions through interpretation for meaning making, that that process be personally significant (Heidegger, 1962; Stahl, 1993; Papert, 1990). Therefore this multi-epistemic dynamic requires an assessment of what is Information and Communication Technology and whether that term is appropriate in this context.

ICT, within the in-service teaching domain is constructivist (DES, 2015) and in this sense it can be considered as a tool for engagement within content and concepts, as indicated by the DES, 'a constructivist pedagogical orientation supports teachers in effectively using ICT with their students i.e. learners are actively involved in a process of determined meaning and knowledge for themselves' (DES, 2015, p.8).

It is clear that the term ICT is active in support of teachers' engagement with the learning process as they engage with students. The designed environment within this research study considers that this is also necessary in the design context to act as an active scaffolding mechanism. However, it is also a requirement that the development of a personally meaningful process be explored and constructed by the participants and to this end the term technologies is deemed more appropriate. Technologies, in the context of this design-based research study, can therefore be viewed as being in the domain of the participants rather than the teacher, lecturer or facilitator and can range in form from pencil and paper to virtual reality headsets, the list is potentially endless when technology is conceived in this manner. In this vein the use of technology rather than ICT can be viewed as concomitantly constructionist and constructivist in a environment where participants are engaged in a circular process of meaning making (Heidegger, 1962). In

this sense, technologies are defined as boundless and in short - technologies are undefined and whatever participants deem them to be.

5.6.2   Learner Orientated Technology

Having discussed what technology can be viewed to be from the perspective of the both the designed environment and from the perspective of the participants. The resultant consideration of technology being undefined, is supported by Norman's contention that technology should not be imposed on a learning environment, rather it should form part of the leaning environment (Norman, 1998). In this respect the expectations of new entrants to undergraduate initial teacher education to learn new and relevant technologies must be met and balanced with the necessity for those technologies to be unobtrusive and supportive of the learning process as whole rather than the focus of the learning process as well as being in-service relevant. Such technologies should offer an -

> 'opportunity to experience leaning activities that are internally driven and contracted, goal orientate and reflect, personally meaning full and authentic, collaborative and socially negotiated, and adaptive to individual needs and cultural backgrounds'

> (Bonk & Cunningham, 1998, p.30)

Considering the needs of the learners in this design study and the aforementioned tension between efficacy and expectation the selection of technologies to utilise as part of the design environment must balance this tension in terms of stretching the capabilities of the participants whilst at the same time supporting their engagement with the design environment and the processes they are active participants in. Bruce & Levin (2003) reflect on the use of a four part taxonomy of uses of technologies- communication, expression, inquiry and construction (Bruce & Levin, 2001; Levin & Bruce, 1997). They suggest that the future development of any learning environment that wishes to integrate

technologies into that environment should be open to links to the wider practitioner environment that technological developments will develop (Bruce & Levin, 2003).

In this sense, technologies are undoubtedly a fundamental tenet of this design-based research study. Technologies, in all of their conceptions, can act as a bridge between past and present experience and also as a bridge from the present to the future of teaching for the users and those that they engage with in that process.

5.6.3   Technology for Teachers

As discussed, pre-service teachers are concerned with technological developments and how such developments will impact on their careers going forward. Consequently technologies experienced in initial teacher education should support future use within professional practice and should mirror the manner and methodologies applicable in that setting (Jacobsen, Clifford & Friesen,2001; Arnold & Ducate, 2006). Computing technology, mobile or otherwise should therefore both in hard and soft formats be relevant to the communities that teachers are part of (Schoffner, 2009; Carroll & Carney, 2005).

The learning environment of this research study should there be supported with technologies that support participation in the programme and also speak to the careers that participants are pursuing where efficacy is increased and concerns regarding professional practice are allayed.

5.6.4   Pre-Service Teacher's Private & Personal Use of Technology

The development of this research study, framed by a collaborative exploration of the history of education, asks students to negotiate their collective preconceptions and try to situate them within the historical content of the module. Such preconceptions are deeply rooted in the participants biographical experiences with education - their histories of

education. In this regard the participants are asked to link their private or introspective experiences intersubjectively with established history. During this process participants are asked to engage in the development of a shared online space. In the process of developing this they have the opportunity to establish the technologies that they consider relevant as part of their emergent professional repertoire thus connecting there established strengths with the challenges they face as they move towards professional practice.

5.6.5   Technology and Teacher Self-Efficacy

The issue of self-efficacy in relation to technology is not exclusive to pre-service teachers, it permeates the entire profession and is heavily influenced by the pace at which technology evolves. Very often, members of the teaching professional are reluctant to invest time in the development of efficacy with technology where the pace of change can outstrip the capacity of teachers to adapt. Self-efficacy or a belief in one's self to use technology for a specific purpose (Wang *et al*, 2004) can be enhanced by the development of skills through practical tasks related to teaching both at pre-service and inservice levels (Fleming, Motamedi & May, 2007). To this end the development participants technological self-efficacy must be part of a shared vision or goal that is rooted in the future of their engagement with in-service teaching. Albion (2001) points to the development of such skills as being 'an important step towards their leaning to use technology effectively in their teaching' (Albion, 2001, p.344).

This is an important consideration given the previously discussed dual tension tension experienced by pre-service teachers in relation to technology. The designed learning environment would need to fulfil the aforementioned expectations of trainee teachers whilst concomitantly supporting them as they develop skills both new to them and in demand within in-service practice.

5.7   Chapter Summary

This chapter has delineated the conceptual framework of the empirical and practical considerations within this thesis. The design themes or interdependent design variables: 1) transition; 2) collaboration; 3) engagement; 4) narrative; and 5) technologies explored in this chapter framed the development of a transition design model, rooted in the history of education. Emergent from Chapter 2, crystallised in Chapter 3 and explored in detail this chapter, this conceptual framework underpins the TWO-CENTs design model. This resultant model is discussed in detail in Chapter 8.

The TWO-CENTs design model is predicated upon emergent themes in Chapter 3, the literature review chapter of this thesis . These emergent and interdependent themes included:

- the salient theme of learning communities within the continuum of education and in particularly concerns regarding the individual nature of inservice teaching.

- concerns regarding the development collaborative practice for practicing teachers and how to establish a culture of collaboration within that domain.

- a deterioration in the engagement levels of student teachers with the foundational studies in education and in particularly the history of education.

- the relationship that technology has with education and in particular the development of technology skills that are in demand by potential employers.

The development of this design model is explored in the chapters that follow. Highlighted in particular, is the evolution of the TWO-CENTs design model across two iterations of the design-based research methodology, outlined in Chapter 4. Emergent from this

iterative process is a robust adoptable and adaptable framework for application in cognate settings where there is a desire for an emergent community of practice to be established in undergraduate initial teacher education through a collaborative engagement with the history of education.

Chapter 6: Design Cycle 1

6.1 Chapter Introduction

This chapter introduces the first design cycle of this design-based research intervention which involved 20 students who agreed to participate in this research study seeking to address a central question: How can a collaborative engagement with the history of education help to establish an emergent community of practice in undergraduate initial teacher education? This chapter is developed in a format designed to detail the evolution of the design model from idea to implementation based upon the key issues and themes emergent from Chapters 2 and 3, developed in accordance with the principles of design-based research, and moulded by the conceptual framework detailed in Chapter 5 of this thesis. The central contentions of which are further delineated within the narrative of this chapter and Chapter 7.

Data collected over the duration of the research study amounted to a considerable body of information and to this end exemplars of data, representative of the findings of the research study, are utilised in the presentation of the effectiveness of the design model in answering the principal research question. The nature of design-based research is that it is utilises all means necessary and appropriate to investigate the potential and limitations of the research study. To this end both qualitative and quantitative data exemplars are employed throughout in support of the research narrative.

The development of the design process and the analysis of its effectiveness in the naturalistic context of its application are framed by the CENTs interdependent design variables, identified in Chapters 2 & 3. The effectiveness of the design model will be analysed using these variables and that analysis will be subsequently applied to the conceptual framework that supports the design model. Finally, after a synthesis of theory and practice, recommendations for the improvement of the a second iteration of the design model will be made, framed by the aforementioned interdependent variables.

6.2   Where to Start?

The problem of transition into professional education programmes is particularly relevant to third level institutions and further education training programme providers.'Design-based research involves the creation of a theoretically-inspired innovation, usually a learning environment, to directly address the [identified] problem.' (Barab, 2006, p.155). The initial innovation was therefore ignited in the researchers host institution, The National University of Ireland - Galway.

6.2.1   The Local Context

Inspired by social constructivist thinking the pilot innovation for this research study was developed in an attempt to enhance pre-service teachers' engagement with the history of education and consequently help them transition into third level education and towards professional practice through collaboration. Of particular interest, in the case of this research project, were new entrants to third level education and those new entrants that were entering professional undergraduate programs for the first time directly from second level education.

The initial application of this designed innovation was implemented to see if a technology enhanced engagement with the history of education could help such students to make this difficult transition. The initial design phase focused on the naturalistic context (Barab, 2006) of the research problem utilising techniques and methodologies that could do real work, in real world settings. This real world setting was identified as part of the undergraduate incoming cohort of pre-service mathematics teachers at the National University of Ireland - Galway.

As a graduate of the School of Education at NUIG and Galway Doctoral Research Scholar, the researcher was familiar with the research staff at the School of Education and

approached co-ordinating staff with the help of my doctoral supervisor to gain access to the identified purposive sample. It was agreed that the pilot intervention would take the form of the History and Structure of Irish Education in the 2014-15 in a pre-service teaching programme. It was also agreed that the development of a portfolio that encouraged a reflective engagement with the topic would be in line with the ethos of the School of Education at NUIG and the requirements for professional registration with the Teaching Council of Ireland. These guidelines and requirements were then used as the building blocks from which to develop a module content and assessment structure that could serve both the aforementioned requirements of the naturalistic context and also provide relevant and useful data to the researcher.

6.2.2   Identifying Participants

Selecting a sample that met the needs of the study required a grouping of participants that would be engaged in similar activities on a daily basis over an extended period of time (Cohen et al, 2003). The cohort of students identified as a purposive sample (Cohen et al, 2003) were new entrants to a four year duration Bachelors Degree in Mathematics and Education or what is known as a concurrent model of ITE, delineated in Chapter 2. The profile of the cohort was also a key factor in the section of the sample (n=20) as fifteen of the participants were entering tertiary education directly from second level education, three participants were returning to education from a period of more than ten years of employment related activity, a further two students were returning to education from a period of two years or less in employment. All of the participants were engaged in tertiary education for the first time.

6.2.3   Designing to Engage

Establishing the research problem and identifying the varying factors influencing the local context established an environment within which to begin designing the initial design-based research intervention. Key to the development of this innovation were the existing programme constraints of content, resources, time and accreditation.

6.2.3.1 Content

The governing body for professional teacher registration in the Republic of Ireland is the Teaching Council of Ireland. This regulatory body stipulates that all pre-service second level teachers must complete a module in the History of Education or a study of the History and Structure of Irish Education as part of a collapsed module with other fields considered to be amongst the Foundational Studies in Education or Educational Sciences. Such studies include but are not limited to the Sociology, Psychology and the Philosophy of Education.

The Teaching Council [Registration] Guidelines (2009) state that:

> 'Studies in the Foundation Disciplines of Education (Educational Sciences)
> should be enquiry based and provide the basis for reflective practice. They
> should enable the student to build a conceptual framework which will help
> them to develop an informed and coherent theory of education not only for
> immediate need in practical teaching but also for future professional
> development. The Foundation Disciplines (Educational Sciences) may be
> taught separately or in an integrated way and should provide experience on
> the Foundation Disciplines of education as these relate to the study of
> educational issues.'

> The Teaching Council [Registration] Guidelines, 2016, p.21)

The Teaching Council Policy on the Continuum of Teacher Education (2011) goes further and states that the:

> 'Foundation Studies should:
> - provide research-informed insights into student teachers'
>   understanding of the practices of teaching, learning and assessment;

- illuminate key dimensions of the professional context in which
  thinking and actions of teachers are carried out;

- provide strong professional ethic in teaching;

- provide the basis for reflective practice.'

(Policy on the Continuum of Teacher Education, 2011, p.12)

This research project therefore considered the content of the design intervention very carefully. Taking into consideration of the aforementioned guidelines and policy, as well as the foremost, relevant academic text in the field of History Education, Irish Education: History and Structure by Professor John Coolahan (1981).

The structure of Coolahan's publication has traditionally acted, across multiple teacher training programmes, as a platform for pre-service teachers engagement with the history of education. Its logical and sectored approach to examining the history of Irish education is recognised as accessible and relevant by both students and module lecturers. In his book the author identifies the various sectors of education as follows:

- First Level Education or Primary Education

- Special Education

- Second Level Education

- Irish Language Speaking Schools

- Teacher Education

- Third level Education

- Adult Education

The definitions above are comprehensively covered from 1800-1980 however for the purpose of this research study the distinct topics of Special Education and Irish Language Schools were subsumed into the First and Second Level education sectors.

For the purpose of this research study the history of education was limited to the following:

- **Primary Level Education** - to include pre-school, Montessori, junior and senior infants classes and all classes pre-second level education;

- **Second Level Education** - to include transition year education programmes;

- **Third Level Education** - to include all courses post Leaving Certificate up to and including undergraduate degree awards and specifically to include continuing adult education and return to education programmes;

- **Fourth Level Education** - to include all post-graduate and continuing professional development while in-service as a teaching professional.

6.2.3.2   Programme / Module Accreditation

The module needed to be designed in line with the accreditation of ECTS credits as sanctioned by the university and the Teaching Council. Careful consideration was given to the definition of the learning outcomes for the module and their alignment with the assessment model for the students enrolled in the module (Appendix 7).

6.2.3.3   Deciding on the Student Academic Submission Requirements

Given the existent local and national requirements to adhere to strict guidelines for academic submission formats, in particular for the awarding of ECTS credits, the researcher, in consultation with the academic staff at the School of Education at NUIG agreed to develop the submission requirements as a 100% continuous assessment format with no terminal examination and no academic essay submission. Instead, participants would be required to submit a portfolio of work completed during the module,

culminating in the collaborative creation of a digital artefact in line with the learning outcomes, provided to students in Appendix 1.

6.2.3.4 Resources

A second key local consideration in the development of the Design-Cycle 1 intervention was the availability of onsite resources to facilitate the development of a collaborative digital artefact. Traditionally this module, in the consecutive track of initial teacher education or postgraduate teacher training, is given in large lecture theatres to hundreds of students. In years past, the concurrent or undergraduate track has facilitated numbers not exceeding thirty and so it was decided that a classroom format that could facilitate wireless internet access and appropriate hardware would be best suited to small group and cohort interactions for meaning making (Stahl, 1993, 2000, 2002).

The decision to incorporate a collaborative digital artefact into the assessment model for the module led the researcher to examine a range of possible authoring tools for this initial design cycle. A key consideration and concern was the variance in use of technology and platforms amongst the student population. New entrants to the B.A. Mathematics and Education were not and never had been in the past required to purchase any specific hardware upon enrolment in the programme. Available to the researcher in the School of Education buildings was a PC suite and an Apple Mac Suite, all located in D-Block, on campus.

The PC suite would provide access to a Windows based platform allowing the researcher to provide limited instruction to the students in relevant educational technologies to facilitate the submission of the portfolios required. Freeware authoring tools such as ePub, etc were considered as platforms from which students could contribute to the development of their digital artefact. However, given the high demand on the suite across the School of Education the selection of this suite was considered, at this time, not to be conducive to the development of the goals of the research study. In considering the

naturalistic context (Barab, 2006) of professional teaching practice an environment that

would mirror that of the real world experience of a student teacher, perhaps entering a

single digital platform environment upon teaching practice or in-service employment was

chosen as suitable for this initial design cycle.

The Apple Suite in D-Block was considered as a viable option. Its on site location and

relative under use as a digital resource made sure the suite was available to the

programme at assigned dates and times for the module, 9.00am on Monday mornings.

The format or layout of the room was also attractive. The Macs were arranged around the

perimeter of the room and in the centre were arrangements of moveable tables and chairs

that would facilitate face-to-face group and cohort interaction. Finally the authoring

software, iBookAuthor was a complete and established authoring package which had

already been licensed by the university for both students and staff to utilise. In addition a

number of iPads were available for use by the students and staff to support their

interaction with the Macs and associated software. It was decided, and agreed with the

School of education that the module would be located in the Apple Suite, Room D302, D-

Block on NUIG's main campus.

Figure 6.1: Apple Suite in D-Block, NUIG Campus

6.2.3.5   Time

The duration of the module was designated as 24 hours of class contact time divided over twelve weeks and into two hour sessions. All of the sessions commenced at 9.00am on Monday morning of each week. Each session comprised of a traditional lecture format for the first 45-55 minutes on historical content and then students were given a 10 minute break after which they returned to engage in designed collaborative exercises such as the narrative construction process - StoryXchange.

6.2.4   Defining the Learning Outcomes

Defining the learning outcomes for the module was in important step in the development of the design intervention. The naturalistic context of the learning environment, in particular the regulatory requirements for professional registration, limited any radical deviation from the established learning outcomes of previous years. The module descriptor (Appendix 1) outlines, with minor alternations from previous years to reflect recommendations made by previous external examiners reports regarding reading lists, a brief module description, the learning outcomes, forms of educational activity, assessment techniques and a brief list of significant relevant readings and digital resources.

The learning outcomes for this first design-cycle were defined as follows:

- Understand the historical and cultural development education and mathematics in Ireland;

- Be knowledgable about the key policy developments and curricular-pedagogical reform movements in Irish Education;

- Understand the multi-faceted structure of Irish education and the provenance and historical role of its key stakeholders;

- Be able to relate the history of Irish Education and its development to the contemporary movement;

- Understand the evolution of Irish education set in the context of emerging and developing continental and interactional trend in tandem with theories of teaching and learning.

The learning outcomes, as part of the module descriptor were provided and explained to all incoming participants at the outset of the module and reiterated at key points during the twelve week programme.

6.2.5   Assessment

Requirements for programme accreditation and professional registration with the Teaching Council of Ireland and National University of Ireland - Galway, College of Arts, Celtic Studies and Social Sciences (CACSS) guidelines (Appendix 7) provided unambiguous boundaries within which to form an assignment for participants to complete. The Final Review Panel Report to the Teaching Council on the B.A. Mathematics & Education 2012 (Appendix 8) provided indicators as to how to enhance already effective models of delivery with the School of Education on this particular programme. Considering all of the information available the 100% continuous assessment submission was broken into three significant parts:

A. Individual Digital Historical Portfolio (IDHP)

- This portfolio would contain all of the preparatory work prior to submission of the final collaborative assignment as well as a short personal reflective essay. In the development of this essay participants were encouraged to give their thoughts on how they felt about the History of education prior to, during and post completion of the module - their personal journey.

B. Participation and Engagement

- Underpinning the design of the intervention was the concept of sharing and collaboration. Students were encouraged to question and discuss topics at any point

during the lessons they were engaged and to demonstrate evidence of critical

thinking in relation to issues raised within the module and if relevant, beyond the

module. They were also encourage to document their group discussion on templates

(Appendix x) provided to them for inclusion in their IDHP.

C. Collaborative Digital Historical Portfolio (CDHP)

- This part of the portfolio would contain the collaborative creation of the pre-
  assigned groups. It would demonstrate an appropriate use of the technology
  available to the participants, display evidence of investigative research and in
  particular display evidence of a coherent narrative throughout the iBook.

A tension in the development of the module with the above assessment model was the

evident need for tuition in educational technology. The identified participants were

entering third level education for the first time and for the most part transitioning directly

from second level education where significant variances in level of technologies available

to students is evident in the literature (Smyth, Banks & Calvert, 2011; HEA, NCCA,

2013; OECD, 2015). The minimum requirements of the Teaching Council of Ireland as

well as the established programme accreditation limited the amount of technology tuition

that could be integrated into the module, however tuition would be necessary in order to

complete the module assessment requirements.

The B.A. Mathematics & Education programme at NUIG, for the initial application of

this design model, did not have a dedicated educational technology module available to

first year students. It was decided to provide the students with a set of very detailed, step-

by-step guidelines (Appendix 9) on how to complete the module assignment in relation to

the technology they were being asked to use - in this case the focused around the Apple

platform base technology available to them on campus. These guidelines were developed

for users who had no prior knowledge of Apple technology or Apple editing software and

the scope of the document was strictly limited to what students required for completion of the required assignment components.

At all times however, participants were encouraged to be innovative and creative in the development of the submission and that the guidelines were not prescriptive acceptable submissions. While it was not within the remit of the module to teach technology it was within the scope of the research project to ingrate technology into the teaching and learning process in a meaningful and transferable manner where participants would emerge with a new and valuable skill set (Kirschner, 2015) having developed an appreciation of the relevance of the history of education to their past engagement with education, their present position in the education system and their possible future engagement with education as practicing professionals.

6.2.6   Student Assignment Guidelines

Developing a set of detailed student assessment guidelines (Appendix 1) was viewed by the researcher as an important element in trying to engage students with the history of education. The researcher felt that the less the students had to worry about in terms of academic submission or ambiguous instruction the more that they could focus on the development of their collaborative exercises and result in the enhancement of their engagement with the history of education as they make the difficult transition from second level into third level education and towards professional practice. This was a key point in the development of the design model. The majority of new entrants to undergraduate education enter directly from second level education which is a highly scaffolded and very goal focused environment (Smyth, Banks & Calvert, 2011; HEA, NCCA, 2013; Hyland, 2011). The participants in the design model would be a particular example of such a homogenous group. In addition they would, for the most part, not have studied history during the course of their senior cycle studies. Developing a set of Assessment Guidelines that left no stone unturned with regard to not only the assessment requirements but also exactly how and where to submit, what media to be used and a

clear set of instructions would eliminate concern with regard to this and allow a degree of freedom for participant to engage with the module and the ongoing continuous assessment to which all lessons were tied to. Indeed all of the lessons built upon the previous so that if a student completed the activities from lesson one through to lesson nine they would have very little to do other than to collate and then negotiate with their group and wider cohort members to refine the collaborative submission.

6.2.7   Rubric Creation

Two rubrics were created (Appendix 1) to assess the submitted assignments and also to guide the students as they developed their individual and collaborative contributions within the module structure. In this way it was intended that the learning experience of the students would be enhanced by establishing, from the outset, clear criteria that they could adhere to and self-assess prior to formal submission of their assignments.

While grading rubrics are prominent in the wider academic educational literature such rubrics were scarce within the literature concerning educational technology and the history of education. Rubrics that dealt with the development of Digital Storytelling were particularly useful as starting points, in particular the Western Massachusetts Writing Project (Hodgson, 2010).

6.2.8   Reading Lists

The Final Review Panel Report to the Teaching Council on the B.A. Mathematics & Education (2012) (Appendix 8) suggested that a more defined breakdown of provided reading lists be made available to enrolled students. Historically, the reading lists on the module ED116, the History and Structure of Irish Education, had focused on academic texts specifically relating to publications on the educational system in Ireland and or bodies associated with the education system. Attempting to enhance engagement with the history of education would require participants to make personal connections with the

module content that would help them link theory and practice. For this reason texts were introduced that provided more social commentary on the period of history being examined and were selected specifically for their references to the education system within the context of the development of Irish society under British Rule, as a Free state and subsequently as the Republic of Ireland. It was intended that students, as they investigated the relevance of the module historical content to their own lives may want to explore the factors that influenced educational change not only in their own time but in the centuries and decades that had lead up to that point. The reading lists were divided into five distinct sections so as not to overwhelm participants and included an array of relevant digital resources:

- Significant Relevant Readings

- Significant Relevant Digital Resources

- Supplementary Reading

- Links to Additional supporting Documentation

- Links to Relevant Supporting Websites

All of the digital resources were available to students in the School of Education student library and all of the links provided to students were tested for accuracy and to make sure that they like were live prior to putting them on the Virtual Learning Environment (VLE) - Blackboard, for students to access at their leisure.

6.2.9   Aligning the Design Model, Content & Learning Outcomes

The initial design cycle was implemented over the course of a single, twelve week, semester with a new intake of first year undergraduate pre-service pre-service teachers in September, October and November 2014.

Developing an alignment between the identified interdependent variables in Chapters 2 and 3, content and the learning outcomes required a detailed breakdown of the weekly lesson structure and careful alignment of the require content of the module. A truncated version of this alignment can be seen in Table 6.2 and in more detail in Appendix 10.

Week No.	Historical Content	Participant	Design Variables	Learning Community
Week 1-3	Primary	Intraspective	Collaboration	Curricular
Week 5-6	Second Level	Intersubjective	Collaboration, Engagment	Curricular Classroom
Week 7-8	Third Level	Intersubjecive	Collaboration, Engagement Narration	Curricular Classroom Student-Type
Week 9-10	Fourth Level	Intercultural	Collaboration, Engagement Narration Technologies	Curricular Classroom Student-Type Residential
Week 11-12	Revision, Review and Submission of Portfolio & Collaborative Artefact			

Figure 6.2: Alignment of Design Model with Module Content

6.2.10   Module Lessons

The local constraints and timetabling of the module defined the main structure of contact time with participants. All lessons began at 9.00am on Monday mornings and would finish at 11.00am. Breaks were scheduled for approximately 9.50am and lasted between 10-15 minutes. This structure allowed a clear definition for students in relation to lecture time and collaborative exercises. It also provided them with a structure that they were familiar with in relation to their time at second level education. Finalised lesson plans are listed in Appendix 11. The following sections are intended as a brief narrative on the evolution of the module structure form the perspective of the researcher. This format is also repeated in Chapter 7 in the second design iteration.

6.2.9.1   Lesson 1 - Module Introduction

Many of the participants had not studied history since they had completed their Junior Cycle examination at the age of fifteen. Only one participant in the programme (n=20) had studies history at Senior Cycle. For this reason the first lesson in the module was given completely, to orientation of the module within the programme, the learning outcomes, an overview of the content and lecture structures, explaining the requirement of the assessment model, pre-assignment of groups and roles within groups and finally clear information on the key dates within the academic calendar at NUIG. Also a ten minute introductory ice-breaker session was employed where students were asked to give a brief history of their education today and the factors that influenced their decision to come to the National University of Ireland - Galway.

The three components of the assessment model were explained in detail. The requirement of a short reflective essay was underlined as important however participants were reminded that this should not become an onerous task. It was explained that a submission of approximately five hundred words would be sufficient and they were given clear guidelines on what the content should engage with (Appendix 1).

The CDHP was explained in detail and students were reminded that they would need to work together in order to achieve their collective goal. Participants were reminded that the digital skills that they would learn as part of the process would be valuable to them the careers that lay ahead of them and indeed as part of their ongoing professional development in the decades to follow. Creating a 'buy-in' to the collaborative process, a process that was not familiar to many of the participants, was important and is a key component of effective CSCL and TEL environments (Gilbert & Driscoll, 2002).

Students were introduced to StoryXchange and provided with exemplars on how to complete the templates that were provided to them for use in the collaborative session each week (Appendix 4). Students were asked to engage with the reading material

provided to them at an early stage and in particular the assigned digital resources

provided to them as this would help them to engage more effectively as part of

collaborative groups in the weeks ahead.

The module content was described to students as 'light touch' in so far as lecture times

with academic historic focus would only form 50% of face-to-face contact time. However

students were reminded that the breakdown of the reading list and the considerable

resources made available to them should be utilised prior to each subsequent lesson and

that in many ways they were engage in a 'Flipped Classroom' mode of learning.

Students were pre-assigned to groups within the cohort. Where possible the groups were

kept to four members (N=20). StoryXchange is a researcher designed process where each

member of each group was assigned a level education to collate information from the

other group members and to tell the story of the group at that particular level of

education, rooted in the historical content of the module supported by the aforementioned

templates and exemplars (Appendix4). It was intended that this would enhance their

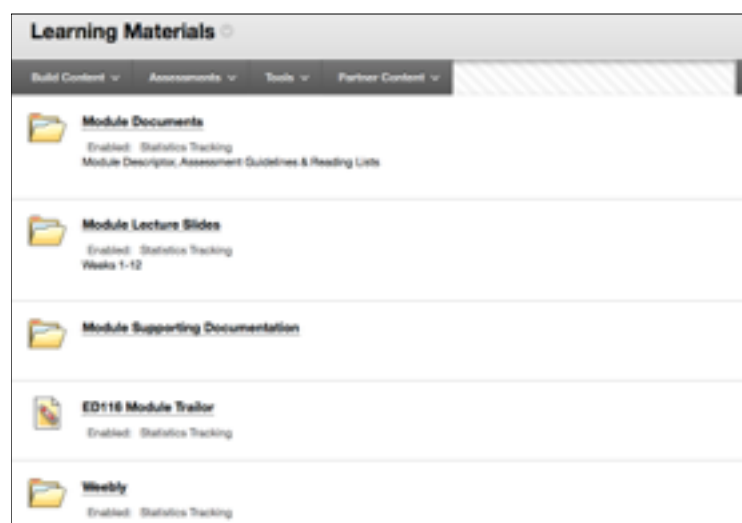engagement with the history of education; the underlying rationale for the research

Figure 6.3: Screenshot of Resources on Blackboard

project. The virtual learning environment (VLE) - Blackboard was used to communicate

with students throughout the module. All presentations, guidelines and relevant resources were placed here for students to access as an when they would need to either on campus or remotely.

It should be noted at this point that the researcher made a decision to explicitly state that the purpose of this module was not to explore personal, positive or negative experiences with education rather it was their task to explore the factors that influenced the development of the system that they were, are and would be a part of in the future. The rationale for this overt instruction was to avoid personal disclosures that might upset participants relating to recent revelations regarding institutional abuses in the Republic of Ireland emerging in recent media reports. It should also be noted that this should remain as an explicit interaction for the foreseeable future given that many victims are still alive and may be potentially related or known to participants in this process.

6.2.9.2   Lesson 2 - Primary Education (1831-1900)

From the outset of the second lesson historical content concerning the development of primary education in Ireland between 1831 and 1900 was covered. Key moments, events and pieces of legislation were elucidated (Figure 6.4). Many of the students were less than enthusiastic about the historical content at the outset however, in line with the learning outcomes, the historical content was constantly and consistently related to contemporary issues in education or issues from the recent past that may have impacted on their time at primary education. This methodology encouraged discussion amongst the group, between researcher and groups as well as providing a basis for discussion during the collaborative exercises. During the ten minute interval StoryXchange Template No.1 (Appendix 4) was placed on the desks of all the students for them to engage with upon their return. When the students returned they were given guidelines as to how to fill out the template and to use their completed template for discussion within the groups. They were also reminded that the template would, as would all of their completed works, form part of their final IDHP.
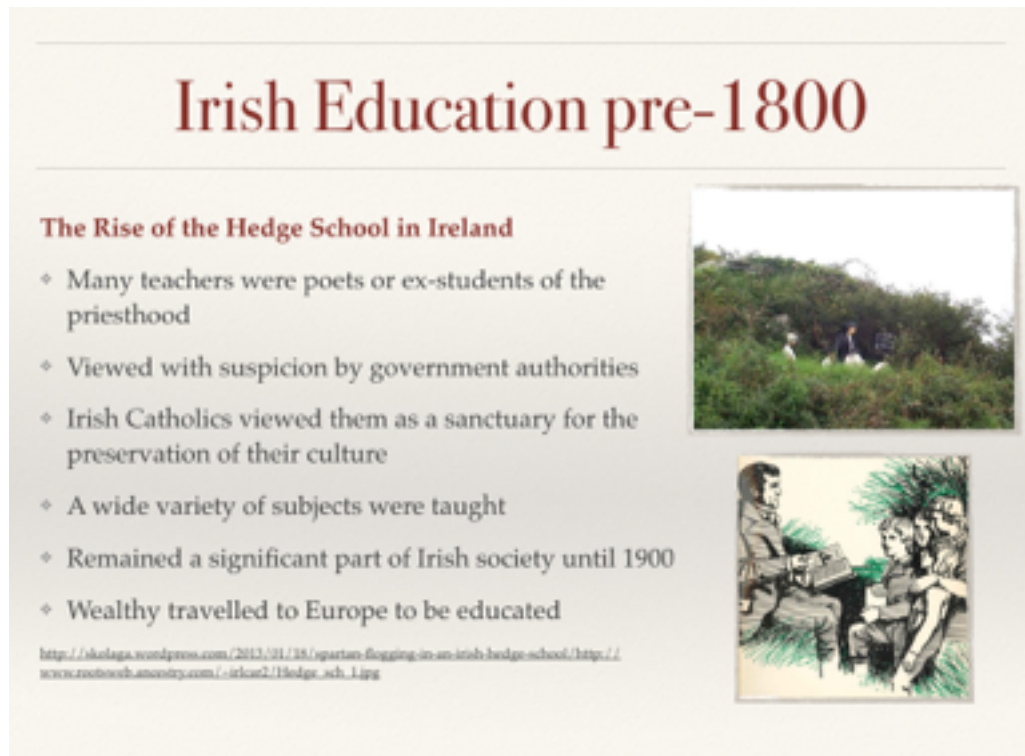
Figure 6.4: Screenshot of Format of Module Content as Presented

The participants found this activity a little surprising as it was not what they had experienced as second level students in particular when they had been engaged in history lessons. Some students did appear reluctant to engage in the completion of the template provided and suggested that they felt it might be something that they could do at a later date when they had, had a chance to think about it more clearly. However, students were reminded that this was a process of building a story rather than having the completed article at this stage and that the more work that they put into the collaborative process the easier the production of their digital artefact would be towards as they progressed towards the completion of the module. The students seemed to appreciate this advice and, for the most part, engaged with the process with some very much enjoying talking about their early education and discussing things that they had not considered as relevant to anybody else. Students immediately discovered that they had quite a lot in common.

Students were handed out an exemplar of a completed StoryXchange Template No.1 | (Appendix 4) after approximately fifteen minutes of discussion. The individuals had developed their templates in quite a similar fashion and only a small number of students made significant changes to their completed templates. Students were encouraged to begin creating digital copies of their work as they completed them incase they lost them or indeed to complete their portfolio. Digital folder structure was discussed with the students and they were advised to be organised and consistent with their file name and folder name creation. They were also advised to include their student numbers on all files and folders. Most of the students took out smart phones at this point and began taking photographs of the contents of the desks. At the end of the lesson students were reminded that the assessment rubrics, available to them through Blackboard were not just an assessment model for staff but rather an opportunity for them to self-assess their progress and to orientate the direction that their work was taking.

6.2.9.3   Lesson 3 - Primary Education (1900-2014)

The third lesson began with historical content concerning the development of primary education in Ireland between 1900 and 2014. In the previous lesson the development of the historical topics and connecting them with the contemporary issues in education was noted, and in the researchers reflective journal it became clear that engaging these participants hinged on making the content as relevant to contemporary society as was possible. Given the time period being covered this proved a little easier than in the second lesson, however coming towards the end of the fifty minute session the participants were beginning to disengage from questioning and probing by the researcher in order to try and maintain their interest. It became clear to the researcher that

> 'these students were not abreast of contemporary issues in education despite their status as pre-service teachers and appeared a little daunted if not, overwhelmed by the complexities of the education system in the modern day.'

(Researcher Reflective Journal, 2014)

In the second part of the session the researcher worked with the groups to encourage them to talk about their experiences in Primary Education as individuals within a collaborative group and to try and help the group members to make connections to the historical content that had been covered during the earlier part of the session and in the pervious lesson. Students were encouraged to open up the lesson Keynote slides on the iMac and keep them open during the discussion.

Ten minutes of the second part of the session was dedicated to the explanation of appropriate referencing for academic submission. This was completely new to the students and many of them had a number of questions in relation to this topic so the timeframe allocated to it ran over by a further ten minutes. As new entrants to undergraduate education and to a professional programme it was imperative that this be covered with the students and integrated in to the design model. Again the availability of materials and resources to student was highlighted and links provided on the Keynote Presentation archived on BlackBoard.

At this point students were again, without prompting, beginning to take out smart phones to take pictures of the work that they had completed on their desks. This activity was timely as the final part of the session would deal with appropriate data storage techniques and reinforce the file name and folder name directions that were given in the previous lesson.

6.2.9.4 Lesson 4 - Secondary Education (1838 - 1900)

This lesson began by introducing the development of second level education in 19th century Ireland. As in previous lessons the session structure was proving popular and the researcher noted that:

'the enthusiasm for the module appeared to be increasing. It is important to

note that at this point in the module many of the students were dealing with a

sector of education that they had only just left a number of months prior to

enrolment in the B.A. Mathematics & Education.'

(Researcher Reflective Journal, 2014)

The researcher also noted that this may have contributed to the enhanced levels of

engagement within the topic. Not withstanding these observations, again when related to

contemporary events that were current and pertinent the students shied away from

engaging in cohort of class-wide discussion, perhaps displaying a lack of awareness o

such issues.

The second half of the session encouraged students to attempt to complete the relevant

parts of StoryXchange Template No.1 and begin to develop StoryXchange Template No.2

(Appendix 4). The level of discussion during this period was significant. While the

students had been reluctant to engage in class discussion they were more than willing to

discuss issues within their peer groups. These discussions tended to centre around the

templates that they had completed and it was noted by the researcher that 'the discussion

ranged from personal experience at second level education to issues relating to the

unionised movements in modern day teaching.' (Researcher Reflective Journal, 2014)

Towards the end of lesson the students were encouraged to read the guidelines for

assessment and the authoring software specific document (Appendix 9) that had been

created for them to complete the required digital submission. In addition they were

encouraged to visit the Apple Suite in D-Block on campus to begin to engage with what

was for all but one student, a new technology. In fact not one of the students had ever

used iBooks Author prior to engaging with the module. The participants were, for the

final twenty minutes of the session encouraged to explore the iBooks templates provided

while the researcher engaged in a group by group question and answer session regarding the StoryXchange process and the development of a group specific template per the detailed instructions provided in the guideline documents provided on Blackboard (Appendix 1).

6.2.9.5 Lesson 5 - Secondary Education (1900 - 2014)

The development of second level education from 1900 to 2014 proved the most popular period and sector of the entire module. It transpired that it was viewed as the most relevant of all the lessons to many of the students registered in the module and particularly because they had no prior experience of third level education and little or no knowledge of what was described as fourth level education.

This lesson was considered to be, by the researcher, a pivotal lesson in the design model as it is the most recent level of education that they have an extensive experience of as students and the very level of education that they will return to as pre-service and in-service teachers. This point was not lost on the students as they actively engaged in discussion and the continued development of their StoryXchange templates. However, the level of support, research and available archival material had begun to be limited such is the dearth of historical research in this area in an Irish context. The scaffolding was a little less supportive at this point in the design model in relation to the historical content and in particular in relation to the development of research and publication post 1981. This was a keen talking point for these pre-service mathematics teachers and generated a lot of questions regarding what the researchers' opinion was. These students were asking questions that directly related to the assessment and assignment. They wanted to be told what was happening and it was imperative that the researcher did not give in to the demands of the students. The researcher felt that the students had to find their way to understanding together, through the historical content.

For the second part of the session students were directed towards the iMacs for a short tutorial on how to insert digital content into iBooks Author. This was particularly relevant to the required collaborative assignment for all students. While the guideline document provided to the students was very detailed the researcher felt that showing students exactly how to this and then engaging them in the same process when supported by the researcher on a group by group basis would be helpful and mildly reflective of the degree of scaffolding that they had experienced as second level students.

The guidelines provided to the students at this point in the design model acted as a bridge between the relative unknown that they were facing in the next number of weeks or indeed for the remainder of the module in their exploration of third level and fourth level education. The scaffolding would be gently being taken down with the aim of helping these students to engage in an independent collaborative investigation of their position in educational history given the solid and comprehensive start that they had made in the primary and secondary level education over the course of the initial five weeks.

6.2.9.6 Lesson 6 - Third Level Education (1845 - 1908)

This, the sixth lesson of the module, had a decidedly different atmosphere with regard to the students attitude to the historical lesson content. The cohort seemed to feel out of its depth and conversation was at a minimum. Engagement with the researcher was also limited. The first part of the lecture passed as an almost transmissive session. Which was disappointing considering the level of engagement that had been observed by the researcher over the weeks in the run up to this lesson. The cohort were nervous about their lack of knowledge in relation to their level education as their experience had been limited to their time at NUIG - five weeks.

During the collaborative exercises the development of interpersonal relationships within the groups was notable. Groups that had not previously formed cohesive bonds or spent a lot of time sharing information began to re-orientate the desk arrangements (Figure 6.5)

in the room so that they could engage with each other and consequently the historical content of the module, as at this stage of the cohorts' exploration of the history of education was indeed limited to the lecturers Keynote presentation and to various sources available to them on the web. The scaffolded experience that had got them this far was disappearing and the prospect of independent exploration was beginning to loom large on the horizon. The development of more cohesive groups within the cohort was observed by the researcher as a direct consequence of the removal of the scaffolding and this group were beginning to make the transition form second level educational environments in to undergraduate education dynamic and towards professional practice.
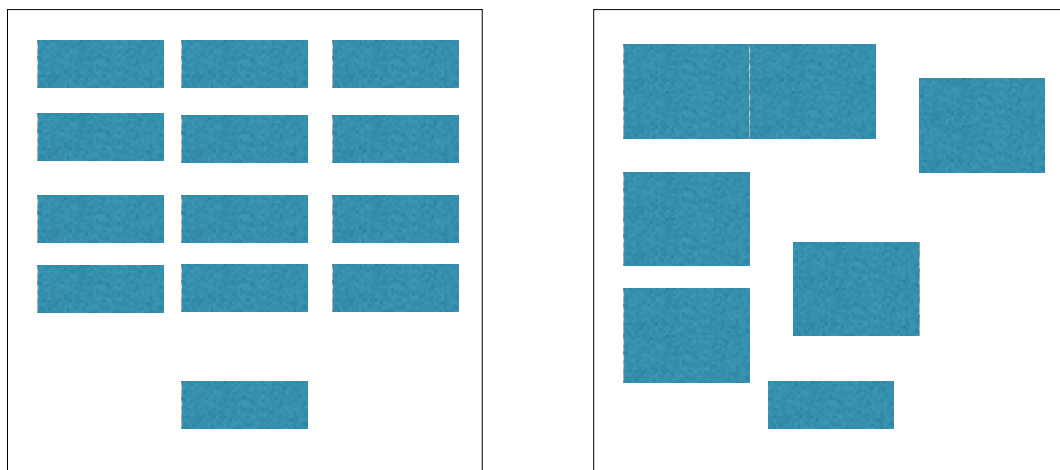
Week 1:Desk Orientation   Week 6:Desk Orientation

Figure 6.5: Desk structure within D302 in Week 1 and after Week 6

6.2.9.7   Lesson 7

Students were given a final lecture on the development of third level education in Ireland in the initial part of the session. These session was scheduled for students to be given an opportunity to have their emergent, collaboratively constructed artefacts informally reviewed by the researcher and to receive feedback from the researcher in line with the grading rubrics supplied the participating students. All groups were encouraged to share their progress up to that point through an informal process of display and explain.

A final question and answer session during the last ten minutes of the lecture finished out the session with students engaged in, for the most part, technical questions regarding the construction of the iBook and some of the advanced editing features that were due to be covered in the next lesson. It was evident to the researcher that the technological aspects of the design model were quite pertinent to the participants at this stage and for some a bone of contention within the module.

6.2.9.8   Lesson 8

Students exploration of fourth level education began in the same vein as previous levels of education with the initial part of the session being dedicated to defining what fourth level education night mean for them as graduate teachers, in-service professionals or perhaps as members of seconded curricular research and development groups in Ireland and perhaps outside of the state. This topic while initially a topic that many of the participants were shying away from turned out to be quite engaging in this initial session. Questions regarding jobs, pay and conditions, additional subjects, management and educational research began to surface. Particularly evident within those discussions was the research that they had carried out in the previous weeks. Their comments were informed and insightful, they drew comparisons with time gone by and many noted a relative lack of progress in certain areas while other areas had experienced growth.

Of particular interest to the researcher was the importance of the cohort as grouped within the classroom. While tension was emerging in relation to the technical aspects of the digital submission, students were, as a consolidated large group discussing and arguing developments that would either impact on them in the immediate future or upon the students that they might teach. In this session they began to refer, for the first time to themselves as teachers rather than just as third level students. It was evident to the researcher that when examining the evolution of postgraduate education that conversation, discussion and agreement were critical in exploring this area of education.

6.2.9.9   Lesson 9

Lesson 9 was structured so that a maximum amount of time could be given to the competing of the StoryXchange process and the development of the students academic submissions. The researcher was available to the students to respond to technical queries and to tease out, in a couple of instances, some finer points of historical exploration. In general this session was incredibly focused on the completion of the collaborative iBook and consequently the collaborative activity in the classroom was reduced accordingly.

In discussion with some of the group members the researchers found out that getting the collaborative aspects of the iBook contribution, in particular, the development of a fourth level narrative had been frustrated as students found it difficult to organise time to see that suited everybody and that coincided with the availability of the Apple Suite on campus. They found this incredibly frustrating.

6.2.9.9   Lesson 10 - Revision Lesson / Workshop

This lesson had been specifically designed for the development of the students completed iBooks. Student were given a short tutorial on certain aspects of the authoring tool to help them if required. Also, students were again given informal feedback on all aspects highlighted in the grading rubric supplied to them at the start of the module.

6.2.9.11   Lesson 11

This session had initially been assigned for the presentation of the iBooks to the cohort and a final assessment mark for the presentation. However their was a significant resistance to the prospect of presenting their productions to the rest of the cohort. When the researcher investigated this further they core reason for this was that the productions were not complete and again this was blamed on the availability of the Apple suite to them at times the suited the participating groups. To this end the rest of this session was dedicated to helping participating groups complete their digital artefacts.

Finally, a last group session was instigated by the researcher to mirror that of the first session that the group had together. Participants were asked to again, tell the story of their education to date however this time they were asked to tell the group what they thought the future of education might look like and what part they feel that they may or may not play in that future.

6.3   Design Cycle 1 - Analysis

The above commentary on the development of the module over a period of twelve week is intended to supplement an understanding of the evolution of this design model and the emergent lesson plans (Appendix 11). Furthermore, they preface an analysis of the multiple interdependent variables within the design model, informed by the design sensitivities, which established the following findings:

- Collaboration - in-depth exploration of the module content and exposes a variety of experiences amongst participants.

- Engagement - as a consequence of an introspective and intersubjective investigation of the relevance of the module content to personal experiences, however, success in those areas was limited by the single platform approach which ultimately hindered the development of a holistic engagement with the module.

- Narrative construction, StoryXchange, facilitated intersubjectivity founded on collaborative biographical exploration of similarities, differences and possibilities.

- Technologies utilised and embedded in the design model contributed to the engagement of participants with the module content and the development of self-efficacy, however ultimately restrictions on platform and accessibility frustrated participants.

6.3.2   Collaboration

Measures of assessing the degree to which group members collaborated had been built into the academic assessment rubrics (Appendix 1) in the form focused areas of the interdependent variables. Consequently, the collaboratively constructed iBooks contained numerous references to group members experiences satisfying the assessment rubric provided for accreditation. However the researcher wanted a more personal response from the participants and therefore designed a multi-point questionnaire (Appendix 3), discussed in Chapter 4, to get a sense of the participants views on the multiple interdependent design variables and their effectiveness with regard to their engagement with the history of education, as new entrants to third level education.

6.3.2.1   Face-2-Face Collaboration

Participants indicated that the collaborative nature of their interaction enhanced their level of engagement with the module content. In particular participants cited the Face-2-Face group sessions as particularly relevant. During the Face-2-Face sessions participants developed feelings of 'team spirit' (Student 4, 2014) where they 'made friends with people in their course much faster' (Student 12, 2014). Student 7 remarked that the Face-2-Face sessions left her 'intrigued by classmates opinions' helping to 'generate ideas, opinions and debates on particular topics.' (Student 7, Reflective Submission, 2014) The exchange of stories in the StoryXchange process and the collation of other people stories accelerated the a process of relationship building within the groups and wider context of the cohort. Participants enjoyed talking, discussing and sharing stories of their own lives with new people, people they would spend a significant amount of time with over the course of a four year undergraduate degree programme indicating that story sharing and working with other were the aspects of the collaborative exercise that participants enjoyed the most (Figure 6.6).
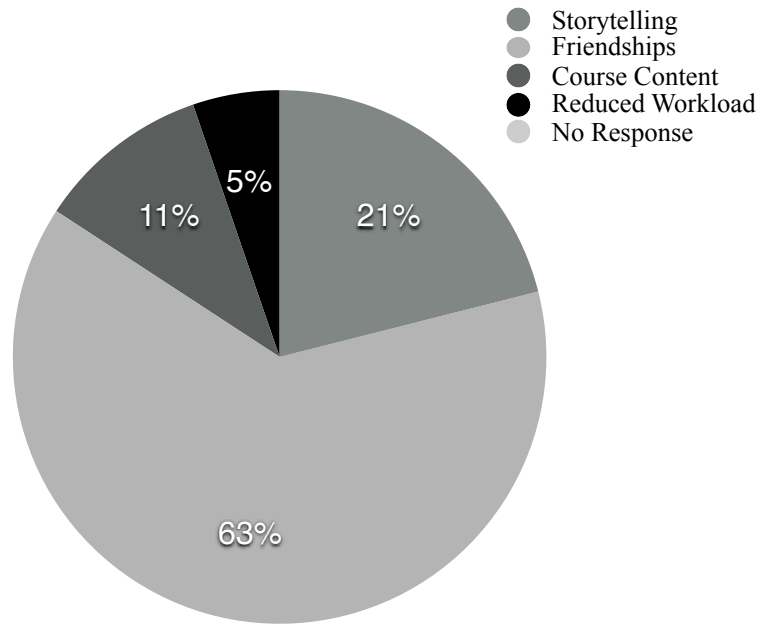
Figure 6.6 Aspects of Collaboration Enjoyed the Most

6.3.2.2 Pre-Assignment of Groups & Roles

Participants also indicated that the pre-assignment of roles, with clearly defined responsibilities and a shared vision helped them to work together from the outset (Figure 6.7). This was confirmed in focus group sessions with the participants where they indicated that

'it was good how you put us into groups….I think that everyone would have went away from Fourth Level… there probably would have been a bit of a row'

(Participant 2, Focus Group, 2014)

In addition Student 19 remarked

'I liked that we were split into groups chosen by the lecturers because at that point none of us really knew each other and it helped us to become acquainted with one another. As a group we had to come together to make a collaborative iBook'

(Student 19, Reflective Submission, 2014)
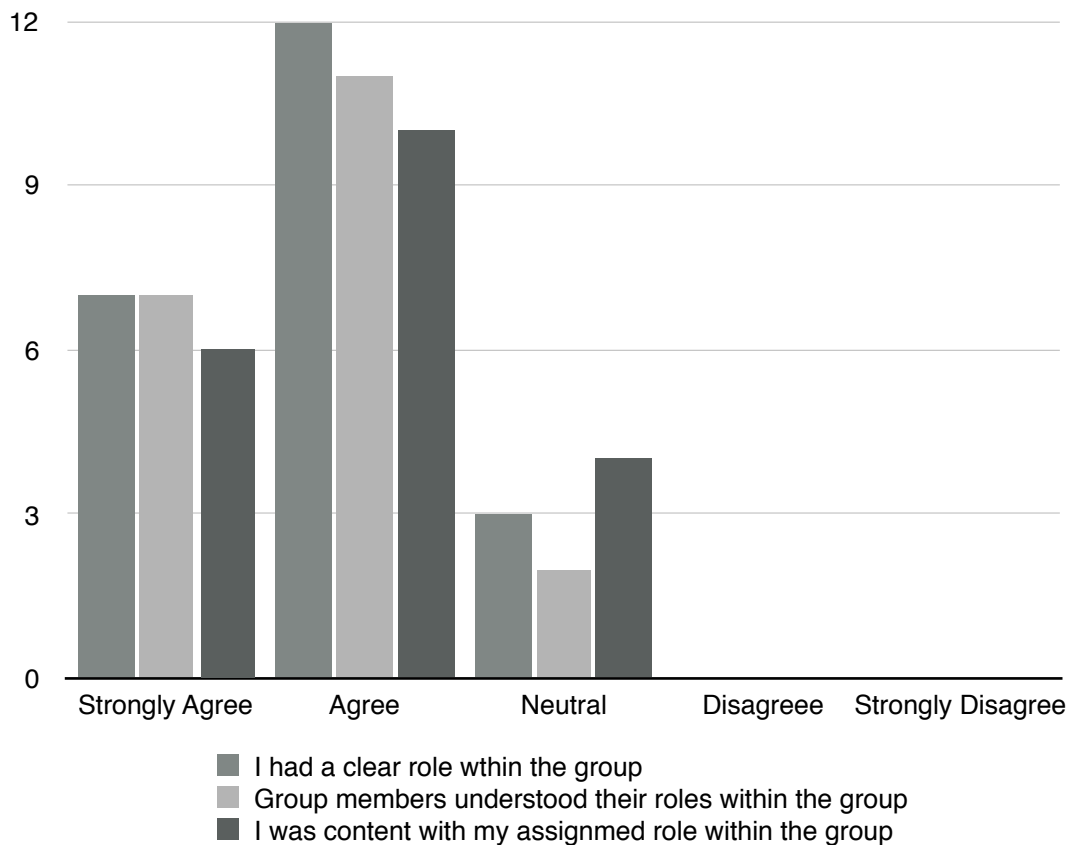
Figure 6.7: Participants perceptions of pre-assignment of groups and roles

6.3.2.3   Participant Interdependence

Participants displayed a high degree of interdependence believing that they needed each other to complete the project and that they were accountable to the group for their contributions and engagement with the project. A number of students indicated that they believed the development of a collaborative portfolio made the completion of the module possible as content that many were less than enthusiastic about, was broken down and manageable, when they worked together as a group. As one student reflected,

'When I first saw my timetable in September of this year, I must admit that I was not very enthusiastic about undertaking the History and Structure of Irish Education Module .... The completion of the iBook was very much a collaborative effort .... we all shared our personal experiences of education with the group, which allowed us to relate our own personal experiences of

education to the history of education. As visible in the iBook, each member

of the group had unique experiences of education and we attempted to

address this as we compiled the iBook'
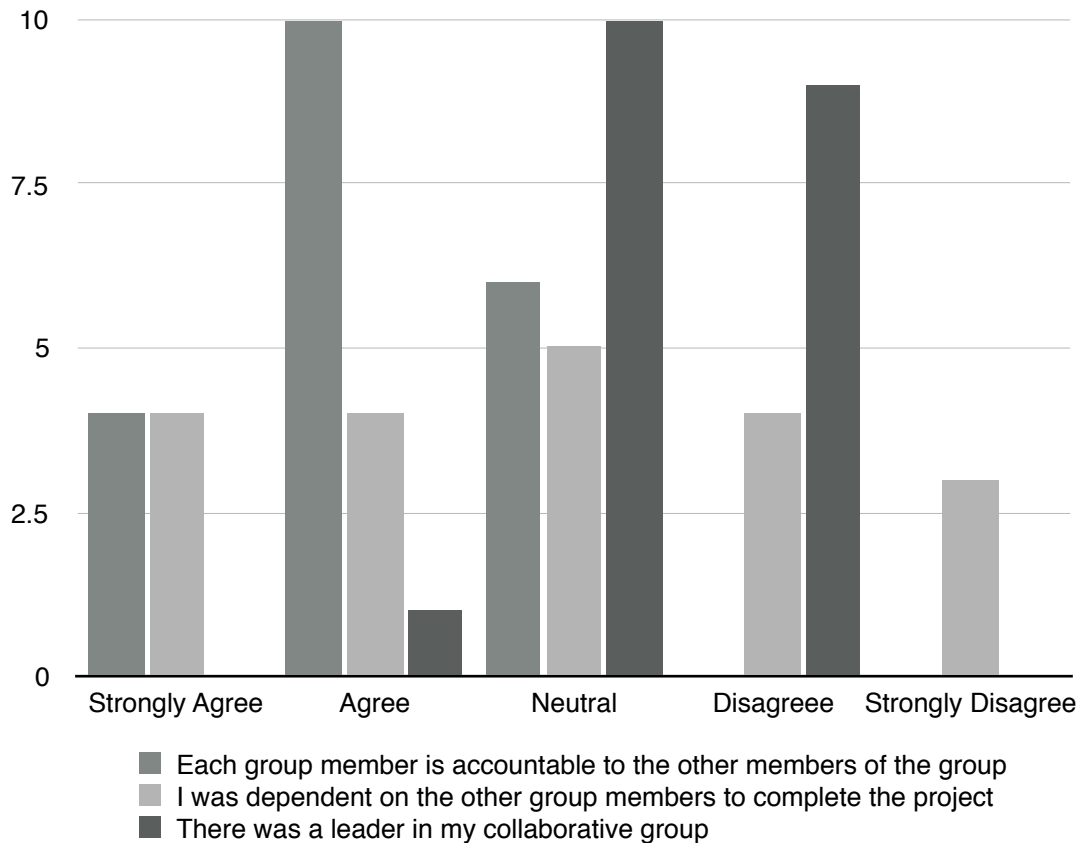
(Student 4, Reflective Submission, 2014)

Figure 6.8: Participants views on the effectiveness of group collaboration

Figure 6.8 indicates that the development of the group was a collaborative entity as no

clear leader emerged in any of the groups. Although it is evident that a participant

considered there to be a group leader within the survey, this instance was not reflected in

any of the other data collected. The StoryXchange process and the construction of their

digital artefact had helped them to work together towards a common purpose.

6.3.2.4   Development of a Shared Vision

A key facet of the development of the intervention was the establishment of 'buy-in' or a

shared vision by participants (Gilbert & Driscoll, 2002). Participants did not believe that

the final completion and subsequent submission of the assigned project motivated them, rather it allows them to explore the topics within the module together and to understand the foundation of the profession that they will be working in where the collaborative ideas that students shared made the content easier to relate to. Indeed when students were asked if the collaborative process, StoryXchange, had made the content of the module more relatable, they indicated that it did.
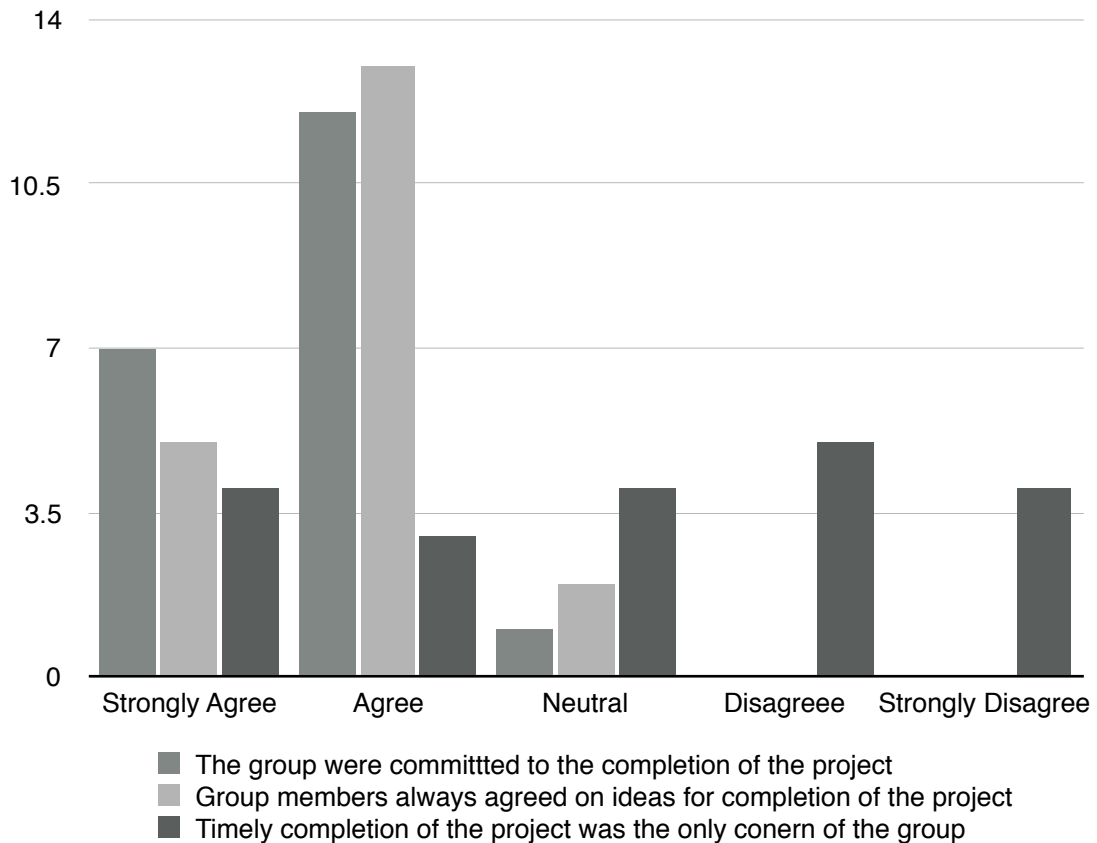

Figure 6.9: Participants views on the development of a shared vision

Data displayed in Figure 6.9 indicates that participants did indeed have a common goal or vision for the completion of the project however it is also clear that timely completion of the project weighed heavier on some participants than on others. The reflective essays submitted by the participants indicated the cause of this tension lay with the chosen technology,

'the Apple computers were at first a challenge to get used to and quite a steep learning curve. I know that many schools are using them now and I think the experience in this module has helped me to prepare for life as a teachers but I definitely think that I had to think more about the technology aspect of the module than the project were working on towards the end of the module.'

(Student 20, Reflective Submission, 2014)

This viewpoint was also noted in throughout all of the focus group sessions where students voiced their frustration at the restrictions placed on access to the Apple suite to complete their projects, as is explored later in this chapter.

6.3.2.5   Social Interaction

A common thread amongst the various responses given by participants was that the collaborative process allowed them to develop relationships within the cohort at what they described as an accelerated rate. They had to get to know each other quite quickly and therefore felt that they had bonded relatively easily. The participants believed that this helped them to resolve issues within the group and to achieve the overall aims of the group.

'I thought that the group work was a massive help in this module. To start with I knew no one in my class so the group work helped us bond and helped us make new friends. As well as that, it made the assignment less daunting because at the start it all seemed very daunting as it involved history which I knew nothing about so if I was to complete the assignment on my own, it would be very difficult. Whenever i was struck I could ask one of my group members and they would help me. In my opinion I believe this collaborative work was one of the biggest benefits of this module and I would strongly recommend to of the future'

(Student 3, Reflective Submission, 2014)

The development of the design model called for the sharing of stories in a group setting. Each student was assigned a level of education to formulate a coherent expression of the groups experiences at each level of education being examined in the module content. The highly scaffolded technology enhanced learning environment (TELE) that was constructed for the participants and this was very much appreciated, as was evident in the reflective essays and general comments section of the questionnaire administered (N=20). Participants who were expressing the groups experience at primary and secondary level education expressed satisfaction with the level of resources available to them. Participants engaged in expressing the groups experiences at third level and fourth level were less satisfied with the resources available to them however were not dissatisfied with the development of their collaborative exploration of the topic. The design model had foreseen this occurrence and had timed the de-scaffolding of materials to coincide with the exploration of third level education by these new entrants to undergraduate education. The groups within the cohort collaboratively engaged in an exploration of these level of education. They made sense of their position in history together and this was reflected in the questionnaire data collected and illustrated in Figure 10.

The StoryXchange process helped them considerably with a number of students indicating that

    'the story telling process [was] very helpful as it gave you a starting block
    for the whole assignment. It guided your throughout the process and made it
    easier at the end to do the video script.'

                         (Student 1, Reflective Submission, 2014)

and

    'through the weeks we built up ideas and thoughts through a storyboarding
    process. I thought this was a good idea and I found it very helpful as in our

groups we were able to put information together, relating history and facts to
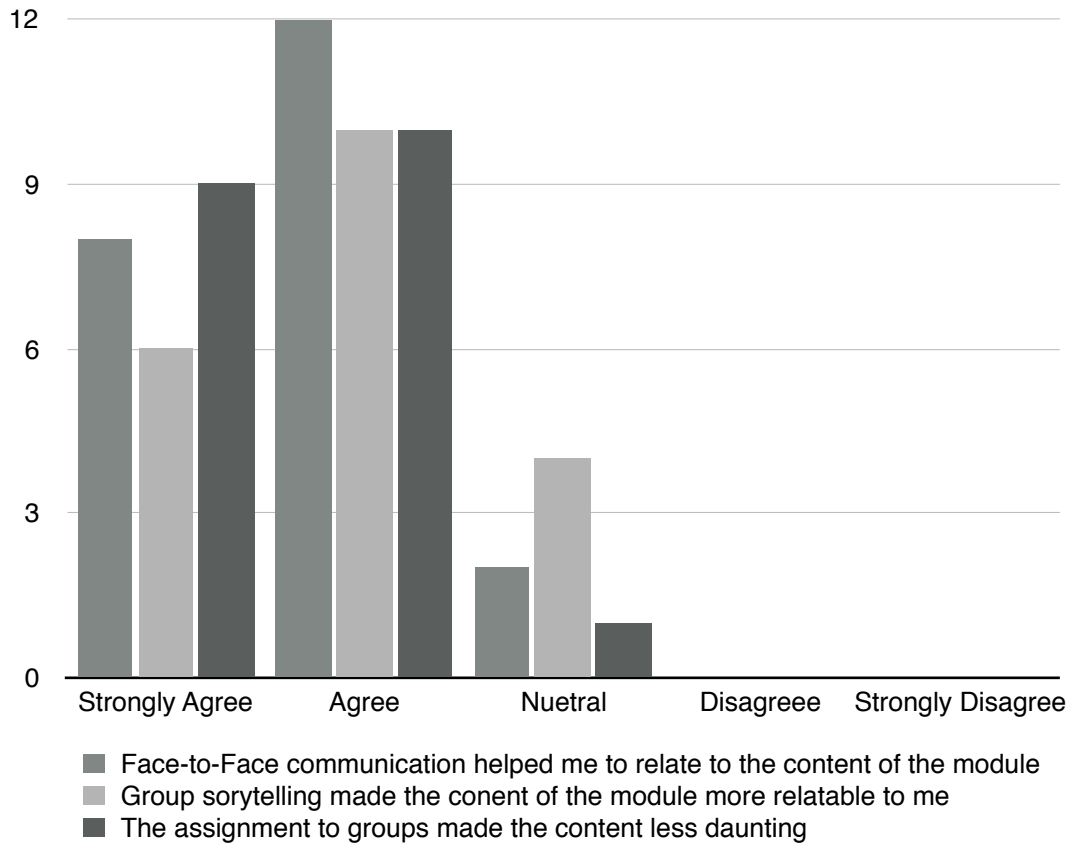
our on experiences'

(Student 17, Focus Group, 2014)

Figure 6.10: Participants views on the Face-2-Face nature of the StoryXchange process and its effectiveness.

When asked if they developed communications outside of the learning environment that were related to the module content and or the assignments the participants indicated that they engaged in limited use of Facebook, Snapchat and Instagram to communicate. From the outset, none of the participants engaged in activities with the VLE at NUI Galway - Blackboard. Participants were encouraged to post questions and or engage in discussion in this forum at numerous points during the design cycle, however not one of the students did so.

There was a generally negative response to the development of a video submission. Participants indicated that this was the least favourable of all activities, with using Apple technology a close second. Additional information supplied by the participants indicated that the lack of mobility of the technology, that is accessing it off-campus, inhibited collaboration. This prompted the researcher to re-examine the rationale for limiting the
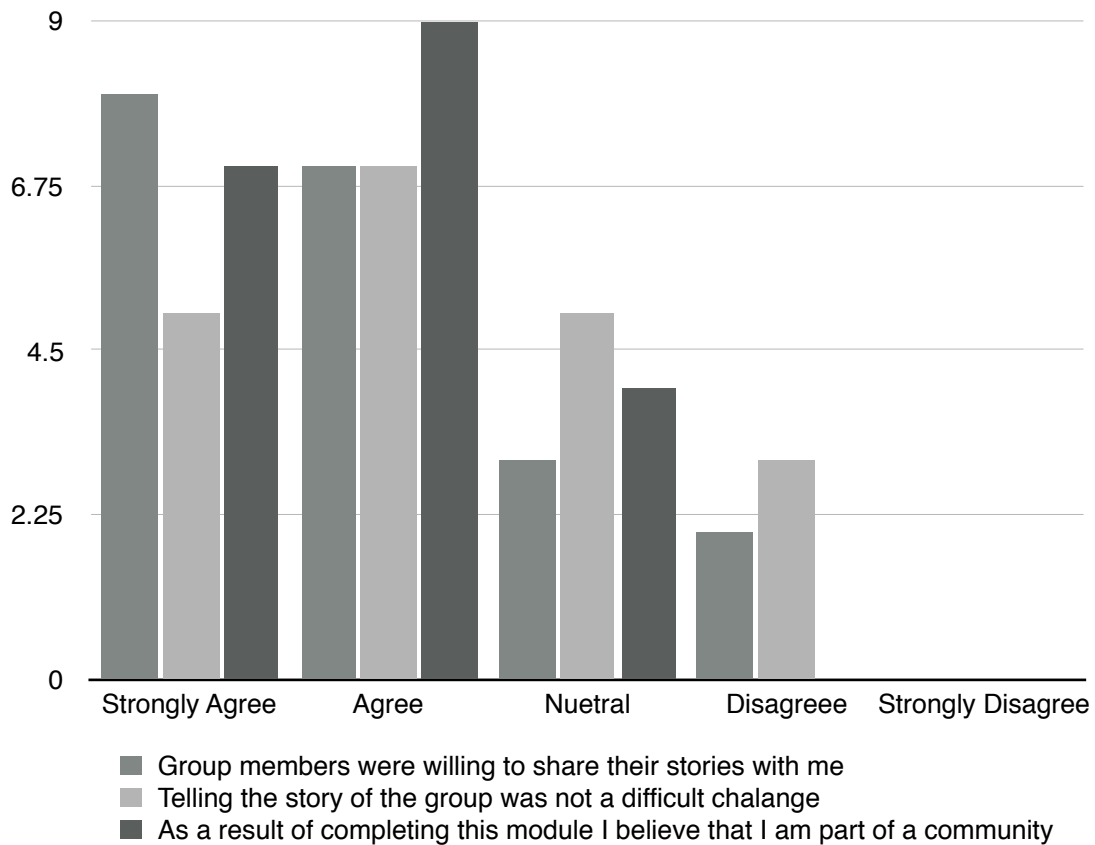

Figure 6.11: Willingness of participants to engage with each other and the effecting this engagement on the cohort.

submission to iBook Author software as explored later in this chapter. As part of the survey participants were asked if they felt that their initial opinion regarding the relevance of the history of education to their future careers had changed as a result of the collaborative process a number of the participants felt that they felt more positively towards the relevance of the topic

6.3.3   Engagement

Core to the rationale for undertaking this research project was to enhance engagement with the history of education in undergraduate initial teacher education. From the outset of the module participants indicated that they felt that the history of education had no personal or professional relevant to them and that it was effectively an imposition upon them - an obstacle to their progression through the module. As Student 11 reflected:

'Before I started this course I knew there was a compulsory history module and to be perfectly honest I wasn't happy about it al all, I thought to myself what a waste of my time, whats that got to do with maths teaching … I also didn't want to know about it as I had no interest in the history of the Irish educational system.'

(Student 11, Reflective Submission, 2014)

However, the collaborative nature of the Face-2-Face interactions on Monday mornings allowed them to engage with each other through the experience and reduced anxiety about engaging in a field of study that many of them had, initially, no desire to engage with. As the weeks progressed these attitudes changed when students began to realise that the very system that they had been a key stakeholder in during their engagement with education right up to their contemporary status as undergraduate ITE participants was important to them (Figure 6.12).

The core collaborative activities that the students engaged in each week within the module allowed them to establish connections with each other that they did not realise existed. StoryXchange helped student to do this as Student 16 reflected:

'I really liked this aspect of the module became not only did I learn about
other people in my group's experience of school but I also got to know the
other people in my group also.'

(Student 16, Reflective Submission, 2014)

This relationship between not just the individual and the content, but rather the individual
and the group members through a collaborative exploration of the content was important
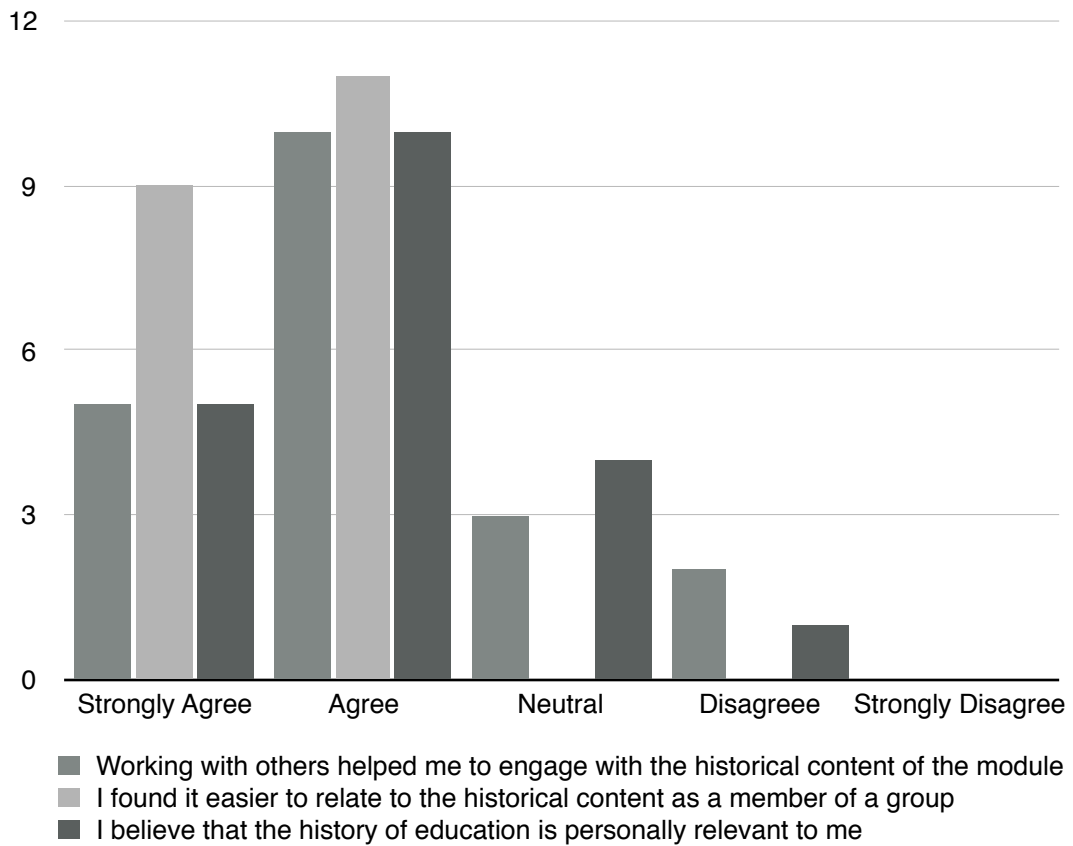to the participants - it had meaning.

Figure 6.12: Participants views on the relevance of the history of education

As discussed in Chapter 3, and explored later in this chapter, the assessment of the
effectiveness of the design intervention on the engagement of participants with the history
of education as a consequence of the design model will be focused on students
participation in four generic forms of learning communities that characterise the status of

undergraduate preservice mathematics teachers - curricular communities, classroom communities, residential communities and student-type communities (Lenning and Ebbers, 1999).

6.3.4 Narrative Construction

Telling the story of other peoples' experiences of an education system similar to their own allowed participants to explore what it means to be a teacher. Establishing an intercultural perspective on the history of education and constructing a collaborative narrative as part of the assessment model encouraged them to do this. As part of this process and as an element of an aligned assessment model, tacit connections rooted in biographical experiences were made by the participants that helped them to realise they were part of an emergent professional community as well as a cohort within the undergraduate student body.

This is evident in this focus group exchange when participants were asked if the felt that the intersubjective connections that they had made helped them to feel part of a professional community:

Student 4: I suppose it did, but you wouldn't realise it.

Student 18: It was kind of unknown to us … but later in the term we felt that we part of something bigger, something that mattered to all of us and it was't just this subject it was because we were talking about stuff that is happening in teaching right now.

(Focus Group Session, 2014)

Much like the tacit relationship that the participants uncovered regarding their shared educational history the participants developed personal networks and links during the

process of making connections between theory and practice by sharing biographical experiences during the narrative construction process that they were engaged in.

The construction of a personal narrative was an extremely unfamiliar concept for the majority of the participants. All were new entrants to undergraduate education, however, they were aware of academic requirements for submission, but not understand them and were apprehensive about making such submissions. As preservice mathematics teachers many of them felt that they should not have to engage in this type of writing and that they came to NUIG to study mathematics, certainly not what they considered to be subject of the Arts.
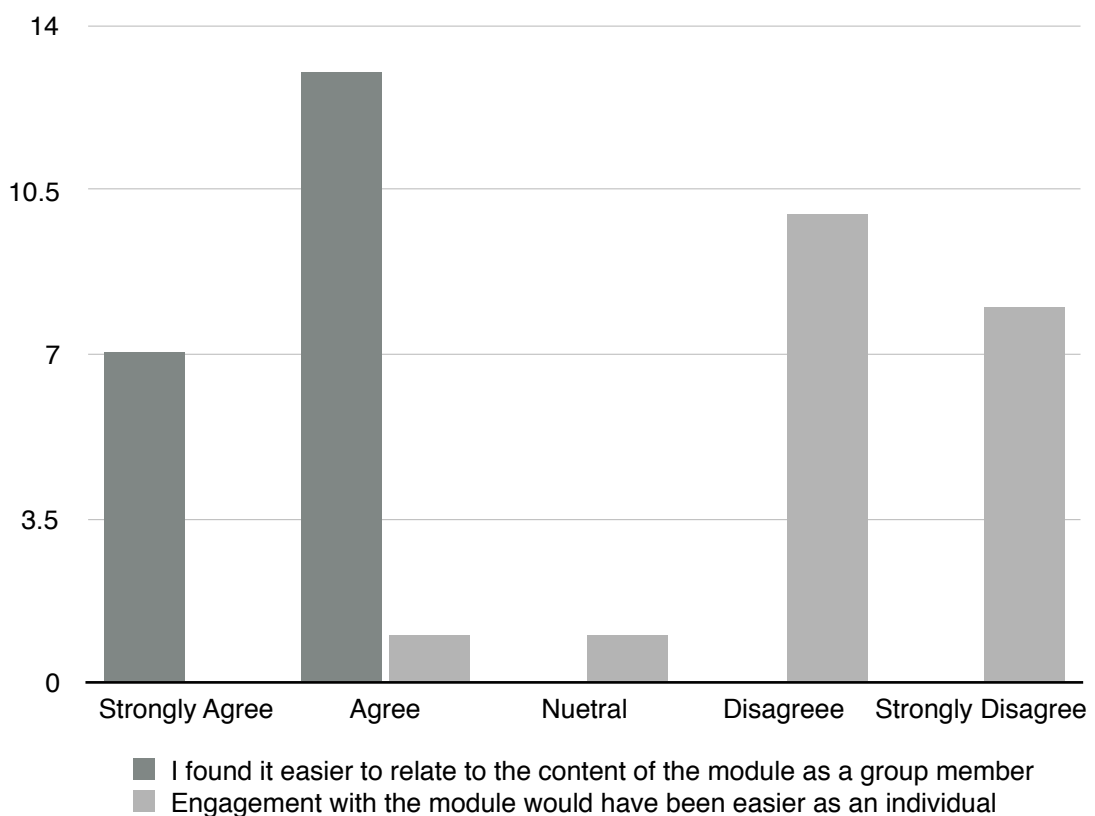

Figure 6.13: Participants views on engagement with content as group members

The initial lesson of the module highlighted to them that their submission while required to be in a narrative format would take the a digital from, a scripted video submission and that this script would be a collaboratively constructed script. Many of the students were

relieved as they had expected the module to require submission similar to the essay style responses expected of them during their time at second level education. When they realised that they would only need to, individually, narrative on behalf of the group at a pre-assigned level of education the entire cohort seemed to relax, a little. Student 6 commented,

'I was very relieved when we were told that our grading system was based on how we can relate what we have learned to our experience of education …. another thing that I liked about the group work is that it took a lot of the reliability away from books so we were engaging more with the module.'

(Student 6, Reflective Submission, 2014)

The StoryXchange templates provided students with a sense of purpose and it was hoped that by introducing these templates on a structured, weekly basis that students would not be overwhelmed by content and assessment, leaving them free to focus on collaboratively constructing their narrative scripts.

In the above table, Table 6.13, it is clear that participants indicated their preference for the collaborative group work that they were engaged in. However, as is displayed there was also an indication that the process my have been easier as an individual. Exploring this further, the researcher found that issues surrounding technology frustrated some of the participants as will be explored further, later in this chapter.

It is evident from the student submissions that the StoryXchange process engaged students with the topics being explored within the module. However it was also evident that particular elements of the history of education were dominating discussion and this, through the observations of the researcher at least, had a fracturing effect on both the

development of group cohesion and learning community development. The researcher returned to his journal to find an entry on this issue:

'in previous years this module had an overt focus on video content within the classroom context allowing for individual engagement with powerful, professional productions focused on one individual or topic. In an effort to continue engagement with multimodal content I continued in this vein. However, this has proved to be a bone of contention for me as both researcher and lecturers. Students are overly focused on the influence that Chuck Feeney has had on the development of our third level system, as a result of an emphasis within class contact in relation to this important contributor to the modern day Irish education system. This is very evident in the student submissions for assessment, particularly from those narrating third level education on behalf of their groups.'

(Researcher Reflective Journal, 2014)

Figure 6.14: Completed StoryXchange Templates

All students used the templates provided and this was encouraging however the scripted video submissions did not all display evidence of collaborative StoryXchange process. A few failed to reference other group members, a couple failed to deal with the topic

assigned to them in any great depth. When the researcher probed the submitted portfolios of these students further there was evidence of the collaborative StoryXchange process (Figure 6.14), the building blocks of the narrative construction process, evident in other submissions the same students had submitted. The researcher began to question what factor within the module had effected these participants to such an extent that they ignored all of the hard work that they had done to that point?

Cross checking the completed module grading rubrics, in particular the aspects of the rubrics that dealt with the use of appropriate technology and technology features, students that had not scored well in this area had not scored well in relating other group members' stories to their own and the opposite was true for those that scored well in the technology section. This observation made the researcher think about whether the technology chosen had impacted upon the quality of the submission by the students and had the restrictive use of what a very new authoring package to all of the participant meant that the threshold of the technology difficult was too high for the student cohort not withstanding issues of accessibility and mobility? An analysis of the the rubric submissions shed further light on what the researcher had suspected.

The number of students that struggled in one of either of the domains within Figure 6.15 had a direct relationship with the number of students responsible for the narration of third and fourth level education within their respective groups. The focus group interviews conducted clarified the situation with students indicating that the difficulty level or threshold level of the technology was not the issue, rather the access to the technology both on site and with regard to asynchronous engagement. The impact of technology on the design model implementation will be explored further later in this chapter.
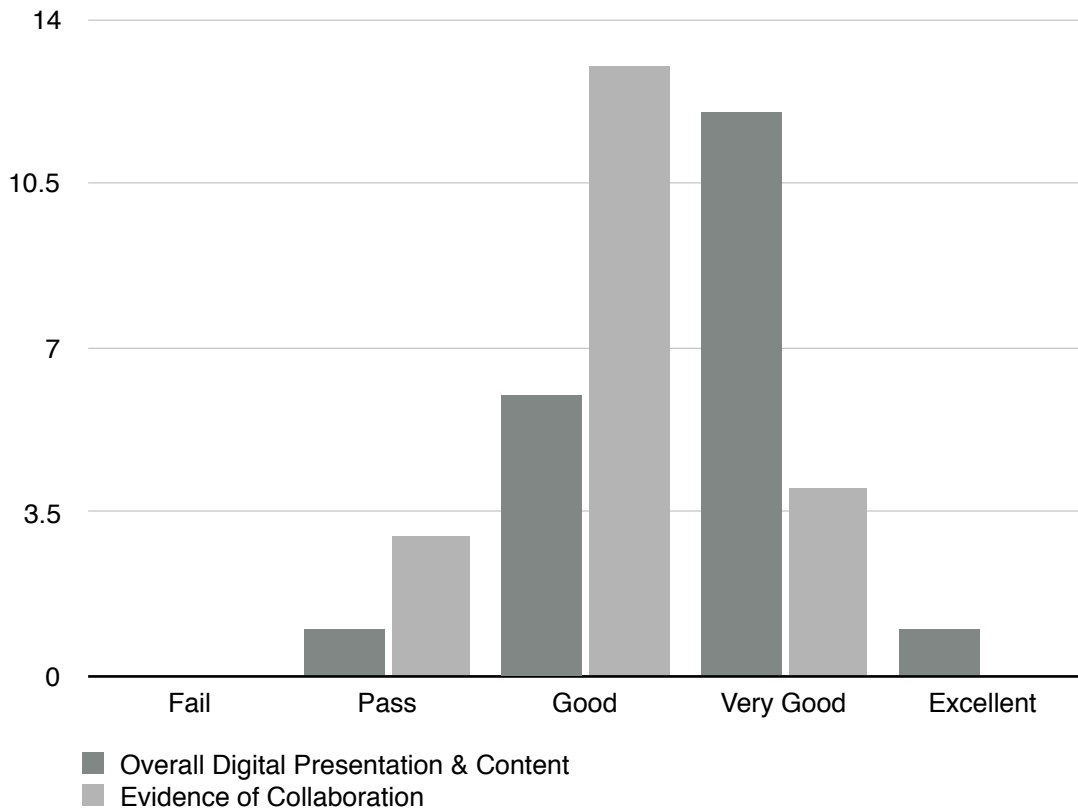
Figure 6.15: Participants performance on digital presentation and evidence of collaboration

6.3.5   Technologies

A key consideration in this initial design cycle was the role of technology and the rate of its advancement in relation to PST's and practitioners' ability to develop self efficacy in relation to the use of technology in this particular teaching and learning environment. Students were required to utilise the iMacs, iPads made available to them and encouraged to use their own mobile technologies. While the students welcomed the opportunity to learn something new, only one student has used an iMac previously. In general, as perviously discussed, the cohort criticised the lack of mobility regarding the software that they were asked to use.

In particular they criticised the selection of iBook Author as it restricted use to those in possession of an iMac, Mac Mini or the Apple suite on campus. All of the participants indicated that they viewed technology as a mobile entity and that to have it fixed or confined reduced its effectiveness. They also saw the use of Apple technology restrictive as they indicated that they did not feel that the platform had penetrated the second level system to any significant degree although they welcomed the opportunity to learn a new skill. As outlined, participants were encouraged to develop their contributions on their own platforms and export them to Apple software. The use of technology played a central role in the intersubjective nature of their relationship with the module content.

The researcher had thought long and hard about limiting the authoring software and hardware to a single platform. Upon entry to the programme the students revealed that only one participant (N=20) had previously used an Apple device in an educational environment prior to enrolment. None of the participants had, had access to a VLE at their secondary school and they did not engage with Blackboard other than to occasionally access course material towards the end of the module and despite their frustration with the platform chosen for the module they indicated that:

> 'It is relevant as we will need to use it in our teaching'; 'It will be useful to know who to use Apple computers'; 'It will introduce how to use this when we are teaching'; 'It has given me experience when I am an in-service teacher';'Technology is used a lot by teachers today. They need to have good I.T. skills'
>
> (Additional Comments from Design Cycle 1 Questionnaire)

In the focus group interviews conducted after the administration of the questionnaire participants were asked if they thought that the technology selected was appropriate, the cohort indicated that they thought it was important. Additional comments to this effect included:

'a different platform would have been easier to get stuck into … it was kind

of a baptism of fire for me. I was sitting in front of them [Apple computer]

thinking 'I have never done this before'

this participant went on to say when asked would he/she change the technology platform

used in the module'

'not the way things are going now. Technology is part of teaching … it is

important to develop these skills … I would have have it more open though

and accessible from outside the college, maybe that might work better but it

might need to be multi-platform or something'

(Focus Group, 2014)
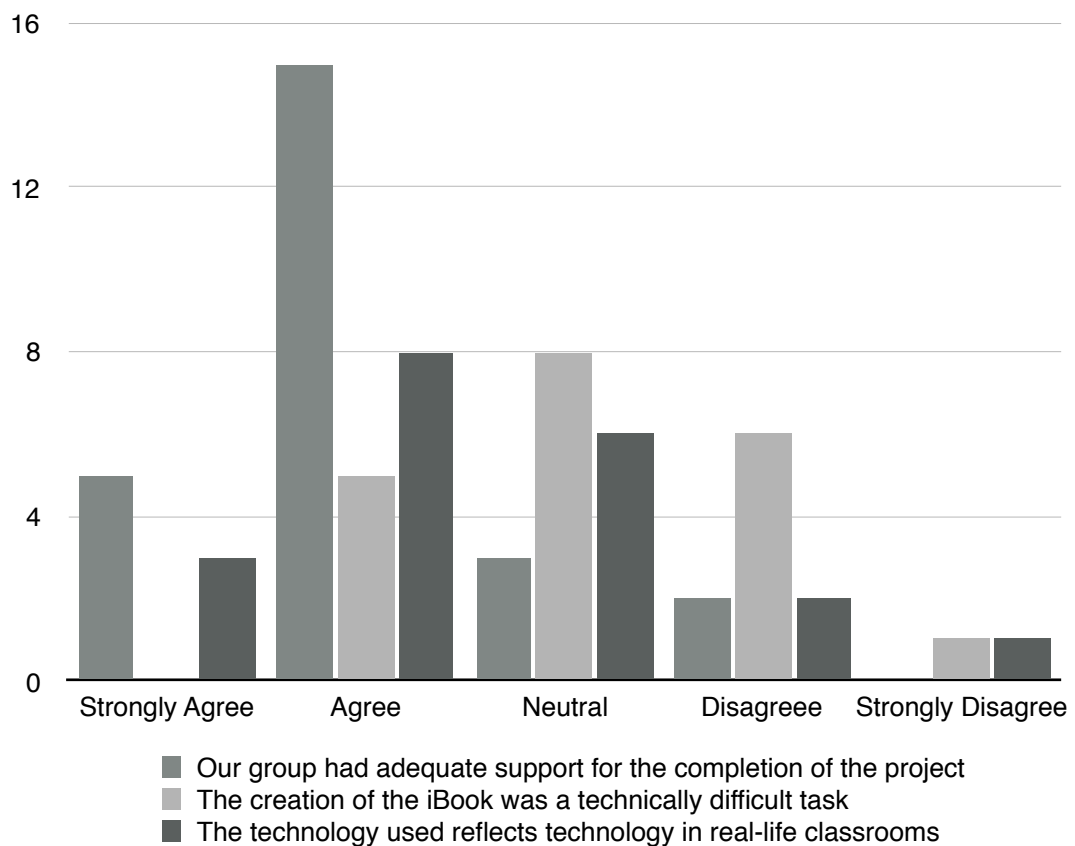
Figure 6.16: Participants views on appropriateness of technology selected and

support provided.

These observations and comments were also evident in the other focus group contributions where frustration at the lack of mobility of the technology surfaced as well as the restriction to a single platform as indicated by this participant:

'it as annoying because if we wanted to go an work on it and the room was taken up then we couldn't do a thing on it [project]. It's not like you could go to a different computer lab or work from home … something more universal would be much better and we could contribute whenever we wanted to or whenever something popped into our heads'
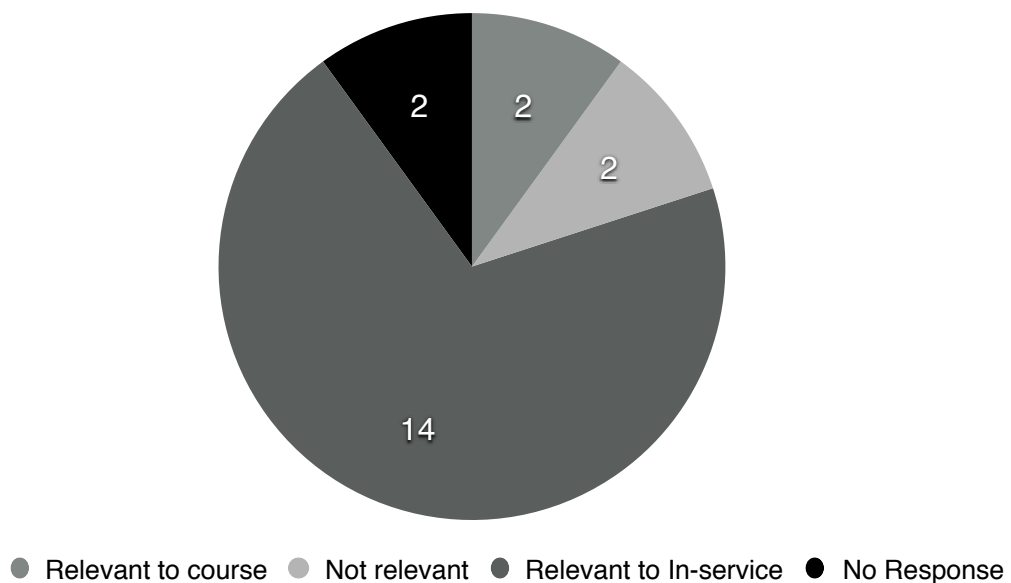
(Focus Group Participant, 2014)

● Relevant to course ● Not relevant ● Relevant to In-service ● No Response

Figure 6.17: Participants views on relevance of technology to in-service practice

It was evident that while the participants were unfamiliar with the technology and they reflected that the restriction caused them significant issue in the completion of their assessment they viewed Apple technology as a staple or necessary skill set to acquire as pre-service mathematic teachers moving towards in-service professional employment.

'I found using the mac computer to be extremely difficult at the beginning as
I was completely new to the system, I would have previously only used
Windows, and found it [mac] frustrating to get familiar with the new layout.
Over the period of time using the mac computers I found myself grasping the
use of the new technology and I feel I am now well able to use it. I am glad
we were given the opportunity to use the mac computers as now I feel much
more comfortable with using them and feel this will benefit m in the future
as Apple devices are becoming much more common, in some schools'

(Student 2, Reflective Submission, 2014)

The importance of the in-service relevance of the technology used in the design model is
clearly important and as is evident in the participant responses(Figure 6.17) this
outweighs any perceived difficulty level associated with developing self-efficacy in that
identified technology. It is also clear however that mobility is also critical to participants
and this should be acknowledged in the development of any future iterations of this
design model.

6.3.5.1   CSCL / VLE

Participants were asked to indicate if they felt that they had adequate resources to
complete the assigned project. This was an overwhelmingly positive response with all
participating students indicating typified by the response of one participant:

'Once we got used to using the iMacs we got though it fast enough. The
entire steps to use iMac on Blackboard helped so much …. Blackboard
helped when doing the script. Everything (and more) was on out Blackboard
page!'

(Student 13, Reflective Submission, 2014)

It became clear to the researcher that the choice of hardware and software was not the core issue rather the limited availability or design restrictions placed upon the students that had become an issue for them.

6.3.5.2   Availability & Accessibility

As discussed, it is evident that issues concerning availability and accessibility had made the students lives harder rather than easier and they had expressed this during their reflective submissions, in response to the questionnaire administered and in dialogue with the researcher. The technology was evidently satisfactory, desirable even to the participants however they were frustrated with the restricted access imposed upon them. This was running counter to the freedom they had been given to engage with the module content on their own terms. This frustration was evident when they were asked,
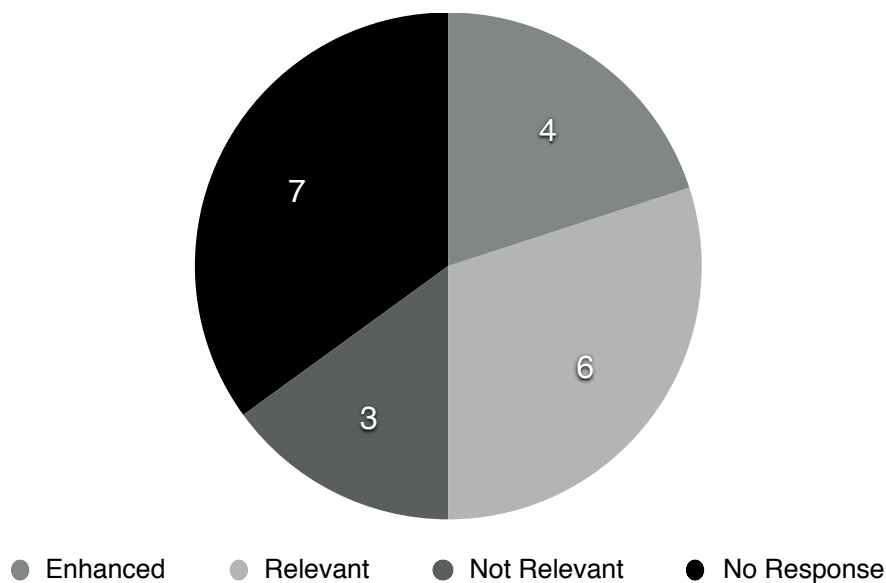

Figure 6.18: Participants views on the degree to which selected technology enhanced engagement with the module.

The researcher suspected that the lack of response to the above question was an expression of frustration in relation to how difficult accessing the technology had been for the participants. The reflective submissions bore this out in the repeated references to a lack of accessibility to the Apple suite on Campus. As perviously highlighted, in focus

group transcripts, participants indicated that mobility access was the overriding issue for them. They wanted to be able to collaborate and contribute off campus, on the move or wherever it suited them. They wanted the technology used to reflect the mobility of access to information that they experience in their own lives.

6.4   Learning Community Formation

As discussed in detail, in Chapters 1, 2 and 3, the formation of learning communities (Lenning & Ebbers, 1999) within undergraduate initial teacher education is a key concern of this research study. The following section of this chapter explores how the implementation of the design model CENTs influenced, impacted or hindered the development of learning communities over the duration of the design model. The findings in relation to the effectiveness of the interdependent variables will be used to examine how learning communities were formed, what sustained them or indeed what frustrated them during the course of the module.

6.4.1   Curricular Community Engagement

The duality of the mathematics subjects that these preservice teachers study and the professional studies subjects that include the history of education formed an interesting dynamic for these students. The historical content of the module was limited to areas that were relevant to the levels of education that participants may have had experience with, were entering into or may be required to participate in as part of a professional career in education. Students in the initial three weeks enjoyed the exploration of primary education and were enthusiastic about linking and contrasting their personal experiences to the historical content. Third level education was explored a little more tentatively, reflecting their own relatively new entrance to undergraduate education. Participants drew on the experience of the researcher as lecturer, family, friends and in particular each other as the collaborative process that they were part of helped them to form a dynamic learning community. Lenning & Ebbers (1999) define a curricular learning community as

'communities consist[ing] of students who are enrolled together in two or more modules that draw on different disciplines'(Lenning & Ebbers, 1999).

Engagement with the mathematics aspect of the programme they had chosen to enrol in, had initially drawn them together. However engagement with the module content would define them as a curricular learning community. There was ample evidence of curricular engagement within the data collected. The collaborative iBook submissions demonstrated that students had come together to explore a topic that most had considered to stand apart from the teaching of mathematics. As Student 12 reflected:

> 'Before, I mean my college course, I didn't know we had to do a history module …. I felt that this module had nothing to do with my maths course. Without a doubt I would not have put this course down on my CAO application if I had just read the module title'
>
> (Student 12, Reflective Submission, 2014)

This short reflection from Student 12 was typical of the overall cohort. The duality of their position within the programme as pre-service mathematics teachers and pre-service educational professionals was obviously causing tension. However as Student 12 went on to say:

> '…. I have now completed the module, I look back on it and realise just how relevant it was to my course. This module helped me to understand where the Irish Education [system] came from and how this will effect development in the Irish Education system …. I found this module quite interesting and more importantly relevant to my course.'
>
> (Student 12, Reflective Submission, 2014)

It is clear that a curricular learning community was established within the cohort as a result of the design intervention. The highly scaffolded nature of the initial sessions created a sense of familiarity for the participants in relation to their recent second level experiences. In particular, the exploration of primary and secondary education. The removal of the scaffolding or the de-scaffolding during their exploration of the development of the third level education sector in Ireland, mirroring their own uncertainty and insecurities as new entrants to third level education was less disruptive to their curricular engagement than the researcher though it might have been. The bonding process that the students had engaged with as part of the development of a curricular learning community, founded upon their engagement with the module content and the construction of their collaborative stories within the StoryXchange process, had developed a sense of camaraderie, so when they were faced with exploring a level of education that they themselves, were just entering and subsequently fourth level education, they turned inward to each other to explore it. They looked within their established, curricular learning community and the collaborative process that they were engaged in for answers.

During a focus group session participants indicated that they would have shied away from exploring third and fourth level eduction,

> 'I think without the assignment of roles in our groups that everybody would
> have went away from these topics'

> (Focus Group Participant, 2014)

However as students progressed through the module they gained confidence in their own abilities and in each other to act as a learning community - a curricular learning community that had forming through their designed collaborative engagement with the module.

6.4.2   Student-Type Learning Community Engagement

As delineated in Chapter 3, Lenning & Ebbers (1999) also define a student-type learning community as being 'this distinct learning community grouping defines the group as having a common purpose or goal. A shared interest and reason for enrolling in a programme or co-enrolling in a number of modules.' (Lenning & Ebbers, 1999).

The homogenous nature of this participating cohort was more than evident in their initial reluctance to engage with the topics of second level and, to a degree, third level education, however this also acted as the very basis from which similarities could be uncovered within their educational histories. Evident in the reflective essays submitted, students were apprehensive and unhappy about having to study the history of education. Indeed in the initial session, Lesson 1, the research asked for a show of hands in response to the question,

> "How many of you actually want to study this topic?"

All nineteen students present indicated that they would have avoided the module if at all possible and indicated that the only reason they were taking the module was because it was non-elective. This commonality defined them as a student-type learning community with a common purpose. It also provided them with a reason to come together as a group to explore the content through the StoryExchange process. A comment from a reflective submission by Student 9 typified the viewpoint of the cohort,

> 'When I first found out I'd be studying the history of education I was a bit
> apprehensive. I didn't see why it would be so important to study this if I was
> to become a maths teacher'

> (Student 9, Reflective Submission, 2014)

and another participating student voicing an even stronger initial position,

'I personally, at the start, was more interested in learning about Mathematics

and Physics and I didn't feel that it would be necessary to learn about the

education system in roar to be a mathematics teacher. Hated that the module

was scheduled for 9.00am on Monday mornings'

(Student 17, Reflective Submission, 2014)

However as participants began to complete the StoryXchange templates and engage with

the module content, in particular templates No.1 and No.2 (Appendix 4), regarding

primary and secondary educational experiences, they began to realise that they had a

significant amount of shared biographical history even though they had never met before

enrolling in the programme. As one participant commented as part of the focus group

session,

'It [StoryXchange] allowed us to discuss the content and create a greater

understanding by relating it to each others experiences.'

(Focus Group Participant, 2014)

Their exploration of the history of education, second level education in particular, had

brought them together as new entrants to undergraduate education and their exploration

of the possibilities that the future engagement with education as part of an identifiable

third level learning community allowed them to begin to challenge preconceptions that

they had regarding the teaching profession and the lives of teachers through the

construction of their emerging narratives.

All but one participant indicated that their engagement with the module had either

changed their perception of the teaching profession or that they felt that past events

covered in the module and explored by them were relevant to their position as a member

of a preservice teaching community. Engagement with the module, as a design

intervention, was positive and productive in the classroom setting where student groups

through the completion of the StoryXchange templates developed a sense community or common purpose both at a micro level in the completion of the tasks at hand on Monday mornings or at a more macro level, their discussions around in-service practice and how it might effect them as members of the teaching community. These students through their participation in the designed learning environment came to see each other as having a common future, even if that future was uncertain - a student-type learning community (Lenning & Ebbers, 1999).

6.4.3   Situational Community Engagement

A central pillar of the design model is the collaborative exploration of the module content to enhance engagement with the history of education. Embedded within that model was the concept of each participant having a dynamic historical connection with the history of education or a tacit remnant of engagement, as explored in Chapter 3 and Chapter 5. The StoryXchange process was designed to expose and elucidate these experiences in order for discussion and further exploration, rooted in historical fact, to occur. The designed environment was developed to facilitate what a recognised description of such a learning community might look like, as being 'a community of learners where the classroom or situation is the axis around which all interaction is based. In this environment co-operation and group activities are shaped by pedagogical direction' (Lenning & Ebbers, 1999). The collaborative pedagogical environment aimed to place Face-2-Face communication to the fore of these explorations though the storyboarding processes thus making the classroom the 'locus of community building' (Lenning & Ebbers, 1999) within the design model.

Face-2-Face engagement with content, the process narrative construction, the submitted artefact and the investment of time were all evident for the duration of the module. This was particularly evident when students engaged in their exploration of third level education the process of their collaborative narrative construction. Participants stated that the collaborative StoryXchange process that they were engaged in helped them to

develop an interpersonal appreciation of each others educational history as it was the most relevant to their present situation - a situation common to all of them.

> '…. it allowed me to talk to them …. it helped a lot as all our experiences were different and it made me think why.'

(Student 3, Reflective Submission, 2014

During a focus group interaction a member of one of the participating groups commented on the sense of community within the group as part of the classroom setting, emphasising the importance of the Face-2-Face contact to the participants,

> '…. We all have this in common, We all have this course in common. We all have the same pressures in common. You know, we are all in a tight bind, say this week, we all know exactly how each other is feeling like, straight away, you know.'

(Focus Group Session, 2014)

This expression of closeness epitomised the nature of the classroom learning community that had been established during the Face-2-Face meetings and lies at the heart of the relative success of the design intervention. Students reaffirmed their belief that the StoryXchange process was central to the establishment of this relationship, rooted in a common educational history that they uncovered in their exploration of the module content - particularly the history of third level education.

The de-scaffolding process, the reduction in the amount of supporting material placed at the participants disposal, at the point of exploration of third level education triggered a response from the participants. They turned towards an interpersonal exploration of a relatively unknown aspect of education - fourth level (Detailed in Chapter 2). This was

underpinned by a willingness to share stories and uncertainties about the future of education and more importantly uncertainties about the future of their positions and engagement with education as in-service professionals. It is clear from the participant submissions of the students that the development of this Face-2-Face classroom engagement helped foster a sense of community within the cohort as they looked towards their future relationship with education.

The researcher reflected at the time in his journal,

> 'It is interesting to note at this point that the groups began to direct the orientation of the room. They were also beginning to talk about the future of teaching in terms of 'we' and as 'teachers'. This was coinciding with a focus on the exploration of third level education and in particular teacher education. I believe that the examination of this sector in tandem with the de-scaffolding process within the design model has helped them to become more of an interpersonal community, at least in the classroom setting.'

> (Researchers Reflective Journal, 2014)

The development of this situational learning community, established within the pedagogically aligned design model, was dependent upon the development of the previous two learning communities established as they moved through their own histories of education. Through the StoryXchange process the groups had begun to establish relationships that developed into learning communities and at the point of their examination of the history of third level education they were used to the format of the process and comfortable within the third level environment that they were exploring together. The designed learning environment had nurtured this engagement through the collaborative narrative construction process StoryXchange forming a situational learning community that was becoming a cohesive and self directing entity.

6.4.4   Residential Learning Community Engagement

Many students involved in the design intervention were either living on campus or in close proximity to the campus. As the weeks progressed and the participants aired stories about their educational history they began to realise that they had a significant amount of history in common and bonded quite quickly. While the classroom or situational learning community engagement was evident and highly valued by the participants for development and discussion, their contribution to the module increased as the weeks progressed, they were becoming frustrated by the lack of flexibility within the environment for them to engage asynchronously.

Lenning & Ebbers (1999) establish a residential learning community as 'learning communities that provide opportunities to engage in learning cones and activity away from the physical constraints of the classroom, usually when living in close proximity to one another.' (Lenning & Ebbers, 1999, p.15)

As explored in Chapter 3 and Chapter 5, this research contends that such engagement is not confined to the proximity of residence rather it is, in contemporary teaching and learning environments, extended beyond Face-2-Face contact to asynchronous engagement through technology enhanced communications such as social media and mobile technologies. The researcher through the initial design model, CENTs, had envisioned that participants, having established the previous learning communities, would engage in off-site collaboration in order to successfully complete the collaborative aspects of their academic obligations to the successful completion of the module and that the limited availability of the classroom context outside of the Monday morning sessions may encourage them to engage with each other in efforts to maximise their limited time with the single platform technology.

However, students cited the lack of access to the Apple technology both on campus and off site as restrictive and regrettable indicating that they had more to give. As Student 15 reflected,

'The restriction of accessibility and the fact that it could only be done in one room of Mac computers mean we couldn't work from home and email each other edited versions or add-ons'

(Student 15, Reflective Submission, 2014)

The impact of this restriction was noted during the focus group session where Student 8 commented,

'…. we did our individual bits but it was hard to find time together in the Apple Suite ….'

(Focus Group Session, 2014)

with another participant stating,

'I found myself getting frustrated so I had to come in extra time and sit on the computers when it was free ….'

(Focus Group Session, 2014)

Student 10 echoed this frustration,

'…. time was an issue. If I could carry that home and finish it and perfect it …. but no matter how we finish this it wont be to the standard that we would like [it to be]'

(Student 10, Reflective Submission, 2014)

It became clear to the researcher that limiting the technology, limited the degree to which students felt ownership over the process that they were engaged in and that the design model's initial intention of entourage students to come together because of the limited nature of the learning environment had not reflected what the participants viewed

technology enhanced learning environments to represent. Participants articulated that the in-service environment was not one of a single platform from their perspective rather it was a multiple of environments with multiple platforms or none, in multiple schools. As student 16 articulated:

> 'When it came to the Macs, I didn't enjoy using them. I found it time consuming and frustrating … although I didn't enjoy using them I do see why it would benefit us … we as pre-service teachers are going to be taken out of our comfort zone especially on placement. Perhaps we will be placed into very old schools that don't have any [tech] resources that we are used to. We will need to be able to take whats given to us and try to adapt'

(Student 16, Reflective Submission, 2014)
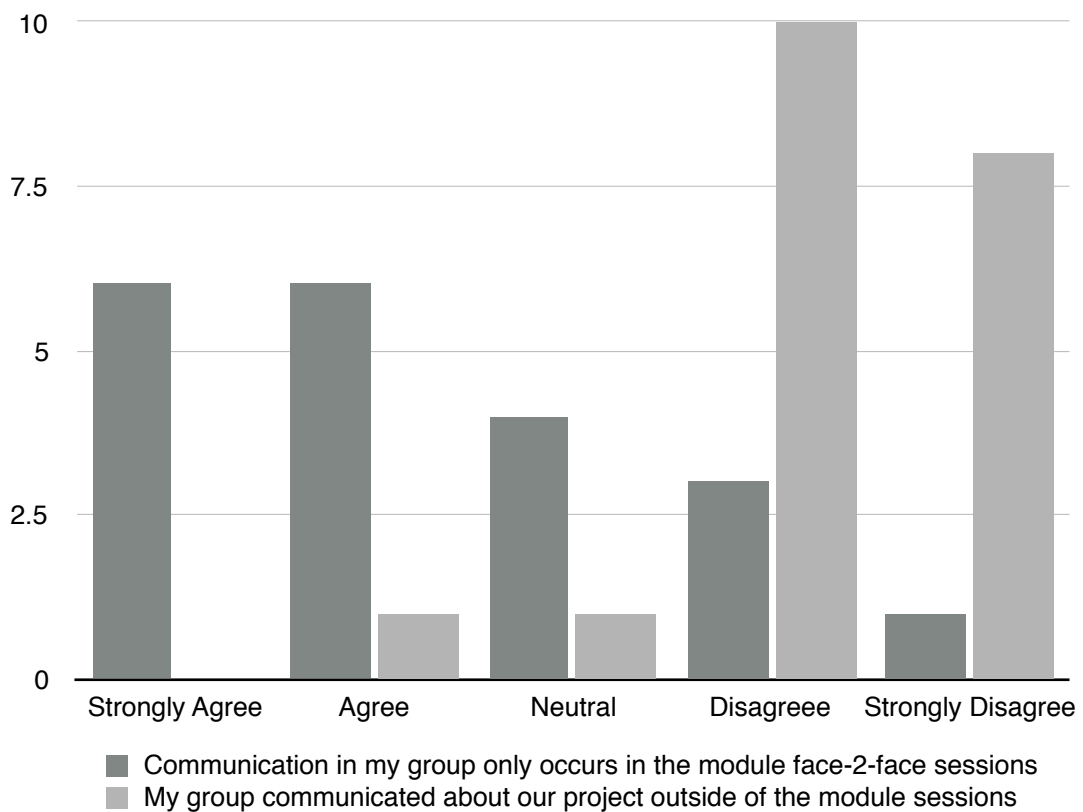
Figure 6.19: Participants views on instances of synchronous and asynchronous engagement regarding module content

As Figure 6.19 indicates, some out of class activities such as informal Face-2-Face meetings in each others accommodation, on campus, the college bar occurred however they were described in the focus group sessions as, 'rare'; 'infrequent' or 'unplanned' (Focus Group Session, 2014). Minor engagements on social media were mentioned by participants however instances of communication regarding the module content, each other or stakeholders in education beyond the university were not reported or evident in the data collected.

This limited engagement with each other beyond the successful Face-2-Face engagements that sequentially developed - curricular; student-type; and situational learning communities; indicates that the development of a residential learning community (Lenning & Ebbers, 1999) was frustrated within the design model by two particular design considerations. Firstly the physical limitations of accessibility of technology on campus and secondly the restrictions that access to the relevant software placed on the development of the collaborative digital artefact.

6.5   Transition - An emergent design variable

In design-based research (DBR) not all variables of interest are known in advance, indeed some emerge in the application of the design. (Barab, 2006). The original design of the intervention identified four key interdependent variables, CENTs. However the flexible and real-world nature of DBR allowed for the emergence of an additional variable. This variable also displayed an interdependence on the original four interdependent variables:

- Transition into undergraduate education and towards professionalism

The very first meeting with the participants was their very first formal engagement with tertiary level education and they did not know each other. Engaging in the module accelerated the process of developing networks and friendships focusing them quite

quickly on the content and the group work they were assigned the story building process and the biographical sharing. The highly scaffolded nature of the intervention was welcomed as it provided continuity with what they had experienced at second level helping them to settle into undergraduate education. However, as the weeks progresses the participants began to realise that they were engaged in a process of professional development. This is particularly evident in a comment during the focus group session:

'Like you need to have an insight into the history of education, like you know for topics that come up in general conversation [in the staffroom]. it was only then I was like, oh my God, I am going to have to be talking about this as a …. [teacher/professional]'

(Focus Group Session, 2014)

The development of the first three learning communities, incrementally developed in accordance with the level of education students were collaboratively exploring, formed the basis upon which students could develop bonds and friendships that would help them engage with each other and potentially the wider, more established and contemporaneously engaged education community and a consequence of their exploration of fourth level education within the StoryXchange process (Figure 20). As suggested in Chapter 3 and explored in Chapter 5, it is now evident in the reported analysis of data gathered, that a sequential development of Lenning & Ebbers (1999) established this cohort as a community of learners in transition. Furthermore it is also clear that the degree to which students make the transition from second level education into undergraduate ITE and towards professional practice is predicated upon the development of a residential learning community where modern asynchronous engagement through mobility of technology and social media are integrated into any designed learning environment enabling participants to engage with each other and the wider education community and founded upon common historical biographical experiences - illustrated in Figure 6.20. This structured development of all four learning communities would enable participants to transition towards engagement with professional practice, as is established
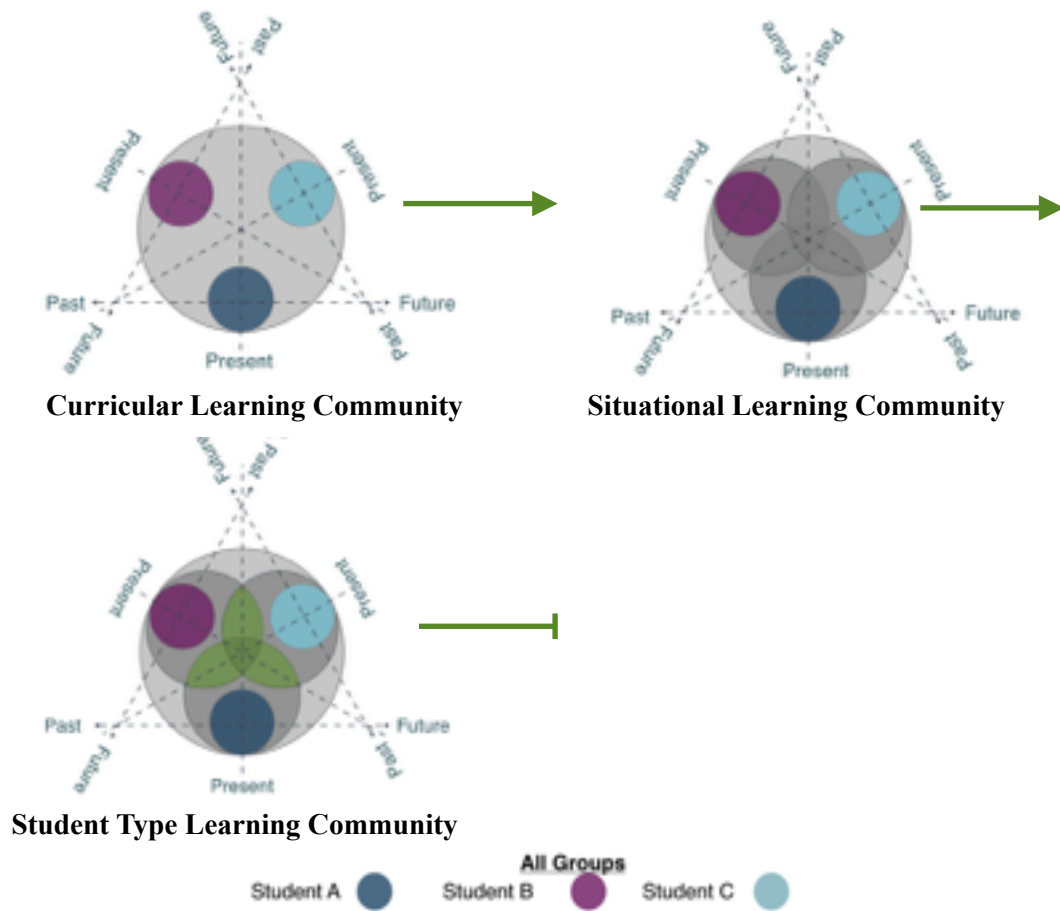
Curricular Learning Community   **Situational Learning Community**

Student Type Learning Community

Figure 6.20: Sequentially established learning communities in design-cycle 1

in in-service learning networks such as are present within the PDST, NCCA learning networks in the Republic of Ireland beyond the designed environment.

6.6   Design Phase - Refinement

This component of the design phase, of this design-based research study, will synthesise the findings of the researchers examination of the effectiveness of the designed intervention, CENTs, and the analysis of the impact those interdependent variables had on the structured development of the Lenning & Ebbers' (1999) four identified learning communities. In concert with this synthesis, a reflection on the conceptual framework the founds the design model will be instigate with a combined aim of refining the design

model in line with the findings of the delineated analysis phase, above and with the aim of helping the model facilitate the development of all four communities.

6.6.1 Transition

As identified in the analysis of the initial design cycle data, Transition emerged as an additional design variable. Participants displayed a shift in the development of their progression from being individual second level learners towards becoming a collaborative community of pre-professional mathematics teachers. The emergence of this variable within the design framework prompted the researcher to return to the literature and investigate this further with a view to somehow creating a method of assessing to what degree this transition was occurring. Informed by the literature and data from the initial design cycle the researcher realised that the sub-themes of the engagement data had revealed this issue though the degree of integration into the four generic learning communities that educators participate in - highlighted in Figure 6.20 above.

A key indicator of such integration within the design model was viewed by the researcher to be the development of critical thinking skills evident in the submission as a fuller integration into all strands of the learning communities (Shaprin & Levine, 1999). The grading rubrics appeared to be the logical place to put a measure of this engagement where it would be explicit to the participants and identifiable by the researcher. The researcher then investigated attempts by others to promote the development of learning communities within initial teacher education and found a dearth of work in this area. Identifiable, however were projects that extended beyond the transitional learning environment aiding the transition from dependant learning to interdependent collaborative learning (Tinto & Russo, 1994).

In particular the development of residential learning communities or in the case of this design model residential learning engagement arenas, tends to be associated with higher instances of social and peer exchanges, increased rated of persistence and the

development of key critical thinking skills, (Blimling, 1993; Terezinzi, Pascarella & Blimling, 1994). With this in mind the researcher refined the module, in consultation with the School of Education Staff at NUIG to promote the development of participation in Lenning & Ebber's four generic learning community arenas (Lenning & Ebber, 1999).

Considering the analysis of the submitted artefacts and the breakdown of interpersonal referencing in a number of submissions the researcher felt that increasing the mobility of the content, artefact, software etc would encourage the development of residential learning engagement and further underpin the status of the participant as new entrant to undergraduate education and as pre-service mathematics teachers and that this would lead to a greater interpersonal exploration of the topics and consequently more opportunities to explore the intercultural nature of their position in their educational journeys.

The most significant change to the design model, as a result of this reflection on the data, was to change the final artefact and the digital platform that was required for use. This change reflects not only the emergence of the new design variable Transition but also the analysis of the data collected in Design Cycle 1. After revising the literature review in Chapter 3 and considering the analysis of data collected from Design Cycle 1 the researcher felt that while the residential learning community engagement was a physical entity, online or social media communications had a significant role to play in the development of the participant engagement levels with the content and the establishment of the identified learning communities, an emphasis should now be placed on the degree to which this process helps participants transition from second level to undergraduate education and towards practice - as an emergent community of practice (Lave & Wenger, 1991).The title of the intervention was therefore renamed as:

Transition with others through a Collaborative Engagement with the history

of education in a Narrative digital format supported by educational

Technologies

or

'Give Your TWO-CENTs'

6.6.2   Collaboration

The StoryXchange process was perhaps the most successful area of the initial design. the participants cited it as important, helpful and ultimately the source of all of the positive aspects of the module that they experienced. The researcher was reluctant therefore to alter very much in this area. There were however some minor issues that required attention regarding the final submitted artefact and displaying evidence of collaboration at that point, although collaboration was evident in the portfolios submitted.

The grading rubric had clearly stated that referring to the experience of others in the submission was a requirement, however that had not prompted all of the students to engage in that aspect of the task when submitting the final scripted video submission. As identified in the analysis of the data, the lack of accessibility, mobility and the single platform approach to technology taken by the researcher had negatively impacted on this aspect of the design model and frustrated the participating student teachers.

Small improvements to the StoryXchange templates in the form of a physical enlargement and lamination of the templates for group work were made, however the structure of the process remained and the timing of the application would remain in line with the changes of topic and levels of education per the original design model, however the development of a collaborative website would now become the focus of the submitted artefact as was the collective preference for mobility of access and contribution to the module assessment requirements. As a Design Cycle 1, focus group participant commented:

> 'teachers that I know have their own website and blogs. I think this might be something to think about for students who will be in our shoes next year. It's definitely something that I would want to learn about and it wouldn't matter what technology was used as all technology could access it … even from home or on the bus if I wanted to.'

<div align="right">(Focus Group Session, 2014)</div>

This was the general consensus among the participating cohort and reflected the frustration that they had expressed regarding the restrictions placed on technology and how they saw where improvements could be made.

In light of this, students would be expected to create and populate a website, a page per student, and as a group and link each others experiences both internally within the website and externally through the internet. It was envisaged by the researcher that through the StoryXchange process participants would gradually engage in all four generic learning communities and enhance the residential learning engagement of their development as an emergent undergraduate community of practice and by connecting to a space beyond the CSCL of the physical learning environment this would become an extension of the collaborative element of the design model. The collaborative StoryXchange process would now penetrate the entire design model and the students completed artefact. In terms of the development of skill sets that were relevant and valued by pre-service teachers the students in Design Cycle 1 had indicated that they placed a high value on being able to develop a website or webpage and more importantly the mobility that a non-denominational digital platform would grant them.

6.6.3   Engagement

The relatively short period of time, eleven weeks, of the structured module meant that while participants were not overstretched they were never very far away from completing their submission. Students valued the week-by-week building up of their portfolios and they expressed their confidence increased as the weeks progressed. This was particularly evident in the researchers reflective journal:

'… today the students were quite vocal and during discussions were willing

to challenge each other in a constructive and respectful manner. While not all

students engaged in this class activity it was notable that small group

discussion were lively and rooted in the material covered to date [week 6 of

12]'

(Researcher Reflective Journal, 2014)

This observation was reflected of the reflective submissions of the participants where they indicated that as the weeks progressed and the became familiar with the process as well as engaging in research pertinent to their position at third level education that they felt more confident in engaging in discussion with each other. As Student 14 reflected:

'initially there was a heavy content of history but it was relayed in a

discussion and interesting manner. As the weeks went on, i can honestly

admit that I was more engaged and I have developed a new found

appreciation for the progression of education and society … I think the

others have too'

(Student 14, Reflective Submission, 2014)

The main, emergent issue for students was that the choice of technology limited their engagement beyond the physical walls of the Apple Suite on the NUIG campus. As explored, the issue of mobility was cited as restrictive and that getting to grips with the new technology perhaps stifled their engagement with the module, the History and Structure of the Irish Education System. The history of education, as the participants in Design Cycle 1 expressed, was common to all of their personal histories and to their future in the teaching profession. This had brought them together when dealing with primary and secondary level education. The participants expressed frustration at the point of exploration in the design cycle at third level and the concomitant problem of trying to refine their digital submissions. The researcher felt that placing the digital artefact in a space accessible by all, at all times would deal with issues raised by participant in the data and entice the development of an in-depth engagement all sectors of education as

delineated by the module and consequently with all four generic learning communities (Lenning & Ebbers, 1999). It was envisioned that they would therefore develop a greater sense of their position in both third level education and where they might see themselves in their future engagement with education as in-service teachers.

6.6.3.1 Additional Requirements

It was notable that the discussion forum/board that had been set up by the researcher on the VLE, Blackboard, had not been used by any of the participants throughout the course of the initial intervention, indicating that they discussed the module in informal settings and this was confirmed by the data. The researcher felt that at the point where de-scaffolding was taking place participants needed a support mechanism that reflected the nature of their personal interaction with each other, a support rooted in the residential learning space or the domain of participants. For this reason the researcher set up a Twitter Account to encourage and keep participants engaged.

6.6.3.2 Presentation of Content - Curricular Community

It was felt by the researcher that the amount of historical content and the variance of historical content across the participating cohort was adequate in the initial design phase. However, given the individual participants submissions and a tendencies to focus on singular topics the researcher felt that a more in-depth discussion regarding the evolution of policy in relation to contemporary in-service practice of teachers to the history of education may enhance further the aspects of student 'buy-in' to the process.

The researcher also felt that at the point of examination of both third and fourth level education, was where students felt the most overwhelmed and presented the most questions. In an effort to facilitate an increase in Face-2-Face engagement the researcher decided that a 'Flipped Classroom' approach would be adopted. For this, the researcher would create a suite of video lectures for the participants to review prior to engaging in the sessions relevant to these topics, again further adding to the supports in place for

participants and to the supports in place for participants and allowing them to engage, collaboratively with each other while at the same time begin to refine the technology supported constructed artefact that they would be engaging with up to and beyond that point. Four 'Flipped Classroom' video productions were planned and recorded - one regarding each sector of education in line with the overall content of the module.

6.6.4 Narrative Construction

The researcher noted that while the submission of a video in-lieu of an academic submission, namely an essay, was well received many of the participants were uncomfortable with recording themselves. The ethical considerations explained to the participants allayed those reservations and all participants submitted a video submission as part of the their collaboratively constructed iBook. However, the researcher felt that this played a significant role in detracting from the narrative construction, not withstanding issues around mobility and technology, as it weighed on students minds. At this point the researcher considered introducing Digital Storytelling to the intervention, however, felt that the focus on technology would overwhelm the historical content required for teacher professional registration and that the focus of a historical critical incident may develop into an embarrassing or upsetting revelation for some in a collaborative situation.

Instead the researcher explored the possibility of allowing students to create within their webpage, a narrative that satisfied the requirement of the module in terms of learning outcomes, but also the host institutions requirements for academic programme accreditation. It was decided that this would take the form of an extended reflective submission. Students would be given free reign on how they would contribute to the webpage for the visual elements as long as the contribution adhered to the collaborative demands of the assessment rubric. A minimum amount of text would be required and in addition a bibliography would also be visible their webpages.

6.6.5   Technologies

During the analysis of the Design Cycle 1 data it became obvious that the enhanced engagement with the history of education experienced by the participants was helping them to make the difficult transition into undergraduate education and towards professional practice. The researcher had intended that the technology used would be integrated into and support that engagement. However, as discussed in the analysis section of this chapter, this occurred to an extent and then the restrictive nature of the single platform approach stifled the engagement and consequently the degree to which participants felt that they were part of an emergent community of practice (Lave & Wenger, 1991) - evidenced by the frustrated attempt of the design model to sequentially establish a residential learning community (Lenning & Ebbers, 1999).

6.6.5.1   Accessibility & Mobility

It is clear from the feedback within the data collected that accessibility and mobility were the two most influential issues regarding not only the use of the technology in the design but the impact upon the collaborative process, engagement and the development of learning communities within the cohort. The researcher felt compelled to make a significant alteration to this design element by removing the reliance on a single platform and on-campus location to the development of an online resource, community or artefact that was both mobile and accessible regardless of location. This would reflect the nature of technology in the participants own lives and would aim to enhance, in particular, the residential experience of the students and consequently the overall engagement with content thus aiding the transition of students into undergraduate education and towards professional practice. The website building platform Weebly was selected as it was free to access and user friendly. It is also platform agnostic.

6.6.5.2   CSCL / VLE

The CSCL environment would retain the VLE (Blackboard) however would be extended out into the lives of the participants and into the digital domain of the participants. The

researcher also felt that by placing more information, in particular, recorded 'Flipped Classroom' lectures on the VLE that this would further support students and leave them free to engage in Face-2-Face exchanges that form the cornerstones of collaboration within the design.

6.6.5.3 Training & Resources

The participants in Design Cycle 1 highly valued the guidelines created by the researcher for the basic operating procedures of the iMacs and the step-by-step guide for the creation of the collaborative iBook. This important feedback informed the researcher that similar examples and step-by-step guides would help participants. Given the movement of the design to a more mobile platform the researcher felt that the aforementioned pre-recorded video lecture may perhaps be a better option for the participants as some had commented that they engaged in lengthy travel each week and if they could utilise that time they may find such resources very useful.

It was considered to give additional in-class training on how to use the various technologies available however the researcher felt that this would detract from the focus of the module in the History and Structure of Irish Education System. The necessity to provide some resources in relation to this was felt by the researcher to warrant the sourcing of appropriate online interaction videos on YouTube or similar platforms and link those resources to the VLE, Blackboard, available to the students.

Also, the mode of informal feedback on the students developing digital artefacts over the course of the module was moved to an online environment where a recorded voiceover using a proprietary 'screencast' production would be placed on Blackboard for students to access at a time that suited them and thus provide further opportunity for increased discussion in the collaborative Face-2-Face engagement.

6.7   Chapter Summary

This chapter detailed the design and development of the Design Cycle 1 intervention - CENTs. The design model was implemented with a cohort of new entrants to undergraduate initial teacher education in the researcher's host institution, the National University of Ireland Galway. The participants (N=20) were enrolled in the B.A. Mathematics and Education programme.

This chapter was split into three distinct parts. The design of the intervention CENTs, founded on the outputs from Chapters 2 & 3 and adherent to the selected appropriate methodology, design-based research detailed in Chapter 4 ; analysis of the data collected from that implementation focused through the lens of the interdependent variables CENTs and also through the development of identified learning communities within the cohort of participants and the group that they were placed in; finally the chapter delineated, again focused through the lens of the interdependent variables, improvements for the design model to be carried out in Design Cycle 2.

The analysis of the design cycle focused through the CENTs variables evidenced enhanced engagement with the History of Education in contrast to the attitudes of participants at the outset of the module. The analysis also demonstrated that three out of four distinct learning communities were sequentially established as the module progressed however that the final learning community, a residential learning community (Lenning & Ebbers, 1999) was frustrated by a restriction of technology to a single platform technology which for many of the participants was only available on campus (Figure 6.20). This analysis further illustrated that the degree to which the learning communities were established could represent the degree to which the participants had collaboratively transitioned from second level education into undergraduate initial teacher education and towards professional practice. This presented the researcher with an emergent interdependent variable - Transition. the researcher returned to the literature, the conceptual framework and the design model taking note of this new variable in an effort to iteratively improve the design model accordingly.

Finally, based on pertinent, relevant literature and in line with the iterative design process of the design-based research methodology employed, the design model variables were expanded to include Transition - Transition With Others through a Collaborative Engagement with the history of education expressed through Narrative construction and supported by Technologies - or TWO-CENTs. The changes outlined in the later part of this chapter, the impact that they made on participants engagement with the history of education and their participation in the aforementioned learning communities will be explored and discussed in the next chapter, Chapter 7.

Chapter 7:   Re-Implementation & Evaluation

7.1   Chapter Introduction

This chapter builds directly on the structure of Chapter 6 and Design Cycle 1 contained therein. The implementation of Design Cycle 2 involved 12 students who had kindly agreed to participate in this research study. Initially the refinement of this second iteration of the design model is outlined, taking note of the findings of the Design Cycle 1 model - CENTs. Thereafter the application of the refined design model, TWO-CENTs is narrated by the researcher through an iterative process that continues to address the central research question of this study: How can a collaborative engagement with the history of education help to establish an emergent community of practice in undergraduate initial teacher education?

The re-implementation phase or second iteration of the design model was administered again within the B.A. Mathematics and Education program within the School of Education at the National University of Ireland - Galway. A key tenet of design-based research (DBR) is to refine the design model within a naturalistic context (Barab, 2006) that is comparable across design iterations (Barab & Squire, 2004). Consideration was given to replicating the design with a similar cohort, in similar physical surroundings and with the same enthusiastic support that the School of Education had given the research process over the previous two years.

The initial implementation of the design model, CENTs, had enhanced undergraduate pre-service teachers' engagement with the non-elective educational foundation subject - The History and Structure of the Irish Education System and had demonstrated the potential for the design model to establish an opportunity for participants to collaboratively transition into the programme through the formation of a number of identifiable learning communities (Lave & Wenger, 1999).

Chapter 7: Design Cycle 2

In Chapter 6, the data collected during the implementation phase of the Design Cycle 1 was discussed and it was clear that students were critically engaged with the content of the module. It was also clear that they were becoming aware of the immediacy of their career choice to become Mathematics teachers. They felt connected to this history of education through their own personal experiences and were able to compare and contrast them through the StoryExchange process. Emergent from this iteration was also how the participants were on the cusp of becoming active members of the educational community as evidenced in that data collected and resented in Chapter 6, marking them out as a cohort in transition.

Consequently, the second iteration of this DBR model then became more focused on developing a connection with the participants future relationship with education and how that may manifest itself when supported by educational technologies. Resultant from that data collected in the first iteration was the negative influence of location and platform restricted technology and the impact this had on the participants engagement with the professional community and resources outside of the module supports. Students were receptive and appreciative of the opportunities to develop key 21st Century Skills that they viewed as essential to becoming an inservice teacher but also the application of such skill sets as they continue to engage with education over the course of the program and beyond into professional practice.

A key concern for the design model within the second iteration or refinement process was how to connect these engaged participants with the wider communities that might enrich and inform their work, and that of others, and perhaps make them think about how they might engage with education as professionals in the future, supported by educational technologies and rooted in the historical facts? This question is reflected in the literature explored in Chapter 3 where the development of collaborative and engaged communities of educators is to the forefront of development in education across the globe (Conway et al, 2009; European Commission, 2012; Darling-Hammond, 2006).

7.2   Local Constraints and Institutional Input

7.2.1   Localised Constraints

As discussed, above, the naturalistic context (Barab, 2006) can change within the research study as it can beyond the confines of the research being carried out. This makes the selected methodology, design-based research suited to educational settings. In the case of the implementation of Design Cycle 1, issues surrounding availability of rooms that can facilitate face-2-face collaborative activities such as StoryExchange were prevalent. Prior to the timetabling of Design Cycle 2 within the School of Education, the researcher contacted the relevant perusal with the support of staff within the school, to ensure that rooms that facilitate collaborative group work would be assigned to the module for the duration of the semester.

Also, important was the timing of the module at 9.00am on Monday mornings. During Design Cycle 1 attendance was more than satisfactory and completely in compliance with the demands of the programme that they were engaged in. Participants had reflected that they found it difficult at first however, after they became involved in the module they felt that they looked forward to the engagement with each other the longer the module went on. It was requested that the timing of the module be maintained. This request was accepted and granted by the host institution. As Student 4 reflected,

> 'when I saw the timetable, my heart really sank. I really wasn't looking forward to
> my very first class in this course … as the course went on I began to look forward
> to Monday mornings as this class asked me what I thought and asked me to talk to
> the people around me, not just for a few minutes but for a lot of the time we were
> in the room. This was a big change from secondary school and I think that is why
> we all enjoyed meeting up on a Monday morning so much - it was about us'

(Stundet 4, Reflective Submission, 2015)

7.2.2   Institutional Input

Hosted by the National University of Ireland and in particular the School of Education who accommodated this research study these stakeholders were considered important elements of the naturalistic context (Barab, 2006) of the designed environment. Feedback and input from these sources including the external moderator for the module and programme were fed into the research process and subsequently the development of the design model. Institutional feedback from the School of Education at NUI Galway was positive. They welcomed the innovative approach to engaging new entrants to undergraduate initial teacher education with the History and Structure of the Irish Education System.

Each programme has an assigned external moderator on the processes, mechanics and outputs of such programmes. For the B.A. Mathematics and Education programme at the National University of Ireland Galway the external moderator complimented the designed model noting that the structure reflected a positive development in use of collaborative practice and the use of technologies. Given the feedback from the staff at the School of Education and that of the external moderator the researcher was satisfied that the academic requirement of the module in terms of student progression were being satisfied and also that the demands and stipulations of the Teaching Council of Ireland for professional registration were also being met (Appendix 2).

7.3   Participants

Participants in Design Cycle 2 needed to replicate, in as close as possible, the characteristics of the participants of Design Cycle 1. They would need to be engaged in similar actives on a daily basis and over an extended period of time (Cohen *et al*, 2003). Therefore the next incoming cohort of students enrolling in the B.A. Mathematics and Education programme within the School of Education at the National University of Ireland Galway were identified as suitable participants for the second iteration of this

design-based research study. The profile of these participants also need to be similar to that of Design Cycle 1. The participant sample (N=12) were all new entrants to undergraduate initial teacher education. Two of the participants were returning to education after a period of two years or less in employment or other activities. All of the participants were engaged in tertiary education for the first time.

7.4   Detailed Design Changes

The analysis carried out in the previous chapter delineate changes that the participants, researcher and relevant pertinent literature indicate as having the potential of enhancing students collaborative engagement with the history of education as they transition into undergraduate initial teacher education and towards professional practice. Emergent from this analysis is the truly interdependent nature of the design variables frames by the conceptual framework in Chapter 5. In the sections that follow, it is clear that all of the design variables were heavily influenced by the technological aspects of Design Cycle 1 and that this interdependent variable required the most significant alterations impacting on the relative success of all of the other variables acting in concert throughout Design Cycle 2.

7.4.1   Transition

The emergence of Transition as an additional design variable also meant that a further degree of transparency needed to be embedded into the assessment model for the module and also it was important that data gathered by the researcher for analysis, detailed later in this chapter, allowed the researcher to investigate if indeed the participants had sequentially established all four identified learning communities that the design aimed to facilitate. As discussed in Chapter 6, evidence of critical thinking skills in relation to the module content and contemporary events in education, to varying degrees, would evidence the development of participants engagement with the module content, each other and the education continuum as it exits beyond the confines of the designed

environment. To this end minor modifications to the grading rubric provided to the students within the module were made and are evident in Appendix 1.

7.4.1.1 Individual Historical Portfolio Rubric

Number of descriptors in this rubric was reduced from six to four with the specific aim of allowing students to focus more on the collaborative aspects of the module and also to reflect on that process in their reflective submissions. The researcher also felt that by reducing the number of deliverables this would reduce anxiety over assessment towards the end of the module thus allowing participants to concentrate on the process that they were engaged in.

7.4.1.2 Collaborative Digital Historical Rubric

A change in focus from the Apple platform to the development of a collaboratively constructed website, hosted by the free online construct -Weebly, meant that some minor changes to the wording of the rubric were made, however their were no significant modifications to the rubric. The scaffolding material, in particular guidelines on the development of the website, were redesigned and focused on the key aspect of developing a website rather than the Design Cycle 1 focus on Apple software. The guidelines from Design Cycle 1 were, however, made available to all participants and so was the Apple hardware within the SoE should the participants wish to to use into contribute to their collaborative or individual submissions. While the rubric was not significantly altered students were encouraged to engage in cross referencing of each others webpages.

7.4.1.3 Learning Communities

As discovered in the analysis of Design Cycle 1, the structured development of four distinct learning communities represented the degree to which participants established or did not establish an emergent community of practice. The establishment of this emergent community of practice would then be representative of the degree to which participants

have made a successful transition from individual second level practices into an emergent collaborative community of practice (Lave & Wenger, 1991) in undergraduate in initial teacher education as they move towards professional practice. The identification of this transition, now established as an interdependent variable in the design model, would be evidenced by students formation and participation in a residential learning community (Lenning & Ebbers, 1999) as delineated for the purposes of this research study in Chapter 6. In an effort to create conditions the would facilitate the development of this learning community and that would mirror that of professional practice students would be asked to create a Twitter account and provided with some prominent, relevant sources from which they may chose to draw from. The researcher planned, that by introducing this online space for the students to engage with that an asynchronous residential learning community engagement would develop, reflective of literature on participation by third level students in such communities, explored in Chapter 3.

7.4.2 Collaboration

As reported in Chapter 6, the StoryXchange process was considered by the participants as one of the most successful components of the implementation of Design Cycle 1. Participants had indicated that the structured nature of the process had helped them to frame their engagement with the module content - content that the majority of participants, from the outset, had no desire to engage with. Also revealed in Chapter 6 was the effect that comparing experiences had on participants and how that process of comparison had helped them as a cohort to explore the module content and situate their experiences in the historical research that had shed their engagement with education up to their present position.

The templates that students were given each week (Appendix 4) were enlarged from A3 to A1 in size and were also laminated so that students could revise their contributions where necessary and also to provide all group members an opportunity to contribute at the same time during Face-2-Face engagement sessions on Monday mornings. This was

also intended to encourage the students to engage in a process of digitally recording their Face-2-Face contributions as the laminated templates would be retained by the researcher for re-implementation purposes and the students digital records, mobile phone photographs, would act as resources for their assessment submissions at later dates in the module and as contribution to their webpages should they wish to do so.

A significant design change was the education of group numbers from four to three. Students had expressed an explicit reluctance to engage in the coalition of students hope for the future of education specifically because that future for many of the participants was quite unclear. The StoryXchange process had been successful in elucidating those concerns however students had not engaged in a process of negotiated understanding (Heidegger, 1962, Stahl, 1993) as one student had been left with the responsibility of pulling together the story of the group post Face-to-Face engagement. The researcher felt that in order to encourage negotiation of meaning making that the group numbers should reduced to three. The process of StoryXchange would remain as per Design Cycle 1 however at the point of exploration of fourth level or their future engagement with education, no one student would have the responsibility of speaking about the future of the group. It would have to be collaboratively constructed and this would be facilitated by the possibility asynchronous engagement afforded through changes in the technologies employed within the design model in Design Cycle 2.

7.4.3   Engagement

As explored and identified in Chapter 6, engagement with the module content had been enhanced and participants had also collaboratively engaged with each other as part of the StoryXchange process. This was most evident in the establishment of three out of four distinct leaning communities. However, the development of a fourth learning community, a residential learning community (Lenning & Ebbers, 1999), had been frustrated by the restrictive nature of the technological platform embedded into Design Cycle 1. The researcher had intended that this would encourage the development of a residential

learning community centred on their Face-to-Face engagements - further explored in off-site engagements round the required academic submission, however their engagement with each other did not require a negotiation of the future of education as it had been left to one member of their forum to interpret.

In response to this, and as all of the design variables are interdependent, the group numbers were reduced as described above and their engagement with fourth level education was refocused around their engagement with each other as part of the online space or emergent community that had been created for them using the social media tool - Twitter. The establishment of an online forum was intended by the researcher to act as a bridge between the flourishing Face-2-Face engagement with module content and each other on Monday mornings and the participants' engagement with each other away from the classroom setting. It was intended that this would provide students with opportunities to connect with each other asynchronously in relation to the module content and also to become part of existing educational communities that are active in that space thus informing their contributions to their academic assessment.

Also, the researcher found that the participants valued the newness of the technology that they were required to engage with. It was evident in the analysis of Design Cycle 1 that the students were conscious of two distinct forms of engagement within the the module. Firstly, they were aware that they were required to work with each other and that the module content explored through StoryXchange and their own histories of education had helped them to do this. Secondly they were explicit in their criticism of aspects of the technology embedded within the module. Students, as highlighted above, were clearly frustrated by the lack of access to the technology employed however valued the relevance of learning how to use it in an educational environment as they believed that some schools that they had researched were using that particular platform, even if the number of those schools as rather limited. It was clear from the analysis of Design Cycle 1 that students wanted to engage with technology, valued that engagement and also valued the

degree of difficult or the steepness of the learning curve as they revealed how this mirrored their perception of the situation of entering into an Irish secondary school for the first time where they would be expected to 'hit the ground running' in terms technology - both in the classroom and as part of the school infrastructures. Indeed, many of the participants felt that they would be relied on by older teachers to help them with technology and not the other way around as new entrants to the teaching profession. It was considered by the researcher, important not to alter the degree of difficulty in relation to the technology employed, rather, the researcher increased the level of resources and scaffolding available to the students for the duration of the module however reduced the amount of time students spent with technology within the module to four hours over the duration of Design Cycle 2.

7.4.4   Narrative Construction

The collaborative narrative or StoryXchange process was viewed, by all of the participants, as important within the module and in the construction of their collaborative submissions. They indicated that the instructions given, exemplars (Appendix 4) provided and the supports within the Face-to-Face sessions were more than adequate for the timely completion of their narratives.

However, many of the participants who had been assigned the narration of the groups future engagement with education felt that they were under resourced in terms of supporting material and that in some instances that they felt that they were left to deal with this on their own as everybody in group was unsure of what their future engagement with education might look like. The design of the module content was such that supporting materials would be limited in this instance. This was to encourage student to work together on a common vision or goal within the assessment model. However, as described, the interdependent variable, engagement had faltered at the construction of a residential leaning community which in turn had been frustrated by the technological aspects of the design model. This absence of scaffolding, or presence of a de-scaffolding

process within the design model, in this regard was intentional and as explored in Chapter 6, this was intended to channel students towards each other through engagement with each other outside of the Face-2-Face sessions on Monday mornings. However, the narrative construction process had faltered at the point where the structured development of a residential learning community would have facilitated supports and further engagement with each other and beyond the module itself. With regard to this, the researcher felt that the narrative construction process would be enhanced through the development of an online space that reached out into the digital domain of the students and the digital domain of the profession that they aspired to enter. As described above, the introduction of Twitter and the reduction of group numbers within the design model were intended by the researcher to ameliorate this issue.

7.4.5 Technologies

Throughout the last number of sections in this document, it is clear that all of the interdependent design variables had been impacted by the technological aspects of the design model. The impact of this variable on all of the others within the framework is testament to the interdependent nature of the design process and the relationship that the naturalistic context has with a design-based research project. The evidence presented with Chapter 6, clearly indicated to the researcher that the elected technology had negatively impacted the ability of groups to collaborate with each other particular towards the latter stages of the twelve week module. Engagement, while productive in Face-2-Face sessions was very positive and well received, was negligible beyond the physical context on Monday mornings. The narrative process, therefore, had effectively stalled at the very point that the technology should have facilitated an environment conduct e to collaborative engagement for meaning making in the completion of their academic assignments. Resultant therefore, was the stagnated degree to which the participants has transitioned from being individual learners into undergraduate initial teacher education and towards professional practice by establishing themselves as emergent community of practice.

Participants in Design Cycle 1 had complained about the access to the software and hardware of the module and also they had not engaged with the on-campus VLE - BlackBoard. It was clear in the triangulated data presented in Chapter 6 that the researcher needed address the issue of technological platform within the design model. Careful consideration was given to this issue. The researcher presented the findings of Design Cycle 1 at a number of national and international conferences receiving feedback at each session. The researcher also consulted with his advisor and the staff at the School of Education at NUIG in order to ascertain the flexibility within the assessment system at the host university and to draw on their expensive research experience.

It became clear to the researcher that emergent from this reflective process was a need to develop a bridge between the formal structures of the module Face-2-Face sessions and the technological ecosystems that the participants inhabit as individuals. Social networking had over the last decade, as explored in Chapter 3, fundamentally changes how students engage with each other as members of the educational communities they engage with. Many of these social networks were successful as they were not platform specific allowing a users to establish connections beyond their own immediate communities. The researcher felt that this concept needed to be reflected in the design model in order to truly reflect the naturalistic context of the design-based research study environment where the participants were cognisant of the fact that the secondary school system within which they will engage either in Ireland or elsewhere does not exhibit any continuity in terms of technology.

The researcher considered introducing a more flexible approach to engaging with BlackBoard by creating a sub-ecosystem within the VLE for students to access remotely and contribute to their digital collaborative submissions however, after a period of reflection I perceived this, again, not to reflect the naturalistic context of the continuum of teaching. The development of a location for students to engage asynchronously had emerged as paramount from the analysis in Chapter 6. BlackBoard did afford this

engagement, however, it would be limited in terms of ownership and the freedom that students would have to construct it as would suit them. The most obvious solution and the solution that would address all of the concerns of the participants, the researcher, the literature and the conceptual framework was the utilisation of a website that all participants could access both on and off campus. The free website design platform, Weebly, was elected to be implemented in Design Cycle 2. This platform out of all of the freely accessibly platforms available had the simplest interface for users new to the concept of developing a functioning website as it employs a 'drag and drop' methodology for its users. It is accessible from all platforms and can also be edited on mobile devices.

The concomitant issues of transition and residential learning community formation, as indicated above, were particularly effected by the technology implemented in Design Cycle 1. In each instance participants indicated that an absence of a structured or channelled interpersonal engagement was the overriding feature of the module that was missing or inhibited participants engagement with the future of education. Such engagement would represent the development of a residential leaning community and allow the researcher to determine the degree to which participants had transitioned towards professional practice as an emergent community of practice. To this end the researcher established a Twitter account associated with the module and provided detailed guidelines on how to engage with Twitter as education professionals and how to contribute to the platform (Appendix 9). These guidelines were provided to students on the VLE - BlackBoard.

In order to provide continued opportunities for positive Face-2-Face engagement at the module sessions the researcher wished to increase the amount of interpersonal engagement particularly when students were negotiating their future engagement with education and considered the informal feedback sessions detailed within Design Cycle 1 as times when students could be engaged with each other rather than with the researchers' involvement becoming the focus of that session. To this end it was decided that this

feedback could be given digitally in the form of screen-captured voice overs on each groups, four collaborative webpages. Freeware was used to give this feedback at week six and week eleven. This feedback was provided in multiple file formats for participants to view when it suited them, on BlackBoard.

In an additional effort to enhance collaboration in the Face-2-Face sessions four flipped classrooms video productions were placed on BlackBoard for students to engage with ahead of selected classroom engagements. One, thirty minute, video production was developed for each level of education being explored.

Finally, in order to facilitate the demands of the academic environment within which the design model was implemented the submission format of students individual portfolios was also to be in digital format and was stipulated as a PDF document that would be submitted through BlackBoard. In addition to this, the students were required to insert screenshots of their collaborative contributions to the website capturing their contribution in time for analysis as part of the assessment criteria of the module.

7.5   Additional Feedback

As previously alluded to, additional feedback was provided to the researcher via a report submitted to the School of Education staff members, commending the innovative approach to engaging students with an internationally recognised educational field suffering a decline in engagement by pre-service teachers at both undergraduate and postgraduate level. The report also suggested possible improvements that included feedback from facilitating lectures to take on a more digital format and for all of the modules on the programme to explicitly engage students with relevant, pertinent international research.

The researchers response to the suggestion of digital feedback is detailed above. The suggestion regarding directing students towards international research was seen by the researcher as positive and an important observation particularly as the researcher wanted participants to engage with communities beyond the module to enrich their discussions regarding their future engagement with education and also to help them interpret their collective past engagement with engagement as they progressed through the module. To this end the grading rubrics were slightly altered to include encouragement to critically engage with both national and international research material in education - relevant to their collaboratively constructed digital artefacts (see Appendix 1).

7.6   Design Cycle 2 - Analysis

The format of the following section of this thesis will reflect the reporting structures of Design Cycle 1 analysis as delineated in Chapter 6. The following analysis of the design model multiple interdependent variables, informed by the design variables and shaped by the conceptual framework in Chapter 5 established the following findings:

- Collaboration - continued in-depth collaborative exploration of the module content and the co-construction of the collaborative digital artefact exposing a a variety of experiences amongst participants. Collaborative engagements were enhanced by the asynchronous characteristic of the technological aspects of the module and in particular the situating of the nexus of engagement in the digital domain of the participants.

- Engagement - engagement with the module content continued to be enhanced through the collaborative process, StoryXchange. Participants were able to relate the module content to their own personal engagements with education. Furthermore they engaged with each other both in Face-2-Face contact and in digital asynchronous fashions. This engagement also took the form of social media engagement with the continuum of

education above and beyond the content or academic requirements of the module descriptors.

- Narrative Construction - the StoryXchange process continued to act as a locus for engagement and the foundation upon which the particaptns could focus their collaborative efforts. The templates guided the students towards completing the tasks at hand. Intersubjective exploration of their biographical experiences continued to be evident and in particular the area of fourth level of education or the participants future engagement with education was explored in-depth and negotiated by participants.

- Technologies - the technologies engaged in Design Cycle 2 enhanced the collaborative process, helped students to engage with module content, each other both in, increased Face-2-Face contact and through asynchronous activity. The point of contact, that of the collaborative construction of a website on the Weebly platform, reflected the practice of in-service teachers and was crucial in the structured establishment of the identified learning communities within this Design-Cycle.

- Transition - all four identified learning communities were established within Design Cycle 2. The multiple interdepend variables responded well to the technological changes implemented and in particular the placement of digital engagement within the digital domain of the participants. Twitter helped participant to establish a the basis for a residential learning community (Lenning & Ebbers, 1999) allowing the formation of an emergent community of practice (Lave & Wenger, 1991).

7.6.1   Data Collection

In accordance with good practice in design-based research methodology maintaining a consistency across design interactions in terms of the naturalistic context (Barab, 2006) was maintained and underpinned by a consistent data collection process. Data, in this Design Cycle, was collected through the researcher ethnographic observations and

reflective journal; the participants (N=12) individually submitted digital portfolios and collaboratively constructed digital artefact - their Weebly website; focus group interviews; an administered survey instrument and participants submitted reflective essays. Data was coded thematically by hand and collated accordingly. The use of powerful statistical packages, as explored in Chapter 4, such as NVivo and SPSS were considered unnecessary as the sample size was quite small. As with the reporting on Design-Cycle 1, a narrative form of analysis of collected data is utilised and exemplars reflecting the entity of the data collected is employed.

7.6.1 Collaboration

Consistent with the findings of Design Cycle 1, the participants in Design Cycle 2 engaged with the module content and each other through the StoryXchange process and place a high value on the mechanism as it guided them towards constructing their collaborative digital artefacts - their web pages on the assigned Weebly website. They engaged in both the designed Face-2-Face collaborative exercises and in unstructured asynchronous collaborative activities via the constructed online space.

7.6.1.1 Face-2-Face Collaboration

Similar the results of Design Cycle 1 indicated that they considered the StoryXchange process to be central to their engagement with the module content, the basis upon which they were able to construct their contributions to their collaborative online space - their Weebly. Within these structured Face-2-Face engagements, participants got to know each other at an accelerated rate and were placed in a situation where there relative success in the module depended upon the development of that acquaintance. As Student 2 stated:

> 'This module really helped me to integrate with the rest of the group, and the
> class. As a mature student it can be difficult to integrate with a group of
> leaning certificate students. However, the nature of their module was that we
> were immediately mixing together, sharing experiences and discussing what

had led us to this choice. This provided a great platform to build on. From

the start of the module, it was also made clear that we would have to interact

with each other, this meant that everyone was aware of the need to work

together so it encouraged everyone to mix and get to know each other.

Without this sort of interaction, I think I would have found it a lot harder to

get to know every one, as it also forced me too come out of my shell and

make the effort to get to know everyone also'

(Student 2, Reflective Submission, 2015)

Students cited the StoryXchange process that they were engaged with on a weekly basis

as the foundation upon which this interaction was built and that relationships were forged

as a result of their collaborations. Indeed participants indicated that they considered this

to be a most valuable skill as they look to their future engagements with education,

indicated by the reflections of Student 7,

'Group work at this level was new to me. In previous schools we would have

done very little group work as the teacher may have wanted to get the

syllabus covered and that they'd prefer to spend the time revising. This

group work however was very different. We would always be consulting one

another and listening to each others advice to make our final project as good

as it could possibly be. For me it was an important skill to learn, to work so

closely with others in a similar situation to me, as I think that when I become

a teacher I will need to work just as closely with other teachers within my

school.'

(Student 7, Reflective Submission, 2015)

Indeed, participants indicated that they believe that they had a shared vision of the

terminal submission and what it should look like as their weekly, structured, Face-2-Face

engagements had helped them to construct a clear picture of the their collective roles and

responsibilities in relation to each other. They felt dependent upon each other and connected to each other (Figure 7.1).
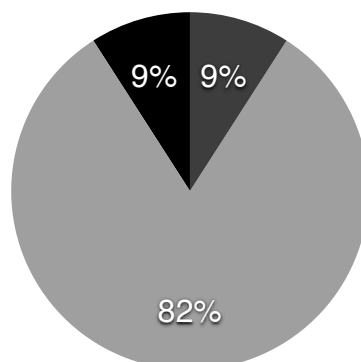
Figure 7.1: Participants views on how dependant upon each other they were for completion of the module.

The development of this interdependency was further explored during the focus group sessions where the participants were quite forthcoming with their opinions on the importance of face-2-face engagement on Monday mornings, as Student 11 shed a little more light on the relationships that had developed:

> 'In secondary school, looking back on it now at the end of the module, I think I was very much on my own. I mean, I had to study on my own, learn on my own and do the Leaving [Certificate Examinations] on my own. At no point was it allowed to work with other people for anything that had a mark and then I came in here and all of a sudden it was ok to share … I mean it was a big shock … I wasn't even sure how do it but then we had the templates and yourself [researcher] to help us if we needed it it. It seemed like it was expected of us. Sometimes … I would be a little lost and then one of the others would write something on our sheets [templates] and all of a sudden I would be back on track. We really learned to rely on each other. I think that is the important thing for me …'

(Focus Group Session, 2015)

This dependency on each other was consistent with the findings of Design Cycle 1 and as per the nature of the interdependent variables the participants expressed a number of inter-related factors that enhanced these Face-2-Face engagements.

7.6.1.2   Pre-Assignment of groups and roles

Consistent with the findings of Design Cycle 1, participants considered the pre-assignment of groups and roles within groups to be an important aspect the the module. They believed that the format helped them to, very quickly establish what their responsibilities were in relation to the assessment criteria, however just as importantly, their responsibilities to in relation to each other. As Student 2 indicated:

> 'Group work was very new to me and my group mates. None of new each other or how each other worked. So when we were assigned our groups at the start of the module I began to become a little worried about how I would be able to work in this situation. But then our lecturer said that roles within each group were also already decided and I began to relax a little … looking back on it now, I think this was the starting point for all of us to come together and complete our project and become the friends that we are now. We didn't have to argue about who was doing what … we just follow the templates that Paul [the researcher] gave to us and then it was a lot easier as we knew exactly what was expected of us …'

> (Student 2, Reflective Submission, 2015)

In the focus group sessions, participants also pointed to the assignment of roles as being important to them from the outset,

> 'I think that it might have taken a lot longer to get going … we wouldn't have … [student looks at others for agreement which is given] I mean we probably wouldn't have agreed from the outset. For me it would have been

easier to take second level but I'm glad I got third level … it was really

interesting …'

<div align="right">(Focus Group Session, 2015)</div>

7.6.1.3   Group member interdependence

As elucidated in Figure 7.1 above, their was a high degree of interdependency within all of the groups in Design Cycle 2. As delineated this was founded upon the StoryXchange process, however the pedagogical structures designed around the assessment procedures also played a significant role in the development of this interdependence. The assessment model required students to listen to, and relate, the histories of their group members' education to the historical content of the module. This aspect of the designed intervention was intended to encourage participant to revise both the historical content of the module multiple times and the biographical histories of their fellow group members. This intent was best described by Student 9,

'We got to know each other, more than just everybody's names … we had to

find the reasons why we have chosen this course and all of the answers were

different … we were alway consulting with each other and listening to each

others' advice to make our final project as good as it could be by working

together'

<div align="right">(Student 9, Reflective Essay, 2015)</div>

This was further elaborated on by Student 3, who revealed that:

'Our project meant that we had to work as a group to write about Primary,

Secondary, Third -Level and Fourth-Level education. This meant that we

spent hours talking during and after the module describing what our schools

<div align="center">239</div>

were like and telling stories about each other and it was as if we had known
each other all our lives.'

<div align="right">(Student 3, Reflective Submission, 2015)</div>

The researcher was encouraged to see that the students were referencing their
interdependence as being something that represented more that just the completion of the
project and that such interactions were breaking free from the structured collaborative
exercise of the classroom on Monday mornings and out into the domain of the students.

7.6.1.4   Inter-group member interdependence

A notable development from Design Cycle 1 in the reflective journal of the researcher
was the manner in which students, towards the end of the module, spoke to each other
about their respective roles within the groups,

> 'It is notable that the group members seem content with the assignment of
> their roles and they appear to be engaged with the relevant module content as
> they try to construct their contribution on behalf of their assigned group.
> What has been interesting and most pleasing to see is that the group
> members assigned to each level of education are seeking each other out
> across the cohort to see if their are similarities in their approach. It has also
> been indicated to me that the students are using Facebook, Twitter, SnapChat
> and instant messaging to ask each other questions …'

<div align="right">(Researcher Reflective Journal, 2015)</div>

As will be explored in the sections that follow the development of this aspect of the
design model was most welcome and can, as indicated above, be directly attributed to the
impact of the change in approach to technologies within the multiple interdependent
variable dynamic.

7.6.1.5 Development of a shared vision

As with Design Cycle 1, participants indicated that the timely completion of the module assessments was not the over-riding motivation for their collaborative participation. Participating students indicated that they felt that the majority of group members were committed to completing the project assigned to them and that completion of the project was not the only concern of the participants. The researcher probed this further within the qualitative responses the questionnaire in relation to this issue and found that the majority of participants, 83% felt that they were responsible to the other members of the group for their mark awarded at the completion of the module.

It is notable that the participants refer to each other in this regard and not their individual mark indicating that they believed that the process that they were engage in was more important to them than that in that it helped them to think deeply about what their future engagement with education might look like, as Student 8 reflected:

'This module has had a significant effect on how I view the teaching profession in vernal and where I see myself within that profession. Prior to this module, I wasn't fully committed to teaching as career, indeed within the first week of this module, during our group discussions, I learned that the majority also shared this feeling. We felt that this was the purpose of this module and that the continuous assessment marks took the pressure off us and let us think more about that than passing tests … I have changed my view of the teaching profession as a result of this module.'

(Student 8, Reflective Submission, 2015)

This remark in particular was reflective of the wider cohort as they continually referenced what it might mean for them to be part of the teaching profession in the future and as will

be explored in the sections to follow technology had a significant role to play in the development of their view of the purpose of the module.

7.6.1.6   Social Interaction

In line with the findings of Design Cycle 1, participants in Design Cycle 2, as referred to above, referenced the StoryXchange collaborative process as the foundation upon which friendships and relationships were formed during the course of the twelve week module. Participants referred to the telling of stories as the basis for this engagement and many of them enjoyed the process. The researcher noted this:

'The atmosphere this week [Week 3] is one of conformable exchange. The students in the room are visibly relaxed and are openly telling each other about incidents that they remember from their past engagements with education. Many of them enjoyed the experience with laughter quite common throughout the session this morning.'

(Researcher Reflective Journal, 2015)

The structured nature of the StoryXchange process provided them with the scaffolding that made this possible. The participants were comfortable in the knowledge that they knew exactly what they had to do with each engagement and in order to complete the tasks that they had been set. This designed environment allowed them the freedom to concentrate on the substance of their discussion rather than a mechanical process of 'box-ticking'. Participants indicated that the templates and examples of completed templates were of significant importance to them at the outset of the module. The importance of the supporting TELE was noted by the participants who believed that the marriage of on-site and off-site access to both materials and each other gave them comfort in that they knew that support was available at any time and at any location should they need it. As student 12 noted:

'The use of Twitter in the module meant that we connected with each other

almost immediately … I mean away from when we met on the first morning

as one of the first things we had to do was create an account if we didn't have

one already. It meant that we were in touch with each other from the start …

I think it helps you feel part of something that way … it really helped a lot to

be so close so quickly and to be able to contact others if we needed to …

especially at the end …'

(Focus Group Session, 2015)

As will be explored in the sections to come and has been alluded to in the sections

preceding, from the outset students recognised the embedded nature of the technologies

employed in this design-based research study. Participants repeated reference to the

StoryXchange process as the basis of their relationships is only one aspect of the social

interaction that they were engaged in. The development of this relationship was also

evident within the physical artefacts that they created on a weekly basis in the form of

completed templates and notes that they took regarding each others biographical histories

of education. These instances of negotiated meaning represent a process of meaning

making both in the instant of their collaborative creation and in their discussion and

analysis as the module progressed. This was evident in the results shown in Figure 7.2

below and in the reflective exemplars that follow. The deeper into the module that the

participants went the more often that they returned to their assumptions and conclusions

to challenge them or even re-affirm their writings. This particularly evident around social

interaction regarding the role of technology in in-service teaching. This area was revisited

on numbers occasions and across all levels of education. Student 5's remarks reflect the

degree to which this interaction occurred:

'I [had] never thought about this before but this module has got us to think

about the increase in ICT and we found it mesmerising how quickly

technology is becoming a central aspect of education and adding our

teaching and learning methods. I think I changed my mind so many times

through the module as I was dealing with fourth level education but I had to

understand the ICT at all the other levels [of education] so that I could speak

about it in my webpage. The only way I could get to grips with this was by

talking to the others … I enjoyed the banter that [it] brought up very much,

but in truth I found discussing them through provoking'

(Student 5, Reflective Submission, 2015)

The biographical nature of the content was important to the participants as this gave them

a basis upon which to relate to each other. As in Design Cycle 1, the participants were

making sense of their position in history together. They made sense of their position

within the continuum of education, together. As has been evidenced, the designed process

of StoryXchange helped them to do this (Figure 7.2).

In Design Cycle 1, the introduction of a video recorded submission was viewed quite

negatively by participating students. Taking this into consideration this was discontinued

for Design Cycle 2. The researcher, however, was curious as to whether a different cohort

might view this type of submission as more attractive than a reflective submission. The

response from the cohort reflects that of the participants in Design Cycle 1 and so the

reserver felt that the decision to discontinue it had been justified.

As will be explored in the section on technologies, the role of the website was to facilitate

asynchronous engagement between group members and between groups. From the

perspective of social interaction this was an interesting area to reflect on as the designer

of the module. This aspect of the module, for participants, was regarded as valuable,
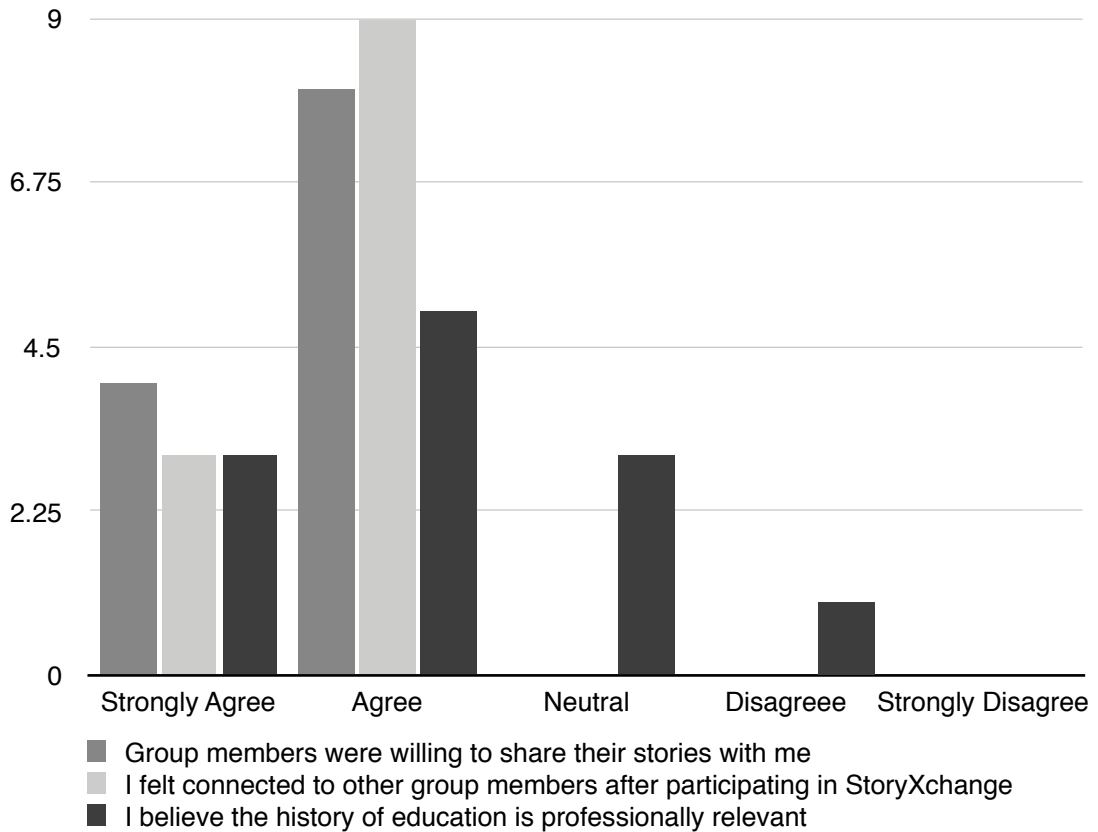
Figure 7.2: Participants views regarding the StoryXchange process

enjoyable and quite importantly to them as a group - professionally relevant. The researcher reflected in his journal during week eight:

'The students are quite focused on the environment that they are creating in the form of the website. I did a quick check to see if they were focusing on the more aesthetic aspects of their website however they appear to be spending their time debating the historical content and how they can maintain a common thread from primary to fourth level education. For many of the groups this is focused around the prevalence or otherwise of technology in in-service teaching. This reflects the discussions that they are having in the face-2-face sessions and their activities on Twitter to date. At this point. the changes in technology appear to be rectifying the issues from Design Cycle 1'

(Researcher Reflective Journal, 2015)

It was notable within the data collected that the interaction experienced and opportunities to interact, provided by the design model were very positively received and utilised. This stands in a marked contrast to the feedback from Design Cycle 1 where students viewed the technology as inhibiting. The participants in Design Cycle 2 viewed the embedded technologies as enabling and this was particularly well articulated within the focus group session:

> 'adjusting to college life and not getting spoon fed material was a big challenge when I arrived at college … getting used to technology was a big challenge … but the technology we learned how to use in this subject was a good transition as we got to use it early in our course. I think the way it was used let us own it … to a certain extent … and let us do things our own way … you know … as a class.'

> (Focus Group Session, 2015)

Further elaborated on, in an additional contribution:

> 'from our use of technology in this module I feel it has helped me in the other modules … not just doing things but being able to contact each other at any time about other things … I liked that a lot. In secondary school everything is on your own .. here I wasn't on my own'

> (Focus Group Session, 2015)

The collaborative aspect of this designed intervention, as do all of the interdependent variables, penetrates all aspects of the design model. It founded, propelled and helped to stabilise emergent friendships and professional connections through the technologies employed. The collaborative focus of the module facilitated a social interaction that was new to the participants an most welcome to them at a time when they were, at the outset

of the module, uncertain of their position in education. As the students have articulated they felt at the end that they had some sense of this and were looking positively towards their future engagements with education not as individuals, rather as members of a group of people that share more than just their position in third level education.

7.6.2   Engagement

The exploration and analysis of the effectiveness of Design Cycle 1 highlighted the effectiveness of the designed intervention for sequential establishment of four identified learning communities (Lenning & Ebbers, 1999). For the purposes of consistency and clarity the examination of the success or otherwise of the design model in establishing these communities will be dealt with in a later section of this chapter. It is however appropriate at this juncture to explore the effect of the designed intervention on one of the primary purposes of this research project - to enhance engagement with the history of education in undergraduate initial teacher education.

As explored in Chapter 6, Design Cycle 1 was successful in helping participants to engage with the history of education as an educational science and many of the participants felt that it was both personally and professionally relevant. However, there were limitations to this engagement, most notably at the point of exploration of fourth level education or what might be described as their future engagement with education as in-service professionals. Evident in Design Cycle 2 was a progression past this point towards a collaborative exploration of fourth level education. The participants in Design Cycle 2 engaged with the module content to a much greater degree and this was particularly evident in their reflective and online constructed submissions where, as previously delineated, cited the technologies embedded in the module as a significant factor in this engagement.

Students engaged with the module content with energy and enthusiasm as they engaged with the StoryXchange process and this was reflected in a submission by Student 8:

'I never had an interest in history. However, the interactive and considered

way this module was taught meant that rather than just listening to a string of

facts on historical issues we discussed them openly as a group and began to

properly understand how the significant point sin history helped to shape the

educational experiences we all had, also with what the possible future of the

Irish Education system could look like … it became obvious to us that it is

only by studying the history that led us to our current position that we can

start to look at the future and how we can have an impact on that [future].'

(Student 8, Reflective Submission, 2015)

As previously stated, engagement with fourth level of education in Design Cycle 1 was

frustrated however as Student 8 articulated, this did not happen in the second iteration of

the design intervention. Participants frequently revisited many of the assumptions that the

had upon entering into the programme, particularly what they considered the life of an in-

service teacher to be like. For example, many of the participants were surprised at the

development of employment policies for second level teachers over the last half century

and were completely unaware of the variance in contract available to them as they enter

the teaching profession in the Republic of Ireland. An analysis of the submitted data

revealed that ten out of the twelve sets of submissions associated with the module

referred to opportunities in employment that extended beyond the stereotypical concept of

the teacher at the head of the classroom, as Student 2 states:

'One of my fears of progressing down the path of teaching was that it could

possibly be limited career with little space for progression. Our group

discussions helped me to change that view. I now see this course as leading

me into a career within the education sector and the side possibilities that are

available within that … it is only from the discussions with this class that I

have begun to consider all these other options. Towards the end of the

module, it seemed that the majority of the groups opinions of teaching had

changed along with mine.'

Part of recognising the engagement of participants with the module content was to situate

that modular engagement within their interactions with each other and the discussion that

they engaged in, in both Face-2-Face sessions and asynchronously using the embedded

technologies within the design model. As student 2 continued to elaborate:

'I have also changed my view of the teaching profession as a result of this

module. My view of teachers before this was very one dimensional in that

they got to teach a subject that they had an interest in for 22 hours a week

with long holidays and time off … using Twitter and being an active

contributor to the online teaching community helped me to realise that

teachers are constantly engaging with other teachers to improve methods

skills and share experiences. I now realise that this will form a necessary part

of my ongoing third and future fourth level education'

The participants had collaboratively explored their biographical histories of education

together and were then asked to make sense of their contemporary positions in third level

education. At this point they were encouraged, although not directed, to engage with

communities beyond the module and this was facilitated by the embedded technologies

that the participants referenced throughout their submission. It is clear that the change in

technologies that were introduced had a positive impact on the engagement of

participants with fourth level education in particular and the students capacity to

articulate their vision of the future of education and their potential engagement with that

future dynamic. The impact of this engagement on the establishment of learning

communities with the module and the development of an emergent community of practice will be explored later in this chapter.

7.6.3   Narrative Construction

Design Cycle 1 revealed that participants enjoyed telling stories to each other about their biographical educational experiences. In many ways it doubled-up as an ice-breaker technique and the students in Design Cycle 2 had the same experience. These participants also displayed an overt reluctance to engage in lengthy academic submissions and were visibly relieved that, that type of submission would not be a part of this module. They welcomed the opportunity to learn new technological skills and were also pleased to know that a previous use of video submission had been removed from the module. They viewed the reflective essay submission at the end of the module as part of their submission, as manageable and indicated that they would prefer this option over alternatives discussed.

This initial reluctance to engage in narrative construction was also evident in the initial weeks of the module during the StoryXchange process until the students began to realise that the templates that they were filling out would form the sore of their contributions to their shard online space. Furthermore, once the participants came to realise that their fellow group members were contributing to their individual submissions and visa verse, their enthusiasm for engaging with the module content increased, as noted above. As student 3 reflected,

> 'At first I thought I was going to have to write a really long piece to put on the website and try to come up with it al by my self just like we did at secondary school but after a couple of weeks you began to realise that the work we were doing in class was building and building, week by week. In the end everybody had helped each other out without knowing it. All I had to

do was string our notes together and then look at the impact of history on

those notes. It was easy really - in the end.'

(Student 3, Reflective Submission, 2015)

The researcher noted that the development of the students collaborative narratives was in keeping with the level of education being explored by the module at any point in time. That is to say that the students responsible for narrating the history of the groups experiences at primary education had constructed the relevant narrative before the module moved on too far into the next level of education. This evidenced to the researcher that the participants were, as preciously discussed, engaged with each other in relations to their collaborative negation of the narrative that they were constructing. The StoryXchange templates, evidence of which was submitted in the participants individual digital portfolios demonstrated the progression of this engagement and the construction of their respective narratives.

The impact of the change of technologies employed by the design model on the narrative construction process were evident in the development of the students webpages. All of the students were encouraged as part of the rubrics provided engage with national and international research relevant to the main thrust of the topic that they were exploring (Appendix 1). All of the submissions via the webpages referenced major national and international research publications that related to the topic they were exploring. Indeed, the most notable evidence of this was in students narrative of groups' foreseeable future engagement with education (Figure 7.3) where they referenced significant OECD reports on the impact of ICT in the Irish Education System (OECD, 2015) (See Exemplar Submission in Appendix 12). As student 11 narrating the biographical histories of education for his group reflected:

'None of really new why certain technologies are used in secondary schools.
We had no idea the amount of confusion that exists in the teaching

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profession about what technology to use in any one situation. We though that this was very hap hazard but after chatting about it and looking at the history part of the module as well as our own experiences we kind of made sense of it. Technology has moved so quickly, the teaching profession can't keep up and then, based on our experience, some of them just give up because what they learned became irrelevant. Its a big challenge and the OECD report we talk about in our website shed a lot of light on this for us'

(Student X, Reflective Submission, 2015)

Figure 7.3: Screenshot of student webpage

As with the students who narrated the history of second level education for their respective groups, most of those engaged in the narration of third level education focused on technology as a narrative theme. In their narrative construction they drew on their own perceptions of what they though third level education was going to be like and cited the use of technology as the aspect of third level education that caused them the most anxiety, as indicated in the Focus Group Session:

> 'I suppose the biggest shock is becoming independent and a massive part of
> that is that nobody tells you how to do anything … really. You are kind of
> left to your own devices. Its hard … at first. We do get some help but a lot is
> thrown at us. This module started off with lots of help in the technology and
> the templates but at the end I kind of didn't need them as I think that I had
> gotten used to working with the others and managing my time for the
> continuous assessment. The one thing that I would say was that help was
> always there if we needed it.'

(Focus Group Session, 2015)

It was clear from the student submission that the process of constructing the assigned narratives was recognised by the students as something bigger than just another assignment. They recognised the processes contained within it it. They established a connection with the design model through their shared vision for the completion of the module project and understood that they were in this program together that the narrative construction was their expression of that closeness brought together by their own histories of education. This is echoed by the reflective submission of Student 7,

> 'At the outset of the program I felt that I might be left behind as I wasn't
> living in Galway, I was commuting in and out. This mean that I was alway
> under pressure for buses and lifts so I really didn't have the opportunity to
> spend time with the others they same way they could on a daily basis. This

module made sure that I got to know my classmates really well and by

having to tell their story of education I got to know more about them than I

ever could by sitting next to them in a big lecture room. Writing their stories

kept me in the loop and I felt part of the group. It was important to me.'

(Student 7, Reflective Submission, 2015)

The narrative construction process also facilitated, in concert with the other

interdependent variables, participants engagement with fourth level education. This had

been frustrated in Design Cycle 1, however in Design Cycle 2, the participants explored

fourth level education or their future engagement with education to quite an in-depth

degree despite the time constraints placed upon them as part of the module structures. The

impact of the embedded technologies in this respect cannot be overstated. The placement

of the collaborative digital artefact into the domain of the participants in the form a

collaboratively constructed webpage allowed asynchronous engagement which student

welcomed however more than that, students embraced the opportunity to participate with

existing educational communities, and each other, on Twitter and this was reflected in the

their submission and in particular their reflective essays. Student 6 articulated this

engagement in the following passage from her reflective essay:

'The engagement with Twitter was a good idea, as it also provided us with a

platform with which to follow accounts that www in the know with regards

to the Irish Education system which allowed us to form an educated opinion

on matters which could effect our future. Having our own hashtag on Twitter

also provided us with a platform with which to communicate with each other

and give and ask for help from others on the course'

(Student 6, Reflective Submission, 2015)

The narrative construction process at this level of education also served to reveal to participants the practice of in-service teachers and those active in the online educational space, as Student 8 commented,

> '… teachers are working more and more with others within communities than on their own. This is not what I though before the module. I think it is a big change for me to think this. Being part of a community is important as it means that you can ask a questions and their will be somebody there to help you answer the question, just like in our group and our class'

> (Student 8, Reflective Submission, 2015)

Participants clearly valued the narrative construction process from differing perspective with all but one participant indicating that it made a significant difference to their perception of what it means to be a teacher. The same student questioned the usefulness of collaborative work given the nature of terminal examinations and standardised testing in the Republic of Ireland at all levels of education, as a pedagogical practice however the same student recognised the importance of working with others to improve teaching practice in general.

The StoryXchange process had facilitated a number of positive outcomes for the participants as explored above. The process had provided a scaffolded continuity across the module that the student recognised as important to them. The grading rubrics provided clarity about the assessment model and they were supported in adequately supported in their engagement with the technological aspects of the module. All of these supports facilitated a 'hassle-free' engagement with the narrative construction process within which participants established a number of learning communities (Lenning & Ebbers, 1999), as will be explored in the relevant sections later in this chapter.

7.6.4 Technologies

Resultant from the analysis of Design Cycle 1, the interdependent variable, Technologies, was the single biggest factor in the stagnation of student engagement with the full range of the module content and the point of frustration for the formation of a residential learning community (Lenning & Ebbers, 1999). Identified in the earlier stages of this chapter were the design changes emergent from the Design Cycle 1. The fundamental change in the design model was the placement of the participants collaboratively constructed digital artefact into the domain of the students in the form of a website that all participants could both view and edit. As previously delineated this was indicated in the analysis of data as something that participants wanted to learn how to do from a professional standpoint while concomitantly indicating that it would give them the option of engaging with the module regardless of time and location. A key consideration in this initial design cycle was, therefore, the impact of any selected technologies on the other interdependent variables that define the design model. As was evidenced in Chapter 6, technology was the single overriding influence on the effectiveness of the design.

In Design Cycle 2 participants were required engage in two significant technological considerations. Firstly they were required to form, if they had not already done so, a Twitter account as an additional avenue within which to explore aspects of education that were of interest to them. Secondly, students were required to develop a collaborative website instead of collaboratively constructing an iBook, per Design Cycle 1. Their contribution to this website was aligned with the content of the module and the process of StoryXchange. Each student was provided with access to the website and assigned a page to upload their constructed narratives at each assigned level of education. Participants were encouraged, as per the module rubrics, to use hyperlinking between their group members pages to help them think about continuity not only across the narrative thread they were following from Primary to Fourth level education but also in terms of the consistency and continuity across the aesthetics of their contributions whilst concomitantly providing them with this additional digital skill.

7.6.4.1 Twitter

The participants in Design Cycle 2 welcomed the opportunity to develop a Twitter account and felt that such communications, Twitter in particular, represented a professional community. They felt that this was not something that they viewed as relevant to their personal lives, whereas they viewed communication tools such as Facebook, Snapchat or Instagram as more personal and 'private'.

During the first lesson of the module students were provided with a step-by-step guide on how to set up a Twitter account and were also provided with a number of pertinent, relevant, educational Twitter accounts to follow and were encouraged to follow each other (Appendix 9). During this session the researcher placed his own Twitter account on the large screen at the top of the room in order to demonstrate the very public nature of such Twitter accounts. The researcher felt that it was important to drive this concept home to the participants and felt a responsibly to highlight the longevity of an individuals' digital footprint. In this initial session participants were encouraged to take care when posting Tweets regarding individuals and that the internet was not a one way communication street.

The use of Twitter in the module, during the first number of weeks was limited however as the module progressed the participants began to engage with each other not just in relation to the module content and issues pertinent to their assessment model but rather with the wider educational community and specifically with mathematics communities. They also valued the mobility of the application and were pleased that it was something that they could engage with for the purpose of the module but also as the start of something that they could develop as in-service professionals. As Student X reflected during the focus group session:

'The Twitter account was a good idea. Before starting the course I used

Facebook quite a lot to keep in contact with friends and stay informed about

things that were important to me, but Facebook is … a personal thing.

Twitter, on the other hand … can be used for professional purposes. I liked

this separation between private and professional … but at the same time I

can access all of them when I am working if I need to. I think that having a

Twitter account is something that I will be able to use as a teacher ion the

future.'

(Focus Group Session, 2015)

Participants also felt the introduction of Twitter, from the outset of the module, had set the

tone for their engagement with the module indicating that they were immediately aware

of issues that were relevant to them as pre-service teachers and future in-service

practitioners. This was evident not only in the Face-2-Face interactions, the

StoryXchange templates that the completed and their engagement with the Twitter

platform, but also in their reflective essays and their collaborative narratives. As Student 5

wrote:

'The Twitter accounts that we used throughout the module helped us to stay

up to date with things that were happening in education today. For us, this

meant that we weren't just looking at the history part of the module on its

own.'

(Student 5, Reflective Submission, 2015)

The researcher, through his own Twitter account, was able to view the interactions of the

students as the module progressed, also noting:

'Initially the students didn't have the confidence to publicly state their

opinions and the instance of engagement on Twitter was minimal during the

first number of weeks. However, as the module content moved towards their

present position and future engagement with education the students appeared

to be able to engage critically with the communities that they are a part of.'

(Researcher Reflective Journal, 2015)

The observations of the researcher were also reflected in the responses of the participants to the administered questionnaire where students indicated that they felt their social media connections had informed not only their interactions with each other but also their understanding of topic and issues within education today (Figure 7.4).
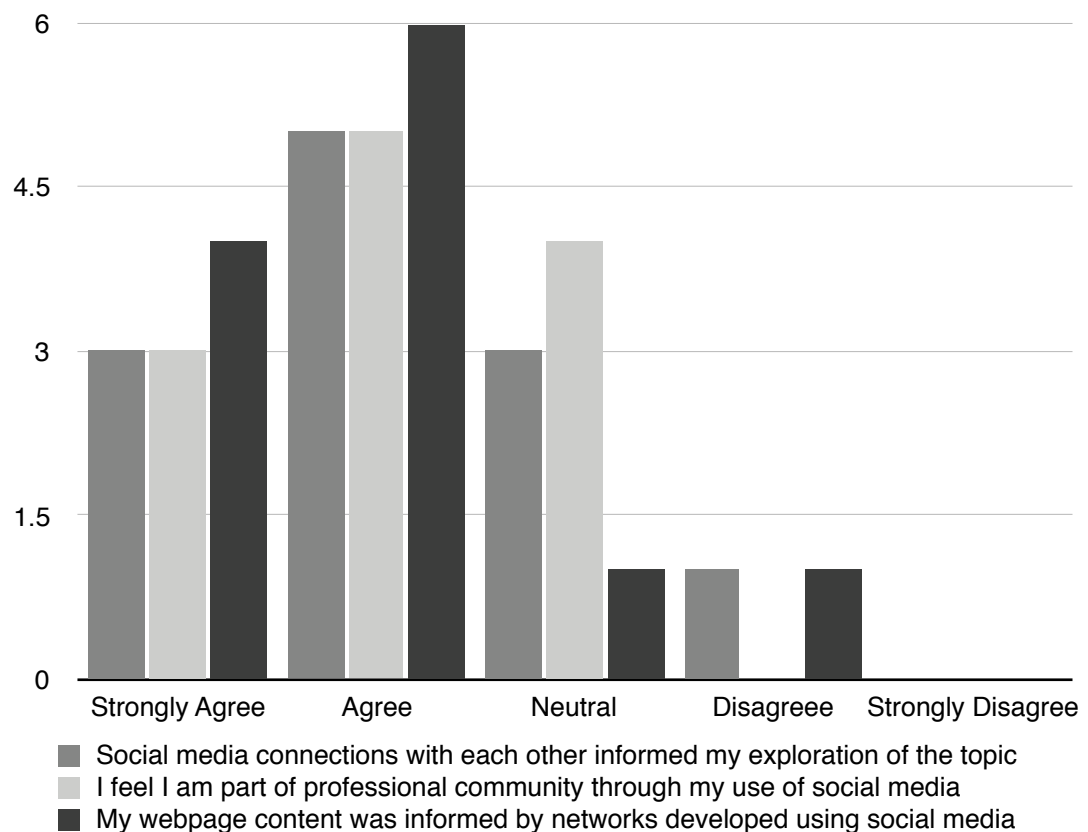
Figure 7.4: Participants views on the role of social media within the module

As Figure 7.4 highlights students were, for the most part engaged with social media communities pertinent to education and that the majority of these connections informed

their contributions to the collaborative digital artefacts. It is also evident, however that a small number of participants felt that their social media presence did not inform their contributions. The researcher delved a little deeper into the collected data to try and understand why this might have been so. It became apparent that some of the students, through the StoryXchange process had been informed of the emergent issues on social media and were content to trust the contributions of their group members, as Student 6 reflected:

'I thought the idea of opening the Twitter account was quite a good one. Some of the others were really good at getting information and they shared it in the groups on Mondays. To be honest I wasn't confident enough engage with the online groups and I was happy to take the word of my group members but it is something that I think that I am slowly getting better at'

(Student 6, Reflective Submission, 2015)

Also highlighted in Figure 7.4, participants recognised the importance of establishing their own network for communication during the module and across the programme that they were enrolled in and, in particular, the asynchronous aspects of that network. This had been an issue for the participants of Design Cycle 1. A comment by one of the Design Cycle 2 students reflected, quite accurately, the thoughts of the cohort in relation to this,

'In secondary school we weren't allowed to have any mobile technology in our classrooms. The technology we are using in this module is the technology that the teachers were allowed to have, but not the students. Using the Twitter account allowed me to feel more responsible and part of the teaching world, but more than that, I never felt alone. I could alway reach out to my classmates and discuss the module, yes, but other things too, if I needed to.'

(Student 5, Reflective Submission, 2015)

The effectiveness of the implementation of this aspect of Design Cycle 2 had, in tandem with the introduction of the collaborative website construction element of the module, offered students an opportunity to establish a network with each other that wasn't dependent on the traditional physicality of the university and its supporting structures while still retaining its academic focus. The success of this, in terms of learning community formation (Lenning & Ebbers, 1999) will be discussed in the sections to follow. However at this point it is sufficient to note the this had a significant impact on community formation as a result of participation within the designed environment.

7.6.4.2 Weebly

As with the success with the introduction of Twitter to the module, the mobility of a website had been highlighted as attractive by Design Cycle 1 participants. In Chapter 6, it became apparent that the naturalistic context (Barab, 2006) was not just the context of the design environment but also the context of the participants and their perception of what their future engagement with education might look like. Part of that vision was employment that may not be based in one location. As many of the students pointed out, particularly after they had become more engaged with online communities later in the module, many teachers in the Republic of Ireland were not in full-time employment and often worked in multiple schools, sometimes simultaneously. The researcher, when iteratively refining the design model from Design Cycle 1 needed to be cognisant of this concern and ask what type of digital submission, supported by a TELE, would both benefit students in terms of developing their technological skill sets and also the demands of mobility that their vision of the teaching profession presented to them. A website was cited by participants in Design Cycle 1 as desirable. Consequently the researcher decided to engage the website building platform Weebly as an extension of the university based TELE out into the mobile domain of the participants in a manner that they considered relevant to them as future in-service teachers.

Weebly was introduced to the cohort in Week 3, as detailed in the module lesson plans (Appendix 11), at a point where all of the groups were developing content that was ready to upload. The researcher felt that to introduce this any earlier would frustrate students who wanted to engage in meaningful practice or trial configurations. The introduction to the platform was initiated through the step-by-step guide designed by the researcher (Appendix 9). This guide was designed in order to support the participants engagement with the module. Weekly was selected for its user friendly 'drag and drop' interface. Also, all of the freely accessible functions were relevant to the participants and so the researcher felt that this platform would provide an opportunity for the students to engage with a platform in all of the basic and intermediate features it had to offer. All of these features were explained in the step-by-step guide placed within the TELE on BlackBoard.

Students welcomed the guide and found that they had little trouble negotiating the platform and were pleased that it was accessible across multiple platforms and in particular on mobile devices. As Student 2X indicated in the focus group session:

'… there were a couple of things that stood out for me … the drag and drop was really easy and when I made a mistake I could change it back easily enough … and the other one was the different devices I could access it on … I mean I even did a bit on my phone when it suited me'

(Focus Group Session, 2015)

As illustrated in Figure 7.5, there were some students who expressed some frustration with working in an online environment, as expressed in the focus group session:

'It [Weebly] was easy to use but I had trouble saving my work a couple of times because of the internet speed that I have where I live … on campus it

was fine but at home it was a problem … but I did get around it and I think

in a work setting this wouldn't be a problem … I wouldn't change it, like.'
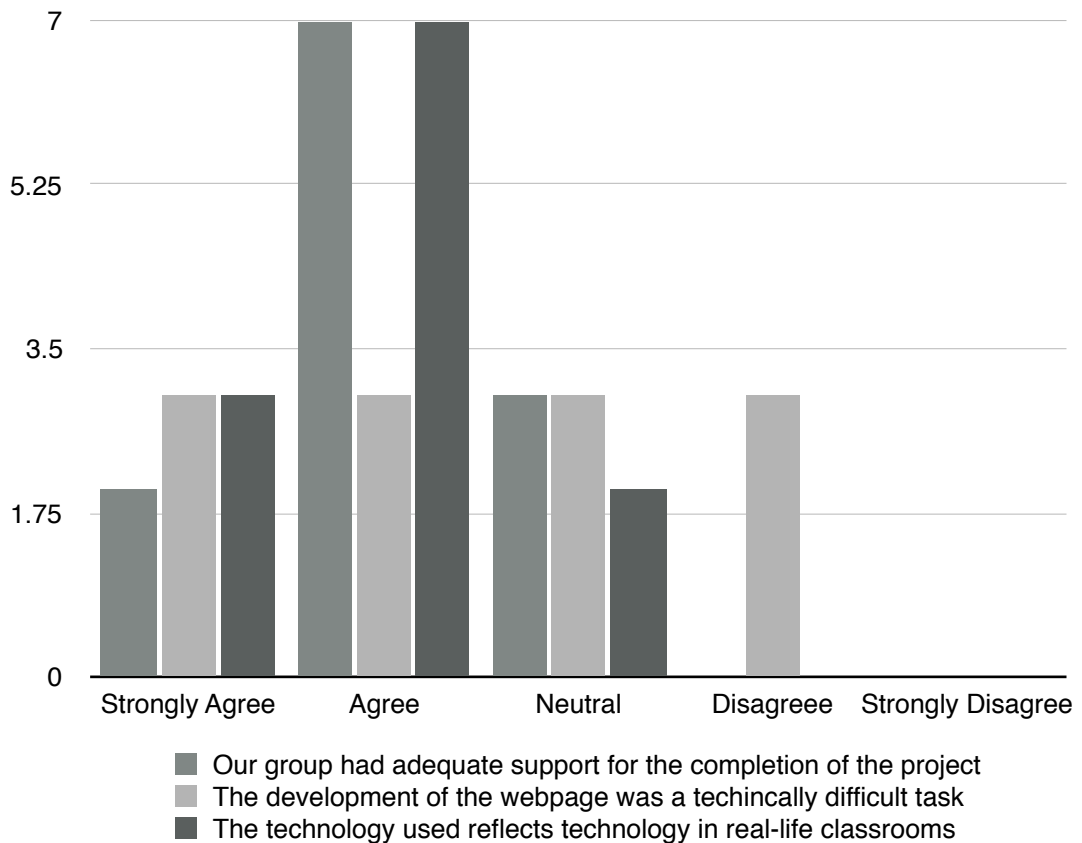
(Focus Group Session, 2015)

Figure 7.5: Participants views on the ease use an relevance of platform - Weebly

This attitude of this student in particular is evidence of the cohorts indication to the

researcher of the importance of the skills that they were learning. They recognised that

these are difficulties that they will have to overcome when they are on teaching practice

or indeed when they become in-service professionals. As Student 10 reflected:

'As part of this module we had to learn how to build a website. This was

something that I had always wanted to do but never really had the

confidence to have a go at. In this course I had to do it and after a short while

I found it quite easy to use. Some of the teachers that I had in secondary

school had their own personal websites where they put notes and solutions or

extra materials for us to look at and I found that having access to information

like that from my teachers was very helpful. I like the way that I am learning

to do the same thing for the students that I will teach.'

(Student 10, Reflective Submission, 2015)

In Design Cycle 1 participants were frustrated with the restrictions on access and mobility

regarding both software and hardware, however they welcomed the skill sets that they

were developing. The participants in Design Cycle 2 experienced improved accessibility

and mobility as well as appreciating the skills sets they were acquiring. The decision to

place the construction of the collaborative digital artefact had been justified in the eyes of

both the participant and the researcher. The researcher noted:

'I had hoped that the students would value the skills that they were

developing and this is evident in the reflective essays that they have

submitted. The focus group also threw this up. The negative issues of

mobility and accessibility in Design Cycle 1 have been addressed and they

are now positives that the participants place quite a high value on.'

(Researcher Reflective Journal, 2015)

7.6.4.3 CSCL / VLE

As illustrated in Figure 7.5 above, participants were asked to indicate if they felt that they

had adequate resources to complete the assigned project. Most of the participants

indicated that they felt that they did, however, as one participant pointed out:

'Don't get me wrong I think it was great that I learned how to make the

website and I know have those skills but I felt very much swamped at the

start … even though there was help there for me I wasn't confident enough to

ask for it [help] … I think that I am now … but not then.*'*

The researcher dug little deeper to try and understand why this student felt this way

despite the vast amount of resources available to this student and resources that other

participants had praised. The reflective essay of this participant painted a much more

detailed picture:

'Having completed the module I see that learning how to use Weebly and

build a website will be very useful for me in the future as a teacher but at the

start I was really not that happy with it. In my secondary school we had very

little experience with computers and no experience doing websites. It wasn't

just this subject, when I arrived at college everything was digital and on

BlackBoard. It took me ages to get used to how that worked so while I was

just getting used to that, this subject asked me to learn something else digital.

I see now why it is important and I feel it it will be important to be able to do

this in the future but it was a lot to take in at the start - maybe we could be

shown the details of BlackBoard first before the website.*'*

(Student 12 Reflective Submission, 2015)

This student had articulated a significant issue in relation to a lack of continuity between

technologies in second level education and third level education in the Republic of

Ireland. As with Design Cycle 1, participants in Design Cycle 2 were expressing

frustration with the expectations placed upon them in terms of the digital capabilities and

were asking for more instruction. The guiding nature of the digital tuition that this design

environment was providing was being recognised as an environment within which they

could develop the transitional skills expected of them. As Student 4 reflected,

'When I left secondary school I though I was pretty good with technology, but as soon as I was in college I realised that I had so much to learn and I want sure where or how I was going to learn this. This module definitely gave me a lot of skill and confidence going forward in this course. It would be great to have more of the technology as part of the module …'

(Student 4, Reflective Submission, 2015)

This comment by Student 4 is typical of all of the participants of this research study (N=32). The researcher though about this aspect of the module numerous times throughout the design study however, as the researcher reflected:

'The participants have, on countless occasion, suggested and indeed requested that they receive more tuition in relation to their digital skills, particularly in relation to technologies that are relevant to them in the more general university setting. This module, however is about the History and Structure of the Irish Education System, to introduce anymore technological elements to the module would only serve to distract from the learning outcomes and the purpose of the module - to help students to transition in undergradute teaching and towards professional practice.'

(Researcher Reflective Journal, 2015)

7.6.4.4   Availability & Accessibility

The issues that had emerged from the Design Cycle 1 in term sou availability and accessibility of technologies have been ameliorated in Design Cycle 2. The design changes made by the researcher, in response to the data collected from Design Cycle 1 participants, informed by relevant, pertinent literature and drawing on the experience of the researcher had served to build a bridge between the formal educational setting of the

B.A. Mathematic & Education programs that the participants were enrolled in and the informal connection that they have with the teaching profession as undergraduate trainee teachers. The technologies implemented within the designed environment had encouraged them to view the module as an environment where they could engage with each other in a number of ways. Firstly, participants could asynchronously engage with the module; secondly, asynchronously engage with each other and; thirdly, asynchronously engage with the education continuum they were now part of as a result of their enrolment in the program.

Evident in this design cycle, aside from the resolution of design issues emergent from Design Cycle 1, is the importance of availability and accessibility to the dynamic structures of the education continuum. It is evident that technologies employed in educational settings are not confined by institutional structures, rather they must be determined by those that use them. The changes implemented in Design Cycle 2 recognised this and were successful in helping participants make a smoother transition into undergraduate initial teacher education and towards professional practice.

7.7   Learning Community Formation

The identified learning communities (Lenning & Ebbers, 1999) discussed in Chapters 1, 2 and 3 and the development of same within Design Cycle 1 discussed in Chapter 6, are of critical importance to this design-based research study. In Chapter 6, it was evidenced that the design environment was successful in helping participant form three out of four learning communities: curricular, situational and student-type learning communities (Figure 6.20) (Lenning & Ebbers, 1999). The development of the fourth leaning community - a residential learning community, had been frustrated restrictions placed on technologies within the design environment. As explored in the above sections, the researcher addressed these issues, informed by the data collected from participants, pertinent relevant literature and the conceptual framework that supports the design environment.

In the sections that follow, the effect of the aforementioned design changes will be explored from the perspective of learning community formation and in particular the designed, sequential establishment of all four learning communities which in the context of this research study, indicate the resultant establishment of an emergent community of practice in an undergraduate initial teacher education programme.

7.7.1   Curricular Community Engagement

The findings of Design Cycle 1 were replicated within Design Cycle 2. Issues regarding the dual position of the participants as members of the general undergraduate population and their concomitant membership of a professional programme were evident. they shared concerns regarding their ability to collaborate, to critically engage with programme material, to construct coherent narratives and they were particularly concerned with the technologies they were faced with using both on campus and in the future as in-service professionals.

As with Design Cycle 1, this iteration limited the historical content within the module to areas that were pertinent to the the levels of education that in-service practitioners engage with during their career. This was explained to the participants as the educational continuum - detailed earlier in this document.

The first three weeks of the iteration, again, dealt with an introduction to the module and to primary education through the process of StoryXchange. Participants every much enjoyed the process, reminiscing about their memories of their first days at school and trying to understand the policies and practices that influenced their experience during those formative years. During this phase of the exploration of the module content students were encouraged to engage with family and friends to help them root their academic work in the very communities that shaped their personal experiences.

Second level education was, as with Design Cycle 1 enthusiastically explored as the most recent experience of the their educational timeline. The participants were particularly interested in the role of technology in the teaching of mathematics. It was interesting to note the limited use of technology in the experience of these participants. They referred to it as a teaching technology rather than a learning technology and their was no instance across either design cycle where the participants were in possession of the technologies. As explored in earlier sections, technology was always referred to as the teachers' technology.

Again, third level education was explored tentatively, reflecting their own relatively new entrance to undergraduate education. Lenning & Ebbers' (1999) definition of a curricular learning community as being a 'communities consist[ing] of students who are enrolled together in two or more modules that draw on different disciplines'(Lenning & Ebbers, 1999, p.15) was both evident within this design environment. Consistent with Design Cycle 1, these participants made distinctions between the mathematics subject they were being instructed in and the learning sciences that they also had to study. In addition, the collaborative process revealed the duality of their position in education as third level students and undergraduate pre-service teachers. They had enrolled in a mathematics course as individual, however their engagement with the module content was defining them as a curricular learning community.

This was particularly evident within the data collected and demonstrative of a coming together to explore a topic that most had considered to stand apart from the teaching of mathematics. As Student 8 reflected:

> 'At first I was very hesitant about the module because I never liked history
> in school because I found it very boring if I'm honest. 9 o clock double
> lectures on a Monday morning was something that I dreaded …'

(Student 8, Reflective Submission, 2015)

This was a sentiment echoed by other participants and highlighted the compartmentalisation that students experience in second level education,

'When I started my BA in mathematics and education I was surprised that we have to do subject like 'history and education'. I never liked history in school, for me it seemed to be very boring and and it was very hard. I would rather spend few hours trying to solve some numerical problems.'

(Student 10, Reflective Submission, 2015)

These reflective instances demonstrate the, initial, fractured view of education that exists with the pre-service teaching community and in particularly in relation to the history of education as a foundational study in education. However, as students progressed through the designed module intervention their views about the relationship of one curricula subject to another changes as they themselves began to explore the educational structures that had led them to their position within the programme. As Student 1 went on to reflect,

'During this module, we explored the different levels of education: primary, second level, third level and fourth level. For each level, in our groups we had a StoryXchange of our experiences of those levels of education. I found these discussions very beneficial as we got to know each other very well, very easily. It was very interesting and insightful to hear the different experiences we have had so far and how it has lead us to this point. These discussions reflected the history and structure of Irish education and helped me to engage with the content of the module more because we could relate it to our own lives and see how these structures and the history have effected our lives and indeed our education to date.'

(Student 1, Reflective Submission, 2015)

This exploration was possible because of the continued use of a highly scaffolded TELE from the outset and in particular during participants' exploration of primary and secondary education. The de-scaffolding process, successful in Design Cycle 1, continued to help the participants to act not as individuals, although they did when the needed to, but rather they learned to rely on each other particularly during their exploration of the development of the third level education sector in Ireland, again, mirroring their own uncertainty and their insecurities as new entrants to third level education.

It could be considered that the formation of a curricular learning community (Lenning & Ebbers, 1999) is true of many instances of engagement with education, however, what is evident in this design-based research study is that the process of realisation of the importance of one curricular subject to another, in this case a radically different subject, is also a process of meaning making (Heidegger, 1962) within the designed environment. Participants had engaged in a collaborative process that had rendered the subject both personally and professionally relevant to this within the established curricular learning community and a basis from which to develop a deeper sense of themselves within the continuum education.

The role of the StoryXchange process (detailed in Appendix 11) at this point in the participants engagement with the module must not be understated. The highly scaffolded nature of the process allows participants to bridge from a second level learning environment into a learning environment that is less structured and highly expectant. StoryXchange provides continuity and reassurance to the participants and as the twelve week module progresses removes, slowly the scaffolds that students are used to as their reliance on each other increases. The foundation upon which this double-gyred process stands is the designed formation of a curricular learn community through a collaborative exploration of the participants histories of education.

7.7.2   Student-Type Learning Community Engagement

Lenning & Ebbers' (1999) definition of a student-type learning community is a 'distinct learning community grouping defines the group as having a common purpose or goal. A shared interest and reason for enrolling in a programme or co-enrolling in a number of modules.'(Lenning & Ebbers, 1999).

As described by Lenning & Ebbers (1999), and evident in the analysis of Design Cycle 1 the establishment of a Student-Type learning community is predicted upon the development of a vision or goal pertinent to all involved within a programme. The physical act of enrolling in the B.A. Mathematics & Education programme at NUIG is sufficient to loosely describe the participants as a community of student-type learners. However, as was evident in the analysis of data across both design cycles the participants as new entrants to third level education and the undergraduate teaching programme developed a curricular learning community in the initial weeks of their engagement with the designed intervention. The StoryXchange process brought them together and gave them common purpose or goals within the module. However it was the wider, literature informed and theoretically framed, design intervention that allowed that module focus to become pertinent to the context of their position of pre-service through the interdependent variable that framed that engagement - focused through their biographical engagement with education, their own personal histories of education.

The impact of this process was particularly evident within the reflective submissions of the participants. As Student 12 noted,

> 'As we learned more about each other we found that we had pretty much all thought the same way about teaching. Know that that view changed towards the end, but as we looked deeper into the history of education we found that we all had the same outlook for the future and pretty much them same conners, especially around technology'

(Student 12, Reflective Submission, 2015)

The twelve student participants all listed across multiple data points within the study that technology was a major concern as the moved towards professional practice and that they were anxious to ameliorate this. This common anxiety and subsequent actions to address this issue, was facilitated by the designed environment and channelled them towards building a shared vision of the future. This process established them, as it had in Design Cycle 1, as a student-type learning community (Lenning & Ebbers, 1999) with a common purpose.

7.7.3   Situational Community Engagement

As with the designed, sequential establishment of curricular and student-type learning communities, reflective of same within in Design Cycle 1, the development of a situational learning community could also be considered to be a product of the physical conditions of the classroom situation within the initial teacher education programme that the research study was situated. However, as Lenning & Ebbers (1999) maintain it is the focus on the interactions within a pedagogically designed learning environment that facilitate the establishment of such a learning community, 'a community of learners where the classroom or situation is the axis around which all interaction is based. In this environment co-operation and group activities are shaped by pedagogical direction' (Lenning & Ebbers, 1999)

The StoryXchange process had allowed participants to come together to explore two, perceive to be, radically different curricular subject and through that exploration to construct a shared vision of the future education. The collaborative aspect o the process was central to this progression and founded upon issues emergent from chapters 2, 3 & 5. Participants' engagement with their own histories of education allowed them to do this channelled through the pedagogical structures built into the process. The highly scaffolded nature of the module allowed them to explore, in particular issue pertinent to the cohort at third level education. During this exploration students did not have the same

supports within the process that they had in the earlier weeks of the intervention. The pedagogical process, at this juncture, intended them to turn toward each other for help.

Building on the success of Design Cycle 1, this iteration aimed to continue to place Face-2-Face communication at the very heart of these engagements though the StoryXchange process continuing the importance of making the classroom the 'locus of community building' (Lenning & Ebbers, 1999).

This aim was realised as Face-2-Face engagement with content, the process narrative construction, the submitted artefact and the investment of time were all evident for the duration of the module. The researcher reflected:

> 'The Face-2-Face contact on Monday mornings was focused and refreshingly loud. Most of the students, after a couple of weeks were not afraid to speak to each other about their own experiences. The impact of this appears to be that this encourages others [groups] to do the same. During the students exploration of second level education students used quite a number of the resources available to them, however, as the availability of these resources diminished while they explored third and fourth level education, participants began to develop a style of negotiation as to who would look after what and when they might deliver to the rest of the group. The structure to that point had prepared or in some ways conditioned them to do this.'

> (Researcher Reflective Journal, 2015)

This was particularly evident when students engaged in their exploration of third level education the process of their collaborative narrative construction. This de-scaffolding of materials that would support the participants channelled them towards each other at a natural juncture in the module content - third level education. At this point they engaged

with each other in an interpersonal exploration of each others decision making process to that led them to enrolling in the B.A. Mathematics & Education programme at NUIG and the reasons for that decision. As the researcher noted,

> 'Many of the students are discussing the topics that they have covered in the first half of the module as significant factors in the their decision making process to become teachers. Particularly interesting is the way they are beginning to discuss what it means to be a teacher with some of them beginning to challenge their established view of the profession'

<div align="right">(Researcher Reflective Journal, 2015)</div>

The repetitive and highly structured process of StoryXchange process which formed the basis for all pedagogical engagement in the classroom allowed them to discuss the issue that were pertinent to them within an environment where Face-2-Face interaction was supported and core to their engagement. As one student reflected,

> 'I was assigned third level education to narrate on behalf of the group. This wouldn't have been my choice at the start as I had no experience of it [third level education] but after a while I found that it was the most interesting of all the topics that could be assigned. In the classroom we were able to put all of our thoughts on the templates and use our laptops and phones to fill in the gaps in our knowledge as well as asking the lecturer. It was far easier than I thought it was going to be'

<div align="right">(Student 7, Reflective Submission, 2015)</div>

As with Design Cycle 1, participants in Design Cycle 2 were eager to point out the importance of this face-2-face classroom contact time. They believed that the structured nature of the process on Monday mornings allowed them to come together at the start of the week and prepare for the week as a cohort. As student 6 reflected,

'I think we all were taken by surprise that we would be studying history and

that it would be at 9.00am on Monday mornings. I certainly wasn't looking

forward to it, but as the weeks went on I looked forward to hearing what the

others had gotten up to and to finding out more about them as we went

through the in-class activities. The templates were great in that they meant

we knew what we were doing each week even if it was always about some

thing different … we kind of used it to touch base with each other and get set

for the week together.'

(Student 6, Reflective Submission, 2015)

The researcher probed this little further during the focus group sessions and found that the

contact students had with each other on Monday morning was important to all involved

with all participants indicating that this was an important aspect of both the module and

the programme that they were enrolled in. Participants also mentioned that:

'There wasn't as much material available on third level … I mean you had to

work harder to be able to write about it as it is still happening for us. There

wasn't as much stuff on Blackboard and so when we talked about it, it was

more about us … as a group.'

(Focus Group Session, 2015)

The students indicated that they viewed the Face-2-Face interactions as the locus of their

engagement with third level education and all of the participants indicated that this had a

positive impact on their initial weeks at university. In addition, they cited the embedded

nature and accessibility of the technologies utilised as helpful to them. Many of the

participants indicated that, as explored in previous sections, the demands placed upon

them upon entry to third level where technologically challenging. The indicated that technologies within the module helped them to mitigate that challenge.

As detailed, critical to the development of this situational learning community were the designed, structured Face-2-Face interactions that the StoryXchange process provided to participants each Monday morning. The development of this learning community was preceded by the nurturing of the curricular and student-type learning communities established in the weeks running up to their exploration of third level education. The pedagogical alignment within the design model clearly facilitated the groups' development oft his situation learning community as they had established relationships based on the common biographical histories of education and had already been through a process of challenge and negotiation regarding primary and second level education. Faced with a reduction in the amount of resources available to them they turned to each other. As per Design Cycle 1, participants were beginning total responsibility for their own investigation of the module material and consequently transitioning from being dependent individuals to becoming interdependent collaborators as members of a situational leaning community within the initial teacher education programme that they were enrolled in.

7.7.4   Residential Learning Community Engagement

During the analysis of Design Cycle 1 it had become apparent that many students were frustrated with the absence of opportunity to engage asynchronously with each other regarding their projects. Ultimately this had hampered, in the eyes of the particularly, the quality of their engagement with the module content and in particularly with each other. In addition the participants did not engage with established communities beyond the module constructs such as in-service teacher communities and did not engage with each other regarding the module other than occasional private messages related to timelines and assessment procedures. The development of a residential learning community Lenning & Ebbers (1999), defined as 'learning communities that provide opportunities to engage in learning outcomes and activity away from the physical constraints of the

classroom, usually when living in close proximity to one another.'(Lenning & Ebbers, 1999, p.15)

As explored in Chapter 3, Chapter 4 and evidenced in the analysis of Design Cycle 1 in Chapter 6, this research contends that such engagement is not confined to the proximity of residence rather it is, in contemporary teaching and learning environments it extends beyond face-2-face contact and into the digital domains of the participants through asynchronous engagement supported by technologies such as social media and mobile technology.

In contrast to Design Cycle 1, the second iteration of the designed environment TWO-CENTs, facilitated asynchronous engagement by placing the focus of digital academic engagement in the digital domain of the students in the form of a collaboratively constructed website. In addition students were, as previously detailed, encouraged to engage with communities active on social media that were relevant to their engagement with the module content. As will be delineated in the text that follows, this significant design change allowed participants to establish a residential learning community as defined by Lenning & Ebbers (1999) and built upon in this research study taking note of the digital communications that have evolved since.

In the initial session together at the start of the module participants were provided with detailed instructions regarding both opening and maintaining a Twitter account Appendix 9). The participants indicated in the focus group sessions that:

> 'The instructions were good … they told us what we need to know and not a load of stuff that didn't matter … it made it easier to get going … I also like the way we were told about it being important to think about what we post … as people can challenge you on what you say … it's a lot different from [secondary] school'

> (Focus Group Session, 2015)

This view of the use of this technology was echoed by Student 2 who commented that Twitter:

> 'was at first really new. I was a bit nervous about posting anything as it is pretty professional compared to what we do on Facebook … after a while though I was happy enough to ReTweet stuff that I thought was important.'

> (Focus Group Session, 2015)

In addition, students indicated that they felt that engaging with the establish online educational communities had helped them to find out more about what was going on in education today beyond the programme that they were enrolled in. Participants also expressed that this had helped them to consider what their future engagement with education may look like and that many of them ended up becoming part of the same online communities as a consequence of their use of the social media tool. The impact of this aspect of the module was noted by Student 5 and representative of the entire cohort,

> 'Twitter, was for me, a huge part of their module. Using it allowed me to interact with people who work where I am trying to get to. While I didn't contribute a huge amount through Tweeting I learned an awful lot about what is relevant in education right now and as I was responsible to writing about what this meant to my group it was a way of getting information when there seemed like there was none to be had. Plus, it meant that we [group] were all able to see it and talk about it online so that the website was right when I was finished it and we were all happy with it … Out of all of the stuff I have done in this module keeping in touch with things through Twitter will be something that I keep doing in the future'

> (Student 5, Reflective Submission, 2014)

The researcher noted in his journal,

'the participants in this study have taken to using Twitter quite easily and

are beginning to engage with communities that were not indicated to them at

the outset however what is more important in relation to this study is the

manner in which they are bringing contemporary issues that they are

discovering through forums in Twitter into their academic discussion on

Monday mornings and into their collaboratively constructed webpages.'

(Researcher Reflective Journal, 2015)

As a consequence of students asynchronous engagement with the established online

educational communities that they connected with, noted by the researcher and evident in

their collaboratively constructed online space, participants brought issue sand topics

pertinent to them as individuals to the groups that they were assigned to and then, as a

result of the open and collaborative nature of the shared Face-2-Face and online space,

they brought these issues and topics to the attention of the wider cohort. These issues and

topics typically included pay and conditions, employment status, curriculum development

and international employment. As participants debated these during the Face-2-Face

sessions they built upon the meaning that they had constructed together regarding the

module content. In turn when it came to the development of their negotiated webpages

they were incredibly well informed discussing contemporary issues rooted in established

historical fact.

The relative success of this intervention, the sequential and structured development of

four identified learning communities, lies in the interaction between members of groups

as part of a networked cohort within their shared online space. The website, hosted on

Weebly, allowed participants to cross reference each others work, to view the work of

others and within their groups to edit each others contributions. The nature of the host

platform meant that access was possible at any place or time. This was a major sticking

point in the development of a residential lending community with Design Cycle 1. In

contrast to the outcome of the first iteration, a residential leaning community, as defined

above for the purposes of this research study, was established during this design cycle.

As posited and delineated within earlier chapters, the structured and sequential development of Lenning & Ebbers (1999) four identified learning communities within the designed environment would constitute the development an emergent community of practice within an undergraduate initial teacher education programme. In the case of Design Cycle 1, the first three were established with the development of a residential learning community being frustrated due to technological restrictions on the design model. The changes implemented after the analysis phase of Design Cycle 1 and implemented with Design Cycle 2 resulted in the sequential and intentional establishment of al four learning communities (Figure 7.7).

Curricular Learning Community   **Situational Learning Community**

Student Type Learning Community   **Residential Learning Community**
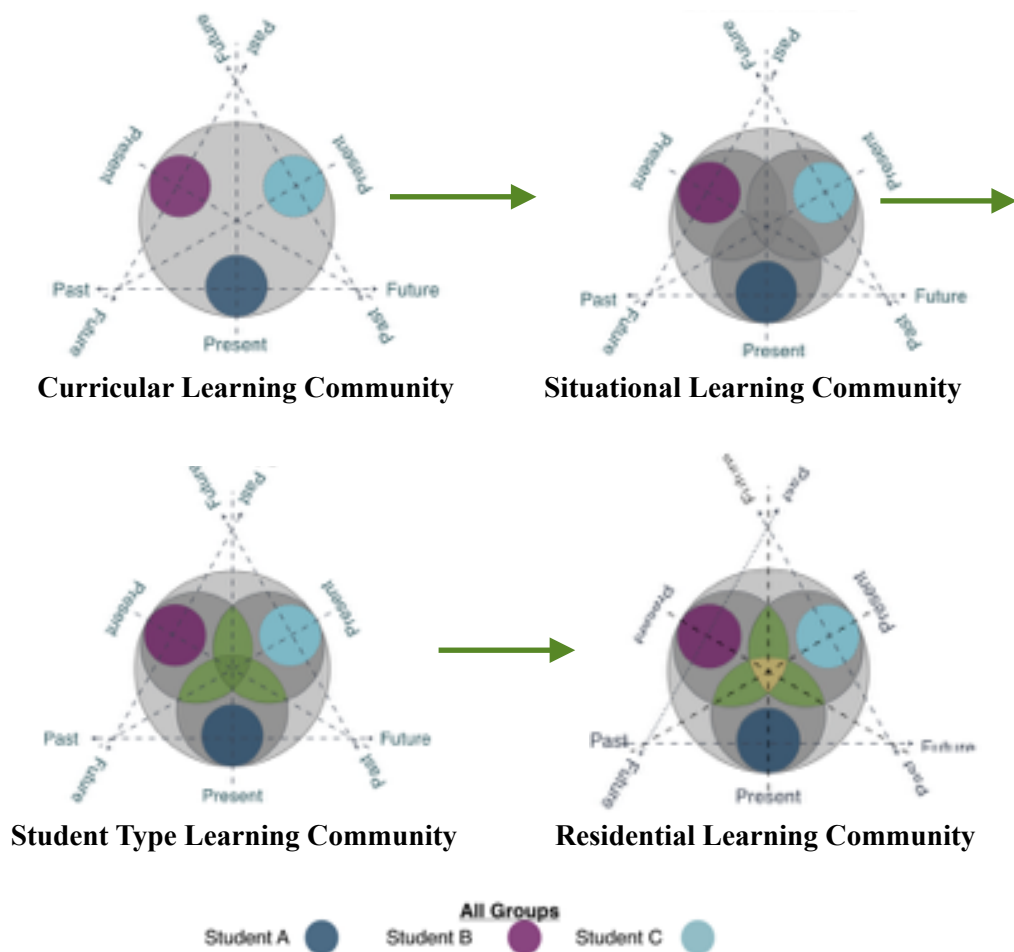
Figure 7.7: Sequential formation of four identified learning communities - representative of the emergence of a community of practice in undergraduate ITE

A community of practice as defined within and for the purposes of this thesis by Lave & Wenger (1991) as a

'set of relations among persons, activity and world, over time and in relation with other overlapping … communities of practice'

(Lave & Wenger, 1991, p.98)

and in the case of the designed environment emergent from design-based research study such interactions are evident in the interactions of the participants within Design Cycle 2.

7.8   Chapter Summary

This chapter had been dedicated to the presentation of the application and analysis of the second iteration of the designed environment. This iteration was informed by the outcomes of Design Cycle 1, the extant literature and thematically refined through the development of the conceptual framework, TWO-CENTs. The analysis of this second iteration highlighted the resultant formation of the four identified, distinct sequentially constructed learning communities. The next chapter will discuss the findings of this design-based research study which aimed to establish an emergent community of practice through a collaborative engagement with history of education in an undergraduate initial teacher education programme.

Chapter 8:   Findings, Discussion & Conclusion

8.1   Chapter Introduction

This, the final chapter in this thesis, aims to reflect on the design process of this research study. A summary of the structure of the report is presented and a definition of the emergent design model TWO-CENTs is delineated for others to adopt and adapt in cognate settings. The findings and contributions of this research study are delineated, the limitations of the study are discussed and opportunities for future research are explored.

8.2   Summary of thesis structure

This research study was framed by one principal research question: How can a collaborative engagement with the history of education help to establish an emergent community of practice in undergraduate initial teacher education?

This principle research question was supplemented by two supporting questions and one supporting objective:

1. Did a collaborative engagement with the history of education enhance collaborative practice and the development of 21st century skills within a designed learning environment?

2. If so, what kind of learning communities were formed within this dynamic?

3. Finally, this thesis sought to establish a set of design sensitivities that could act as resources for others with similar aims and objectives to adapt and adopt in cognate settings.

Chapter 8: Phase 3 - Reflection

At the outset of this design-based research (Barab, 2006) study it was evident that no prior studies had been conducted that aimed to establish an emergent community of practice (Lave & Wenger, 1991) through a collaborative engagement with the history of education in an undergraduate initial teacher education programme. To this end the structure of this thesis was such to allow the researcher to explore this concept.

The first chapter delineated the researcher's own motivation for initiating and carrying out this study as well as detailing the rationale for the study itself. The research questions, re-iterated above, were formed and the most pertinent issues relating to the establishment of this questions were presented for further interrogation later in the thesis.

Chapter 2 of this document highlighted, examined and detailed the serious issues facing new entrants to both third level education in general and more specifically, undergraduate initial teacher education in the Republic of Ireland (Conway *et al*, 1999; Smyth, Banks & Calvert, 2011). Referred to as a concept of Transition, a number of key challenges emerged from this review and were identified as challenges that would need to be addressed as part of any effort to positively effect the difficult transition that new entrants into undergraduate ITE have to make as they move towards professional practice.

In Chapter 3 a thematic review of pertinent, relevant literature in the field was carried out. This thematic review was framed by issues that emerged from Chapter 2. It all aimed to identify what efforts had been made by institutions, researcher and practitioners to enhance engagement with the history of education and to try and establish communities of practice within initial teacher education programmes and educational settings. Building on the outcomes of Chapter 2, Chapter 3 concludes with a characterisation of the challenges that student teachers face and what is expected of them, a characterisation that concomitantly acts as a descriptor for the effect construction of learning communities (Lenning & Ebbers, 1999) in educational settings. The identification of these dual characteristics therefore helped to identify a methodological approach for the research

study in an effort to design a learning environment that could help new entrants to undergraduate ITE transition into the programme and towards professional practice through a collaborative engagement with the history of education.

Established upon the findings of Chapters 2 and 3, Chapter 4 delineates the methodological approach employed in their research study. Design-Based Research (Barab, 2006) was chosen as a suitable methodology and its appropriateness in research studies that are design driven was detailed. Design-Based Research, as explained in detail in Chapter 4, is a reflexive and responsive methodological approach to educational research. Theory drives the design of an intervention, iteratively refined in practice and theory is then, in turn, informed by resultant outcomes. At all times the connection between theory and practice is mediated through the designed intervention addressing the research questions identified at the outset of the study. This robust, flexibility, was considered most suitable to the design of a learning environment that could respond to the principle research question and the supporting objectives previously listed.

As identified with the selection of DBR as a research methodology, theoretical considerations inform the design of any intervention within the research study. Therefore, Chapter 5 sought to conceptually frame the design intervention by establishing design aspects or themes that would guide the thesis examination of the effectiveness of a designed intervention to address the research questions. Framing the intervention in this fashion would allow a conversation to open up between the theoretical framework supporting the design an the practical application of the design in situ, thus connecting theory and practice within the iterative process of DBR. To this end, the characteristics identified in Chapters 2 and 3 were used to establish a set of conceptually framed interdependent variables as a lens through which to determine the effectiveness of the design intervention and to inform subsequent iterations during the research study. A prototype design model was established and during the iterative phase of this research study was refined to become: TWO-CENTs.

Both Chapters 6 and 7 delineate the design, implementation and analysis of the designed intervention and act as guidelines for others engaged in similar efforts within cognate settings. The TWO-CENTs model evolved during this iterative process and the narrative considerations of the researcher, informed by the theoretical underpinnings of the design process, are detailed. The output of these two important chapters, detailed later in this chapter, are a set of design sensitivities and implementation guidelines that can be utilised by others who which to help student transition into undergraduate ITE and towards professional practice.

8.3   TWO-CENTs design model

The TWO-CENTs design output and adaptable and adoptable guidelines for replication from this multi-cycle research study are described as interdependent variables or design sensitivities (Ciolfi & Bannon, 2003). A number of design informants also comprise the totality of this output and are crucial in the implementation of the design model in cognate settings.

8.2.1   Design heuristics

Here follows a summary of the guidelines emergent from this design process for establishing a collaborative engagement with the history of education for transition into undergraduate initial teacher education and towards professional practice in cognate settings.

Transition:

- Recognise the dynamic factor of the environment: new entrants to undergraduate programmes are experiencing a number of new challenges all of which are interconnected. The emergence of this interdependent variable within this design process is reflective of the importance of responding to the needs of the students as well as the demands placed upon them. The degree to which they transition into the programme and towards professional practice as an emergent community

of practice is dependent upon this concept being made explicit to students from the outset of the collaborative exploration of the history of education through StoryXchange. Participants are overwhelmed during the early days of their engagement with third level education and require certainty about the practices that they are engaged in.

- As noted above, participants are, initially reliant on certainty and clarity experienced at second level education. In the first half of the intervention participants should be focused upon the constraints of the module content to frame their engagement with StoryXchange helping them to move towards critical engagement later in the module.

- The development of 21st Century skills is a primary concern for participants in cognate settings. Such skill development processes should be embedded within the module and not external to it. This is crucial is effecting 'buy-in' to a shared common vision or goal from the outset.

- This design model engaged in the sequential and deliberate development of four identified learning communities to establish an emergent community of practice. Core to successfully replicating this effect is the time allowed to students to engage with each other within the classroom setting under pedagogical direction. Efforts to increase the amount of face-2-face interaction through Flipped Classroom approaches significantly enhanced the time that students had together on Monday mornings in this design intervention and their critical engagement with module content increased in the second design intervention.

- Timing of the intervention is a crucial aspect of the design intervention. This should be the first time that the entire cohort engage with the programme.

Collaboration:

- It should be made clear to students that this is the case and their should be no possibility for individual contribution without negotiation with the other group members or the wider cohort. The StoryXchange process facilitates this

interaction and the individual portfolio rubric outlines the academic criteria that enforce this requirement within the design model.

- The collaborative elements of the design model must be supported by the StoryXchange templates. The process of negotiation is core to the development of any shared meaning or understanding within the design model. It was evident that students, when supported in this way, challenged preconceptions about teaching practice and this then enabled them to find out what such practice might mean to them in the future, later in the module.

- Formal an informal feedback on an ongoing basis is important. As noted, new entrants to third level education are heavily dependent upon feedback from teachers at second level education and are entering an environment that they are unfamiliar with. Ongoing feedback help students to gauge, also with the aid of the rubrics - another new concept for students, how they were doing and this was very important to them.

- Online communication platforms engaged should facilitate open and public engagement with each other in order to encourage considered and informed critical engagement with each other regarding pertinent issues. Participants in this design process identified maintaining a professional profile beyond their participation in their design study, and indeed the programme, as important to them. The participants also noted the importance of the guidelines provided to them on the development of a professional profile.

Engagement:

- The StoryXchange process is central to engagement between both students and the module content as sell as engagement with each other with in a face-2-face context and in their own digital domains. Participants within this design study recognised the importance of their structured approach to the module and how it allowed them to focus their effort as group and as a cohort each time that they met.

- The skills development, embedded within the design model, must be relevant to the participants beyond the local design environment. Effectively the skills chosen must be of a concern to in-service teachers as well as the host university.

- Students must be supported throughout the their engagement with the module. Although the module design reduces the amount of scaffolding available to students, in terms of content and resources, as the module progresses however it is imperative that the facilitator of the module be available to students to support them. This support was highly valued by participants as they recognised their relatively new position in third level education and for many they still required the support of the facilitator to be available, even if it wasn't required.

- Throughout this design study all actions requested to be carried out by participants were aligned with the assessment criteria of the module. This is important considering the negative view of the module internationally within ITE.

- All of the steps within the StoryXchange process are broken into manageable and completable steps. This facilities that development of critical engagement as students are then, not concern with or overwhelmed by the newness of the assessment process that they face into as new entrant to undergraduate ITE. Where possible all complete steps should be accomplishable during the face-2-face interactions.

Narrative:

- The construction of the personal narratives should be framed through the templates provided by the StoryXchange process. The collation of these templates formed the core of participants contributions to their collaborative narratives and as part of their individual portfolios provided evident of engagement with the module content, the other participants and communities beyond the designed environment.

- For many of the new entrants to third level education, time management is new concept for them to get to grips with. The StoryXchange process and its pedagogical alignment to the module content and contributions to their shared online space should be strictly sequenced and clearly communicated at staged and regular intervals to avoid students becoming overwhelmed towards the completion of the module.

- All contributions to the shared online space must be negotiated by all group members. There are two mechanisms within the design model to help participants to do this. Firstly the StoryXchange process that they engage with in a weekly basis and secondly the requirement of digital hyperlinking or cross referencing other cohort members constructed digital spaces.

- The narrative construction relies upon the participants investigation of their own biographical histories of education and therefore in order to support collaborative engagement with all participants variances in region or nationality should be considered when constructing module content prior to implementation.

Technologies:

- Medium to high threshold technologies should be utilised throughout the design implementation. Participants valued the technologies that they were learning to use and also voiced their appreciation of the relevance of such technologies beyond the designed environment they were engage in. They also value the detailed guides to the use of the technology.

- Resultant from the iterative design process is the importance of the concept of a multi-platform environment for engagement. The digital platform that supports engagement should not be limited and the point of contribution to the assessment process i.e. the website should be a component of a VLE.

- While guidelines as to the mechanics of contraction of a Twitter account and development of the website are provided the manner in which they contribute and from what channel should not be restricted.

- All hardware must be BYO concept to facilitate a wide variance in the accessibility and availability to the student body of devices - mobile or otherwise.

8.2.2 Factors that effect a successful implementation

In order to develop a learning environment conducive to the implementation of the design model TWO-CENTs the following key elements should be taken into consideration:

- **External Context:** Various national and international influences are evident in the requirements for professional teacher registration in the Republic of Ireland. In cognate settings the requirements for same should be considered as well as international requirements for professional registration so that participants who engage with the environment are not at a disadvantage rather they are engaged with a process of professional elopement from the day they enter the programme. The external context should also be considered as informative of the design application. The national and international educational communities can, through conference and paper presentations give valuable feedback on the evolution of the design model in cognate settings.

- **Local ITE Context:** the implementation of the design model TWO-CENTs in cognate setting should be carefully aligned with the ethos and longterm plans for the host institution. For example the development of 21st Century skills is a key priority for third level institutions in the Republic of Ireland and in particular for participants in the initial teacher education programmes at NUIG. The feedback from others within this dynamic is also important in the development and refinement of the design model in cognate settings.

- **Collaborative Pedagogy:** at the core of this design model are the collaborative pedagogical structures the support partition for shared

meaning making. It is imperative that the design environment is developed to withstand the forces that exist external to the module in terms of alternate assessment methods which lean towards individual assessment and a continuity of assessment from second level education. Although this is a stand alone module, developing support for the module and the collaborative process is important as the students engaged with the module are engaged with each other across multiple other modules during the course of their contact with the programme. Given the international view of field of the history of education it is important that the efforts being made to encourage students to collaborate and share are supported across faculty.

- **Individual Histories of Education:** It is possible that participants will have had negative experiences with education prior to enrolling in the programme and while participating students bring with them a wealth of information regarding their experiences with education, it is important that the focus of their investigations into the module content and that their contact with each other be focused on the module content. Revelations regarding personal experiences that may embarrasses or surprise students should be avoided wherever possible. Sticking to the structures of education and the historical content through the StoryXchange process will ensure, to every extent possible, that this does not occur. It should also be noted that the facilitator had a key role to play in this area.

- **TELE / CSCL:** Efforts to implement this design model should not succumb to the pressures to utilise editing software within host institutions should it not meet the criteria of the design model as listed above. It has been clearly demonstrated that limiting engagement with the design model through a single platform technology had a detrimental effect on all of the

design variables as did hosting all of the digital contact within a closed,

institutional VLE. To this end, the student digital domain should be

considered as public or at the very least password protected within a

publicly accessible digital space.

8.2.2   TWO-CENTs Model

The aforementioned design specification and sensitivities, supported by design informants and associated resources have been aligned as the TWO-CENTs model in Figure 8.1.
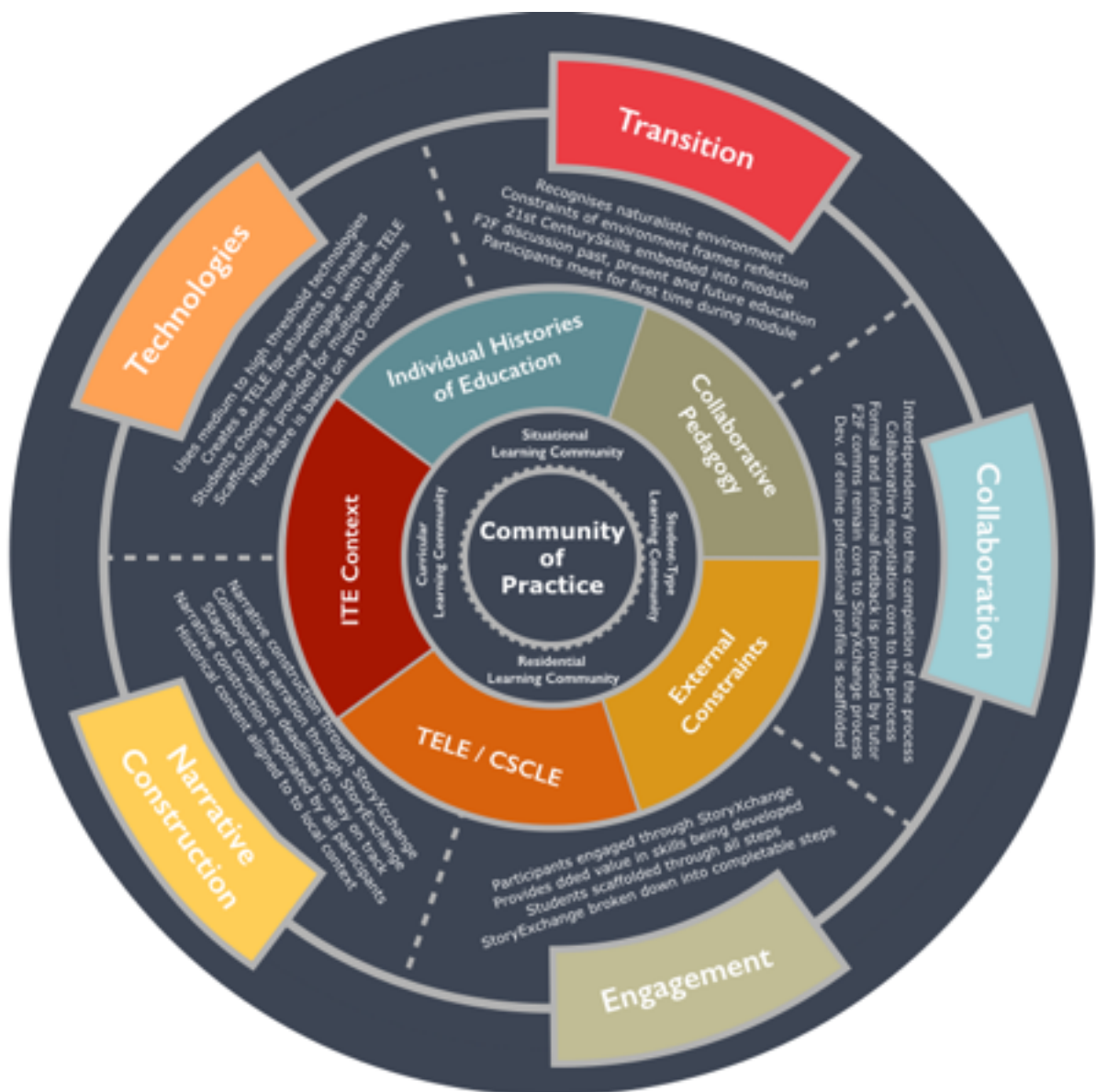
Figure 8.1: The TWO-CENTs design model for transition into undergraduate initial teacher education and towards professional practice.

8.3   Findings & Contribution

8.3.1   Thesis Contribution

This research study initially set out to enhance engagement with the history of education in an undergraduate initial teacher education programme and as consequence explore how the structured establishment of identified learning communities (Lenning & Ebbers, 1999) may help new entrants transition in to such programmes and towards professional practice. In summary, there are three critical outcomes from this research study that collectively represent the contribution of this doctoral research thesis:

- This research study has, through a systematic process of iterative design, illustrated the potential for a pedagogically directed, collaborative exploration of the history of education to help new entrants to undergraduate ITE programs transition into third level education and towards professional practice.

- In addition and as a consequence of establishing the effectiveness of the TWO-CENTs design model though the iterative design-based research methodology selected, this thesis delineates the practical application of the designed intervention and the iterative process undertaken for others to engage in cognate settings.

- Finally, this thesis has contributed to the field of educational research and in particularly the development of learning communities within undergraduate initial teacher education programmes. This contribution is manifest in the adoptable and adaptable TWO-CENTs design model. It should be noted that this design model may be applicable in settings that involve the transition of new entrants to third level education and particular into undergraduate professional programmes.

8.3.2   Conclusions

The multi-cycle nature of the methodology employed in the research study, design-based research, allowed the iterative refinement of the design model and consequently this has established the potential for the design model TWO-CENTs to help new entrants to undergraduate ITE transition from second level education into third level education and towards professional practice through a collaborative exploration of the history of education.

Across both design cycles, explored in detail in Chapter 6 and Chapter 7, participants indicated that, despite their initial reluctance to engage with the history of eduction and indeed their indication that they felt the topic bore no personal or professional relevance them as students or prospective teaching professionals however they considered the topic to be important to the development of teaching professionals upon completion of the module. As evidenced, engagement with the module content was significantly enhanced as a consequence of the embedded nature of the technologies engaged and participants believed that the skills that they developed as a result were important to them both as third level students and as prospective teaching professionals.

The structured and sequential development of four identified learning communities (Lenning & Ebbers, 1999) facilitated, through the designed StoryXchange process, the development of an emergent community of practice (Lave & Wenger, 1991). This was most evident in the analysis of Design Cycle 2 where participants indicated that they were now more engaged with aspects of education relevant to in-service teachers rather than more general issues regarding third level education. They also felt that their participation in the module, while it had made them very aware of historical influences that impacted their own education to the point of entry to third level education, had also helped them to become members of a collaborative community and they explicitly expressed this in the data collected.

The majority of participants indicated that they believed that the module, as it was delivered, should be retained as a non-elective module in undergraduate initial teacher education citing it as important and worthwhile to them as it made them reconsider their preconceptions of what it means to be a teacher. As one participant commented:

'Overall, this module has been very beneficial in educating me in a number of things. I am more aware of the history of our education which, contrary to what I initially thought, will be important for me as a teacher going forward. I am more equipped to use technology in may ways which will greatly assist my teaching ability. Finally, I am more familiar with working in a group and overall have become part of a friendly, helpful class which will be vital to us all in the next four years.'

(Student 3, Reflective Submission, 2015)

8.3.3   Limitations of the Study

As outlined in Chapter 4 the selection of design-based research brings with it a number of considerations that contextualise the outputs of this doctoral research study. Chapter 6 and Chapter 7 focus on the design, implementation and analysis of effectiveness within a particular, identified, naturalistic context (Barab, 2006). Resultant therefore, in the form of the design model output TWO-CENTs, are a set of design sensitivities that are intended to serve those engaged in similar settings with participants of a similar profile and similar associated learning outcomes. These sensitivities are intended to serve as design orientations (diSessa & Cobb, 2004) and are at all times subject to the fluctuations of the naturalistic context within which they are employed.

8.3.4   Future Research

This research study, employing a design-based research methodology, explored how a collaborative engagement with the history of education could help new entrants to third level education transition from second level education into undergraduate initial teacher

education and towards professional practice. Evidenced in Chapter 2 and Chapter 3 this is a significant challenge for teacher educators not only in Ireland but internationally, as well as for students making the difficult transition into the general third level education population. Issues surrounding such a transition have been identified within the extant literature as being the ability to collaborate and critically engage with material and the academic community. Also pertinent issues are enhancing new entrants academic writing skills and their technological agility post graduation. The development, therefore, of this research study is both timely and relevant to all points on the education continuum.

It is therefore and interesting to think about where future research may unfold. Emergent from the second level education system are the users of the designed environment and they are a regenerative population. A wider study on the impact of the designed environment in more general professional programmes may shed light on the pressures faced by the more general first year population within the university sector and further inform the TWO-CENTs design model and demonstrate the adoptability and adaptability of the model.

As detailed, an emergent community of practice was established as a result of the application of the design model at the point of entry to an undergraduate initial teacher education cohort. A more longitudinal study beyond the module application may also shed light on the effectiveness or otherwise of this emergent community on collaborative practices across the duration of the four year programme.

Also, it may be feasible for the design model to applied at second level education as a precursor to entry to third level institutions. The researcher is involved in the development of a project that is focusing on the skills required upon entry to third level education and has identified, informed by literature, that components of the second level history curriculum may prove to be suitable for such a project to be rolled out. This could further widen the impact of using a collaborative exploration of history for the

development of 21st century skills such as collaboration, critical engagement, academic writing and technological agility through engagement with the subject of history.

It emerges, therefore, that there are number of areas within which the researcher will pursue publications of research presented in this thesis and themes that have emerged from the research process for future research activities. They are intended as follows:

The History of Education:

• A case for the history of education in undergraduate initial teacher education and the wider undergraduate student population

• The history of education as a transitional space for pre-undergraduate and new entrants to undergraduate education

Research Methodology:

• Design-based research as an educational research methodology in initial teacher education programmes

• Design-based research as a research methodology for practitioner research practices

History Teaching Methodology

• Study to determine students teachers' experience of implementing adapted TWO-CENTs model within second level senior cycle history mandatory research project

• Study to determine in-service teachers' experience of implementing adapted TWO-CENTs model within second level senior cycle history mandatory research project

• TWO-CENTs as a module for second level students grounded in the Irish second level senior cycle curriculum - longitudinal study to determine the effectiveness of the model in preparing students for initial demands of undergraduate study.

- TWO-CENTs as a module for second level students grounded in the Irish second level junior cycle curriculum

Generic Transition Model

- Study to determine the effectiveness of the model within other preparatory courses for this level study such as the Access Programme at NUIG

Technology Enhanced Learning:

- The role of Technology Enhanced Learning (TEL) in the transition of second level students into undergraduate initial teacher education

- The role of TEL in developing subject specific teaching methodologies

- The perception of ICT v TEL in undergraduate and post-graduate teacher training programmes

- The perception of ICT v TEL within the pre-service teaching community

- The importance of de-scaffolding students for independent learning

Other research interests emergent from this study:

- Complex learning systems negotiated by students and teachers within second level history teaching methodologies

- The role of TEL in complex learning systems within second level history classrooms.

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Appendices:

Appendix 1: BME Descriptor, Assessment Criteria & Reading Lists

B.A. Mathematics and Education

Module Title: History and Structure of the Irish Education System

Module Code: ED116

Lecturer: Paul Flynn

Module Description:

This module introduces students entering undergraduate initial teacher training to the development of education in Ireland at primary, post-primary, third level and continuing education. Students will explore, through technology enhanced learning, the major policies and movements set in the context of pertinent international trends.

Constructed as a series of lectures with individual and collaborative tasks, participants will relate historical developments with contemporary issues in educational policy, curriculum and the teaching profession and examine their past, present and future relationship with education as they transition into a collaborative pre-professional community.

Weighting: 5 ECTS

Learning Outcomes:

On successful completion of this module and its associated assignment, students will:

- Understand the origins of the education system in Ireland;

- Discuss the history and structure of the Irish education system in the context of national and international trends;

- Explain the education system, key education issues and its contemporary development;

- Discuss the future of education in the context of national and international trends and participants' future relationship with education as part of a collaborative community.

- Develop digital skills compatible with both pre-service and in-service environments.

Forms of educational activity over the duration of the module:

Lectures, online lectures, discursive tutorials, collaborative project, technology enhanced learning, presentations, reading and research.

Assessment techniques:

Assessment will be broken into 3 components

1	Individual Digital Historical Portfolio	60%
2	Particpation & Engagement	Pass/Fail
3	Final Collaborative Submission	40%

(Refer to ED116 Assessment Guidelines document for further details and rubrics)

Significant Relevant Readings:

Akenson, D.H. (1970) Irish Education Experiment: The National System of Education in the 19th Century (Study in Irish History). UK: Routledge.

Bartlett, T. (2010) Ireland, A History. Cambridge.

Boyd, W., King, E.J. (1980) The History of Western Education. London

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Cunningham, J. (2010) Unlikely Radicals: Irish Post-Primary Teachers and the ASTI, 1909-2009. Cork University Press.

Ferriter, D. (2004) The Transformation of Ireland 1900-2000. London

Significant Relevant Digital Resources

7 Ages (Available from NUI School of Education, Resource Library, D-Block)

The Secret Billionaire - Chuck Feeney (Atlantic Philanthropies), www.youtube.com/watch?v=OMcjxe8slYI

(Refer to ED116 module specific reading list for supplementary reading, supporting documentation and related websites)

groups' experiences, attitudes and beliefs relating to your pre-assigned topic. It should not be a simple reading out of the content of the webpage.

The reflective essay will be 500 words and will be a reflective expression of your experiences during the course of the module with particular emphasis on your perception of the History and Structure of Education before, during and after the completion of Module ED116 and importance of collaboration to you as a participant.

All submissions will be through Blackboard

There is no hardcopy submission

Refer to marking rubric in Appendix A of this document.

All submission will be made not later than 5.00pm, 27th November 2015.

2.   Participation & Engagement (Pass/Fail)

The following will form part of this assessment:

1. Attendance

2. Contribution to class/workshop/tutorial discussion

3. Contribution to online discussion via Twitter and Blackboard - where required.

3.   Collaborative Digital Historical Website (40%)

This part of the assessment model will entail the construction of a Collaborative Digital Historical Website assessed under the following headings:

1. Evidence of collaboration

2. Appropriate use of available technology

3. Evidence of both national and international research

4. Construction of a coherent narrative

5. Overall digital presentation and academic writing (including bibliography)

All submissions will be through Blackboard

There is no hardcopy submission

Refer to the marking rubric in Appendix A of this document.

The completion of the CDHW will be due no later than 5.00pm, 27th Nov. 2015

INDIVIDUAL DIGITAL HISTORICAL PORTFOLIO (IDHP) DATE: _____ GRADING RUBRIC

GRADE %	FAIL 0 - 29	PASS 42	45	48	H 2.2 52	55	58	H 2.1 62	65	68	H 1 72	75+	SECTION GRADE %
DESCRIPTION	UNACCEPTABLE	SATISFACTORY			GOOD			VERY GOOD			EXCELLENT		DESCRIPTION
EVIDENCE OF STORY EXCHANGE	Incomplete set of developed story exchange templates provided with no original edits and changes visible.	Partially complete set of developed story exchange templates provided with sparse original edits and changes visible.			Near complete set of developed story exchange templates provided with few original edits and changes visible.			Substantially complete set of developed story exchange templates provided with some original edits and changes visible.			Complete and comprehensive set of fully developed story exchange templates provided including all original edits and changes.		
	Omissions and blank spaces dominate the submission.	Numerous omissions & blank space detract from submission.			Some omissions and blank spaces.			Few omissions or blank spaces.			No omissions or blank spaces.		
EMBEDDED VIDEO CONTENT	Video detracts from the communiqué.	Video is supplements the communiqué.			Video contributes to the communiqué.			Video enhances the communiqué.			Video significantly enhances the communiqué.		
	Unacceptable overview of topic and relation to group members	Satisfactory overview of topic and relation to group members			Good overview of topic and relation to group members			Very good overview of topic and relation to group members			Excellent overview of topic and relation to group members		
	Spelling / grammatical errors dominate submission (in text)	Many spelling / grammatical errors (in text)			Some spelling / grammatical errors (in text)			Few spelling / grammatical errors (in text)			Explicit referencing of module content		
SCREENSHOT OF PERSONAL WEBPAGE	Issues with legibility, unclear & obscured dominate	Numerous issues with legibility, unclear & obscured			Some issues with legibility, screenshot unclear or partial			Slight issues with legibility, clear and full screenshot			Legible, clear and full screenshot		
	Layout is bare and very inconsistent with other group	Layout is sparse and inconsistent with other group			Layout is loosely consistent with other group			Layout is largely consistent with other group			Layout is consistent with other group		
	Positioning / size of image, video and text seriously detracts from the webpage	Positioning / size of image, video and text detracts from the webpage			Positioning / size of image, video and text contributes to the webpage			Positioning / size of image, video and text enhances the webpage			Positioning / size of image, video and text significantly enhances the webpage		
REFLECTIVE ESSAY	No consideration of relationship with education - past, present and future	Limited consideration of relationship with education - past, present and future			Briefly considers relationship with education - past, present and future			Considers relationship with education - past, present and future			Carefully considers relationship with education - past, present and future		
	No references to group members experiences	Few references to group members experiences			Sparse reference/ing of group members experiences			Some explicit reference/ing of group members experiences			Explicit reference/ing of group members experiences		
	No references to module content	Few references to module content			Some sparse referencing of module content			Some explicit referencing of module content			Explicit referencing of module content		
PRESENTATION & ACADEMIC WRITING (INCLUDING BIBLIOGRAPHY)	Major inconsistances, inaccuracies and non-compliance to standard referencing system. Sources are not accessible or accurate	Some inconsistances, inaccuracies and non-compliance to standard referencing system. Sources are somewhat accessible and accurate			Few inconsistances, inaccuracies and non-compliance to standard referencing system. Sources are reasonably accessible and accurate			Mostly consistent, accurate and adheres to standard referencing system. Sources are accessible and accurate			All referencing is consistent, accurate and adheres to standard referencing system. Sources are accessible and accurate		
GRADE NOTES / COMMENTS													**FINAL MARK %**

B.A. MATHEMATICS & EDUCATION - ED11B

GROUP: _____

COLLABORATIVE DIGITAL HISTORICAL WEBSITE (CDHW)　　DATE: _____　　GRADING RUBRIC

GRADE	FAIL	PASS			H 2.2			H 2.1			H 1		SECTION
%	0 – 39	42	45	48	52	55	58	62	65	68	72	75+	GRADE %
DESCRIPTION	UNACCEPTABLE	SATISFACTORY			GOOD			VERY GOOD			EXCELLENT		DESCRIPTION
EVIDENCE OF COLLABORATION													
APPROPRIATE USE OF TECHNOLOGY													
EVIDENCE OF BOTH NATIONAL & INTERNATIONAL RESEARCH													
CONSTRUCTION OF A COHERENT COLLABORATIVE NARRATIVE													
OVERALL DIGITAL PRESENTATION AND ACADEMIC WRITING (INCLUDING BIBLIOGRAPHY)													
GRADE NOTES / COMMENTS													FINAL MARK %

B.A. MATHEMATICS & EDUCATION - ED118　　GROUP: _____

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Appendices

B.A. Mathematics and Education

Module Title: **History and Structure of the Irish Education System**

Module Code: **ED116**

Lecturer: **Paul Flynn**

Significant Relevant Readings:

Akenson, D.H. (1970) Irish Education Experiment: The National System of Education in the 19th Century (Study in Irish History). UK: Routledge.

Bartlett, T. (2010) Ireland, A History. Cambridge.

Boyd, W., King, E.J. (1980) The History of Western Education. London.

Coolahan, J. (1981) Irish Education: Its History and Structure. Dublin: Institute of Public Administration.

Cunningham, J. (2010) Unlikely Radicals: Irish Post-Primary Teachers and the ASTI, 1909-2009. Cork University Press.

Education Matters. Education Matters: Ireland's Foremost Education Periodical. Available online: http://www.educationmatters.ie/.

Ferriter, D. (2004) The Transformation of Ireland 1900-2000. London

Jackson, A. (2010) Ireland, 1798-1998: War, Peace and Beyond. 2nd Ed. London

Significant Relevant Digital Resources

7 Ages (Available from NUI School of Education, Resource Library, D-Block)

Reeling in the Years (Available from www.rte.ie)

The Secret Billionaire - Chuck Feeney (Atlantic Philanthropies), www.youtube.com/watch?v=OMcjxe8slYl

Supplementary Reading

Boyce, D.G. (2005) New Gill History of Ireland 5: Nineteenth-Century Ireland, The Search for Stability. Dublin

Brown, T. (2004) Ireland, A Social and Cultural History 1922-2002. London

Cooke, J. (2009) A history of the Irish Vocational Education Association, 1902- 2002. Dublin: Irish Vocational Education Association.

Curtis, E. (1936) A History of Ireland. London

Dowling, P.J. (1971) History of Irish Education: A Study of Conflicting Loyalties. Dublin: The Mercier Press.

Garvin, T. (1981) The Evolution of Irish Nationalist Politics. Dublin

Ferriter, D. (1999) A Nation of Extremes: The Pioneers in Twentieth Century Ireland. Dublin

Geoghan, P.M. (2008) King Dan. Dublin

Geoghan, P.M. (2010) Liberator: The Life and Death of Daniel O'Connell 1830-1847. Dublin

Hayden, M., Moonan,G.A. (1960) A Short History of the Irish People, Part 2, From 1603 to Modern Times. Dublin

Murphy, M. (2005) The History and Philosophy of Education: Voices of Educational Pioneers. US: Prentice Hall.

Newman, J.H. (2010) The Idea of a University. Ignatius Press.

Links to Additional Supporting Documentation:

1831	Stanley Letter
1878	Intermediate Education Act
1905	Dale & Stephens Report
1908	The Irish Universities Act
1918	Fisher Education Act
1960	Broadcasting Authority Act
1961	Local Authorities (Education Scholarships) Act
1992	Green Paper on Education

1995	White Paper on Education
1997	The Universities Act
1997	The Dearing Report
1998	Education Act
1999	Primary School Curriculum
2001	The Teaching Council Act
2003	PISA Report
2011	National Strategy for Higher Education to 2030

2013   The Report of The Forum on Patronage & Pluralism in the Primary Sector

| 2014 | Higher Education Research Bill |

Links to Relevant Supporting Websites

Department of Education and Skills

Irish Newspaper Archives

Multitext Project in Irish History

ASTI

Project Maths

New Junior Cycle

National Council for Curriculum and Assessment (NCCA)

Professional Development Service for Teachers (PDST)

Higher Education Authority (HEA)

The Teaching Council

Atlantic Philanthropies

Appendix 2: Teaching Council Requirements

Foundation studies should:

— include curriculum studies, the history and policy of education,
philosophy of education, psychology of education, sociology
of education
— through macro curriculum studies, develop students' understanding
of, and capacity to critically engage with, curriculum aims, design,
policy, reform, pedagogy and assessment
— enhance students' understanding of the Irish education system, locate
it in context and enable students to think critically about it
— provide research-informed insights into student teachers'
understanding of the practices of teaching, learning and assessment
— illuminate key dimensions of the professional context in which the
thinking and actions of teachers are carried out
— provide the basis of a strong professional ethic in teaching.

Professional studies should:

— include subject pedagogies (methodologies) and curricular studies
— develop pedagogical content knowledge
— advance the communicative skills of student teachers
— ensure that teaching itself is understood and practised as a form of
self-critical learning by student teachers, with ample opportunities for
teamwork and enquiry-based initiatives with colleagues.

The school placement should provide opportunities for student teachers to:

— integrate theory and practice
— plan for, and undertake, class teaching, learning and assessment
using a wide range of strategies
— develop classroom, organisational and behaviour management skills
— observe experienced teachers teaching and be involved in a wide
range of school activities
— reflect critically on their practice
— receive and respond to feedback on their practice
— seek and receive advice and guidance in a supportive environment.

(Further details at 1.2.5)

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Appendix 3: Questionnaire Administered

NUI Galway
OÉ Gaillimh

Scoil an Oideachais   School of Education

Project Title

A Framework Towards Transition in Undergraduate Initial Teacher Education Through Collaborative Engagement with the History of Education

Researcher

Paul Flynn
Galway Doctoral Research Scholar
School of Education
NUI Galway

p.flynn10@nuigalway.ie

This is a questionnaire to inform the design based research intervention:

Give Your TWO-CENTs

(Transition **W**ith **O**thers - **C**ollaboration, **E**ngagement, **N**arration, **T**echnologie**s)**

There are **3 important sections** in this questionnaire please take the time, approximately 15 minutes, to fully complete all 3 sections.

Thank you in advance for competing this survey and for making a valuable contribution towards this research project.

Section One

Please tick one box in each case:

Q1 Gender

Male   Female

○   ○

Q2 Is this you first enrolment in an undergraduate programme?

Yes   No

○   ○

Q3 Have you previously studied history at leaving certificate level, continuing education or at a third level institution?

Yes   No

○   ○

If **No**, please indicate pervious course (even if not completed)

Q4 Did you study higher level english at leaving certificate level?

Yes   No

○   ○

Q5 This module is compulsory. If it were not would you have chosen it upon enrolment?

Yes   No

○   ○

Q6 Please indicate the year you completed your leaving certificate or equivalent.

Q7 Please indicate any previous use of apple technology

Section Two

Please select only one option for each statement:

Q8 People in my group collaborate openly with one another.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q9 There is a leader in my collaborative group.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q10 Communication in my group occurs face-to-face only at module sessions.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q11 My group communicated about this project outside of module sessions.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q12 Each group member is accountable to the other members of the group.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q13 Face-to-Face contact in this module was always positive.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q14 I was dependant on other group members to complete the module project.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q15 I had a clear role with the group.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

C A

C B

Q16 Group members understood their roles within the group.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q17 The group were committed to completing the project

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q18 Group members always agreed on ideas for completion of the project.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q19 Timely completion of the project was the only concern of the collaborative group.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q20 Working with others helped me to engage with the historical content of the module.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q21 The assignment of roles made the module content less daunting.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q22 I was content with my assigned role within the group.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q23 I found it easier relate to the content of the module as a group member.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Please Explain:

Q24 Face-to-face communication helped me to relate to the content of the module.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q25 As a result of working in group I believe the history of education is personally relevant.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

C
C

Q26 As a result of participating in this project I believe I am part of a community.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q27 Engagement with this module would have been easier as an individual

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q28 The group members were willing to share their stories with me.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q29 Telling the story of the group was a difficult challenge.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Please Explain:

Q30 Group storytelling made the content of the module more relatable to me.

C
D

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Please Explain:

Q31 Our group had adequate support for the completion of the project

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q32 We received adequate training with software to complete the project.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q33 The technology used reflects real-life classroom applications.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q34 There was too much focus on technology in this module.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q35 The process of storyboarding made it easier to engage to engage with the technology.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q36 Having a script prepared made the recording of the video content less daunting.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q37 The recording of the video content was a technically difficult task.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Q38 The creation of the iBook was a technically difficult challenge.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
O	O	O	O	O

Please Explain:

Section Three

Please answer all questions.

Q39 How did working with others help you engage with the module content?

Q40 In what way have you benefited from engaging with the history of education?

Q41 What aspects of the collaborative group process did you least enjoy?

Q

Q42 What aspects the collaborative group process did you enjoy the most?

C

Q43 In what way do you feel the history of education is relevant to you as a pre-service teacher?

Q44 How has engaging with this module and the history of education changed your perception of the topic?

Q
E

Q45 How has your view of the teaching profession changed over the course of the module?

Q46 How has your perception of the history of education changed of the course of the module?

Q47 How do you think storytelling helped you to engage with others in the group?

Q48 In what ways did storytelling help you engage with the module content?

Q49 How did telling the stories of other people help you to explore the history of education?

Q50 How has your opinion changed about the history of education as a result of engaging in collaborative storytelling process ?

Q51 In what ways did technology help you to engage with the module content?

Q52 In what ways did the storyboarding precess aid your engagement with the educational technology used in this module?

Q53 Why was the use of educational technology important to you in this module?

Q

Q54 How did the use of educational technology enhance your experience?

T

Q55 Do you have any suggestions for the improvement of this module? (content, assessment etc)

Q56 What would you change about the assessment model, specifically?

G

Q57 General feedback on the module: (personal relevance, improvements etc)

L

Thank You !

Appendix 4: Templates & Exemplars

Primary Education Template Guide

Start off by asking yourself and each other some the following questions:

Where was my school located?
Was it a single sex school?
How many students attended?
How many teachers were employed there?

Were the buildings new / refurbished / dilapidated etc.?
What were the grounds like?
Was there a playground / basketball court / football pitch etc.?
If not, were amenities close by?
Was the school located near a church?

Did you take part in any standardised testing?
Do you remember getting formal school report cards?
Was there a book scheme in place?
Did you received a school meal, of any kind?
Was the Irish language a priority in your school?
Was religious education prominent?

Were your parents encouraged to contribute to the running of the school?
Were parents involved in the decision making process regarding the development
of the school?
Was sport a major part of school life?
Did you receive PE on a regular basis?
Was there an emphasis on STEM during your time at primary school?

To what degree did ICT / IT form a part of everyday school life?
Did your school have more than a handful of computers?
Were videos or tape reordered used rather than DVDs etc?
Did your school have any interactive whiteboards?
Did your school have a website?

- The above list of questions are just prompts to get you thinking. It is not an exhaustive list so please add to it as you see fit.

- Place any responses to the above questions in the box provided on the template sheet.

- You will see a number of lines below the box. In this space you will need to place elements of the module that you feel are connected to your experiences. A piece of legislation, a political movement or a funding stream may have made some of the above possible. Perhaps you will see parallels between what you experienced and what was happening 100 years ago!!

PRIMARY

PRIMARY EDUCATION SYSTEM

DATE: _____

STUDENT NAME: _____

STUDENT NAME: _____

STUDENT NAME: _____

STUDENT NAME: _____

GROUP NO: _____

INTRO TEMPLATE NO.1

GROUP NOTES

BME - ED116 -2015/16

Primary Education Introductory Template Guide

Where to start?

Before competing this template all the members of your group will need to have fully completed the Primary Education Story Exchange Template.

Match up the experiences that you have written in the Story Exchange Template box with the relevant module content that you have identified in the lined area beneath the box.

For each match that you create form a short narrative on the Post-Its provided to you and place that narrative on the Introductory Template, also provided.

- Try to write a short piece that helps your fellow group members understand your experience and how it was influenced by events covered in the module content.

- Each person should contribute 6-8 Post-Its (experiences)

What happens when the template is complete?

The completion of this template is very important. You will need to submit evidence of its completion as part of your final submission so make sure that you photograph it. It will help you to develop and complete the following:

- Firstly, you may find it helpful to select a theme or issue that you and your group members have all experienced and focus your narrative around that issue.

- Secondly, it forms the foundation of the narrative that you will present on your assigned website page, that is, the video presentation that you will create and embed.

- Thirdly it will help you to develop the academic content for your webpage.This will take the form of a brief synopsis of the development of the level of education that was assigned to you. It is important that you correctly reference any information that you place on this webpage. Your bibliography should be developed accordingly.

How else can I develop this template?
The Twitter contributions, issues, ideas and photos that you may have exchanged will be crucial in helping you to develop a comprehensive understanding of the history and structure of the Irish education system. You should include references to these instances on the template and this will remind you to include them when you are developing your webpage.

Finally….
The more complete this template is, the more you are helping your fellow group members to develop their webpage submission. In order to get the most out of this module it is imperative that you work together, that you collaborate. The evidence of this will be this introductory Template.

STORY EXCHANGE TEMPLATE NO.1   DATE: xx|xx|2015   PRIMARY LEVEL EDUCATION

PRIMARY

- SMALL RURAL SCHOOL
- 2 TEACHERS
- OLD BUILDINGS (FORMER HEDGE SCHOOL)
- DRUMCONDRA TESTS
- LAY TEACHERS
- MINIMAL PARENTAL INVOLVEMENT
- INTERACTIVE WHITEBOARDS IN 6th CLASS ONLY
- SPORTS NOT A PART OF SCHOOL LIFE
- BOOK SCHEMES

ESTABLISHED   POST FAMINE/PRE 1700

      LS STANLEY LETTER ?

STANDARDISED   TESTING / PAYMENT BY RESULTS

DENOMINATIONAL HISTORY

STATE INVOLVEMENT.

1971/1999 PRIMARY SCHOOL CURRICULUM

2013 FORUM ON PATRONAGE + PLURALISM

Appendices

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Secondary Education Template Guide

Start off by asking yourself and each other some the following questions:

Where was my school located?
When was it established?
Was it a single sex school?
How many students attended?
How many teachers were employed there?
Was there a strict uniform code?

Were the buildings new / refurbished / dilapidated etc.?
What were the grounds like?
Was there a playground / basketball court / football pitch etc.?
If not, were amenities close by?
Was the school located near a church?
Was the school under the trusteeship of a religious order?

Was your school a pilot school of any new initiatives?
Did you attend your parent / teacher meetings?
Did your school have a canteen? Was it subsidised?
Was the Irish language a priority in your school?
Was the student council a prominent part of school life?
Was career guidance evident throughout your secondary school experience?

Were your parents encouraged to contribute to the running of the school?
Were parents involved in the decision making process regarding the development of the school?
Was sport a major part of school life?
Did you receive PE on a regular basis?
Was there an emphasis on STEM during your time at primary school?
Was there an option for LCA or LCVP?

To what degree did ICT / IT form a part of everyday school life?
Did your school have dedicated computer rooms? Broadband?
Were videos or tape reordered used rather than DVDs etc?
Did your school have any interactive whiteboards?
Did your school have a website?
Did your school have a Virtual Learning Environment (VLE)?

- The above list of questions are just prompts to get you thinking. It is not an exhaustive list so please add to it as you see fit.

- Place any responses to the above questions in the box provided on the template sheet.

- You will see a number of lines below the box. In this space you will need to place elements of the module that you feel are connected to your experiences. A piece of legislation, a political movement or a funding stream may have made some of the above possible. Perhaps you will see parallels between what you experienced and what was happening 100 years ago!!

SECONDARY

INTRO TEMPLATE NO.2

SECONDARY EDUCATION SYSTEM

DATE: _____

STUDENT NAME: _____

STUDENT NAME: _____

STUDENT NAME: _____

STUDENT NAME: _____

GROUP NO: _____

GROUP NOTES

BME - ED116 -2015/16

Secondary Education Introductory Template Guide

Where to start?

Before competing this template all the members of your group will need to have fully completed the Secondary Education Story Exchange Template.

Match up the experiences that you have written in the Story Exchange Template box with the relevant module content that you have identified in the lined area beneath the box.

For each match that you create form a short narrative on the Post-Its provided to you and place that narrative on the Introductory Template, also provided.

- Try to write a short piece that helps your fellow group members understand your experience and how it was influenced by events covered in the module content.

- Each person should contribute 6-8 Post-Its (experiences)

What happens when the template is complete?

The completion of this template is very important. You will need to submit evidence of its completion as part of your final submission so make sure that you photograph it. It will help you to develop and complete the following:

- Firstly, you may find it helpful to select a theme or issue that you and your group members have all experienced and focus your narrative around that issue.

- Secondly, it forms the foundation of the narrative that you will present on your assigned website page, that is, the video presentation that you will create and embed.

- Thirdly it will help you to develop the academic content for your webpage. This will take the form of a brief synopsis of the development of the level of education that was assigned to you. It is important that you correctly reference any information that you place on this webpage. Your bibliography should be developed accordingly.

How else can I develop this template?

The Twitter contributions, issues, ideas and photos that you may have exchanged will be crucial in helping you to develop a comprehensive understanding of the history and structure of the Irish education system. You should include references to these instances on the template and this will remind you to include them when you are developing your webpage.

Finally….

The more complete this template is, the more you are helping your fellow group members to develop their webpage submission. In order to get the most out of this module it is imperative that you work together, that you collaborate. The evidence of this will be this introductory Template.

STORY EXCHANGE TEMPLATE NO.2   DATE: XX/XX/2015 SECONDARY LEVEL EDUCATION

SECONDARY

- LARGE RURAL SCHOOL
- TRUSTEESHIP OF A RELIGIOUS ORDER
- ESTABLISHED 1946
- MIX OF OLD AND NEW BUILDINGS
- PILOT SCHOOL FOR NEW JUNIOR CYCLE
- HEAVY FOCUS ON I.T.
- NO TY + NO LCA
- ENTRANCE EXAMS FOR FIRST YEARS
- MOSTLY FEMALE STAFF MEMBERS
- VERY ACTIVE PARENT BODY
- STRICT UNIFORM CODE.

WAS THIS SCHOOL ESTABLISHED AS A RESULT OF A SCHOOLS

BUILDING PROGRAM?

PERHAPS THIS WAS A PILOT SCHOOL FOR THE

NEW JUNIOR CYCLE?

IT. WAS NOT JUST A TEACHING TOOL, IT WAS

A LEARNING RESOURCE FOR THE STUDENT BODY?

BME - ED116 - 2015/16   STUDENT NO: 1234567   GROUP NO: A

Third Level Education Template Guide

Start off by asking yourself and each other some the following questions:

What subject did you take for the Leaving Certificate?
Did you take LCVP options?
When you filled out your CAO form were you undecided?
Did you use the change of mind facility?

Is this your firs time living away from home?
Are you living with people that you know?
Was NUI Galway your first choice?
Was a B.A. Mathematics & Education your first choice?
Did you know that you would have study history?
Was your course available at any other Teacher Training College?

Is funding a concern for you as an undergraduate?
Are free fees applicable to you?
Is this a significant change form second level education?
What are the main differences?
What are the biggest challenges for you right now?

How do you think third level institutions are funded?
Have they always received funding?
Was third level education always been available to everybody?
Is it still available to everybody?

What are the most important skills you will learn at third level?
Do other teacher training programmes in other countries provide similar courses to the one that you are enrolled in?
How does Ireland compare internationally?
What do the EU and the OECD say about Ireland international performance ratings in relation to STEM or even just Mathematics education?

- The above list of questions are just prompts to get you thinking. It is not an exhaustive list so please add to it as you see fit.

- Place any responses to the above questions in the box provided on the template sheet.

- You will see a number of lines below the box. In this space you will need to place elements of the module that you feel are connected to your experiences. A piece of legislation, a political movement or a funding stream may have made some of the above possible. Perhaps you will see parallels between what you experienced and what was happening 100 years ago!!

THIRD LEVEL
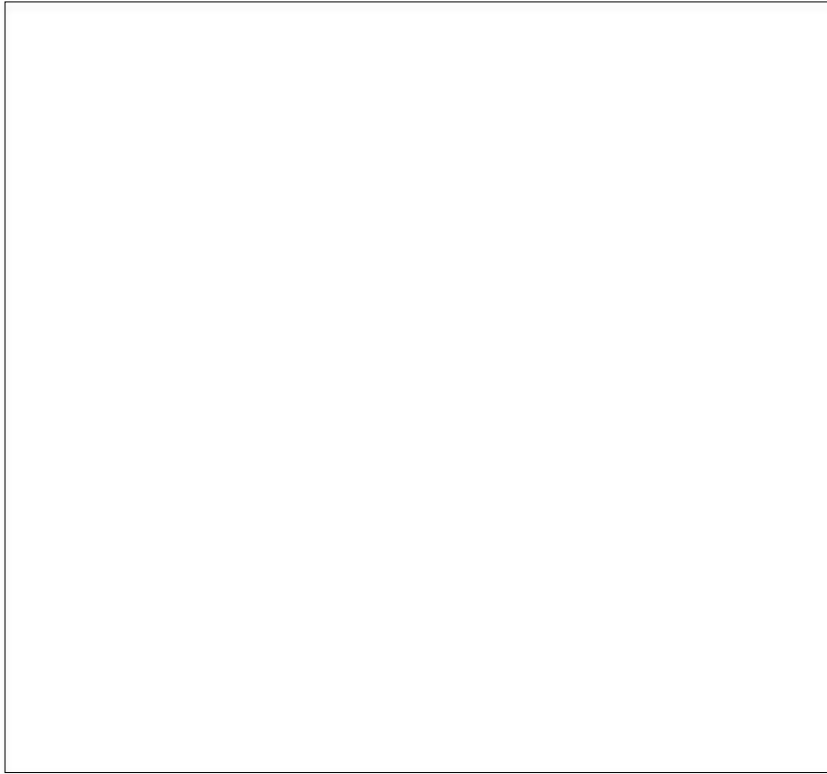
Third Level Education Introductory Template Guide

Where to start?

Before competing this template all the members of your group will need to have fully completed the Third Level Education Story Exchange Template.

Match up the experiences that you have written in the Story Exchange Template box with the relevant module content that you have identified in the lined area beneath the box.

For each match that you create form a short narrative on the Post-Its provided to you and place that narrative on the Introductory Template, also provided.

- Try to write a short piece that helps your fellow group members understand your experience and how it was influenced by events covered in the module content.

- Each person should contribute 6-8 Post-Its (experiences)

What happens when the template is complete?
The completion of this template is very important. You will need to submit evidence of its completion as part of your final submission so make sure that you photograph it. It will help you to develop and complete the following:

- Firstly, you may find it helpful to select a theme or issue that you and your group members have all experienced and focus your narrative around that issue.

- Secondly, it forms the foundation of the narrative that you will present on your assigned website page, that is, the video presentation that you will create and embed.

- Thirdly it will help you to develop the academic content for your webpage.This will take the form of a brief synopsis of the development of the level of education that was assigned to you. It is important that you correctly reference any information that you place on this webpage. Your bibliography should be developed accordingly.

How else can I develop this template?
The Twitter contributions, issues, ideas and photos that you may have exchanged will be crucial in helping you to develop a comprehensive understanding of the history and structure of the Irish education system. You should include references to these instances on the template and this will remind you to include them when you are developing your webpage.

Finally….
The more complete this template is, the more you are helping your fellow group members to develop their webpage submission. In order to get the most out of this module it is imperative that you work together, that you collaborate. The evidence of this will be this introductory Template.

STORY EXCHANGE TEMPLATE NO.3   DATE: xx/xx/2015   TERTIARY LEVEL EDUCATION

THIRD LEVEL

- NUIG FIRST/SECOND CHOICE
- 1st IN FAMILY TO GO TO 3RD LEVEL EDUCATION
- B.A. MATHS + EDUCATION
- HISTORY OF NUIG
- MATHS EDUCATION (STEM)
- TEACHER TRAINING COLLEGES
- UNDERGRADUATE EDUCATION
- POINTS SYSTEM
- LEAVING CERTIFICATE EXAM
- FUNDING AT THIRD LEVEL
- FREE FEES / ADMIN / REGISTRATION FEES

HOW IS THIRD LEVEL FUNDED TODAY? HOW HAS IT

BEEN FUNDED IN THE PAST?

WHAT DEVELOPMENTS HAVE TAKEN PLACE IN RELATION

TO THE ENTRY (MATRICULATION) PROCESS TO THIRD

LEVEL EDUCATION?

WHAT IS HAPPENING IN OTHER COUNTRIES?

BME - ED116 - 2015/16   STUDENT NO: 1234567   GROUP NO: A

INTRO

GROUP NOTES

GROUP NO:

BME - ED116 - 2015/16

Appendix 5: Data Collection Table - Ethnographic

Appendix 6: Ethical Consent Forms

NUI Galway
OÉ Gaillimh

Scoil an Oideachais   School of Education

Consent Form

Title of Project:

Transition with Others: Collaborative Engagement with the History of Education for Transition in Undergraduate Initial Teacher Education and Towards Professionalism

You are under *no* obligation to participate in this study. If you agree to participate, but at a later stage feel the need to withdraw, you are free to do so. It will not affect you in any way.

Please answer all of the following (tick the appropriate box):

	Yes	No
I have read and understood the subject information sheet dated 07-09-2015 and have had the opportunity to ask questions.	☐	☐
I understand what the project is about, and what the results will be used for.	☐	☐
I am fully aware of all of the procedures involving myself, and of any risks and benefits associated with the study.	☐	☐
I know that my participation is voluntary and that I can withdraw from the project at any stage without giving any reason.	☐	☐
I am aware that my results will be kept confidential.	☐	☐

I agree to participate in the above study

_____   _____

Signature of Participant   *Date*

_____   _____

Signature of Investigator   *Date*

OÉ Gaillimh,   NUI Galway,
Bóthar na hOllscoile,   University Road,   education@nuigalway.ie
Gaillimh, Éire   Galway, Ireland   T +353 91 492 195   www.nuigalway.ie/education/

NUI Galway
OÉ Gaillimh   Scoil an Oideachais   School of Education

07/09/2015

Dear Participant,

My name is Paul Flynn and I am currently undertaking a research project in the subject area of Education as part of my studies of the Structured PhD Programme, under the supervision of Dr.Tony Hall. My research is concerned with enhancing pre-service teachers engagement with the History of Education using educational technology, with the explicit aim of helping you to collaboratively transition into undergraduate pre-service teaching and towards professionalism

Therefore I am writing to you to invite you to participate in this research project. The key points of the project that I would like emphasise are:

- Enhancing pre-service teachers engagement with the History of Education using educational technology.

- A student/staff member who agrees to participate will be required to engage with continuous assessment activities for the duration of the module, as will a student/staff member who chooses not to participate in the study.

- The entire duration will be a maximum of 12 weeks. (12x2hour lectures)

- Anonymity will be protected at all times.

- Individual identifiers will not be used in the write up of the findings.

- All information gathered will be stored confidentially and will be used only for the purpose of this project.

The NUI Galway Ethics Committee has granted full ethical approval for this project. I have enclosed a copy of the Information Sheet and the Consent Form, should you wish to participate in this research project.

I would like to thank you for taking time to read this letter and if you require any further information please do not hesitate in contacting me by email at p.flynn10@nuigalway.ie. I look forward to hearing from you.

Regards,

Paul Flynn
Galway Doctoral Research Scholar
School of Education
NUI Galway

OÉ Gaillimh,   NUI Galway,
Bóthar na hOllscoile,   University Road,   education@nuigalway.ie

NUI Galway
OÉ Gaillimh

Scoil an Oideachais   School of Education

Research Thesis Information Sheet

Title of Project:

Transition with Others: Collaborative Engagement with the History of Education for Transition in Undergraduate Initial Teacher Education and Towards Professionalism.

The Study:

How can technology enhanced engagement with the history of education help new entrants to undergraduate pre-service teacher training collaboratively transition in undergraduate education and towards professionalism?

Participation Information:

If you agree to partake in this study you will be required to participate in one or more of the following:

- Complete a survey/questionnaire.
- Complete continuous assessment activities per module assessment criteria, including production of a multimedia contribution.

There are no risks involved in this study. All information gathered will remain confidential and used only for the purpose of this study. It will be stored safely with access only available to the investigator.

You are under no obligation to participate in this study. Should you have any questions or do not understand something just contact me and I will clarify any issues that you are concerned about.

Contact Details:

Paul Flynn,
Galway Doctoral Research Scholar,
School of Education,
NUI Galway
p.flynn10@nuigalway.ie

If you have concerns about this study or would like additional information, you may contact my supervisor

Dr. Tony Hall, School of Education, NUI Galway.
Tel: Ext. 2153/ Email: tony.hall@nuigalway.ie

Appendix 7: University Guidelines on Module Design and Delivery

IMPORTANT INFORMATION REGARDING FIRST-YEAR RESULTS (2010-11)

First Arts Students

1. Rules of subject-based BA programmes

- Subjects are passed where a mark of **40%** has been achieved at the subject level.

- If you do not obtain 40% in a subject (which is the combination of Semester 1 and Semester 2 modules), you must retake **failed** modules only in May as follows:

  Semester 1 Resits/Repeats Examinations take place from May 10 – 13
  Semester 2 Resits/Repeats Examinations take place from May 17 – 20

  If you have failed a module which was assessed solely by Continuous Assessment or Essay, you should contact your First Year Tutor regarding a resubmission date for the Continuous Assessment or Essay.

- If you have passed a subject(s) at 40%, you <u>cannot</u> repeat any module which you have failed.

- Students are allowed to compensate in **one** out of their four subjects and thereby pass First Arts by Compensation providing:

  (i)   they reach **35%** in that subject, **and**

  (ii) they pass their other three subjects at 40%, and have additional marks above 40% across the three subjects they pass, which is equal to the deficiency in the subject being compensated.

  Students may <u>not</u> proceed to Second Arts in a subject in which they compensate. In addition, students must satisfy the requirements of progression in certain subjects (i.e. Beginners' German, Léann an Aistriúcháin, Legal Science, Psychology)

N.B. Students studying a Language should note that they cannot proceed to Second Arts in that Language if they fail a Language module(s), even though they may achieve 40% or higher in the overall subject result.

  Requirements on choosing a Modern Language
  Students should note that choosing to study a Modern Language to Degree level involves spending a period, normally a year, abroad in a country or region where the language for which they are registered is widely spoken. In the case where a student is registered for two Languages, the student will normally be required to spend six months in each of the relevant countries/regions. Therefore after having successfully completed the Second Arts Examination and in advance of registering for Final Year studies of the BA programme, students will be required to spend a period abroad in order to prepare them for the demands of the Final Year of their degree studies in a Language.

2. Additional Rules relating to Denominated BA programmes

- Students who are registered for the Denominated Programmes BA (Public and Social Policy)/BA (Cumarsáid)/BA (Riarachán Gnó) may compensate in modules up to the value of 15 ECTS, providing they attain 35% in those modules, pass all of their other modules and have a surplus of marks in the modules they pass equal to the deficiency of the marks in the modules being compensated.

- Students who are registered for a **BA *CONNECT* programme** must pass each module of their Specialism (***Children's Studies/Creative Writing/Film Studies/Human Rights/Irish Studies/Latin American Studies, Theatre and Performance/Women's Studies***) at **40%** or higher in order to pass the First University Examination.

- Students registered for the **BA (History) Denominated** programme must pass all of the modules in **the subject History** in order to proceed into Second Year of that programme.

- Students registered for the **BA (Psychology) Denominated** programme must pass all of the modules in **the subject Psychology** in order to proceed into Second Year of that programme.

- Students who are registered for the **BA (Mathematics and Education)** must pass all their modules in order to proceed into Second Year of that programme.

Dr. Edward Herring,   **May, 2011**
Dean,
College of Arts, Social Sciences, and Celtic Studies

Appendix 8: Final Review Panel Report the Teaching Council on BME 2012

Final Report of the Review Panel to the Teaching Council following a review of the reconceptualised BA Mathematics and Education submitted for accreditation by NUI Galway

December 2012

An Chomhairle Mhúinteoireachta
The Teaching Council

Table of Contents

1.0 Background

The Teaching Council is the statutory body charged with setting the standards for entry to the teaching profession and ensuring that these standards are upheld.

In accordance with Section 38 of the Teaching Council Act, 2001, the Council shall:

(a) review and accredit the programmes of teacher education and training provided by institutions of higher education and training in the State,

(b) review the standards of education and training appropriate to a person entering a programme of teacher education and training, and

(c) review the standards of knowledge, skill and competence required for the practice of teaching,

and shall advise the Minister and, as it considers appropriate, the institutions concerned.

The Teaching Council's role in relation to the review and accreditation of programmes of initial teacher education (ITE) is distinct from the academic accreditation which programmes also undergo. Academic accreditation is based on the suitability of a programme for the award of a degree/diploma, whereas professional accreditation for any profession is a judgement as to whether a programme prepares one for entry into that profession.

The review and accreditation of programmes of ITE by the Teaching Council provides an opportunity for Higher Education Institutions (HEIs) to demonstrate that they offer quality programmes of teacher education. It is expected that the graduates of such programmes achieve programme aims and learning outcomes which are aligned with the values, professional dispositions, and the standards of teaching, knowledge, skill and competence which are central to the practice of teaching.

In order to guide its review of programmes, the Teaching Council has published *Initial Teacher Education: Strategy for the Review and Accreditation of Programmes* (hereinafter referred to as the Council's review strategy). That document sets out the process by which programmes are reviewed. The criteria against which reviews take place are set out in a second document: *Initial Teacher Education: Criteria and Guidelines for Programme Providers* (hereinafter referred to as the Council's criteria). That document, which will apply to existing and new programmes (from 2012 in the case of concurrent programmes and 2014 in the case of consecutive programmes), relates to a range of areas, including programme design, areas of study, the duration of programmes, the numbers and qualifications of staff, facilities and resources. Significantly, the criteria:

- prescribe those areas of study which will be mandatory in programmes, including numeracy

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and literacy, behavior management, parents in education, ICT and inclusive education

- set out for the first time the expected learning outcomes for graduates of all ITE programmes
- propose raising the minimum requirements for persons entering programmes of ITE at primary level and a literacy and numeracy admissions test for mature entrants
- require a 15:1 student-staff ratio
- call for the development of a new and innovative school placement model, involving active collaboration between HEIs and schools and an enhanced role for the teaching profession in the provision of structured support for student teachers
- require that student teachers should spend at least 25% of the programme on school placement, and that such placements should be in a minimum of two schools
- require increased emphasis on research, portfolio work and other strategic priorities.

Providers of existing programmes have been asked to reconceptualise their programmes in line with the revised criteria and to submit them for accreditation. All providers have made a declaration to the Teaching Council that the criteria will be fulfilled and guidelines followed in respect of all of their programmes.

In parallel with the drafting of the Council's review strategy and its criteria for ITE, the Council has also published its *Policy on the Continuum of Teacher Education*, which sets out its vision for teacher education at all stages of the continuum – ITE, induction, and continuing professional development.

2.0   The Review Process

The review of NUI Galway's submission for approval of a four year concurrent programme, the B.A. Mathematics and Education programme (hereinafter referred to as "the programme"), took place in September, October and November 2012. The process was formally initiated when the Review Panel (hereafter referred to as "the panel") was appointed by the Teaching Council's Director, with Professor Áine Hyland as Chairperson.[1] To assist and support the work of the panel, Fionnbarra Ó Tuama was appointed as Rapporteur. The panel was also supported in its deliberations by an external subject expert and by the Director and staff of the Teaching Council.

Documentation relating to the application was submitted to the Teaching Council by NUI Galway (hereinafter referred to as NUIG or "the university") on 23 July 2012. The review panel met initially on 30 August 2012 in the Glenroyal Hotel in Maynooth to give preliminary consideration to the NUIG submission. At that meeting, a general briefing was provided by Tomás Ó Ruairc, Director, and Carmel Kearns, Education Officer of the Teaching Council. The Teaching Council's terms of reference and general principles bearing on the review and accreditation of the reconceptualised programmes of initial teacher education were outlined in detail. On foot of that briefing, the panel gave some preliminary consideration to the NUIG submission.

Following this meeting, individual members of the panel focused on specific aspects of the submission and circulated their comments and questions to other members of the panel. On 20 September, the Chairperson sent an email to Dr Mary Fleming, Director of Teacher Education in

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[1] Details of the Panel membership are included at Appendix 1.

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- Areas of Study
- School Placement
- Assessment Policies and Procedures
- Student Intake and Admissions Criteria
- Staffing
- Facilities
- Student Support and Guidance Systems.

The documentation is informative, but it lacks consistency in presentation. Clarification was sought on a number of aspects of the programme and this clarification was readily and willingly provided by the Director of Teacher Education, Dr Mary Fleming, and by the joint Programme Directors, Dr Paolucci and Dr Jennings. Some modules are designed and presented in accordance with an institutional template for programme design[2], but this is not universally the case. In some instances this made it difficult for panel members to identify whether, and if so, how individual modules contribute to the overall learning outcomes of the programme. Volume 2 (Appendix Items) is not paginated and this caused additional difficulty for members of the panel when referencing their comments.

5.0   Overview of the Programme

5.1   *Duration of the Programme*

The B.A. Mathematics and Education is a four programme year (240 ECTs) leading to a Level 8, B.A. qualification. A total of 120 ECTS credits relate to the Education components and 120 ECTS relate to the Mathematics and Applied Mathematics components. The programme is modular in structure and is one of a number of two subject B.A. degree programmes offered within the College of Arts, Social Sciences and Celtic Studies in NUIG. While the programme complies with the Teaching Council's guidelines for concurrent programmes for post-primary teachers and satisfies the subject criteria for the teaching of Mathematics and Applied Mathematics, the panel is aware that some other providers have extended the duration of their concurrent programmes to five years.

5.2   *Student Intake and Admissions Criteria*

Entry to the programme is through a designated entry code in the CAO list of programmes. The minimum requirements for entry are C3 in two subjects taken at Higher Level and a D3 in four other subjects in the Leaving Certificate, with at least a D3 in Ordinary Level in Irish, English and another language. A minimum of C3 in Higher Level Mathematics or an A2 in Ordinary Level Mathematics is also required. Intake is restricted to approximately 25 students per annum, with five places reserved for mature students. There is no specific preferential access quota to this programme for students from disadvantaged backgrounds or for those with disabilities, although the panel notes that NUIG has a general overall policy of preferential access for school leavers under the HEAR[3] and DARE[4] schemes. (The panel notes that, according to statistics in the Equal Access Survey carried out by the

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[2] The panel notes that there is a standard template for module design in NUIG which states that "completion of Part B is compulsory for ALL programmes and ALL modules within the College of Arts, Social Sciences and Celtic Studies" (sic). Part B includes a statement of Learning Outcomes or Competencies.

[3] Higher Education Access Route.

[4] Disability Access Route to Education

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HEA, 20% of the intake into NUIG in 2010/11 came from lower socio-economic backgrounds.)

The panel noted that of the 20 students who started the B.A. Mathematics and Education in 2008/9, only 12 (or 60%) completed the programme last year. However, the retention rate for subsequent years appears to be much higher and 26 of the 28 who entered in 2009/10 were still on the programme in 2011/12, i.e., in their third year.

5.3   Conceptual Framework

The intention of the programme is to adopt a concurrent approach where the academic study of subjects proceeds in parallel with foundational studies, professional studies and periods of school placement. The concurrent progression of modules in Mathematics and Education has been strategically sequenced to ensure that students not only engage with mathematical content and general pedagogy but that they have opportunities to focus specifically on developing pedagogical content knowledge. The framework of the programme is presented as three parallel pillars – Content Knowledge, Professional Knowledge and Pedagogical Knowledge pointing and leading to Professional Practice. A matrix which shows how the mandatory elements of the programme align with the Education modules, was included in the documentation submitted. This is a useful matrix which could provide a potential framework for cohesion and integration.

5.4   Design, Programme Aims and Learning Outcomes

The conceptual framework, the programme aims and outcomes, and the overall learning outcomes for the programme provide a sound basis for a coherent and integrated initial teacher education programme. Volume 1 of the documentation contains an overview of the Education, Mathematics and Applied Mathematics modules and indicates how the modules, especially the Education modules, fit into the overall curricular framework. However, as not all the module descriptors are written in accordance with the institutional template – in particular some of the Mathematics and Applied Mathematics modules – it was difficult for the panel to see how some of these modules fit into the overall programme design.

The panel is aware that the modules in Mathematics and Applied Mathematics are not designed solely for, nor taught uniquely to, student teachers. The students of the BA (Mathematics and Education) programme join a range of other students in attending modules in Mathematics and Applied Mathematics. This means that the modules in Mathematics and Applied Mathematics do not have a specific focus on the teaching of Mathematics or Applied Mathematics; nor do the assignments or examinations in the Mathematics and Applied Mathematics modules focus on the teaching of Mathematics. These modules effectively form the "Content Knowledge" component of the programme and from a student perspective can appear to be separate and distinct from the Education components of the programme.

While recognising that the Mathematics and Applied Mathematics modules were not designed specifically for teacher education students, the panel would expect that the programme documentation should demonstrate in a transparent and explicit way how each module fits into the overall design of the programme, in accordance with good practice in curriculum design. This would require that each module descriptor should include learning outcomes congruent with the overall learning outcomes of the programme. As programme/curriculum design should be a fundamental component of any programme of teacher education, those who design and deliver teacher education programmes should model best practice in all aspects of their work, including curriculum

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design.

The panel notes that some modules contain a very large number of learning outcomes and that other modules contain none. For example, the school placement in Year 4 (a 20 ECTS credit module) contains no less than 36 separate learning outcomes which are listed in an unsystematic and undifferentiated manner. The Integrated Project (Parts 1 and 2) (a 10 ECTS credit module) contains 42 separate learning outcomes, again listed in an unorganised way.

The panel recommends that a Student Handbook, designed in accordance with modern curriculum design protocols, should be prepared and made available to all staff and students of the programme. The Handbook should contain a summary of the conceptual framework of the programme; a statement of the overall learning outcomes of the programme, and a short description of each module in Mathematics and in Education, using a standard and consistent template.[5] The relationship between the programme learning outcomes and the individual modules might be mapped on a matrix. The Handbook should also contain clear information on the assessment of all aspects of the programme including a timetable indicating when assignments are due and should make explicit the ways in which the programme addresses the strategic priority areas of numeracy and literacy, ICT and inclusion, and the mandatory areas of study prescribed in the Teaching Council's criteria.

5.5 Co-ordination and Integration

The panel notes the feedback provided by 11 students from the first cohort to complete the programme. Of the 11, eight would welcome better linking of Mathematics and Education modules, and from the point of view of some students, Mathematics and Education "appear to be two separate courses". These students suggested that the education courses should involve more specific Mathematics references/examples/approaches to help students to be Mathematics teachers and that the Mathematics courses should refer to the secondary school Mathematics curriculum.

The panel notes that in the design of the programme, some student assignments were intended to assist students to make links between the Mathematics and Education elements, e.g., the Integrated Project Module in Year 3, the Final Year Symposium in Education, and the Final Year Project in Mathematics. However, it would appear (at least in the case of the first cohort of students) that these assignments did not fully achieve their purpose. The panel recommends that the issue of making visible the overall coherence and integration of the programme be addressed. For example, consideration might be given to requiring students to collate a professional portfolio over the four years of the programme which might include personal reflections, teaching and learning materials, and evidence of engagement with research in Mathematics education. Such a portfolio could also encourage students to develop assessment tasks linked to assessment for, and of, learning. Steps should be taken to ensure that in the Integrated Project in Year 3, students "make connections" between the Mathematics and the Education components of the programme.

While the panel is aware that there is on-going collaboration between the joint Programme Directors (Dr Paolucci and Dr Jennings), it suggests that further opportunities for cross-departmental collaboration should be exploited. (It is noted that 29 different lecturers are involved in the delivery of the programme.) For example, strategies such as joint Mathematics/Education seminars and workshops might be considered, as well as projects which involve academic staff from both the Mathematics and Education Departments.

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[5] The standard NUIG template would appear to be suitable for this purpose.

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The panel notes that student examination results in the Mathematics and the Education elements of the programme are considered and approved by two separate examination boards at the end of the programme. This contributes to the perception that Mathematics and Education are two separate elements of the programme and that the programme is not an integrated one. The students' results in both subjects (Mathematics and Education) should ideally be considered and approved by a single Examinations Board, especially at the end of the final year of the programme. At the very least, there ought to be cross-departmental membership of the two Examination Boards.

5.6 *Linking Theory and Practice*

The programme documentation recognises that "one of the most important aspects of the teaching, learning and assessment on this programme is the integration of theory and practice". It lists a number of ways in which this linkage occurs, including:

- opportunities for the students to apply their learning in school settings;
- opportunities for students to integrate their various studies of Mathematics and educational theory in the Professional Studies modules;
- criteria for grading assignments in Foundation and Professional Studies ensure that students are rewarded for their capacity to link theory and practice;
- demonstration of creative and advanced uses of ICT in Education.

While the importance of linking theory and practice is highlighted in the programme documentation, the link is not always evident in the module descriptors. The panel notes that a number of modules (both Education and Mathematics modules) do not include suggested or required reading lists. In a number of cases the lack of a reading list is apparently justified by the statement: "*This is a practical module in which student learning will be through practical experience and tutorial support.*"

It is a matter of concern to the panel that some module descriptors give the impression that practical modules do not have an underpinning theory and are not research-informed. This issue needs to be addressed when the proposed Student Handbook is being prepared.

In any professional programme, the link between theory and practice should be made explicit at every opportunity. If teachers are to develop as reflective practitioners, they need to understand the theory which informs best practice in their profession. It is important that all aspects of ITE programmes are informed by up-to-date research and that this link between research and teaching and learning is explicit and understood by students.

5.7 *Suggested/Required Reading*

The review panel notes that there is considerable variation between the suggested/required reading lists for the various modules. There is no suggested reading for some modules. On the other hand, some reading lists are unrealistically long and lack guidance in relation to required reading and supplementary reading. For example, a module in Year 3 on Psychology, Sociology and Catering for Diversity lists no fewer than 60 URLs without suggesting any priority for the websites listed. Some key publications on education (nationally and internationally) and on key aspects of pedagogy do not appear in the lists of readings.

The panel recommends that all reading lists should be reviewed in a co-ordinated way, and that every module should distinguish between required reading (a short list) and supplementary reading.

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All references for reading and research should be rationalised in a consistent way in the Student Handbook.

5.8   School Placement

Students on the programme experience a range of teaching situations and education settings. During Years 1, 2 and 3, students work mostly in local schools in and around Galway city and placements are integrated with their university programme. The placements during these years are organised by a School of Education Placement Co-ordinator. In their final school placement block in Year 4, students are themselves responsible for finding a placement school. Where possible and feasible, students are encouraged to partake in various aspects of school life during their school placements. The panel recommends that the Placement Co-ordinator takes steps to ensure that students spend each placement in a different type of school (as recommended in the Teaching Council criteria).

Students undertake 180 hours of face-to-face teaching over the duration of the programme. In addition they spend a further 160 hours in other school-based activities, giving a total of approximately 340 hours. In second year, students work closely with a co-operating teacher and receive one visit from the Programme Director, Dr Paolucci. They receive a minimum of three visits in Year 4. While this provides consistency of supervision, it means that there are fewer school visits than are provided in similar ITE programmes in other institutions. While it might have been feasible for one placement tutor to visit all the students in the early years when numbers were relatively small, the panel is of the view that it is not realistic to expect that one member of staff can carry full responsibility for school placement visits now that the full complement of students has been reached (around 100 over the four year programme). The panel seeks reassurance that the number and timing of school placement visits will be kept under continuous review and that appropriate and moderated school placement visits by appropriately trained placement tutors will be provided on an on-going basis.

The panel welcomes the inclusion in the documentation of comprehensive and clear criteria and grade descriptors for the assessment of school placement.

The development of a systemised and co-ordinated support system for school placement by the School of Education in NUIG, in partnership with schools, is in its infancy. In September 2011, an innovative Partner School Placement Model was initiated and piloted in 20 post-primary schools. At present, the possibility of developing a co-ordinated mentoring system with co-operating teachers from all schools is being explored. In this context, a protocol setting out the roles and responsibilities of partners in this process has been prepared and this protocol, which clarifies the university's expectations of all involved in school placement, including student teachers and their placement tutors, is welcomed by the panel.

5.9   Mathematics and Applied Mathematics modules

As regards Mathematics, the review panel is satisfied that the programme includes the study of Analysis, Algebra, Geometry, and Probability & Statistics to a minimum of 40 ECTS credits as required by the Teaching Council. The panel is also satisfied that the programme has a minimum of 20 ECTS credits in the accepted list of optional areas specified in the Teaching Council's draft subject criteria [Mathematics] as published in November 2011.

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As regards Applied Mathematics, the panel is satisfied that the programme includes the study of Analysis, Algebra, Geometry, and Probability & Statistics to a minimum of 25 ECTS credits. The panel is also satisfied that the course includes the study of Mechanics to a minimum of 25 ECTS credits. It is further satisfied that the programme has a minimum of 10 ECTS credits in the accepted list of optional areas specified on p. 25 of the Teaching Council's draft subject criteria (Applied Mathematics) as published in November 2011.

5.10   Staffing, Facilities and Financial Resources

The names and academic qualifications of full-time academic staff involved in the delivery of the programme were made available to the panel, together with details of their teaching and research experience. The panel notes with satisfaction that almost all of the staff mentioned in the appendix hold a Ph.D in a relevant area of expertise. Most of the Education staff have had some experience as post primary teachers and many are research-active in relevant areas of education.

The two Programme Directors, Dr Paolucci and Dr Jennings, were both appointed three years ago, after the first cohort of students had been recruited. The panel notes that when the joint Directors were first appointed, the total number of students on the programme was less than 30. Now that the programme is fully up and running, the total number of students is almost 100 and the workload of the Directors has grown significantly.

As regards the funding of the programme and the student-staff ratio, the data available in the submission was insufficient for the panel to come to a definitive conclusion about these matters. The panel is aware that in a large Education Department such as that in NUIG, it is difficult to separate the resources available for the B.A. Mathematics and Education and the resources available for the PDE. It recommends that NUIG be required to furnish further details to the Council in relation to these matters and that when the reconceptualised PDE is being reviewed by the Teaching Council, the resourcing and staffing issue be examined more fully.

The panel is aware of the challenges being faced by Education Departments in dealing with the current economic constraints and the funding and staffing cutbacks experienced in recent years, particularly in the context of extending the length of consecutive ITE programmes. The panel recommends that the resourcing situation of the Education Department of NUIG be carefully monitored in the years ahead to ensure that adequate resources (staffing, funding and space) will continue to be available for the effective delivery of all ITE programmes. In this regard, it is important that the interests of student teachers and of ITE are represented on all relevant committees/structures of the College of Arts, Social Sciences and Celtic Studies; that ITE remains a strategic priority of NUIG; and that adequate resources for the effective delivery of ITE programmes are provided on an on-going basis.

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6.0   Overall Findings

The panel notes that this programme satisfies the criteria set down by the Teaching Council in its Criteria and Guidelines and in the draft subject criteria and recommends to the Teaching Council that the programme be accredited. It proposes that such accreditation would have a lifespan of not more than five years and would be subject to any policy developments with regard to the duration and award level of teacher education programmes or changes made to the subject criteria in the intervening period. It further recommends that any subsequent review should take account of the views and experiences of graduates of the programme and of employers of those graduates. It should also take account of relevant findings arising out of the review of the university's consecutive programme (PDE).

The commendations below relate to areas of particular strength which the panel has identified.

With regard to the recommendations below, the panel recommends that the Teaching Council should require the college to set out to the Teaching Council its proposals for implementing the recommendations. Such proposals should be submitted in advance of the review of NUIG's consecutive programme. It further recommends that the Council should prioritise those areas for particular attention when this programme falls due for re-accreditation.

The following commendations are made:

1. The panel commends the Director of Teacher Education, Dr Mary Fleming, and the joint Directors of the B.A. Mathematics and Education programme, Drs Paolucci and Jennings, for their commitment to the provision of a high quality ITE programme, and appreciates their help and co-operation in providing further information and clarification when requested by the review panel.

2. The panel commends the institutional arrangements for student feedback and welcomes the open way in which student views were made available to the panel.

3. The panel notes that the concurrent progression of modules in Mathematics and Education has been strategically sequenced to ensure that students not only engage with mathematical content and general pedagogy but that they have opportunities to focus specifically on developing pedagogical content knowledge. The panel commends the three-pillar framework of the programme – Content Knowledge, Professional Knowledge and Pedagogical Knowledge leading to Professional Practice.

4. The panel notes that the matrix showing how the mandatory elements of the programme align with the Education modules could provide a potential framework for greater cohesion and integration.

5. The panel is impressed by the commitment of NUIG to the school placement element of the programme and by the emerging partnership between the university, and schools. The panel welcomes the guidelines which set out the roles and responsibilities of all parties involved in the placement.

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6. The panel welcomes the comprehensive and clear criteria and grade descriptors for the assessment of School Placement.

7. The panel commends the recognition in the programme documentation that "one of the most important aspects of the teaching, learning and assessment on this programme is the integration of theory and practice."

The following recommendations are made:

1. The panel recommends that a Student Handbook, designed in accordance with modern curriculum design protocols, be prepared and made available to all staff and students of the programme. The Handbook should contain a summary of the conceptual framework of the programme, a statement of the overall learning outcomes, and a short description of each module in Mathematics and in Education, using a standard and consistent template. The relationship between the programme learning outcomes and the individual modules might be mapped on a matrix.

   The Handbook should also contain clear information on the assessment of all aspects of the programme, including a timetable indicating when assignments are due. It should make explicit the ways in which the programme addresses the strategic priority areas of numeracy and literacy, ICT and inclusion, and the mandatory areas of study prescribed in the Teaching Council's criteria.

2. As students appear to have difficulty in perceiving the programme as an integrated one, the panel recommends that further opportunities for cross-departmental collaboration should be exploited. Consideration might be given to requiring students to collate a professional portfolio over the four years of the programme which might include personal reflections, teaching and learning materials, and evidence of engagement with research in Mathematics education. The students' results in both subjects (Mathematics and Education) should ideally be considered and approved by a single Examinations Board, especially at the end of the final year of the programme. At the very least, there ought to be cross-departmental membership of the two Examination Boards.

3. The panel recommends that students be made aware of, and become familiar with, the national strategy Literacy and Numeracy for Learning and Life (2011) as well as reports of national and international assessments of literacy and numeracy, especially those relating to pupils at second level.

4. It is a matter of concern to the panel that some module descriptors give the impression that practical modules do not have an underpinning theory and are not research-informed. This issue should be addressed when the proposed Student Handbook is being prepared.

5. The panel recommends that all reading lists should be reviewed in a co-ordinated way, and that every module should distinguish between selective, required reading (a short list) and supplementary reading. All references for reading and research should be rationalised in a consistent way in the Student Handbook.

6. The panel recommends that a systemised and co-ordinated support system for school placement in partnership with the schools continue to be developed and that the pilot

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School Placement Model be extended and mainstreamed. The panel seeks reassurance that the number and timing of school placement visits will be kept under continuous review and that appropriate and moderated school placement visits by suitably trained placement tutors will be provided on an on-going basis. It further recommends that the Placement Co-ordinator takes steps to ensure that students spend each placement in a different type of school (as recommended in the Teaching Council criteria).

7. The panel recommends that when the reconceptualised PDE is being reviewed by the Teaching Council, the resourcing and staffing issues relating to both the PDE and the B.A. Mathematics and Education be examined more fully.

8. The panel recommends that the funding and staffing of the Education Department of NUIG be carefully monitored in the years ahead to ensure that adequate resources (staffing, funding and space) will continue to be available for the effective delivery of ITE programmes.

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Appendix I – Review Panel Membership

Independent Review Panel Chair	**Professor Áine Hyland** is Emeritus Professor of Education and former Vice-President of University College Cork. She was a member of a review team organised by the Irish Universities Quality Board which carried out an institutional review of NUI Galway in 2010 and is a member of the European Universities Association Institutional Evaluation team. She has been involved in reviews of universities in Italy, Turkey, North Cyprus, Bosnia-Herzegovina, Slovakia, Portugal and Romania. She is author of *A Review of the Structure of Teacher Education Provision in Ireland*, a Background Paper published in June 2012, and *Transition from Second to Third Level*, published in September 2011.
Teacher Education Expert	**Professor John Anderson** is Managing Inspector for teacher education in the Education and Training Inspectorate in Northern Ireland and an Honorary Professor of Education at Queen's University, Belfast. He was formerly a lecturer in Education at the University of Ulster and an adjunct Associate Professor in the School of Education at Duquesne University, Pittsburgh, USA. He has also worked for British Educational and Communication Technology Agency (Becta) where he was responsible for the formulation of national UK teacher education in IT policies. He is a former Academic Secretary for the Committee on Early Professional Development for Teachers of the Northern Ireland Teacher Education Committee.
Teaching Council Member	**Christy Maginn** is a member of the Teaching Council and serves on the Disciplinary and Finance Committees and the Primary Applications Panel. He is a full-time teacher of Mathematics, Applied Mathematics and Physics. He has prior experience of the Teaching Council's review and accreditation function, having previously been appointed as a member of a review panel.

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Inspector from the Department of Education and Skills	**Carmel Donoghue** is senior Post-Primary Science Inspector at the Department of Education and Skills. She has a variety of experience in research, curriculum, teaching and inspection. Her work involves a range of evaluation models of teaching and learning, as well as whole-school evaluations, including management and leadership.
Rapporteur	**Fionnbarra Ó Tuama** was, until recently, a member of the Inspectorate in the Department of Education and Skills. Initially he worked as a District Inspector and later at Divisional level. He contributed to policy formulation and implementation in a variety of settings throughout the education system during a period of over thirty years. Prior to that he taught at primary, secondary and third level.

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Appendix 9: Technology Guidelines Provided to Participants
Creating a Twitter Account

Go to: http://twitter.com
Click on "Sign UP Now" icon which is located on the right hand sid[
You will be re-directed and asked to enter the following details:

Full Name: Forename and Surname

User Name: it is important to think carefully about your user name or
Twitter ID. While you are creating an ID for this module remember that the ID
you choose will be in the public domain, as will what you Tweet and what or who
you follow. Also, consider that that this ID may be one by which others will know
you both personally and professionally, now and in the future. Perhaps even
potential employers.

Password: Keep this as simple as possible and make a note of it
somewhere secure.

Email Address: You will need to provide a valid email address

Verification: To ensure that you are a human user!

Inside Scoop: Disable this or you will receive countless updates

FinalStep: Create my account

You have now created your very own Twitter Account!

Following Other People, Groups or Organisations

This is the next step that Twitter will direct you towards. There are three ways to
begin finding people that you would wish to follow.

Sources if interest:This is a page that lists numerous categories that group
people of similar interests. By clicking on any one category you can then look at
people conversing in this space and perhaps decide to follow them. What they
tweet will then appear on your page.

Using email address books:You may locate friends who are already on Twitter by
using this option. Options include Gmail, AOL or Yahoo. Although you may have
had to register with this email rather than your NUI Galway   email
address.

Find Anyone:This option allows you to use a search box to locate anybody,
group, organisations or #'s

After locating a person, group or organisation of interest, to follow them all you
have to do is click on the follow button at the top of the page near their profile
picture.

Customising your Twitter Account

Home: This is the page that lists all of the Tweets that you post and that of those you are following.

Profile: This page lists all of your details (that you have made public) and lists all of your Tweets and Re-Tweets. This is great because it makes easier to find what is particularly relevant to you.

Find People: A search box to help you connect with others

Settings: Here you can configure the various settings in relation privacy

Customising the way your Twitter Page / Profile looks
Click on Settings (Above)

Account Page: Here you can change your account details such as your Twitter ID, the email address that you use and who can view your Tweets.

Password: Options to change your password

Mobile: You can confuse the mobile profile of your Twitter Account from here

Notices: Options for Twitter to alert you by email when somebody follows you, posts on your timeline etc

Profile: This is visible to everyone and its appearance will form the backdrop for your home page. Options to customise include

• Uploading a photos or logos
• A line with your real name on it
• Where you are located
• A website that you may have
• A short 160 character bio

Design: Your page background can be customised to suit whatever style you like. Options include background images, colour etc. Make sure to save your changes before leaving this page or your all of your changes will be lost!

Sending a "Tweet"
To send a Tweet go to your Home Page and click into the empty box titled "What's happening?"
Your message/comment/observation/link etc should be typed or pasted into this box.

Your message can only be 140 characters or less - this includes all character including spaces!! Their is a counter on the right of the comment box to help you keep track

Your message will appear on the pages of your followers as well as on your home page. You do have the option of deleting any Tweet that you send however care should be taken given that many people may read and Re-Tweet your message.

Re-Tweeting is when somebody shares what you have said with their followers - So be careful!
Engaging with other Twitter Users

Contacting Other Twitter Users

You can reply to Tweets by people that you follow by clicking reply and typing your message.He character count is also relevant here. Just type @(Twitter User ID) and then your message.

You can also send a Tweet at a Twitter User in the same way by typing @(Twitter User Id) and then your message and include other users in the same message by repeating this step. But watch out as this eats into your character count.

You can send a direct message to a Twitter User and this is a private message just for this follower.

Hashtags are widely used to help create spaces for Twitter Users to engage in conversations about certain issues, topics etc. They take the form of #12345 and to contribute to a discussion use the same format as Tweeting at a follower but just use the #12345 instead of the Twitter ID.

General

Twitter is by and large a public space and when you are Tweeting remember that people will read what you say and possibly engage you in conversation about your Tweet.

It is important to remember that Twitter like other social media is searchable and also creates a record of your participation.

So when you decide to Tweet - think! Then think again! If you are still happy with it then at least you have considered the content of your Tweet and who you are Tweeting at!

Some interesting People/Groups/Organisations
(Or Create Your Own!)

@MathTeachProbs   @ILTAtweets
@MathsocNUIG
@NCCAie

Appendix 10: Design & Module Content Alignment

WEEK NO. / DATE / ROOM LOCATION	HISTORY OF ED - CONTENT 9.00 - 10.00AM	CONTENT TO ED TECH LINKING	ED TECH - CONTENT 10.15 - 11.00AM	STUDENT ACTIVITY	RELATIONSHIP TO TWO-CEN's STAGE 1 - 3	ASSESSMENT
WK1 8TH SEPT 2014 D360	OVERVIEW	OVERVIEW OF CONTENT AND ASSESSMENT MODEL	OVERVIEW	• GROUPS & ROLES • Q & A (GENERAL) • Q& A ASSESSMENT • IPAD & MAC INTRO	COLLABORATION	Assessment For Learning
WK2 15TH SEPT 2014 G204	1831 - 1900	• EACH STAGE OF ATTENDING AT SCHOOL TO BE PLACED ON STORYBOARD • LINK PERSONAL TO THE PAST	STORYBOARDING METHODOLOGY	• CREATION OF STORYBOARDS • SHARING OF STORYBOARDS WITH GROUP	COLLABORATION	AFL
WK3 22ND SEPT 2014 D360	1900 - 2014	• INDIVIDUALS TO COLLATE WITHIN GROUP ACCORDING TO LEVEL • TRANSFER TO STORYBOARD • ALIGN HISTORICAL EVENTS	COLLATING DIGITAL CONTENT FOLDER STRUCTURE	• LOCATE DIGITAL CONTENT • GROUP INFO EXCHANGE • CREATE FOLDER STRUCTURE	COLLABORATION ENGAGEMENT	AFL
WK4 29TH SEPT 2014 G204	1939 - 1960	• NARRATIVE OF COMMON DESCRIPTIONS FROM STORYBOARDS • RELATE TO HISTORICAL CONTENT	BOOK TEMPLATES	• SHORT TUTORIAL • DEVELOP BOOK TEMPLATE • STORYBOARD COMPLETION	COLLABORATION ENGAGEMENT	AFL
WK5 6TH OCT 2014 D360	1900 - 2017	• COMPLETED STORYBOARDS TO BOOK TEMPLATE • LINK PERSONAL TO THE GROUP THROUGH REPRESENTATION	INSERTING DIGITAL CONTENT	• MACIPAD FOLDERS • INSERTING MULTIMEDIA • INSERTING DIGITAL CONTENT • EDITING TEXT	COLLABORATION ENGAGEMENT NARRATIVE CONSTRUCTION	AFL
WK6 13TH OCT 2014 D360	1940 - 1958	• CREATION OF DIGITAL CONTENT BASED ON RESEARCH OF TOPICS • LINKING GROUPS TOGETHER	IMOVIE	• IMOVIE TUTORIAL • SCRIPTING • EDITING • VOICE OVER	COLLABORATION ENGAGEMENT NARRATIVE CONSTRUCTION	AFL
WK7 20TH OCT 2014 D360	1900 - 2015	• RECORDING OF SCRIPTED IMOVIE/ VOICEOVER, COLLABORATIVELY COMMUNICATE RELEVANCE OF CONTENT TO THE COHORT	INFORMAL REVIEW & FEEDBACK SESSION	• PEER REVIEW • INFORMAL FEEDBACK SESSION • Q & A	COLLABORATION ENGAGEMENT NARRATIVE CONSTRUCTION	AFL Assessment of Learning
WK8 3RD NOV 2014 D360	1960 - 1988	• COLLATION OF RESEARCHED MATERIAL • DIGITAL CONTENT TO FORM BOOK THAT REFLECTS HIST EVENTS	SOUND EDITING & QUIZ FEATURES	• BOOK EDITING • ADVANCES FEATURES • FINAL REVISIONS TO STORYBOARD/RECORDING	COLLABORATION ENGAGEMENT NARRATIVE CONSTRUCTION TECHNOLOGIES	AFL
WK9 12TH NOV 2014 D360	1988 - 2016	• CREATION OF BOOK THAT COMMUNICATES WITH WIDER WORLD • SHARED COMMON EXPERIENCE	HYPERLINKING & REFERENCING	• FINAL EDITING OF IBOOK • Q & A	COLLABORATION ENGAGEMENT NARRATIVE CONSTRUCTION TECHNOLOGIES	AFL
WK10 17TH NOV 2014 D360	REVISION	REVISION	REVISION	REVISION	REVISION	AFL
WK11 24TH NOV 2014 D360	PRESENTATION SUBMISSION	PRESENTATION SUBMISSION	PRESENTATION SUBMISSION	PRESENTATION SUBMISSION	TWO-CEN's	AFL AOL

TWO-CEN's INTERVENTION OUTLINE
PREPARED BY: PAUL FLYNN
DATE: 14 - 12 - 2014
REVISION: REV 01

NOTES:
• FOR HISTORY AND STRUCTURE OF IRISH EDUCATION CONTENT REFER TO INDIVIDUAL LESSON PLANS.
• DETAILS OF ASSESSMENT WEIGHTING DETAILED IN MODULE DESCRIPTOR.
• HISTORY OF MATHEMATICS EDUCATION TO BE INTEGRATED INTO CONTENT IN EACH LESSON

Appendix 11: Module Lesson Plans

ED116: The History & Structure of the Irish Education System

Date:	7th September 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (1 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the introductory session of this module. Students will be introduced to the content, requirements and assessment model aligned with the course. Also students will be made explicitly aware of their transitional situation - that is moving from individual learners at second level into the formation of a collaborative community within their programme. Students will begin to introduce themselves to each other and will connect both F-2-F and in the online environment created for them. (Twitter & Website) In addition, ethical considerations fro research being carried out will be put to students to consider and review, and subsequently agree/disagree to participate.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer • Ethics Information and Consent Docs	• Introductory Template No.1 • A5 Multi Coloured Post-its • Markers • Note taking materials

1. Aims

• Introduce students to the structure and content of the module.
• Introduce and Explain the assessment requirements for the module.
• Explain the research project being carried out and provide relevant documentation to students.
• Introduce students to group work and collaborative problem solving.

2. Learning Outcomes

• Will understand the structure and assessment structure of the module
• Understand the research aspect of the module and be informed as to their option to participate or not to participate.
• Understand the importance of working collaboratively to successfully complete the module.
• Understand the digital nature of this module and the requirements to participate online in the forums provided

5. Self Evaluation	
How did the session go?	
What would you do differently next time?	
What can you learn from this session?	
6. Issues arising:	

ED116: The History & Structure of the Irish Education System

Date:	14th September 2015
Location:	G024 - Nuns Island, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (2 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the second of eleven sessions in relation to this module. Students will have prepared for this session by engaging with a flipped classroom production. This flipped classroom dealt specifically with the history and structure of the Irish primary education system from 1790 to 1905.

This will be the first time that the students will use Story Exchange to begin developing their knowledge of the history and structure of the Irish education system

Students will also be reminded that this is an excellent opportunity to contribute online and develop their webpage - the basis for their assessment.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer • Ethics Information and Consent Docs	• Partially Completed Introductory Template No.1 • Story Exchange Template No.1 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

• Introduce students to Story Exchange
• Encourage students to exchange stories
• Help students to relate personal experience to course content
• Build on students' experience of flipped classroom content to develop collaborative narratives.

2. Learning Outcomes

• Students will begin to develop a collaborative narrative based on their personal histories of education
• Students will root personal histories of education in historical fact
• Students will begin to develop and construct their personal and collaborative webpages.
• Students will develop further their digital skills as they research and connect with each other in relation to their individual and collaborative assignments.

3. Opening	
Welcome and introduction as the initial session of their four year programme and within this session they may find the beginnings of friendships that may last a professional lifetime or even longer.	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce himself and brief bio, contact details etc.	Notes	9.05- 9.10
Instruct students to tell partner about themselves (Desks in doubles at this point)	To speak to cohort about the person they have just met (A5 Post-its to be completed)	9.10 - 9.20
Present structure of module, outline assessment guidelines & criteria, blackboard key dates, flipped etc.	Notes and Q&A	9.20 - 9.35
Instruct students to from squares out of desks into pre-assigned groups of four.	Moving desks and chairs	9.35 - 9.40
Instruct students to introduce each other within groups and place post-its on larger Story Exchange Template No.1	Self introduction to group members & development of story exchange template	9.40 - 9.50
Break	Break	9.50 - 10.00
Room to be organised in a circular format (chairs only-names)	Students to sit where assigned (not with group members)	10.00 - 10.05
Facilitate round group introduction to the group based around personal history of education.	Students to introduce themselves to the group in turn.	10.05 - 10.35
Introduce iMacs to students and introduce how to create a Twitter Acc, TweetDeck #1BME1201? (Locate Facebook Page?)	Students to create a Twitter & TweetDeck Acc's & make initial contribution to #	10.35 -10.55
Wrap-up and reminders Flipped Video & change of room	Notes and Q&A	10.55 - 11.00

5. Self Evaluation	
How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

ED116: The History & Structure of the Irish Education System

Date:	21st September 2015
Location:	D302 - D-Block School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (3 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the third of eleven sessions in relation to this module. This traditional lecture format session (first 60 minutes) will deal specifically with the history and structure of the Irish primary education system from 1905 to 2015.

This will be the second time that the students will use Story Exchange to begin developing their knowledge of the history and structure of the Irish education system

Students will receive a half hour tutorial in the development of their webpages (Weebly and encouraged to refine their contributions as part of the process. (Correct referencing procedures also)

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• Partially Completed Introductory Template No.1 • Story Exchange Template No.1 • A5 Multi Coloured Post-its & Markers • iMacs, associated Youtube links etc

1. Aims

- Further develop students use of Story Exchange
- Develop students understanding of the relationship between contemporary educational issues and past events.
- Help students to relate personal experience to course content
- Develop students knowledge of Website construction as they develop their collaborative narratives.

2. Learning Outcomes

3. Opening	
All of us hear have a history of education. The history of education is ongoing and ever changing. Part of this module is looking to the past to make sense of current issues. I encourage you to think about…..	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
A more formal introduction to the concept of transition and the purpose of the module	Notes and Q&A	9.10 - 9.20
Provide students with Story Exchange Template No.1 and instruct students to begin to complete it. Interact with groups and provide assistance.	Students to begin to develop Story Exchange Template No.1 Students to use post-its to develop their collaborative narrative construction	9.20 - 9.50
Break	Break	9.50 - 10.00
Facilitator to introduce a contemporary issue related to historical content	Students to research individually and in groups national and international issues that are related	10.00 - 10.20
Facilitator to introduce Weebly and give a brief intro to developing a webpage	Students to update their profiles on the Webpage and add much detail as they can at this point based on earlier discussion.	10.20 - 10.45
To address issues developing on Twitter	Students to ask questions regarding content and personal histories.	10.45 -10.55
Wrap-up and reminders & change of room & Twitter contributions	Notes and Q&A	10.55 - 11.00

- Students will continue to develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will continue to develop and construct their personal and collaborative webpages.
- Students will develop further their digital skills as they research and connect with each other in relation to their individual and collaborative assignments.

5. Self Evaluation

How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

ED116: The History & Structure of the Irish Education System

3. Opening	
This is one of four traditional lecture formats for this module. Please try to take note of issue that you recognise from your exploration of the history and structure of Irish education to date. Perhaps identify a theme ….	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module	Notes and Q&A	9.10 - 9.15
Traditional lecture format on the history and structure of the Irish education system.	Notes and Q&A	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitator to introduce a contemporary issue related to historical content	Students to research individually and in groups national and international issues that are related. Continue to develop collaborative narrative.	10.00 - 10.20
Tutorial on Weebly and referencing images etc.	Students to develop webpage in accordance with tutorial	10.20 - 10.45
To address issues developing on Twitter	Students to ask questions regarding content and personal histories.	10.45 -10.55
Wrap-up and reminders & change of room & Twitter contributions	Notes and Q&A	10.55 - 11.00

Date:	28th September 2015
Location:	G024 - Nuns Island, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (4 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the fourth of eleven sessions in relation to this module. Students will have prepared for this session by engaging with a flipped classroom production. This flipped classroom dealt specifically with the history and structure of the Irish second level education system from 1780 to 1924.

The students will return to Story Exchange to begin developing their knowledge of the history and structure of the Irish education system at this level of education

Students will also be reminded that this is an excellent opportunity to contribute online and develop their webpage - the basis for their assessment.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• Partially Completed Introductory Template No.2 • Story Exchange Template No.2 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Re-introduce students to Story Exchange
- Encourage students to exchange stories
- Help students to relate personal experience to course content
- Build on students' experience of flipped classroom content to develop collaborative narratives.

2. Learning Outcomes

- Students will begin to develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will begin to develop and construct their personal and collaborative webpages.
- Students will develop further their digital skills as they research and connect with each other in relation to their individual and collaborative assignments.

5. Self Evaluation

How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

ED116: The History & Structure of the Irish Education System

3. Opening	
Second level education is a quite recent experience for many if not all of you. Try to remember the most vivid issues that pop into your mind as you discuss the online video and exchange stories.	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Again, further develop the concept of transition and the purpose of the module	Notes and Q&A	9.10 - 9.20
Provide students with Intro Template No.2 & Story Exchange Template No.2 and instruct students to begin to complete it. Interact with groups and provide assistance.	Students to begin to develop Story Exchange Template No.2 Students to use post-its to develop their collaborative narrative construction	9.20 - 9.50
Break	Break	9.50 - 10.00
Facilitator to introduce a contemporary issue related to historical content	Students to research individually and in groups national and international issues that are related	10.00 - 10.20
Facilitator to introduce PowerPoint and Key note rolling video, photographs embedded in Weebly	Students to update their profiles on the Webpage and add much detail as they can at this point based on earlier discussion.	10.20 - 10.45
To address issues developing on Twitter	Students to ask questions regarding content and personal histories.	10.45 -10.55
Wrap-up and reminders & change of room & Twitter contributions	Notes and Q&A	10.55 - 11.00

Date:	5th October 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (5 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the fifth of eleven sessions in relation to this module. This traditional lecture format session)first 60 minutes) will deal specifically with the history and structure of the second level Irish education system from 1924 to 2015.

The students will continues to engage in Story Exchange, further developing their knowledge of the history and structure of the Irish education system at this level of education and being relating it to their own position in education as pre-service teachers

Students will receive a half hour tutorial on hyperlinking and picture linking on their webpages.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• Partially Completed Introductory Template No.2 • Story Exchange Template No.2 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Re-introduce students to Story Exchange
- Encourage students to exchange stories
- Help students to relate personal experience to course content
- Develop further students EdTech skills as they develop their collaborative narratives.

2. Learning Outcomes

- Students will further develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will further develop and construct their personal and collaborative webpages.
- Students will develop further their digital skills as they research and connect with each other in relation to their individual and collaborative assignments.

5. Self Evaluation

How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

ED116: The History & Structure of the Irish Education

3. Opening	
As we move towards there recent history of the education system in Ireland at second level you may recognise issues that emerged during your time at secondary school. Perhaps try to make note of these to help you …..	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module.	Notes and Q&A	9.10 - 9.15
Traditional lecture formation the history and structure of the Irish education system.	Notes and Q&A	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitator to introduce a contemporary issue related to historical content	Students to research individually and in groups national and international issues that are related. Continue to develop their collaborative narrative both on Template and webpages in realtime	10.00 - 10.20
Tutorial on hyperlinking and picturing on Weebly	Students to update their profiles on the Webpage and add much detail as they can at this point based on earlier discussion.	10.20 - 10.45
To address issues developing on Twitter	Students to ask questions regarding content and personal histories.	10.45 -10.55
Wrap-up and reminders & Twitter contributions	Notes and Q&A	10.55 - 11.00

System

Date:	12th October 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (6 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the sixth of eleven sessions in relation to this module. Students will have prepared for this session by engaging in a flipped classroom production. This flipped classroom dealt specifically with the history and structure of the Irish tertiary level education system from 1800 to 2015 with a particular focus on international development both inEurope and worldwide.

The students will continue teenage inStory Exchange, further developing their knowledge of the history and structure of the Irish education system at this level of education and relating it to their own positioning education as pre-service teachers.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• Partially Completed Introductory Template No.3 • Story Exchange Template No.3 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Re-introduce students to Story Exchange
- Encourage students to exchange stories relating to their expectations of third level education and as pre-service teachers
- Help students to relate personal experience to course content
- Further develop EdTech skills as they develop their collaborative narratives

2. Learning Outcomes

- Students will further develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will further develop and construct their personal and collaborative webpages.
- Students will further develop their digital skills as they researching connect with each other in relation to their individual and collaborative assignments

5. Self Evaluation

How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

3. Opening	
This workshop is all about what you make of this level education. You will be guided by some questions on the screen to help you focus your efforts however you are in control of where this workshop will take you….	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module.	Notes and Q&A	9.10 - 9.15
Provide students with Intro Template No.3 & Story Exchange Template No.3 and instruct students to begin to complete it. Interact with groups and provide assistance.	Students to begin to develop Story Exchange Template No.3 Students to use post-its to develop their collaborative narrative construction prior to webpage placement	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitator to introduce a contemporary issue related to historical content	Students to research individually and in groups national and international issues that are related. Continue to develop their collaborative narrative both on Template and webpages in realtime	10.00 - 10.20
Interact with groups as they explore their position at tertiary level education prompted by questions place on the screen	Groups to continue to develop introductory template No. 3	10.20 - 10.45
To address issues developing on Twitter	Students to ask questions regarding content and personal histories.	10.45 -10.55
Wrap-up and reminders & Twitter contributions	Notes and Q&A	10.55 - 11.00

ED116: The History & Structure of the Irish Education System

Date:	19th October 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (7 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the seventh of eleven sessions in relation to this module. To date students would have received a tradition lecture format however at this point they are receiving less scaffolded instruction and being given the responsibility of driving their own relationship with the module forward as a community

This session will take the form of a full workshop where student will work as members of collaborative groups to develop their story exchange templates and further develop their interaction with each other as members of the educational community.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• Partially Completed Introductory Template No.3 • Story Exchange Template No.3 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Re-introduce students to Story Exchange
- Encourage students to exchange stories relating to their expectations of third level education and as pre-service teachers
- Help students to relate personal experience to course content
- Guide students towards a collaborative investigation of the topic

2. Learning Outcomes

- Students will further develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will further develop and construct their personal and collaborative webpages.
- Students will develop there reliance on each other as members of a collaborative groups and as a community

5. Self Evaluation	
How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

3. Opening	
This workshop is all about what you make of this level education. You will be guided by some questions on the screen to help you focus your efforts however you are in control of where this workshop will take you….	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module.	Notes and Q&A	9.10 - 9.15
Interact with groups as they explore their position in the education system guided by questions on screen and with books sourced by students	Students to begin to develop Story Exchange Template No.3 Students to use post-its to develop their collaborative narrative construction prior to webpage placement	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitator to introduce a contemporary issue related to historical content	Students to research individually and in groups national and international issues that are related. Continue to develop their collaborative narratives. No digital formation of webpage in this tutorial	10.00 - 10.20
Interact with groups as they explore their position at tertiary level education prompted by questions place on the screen	Groups to continue to develop introductory template No.	10.20 - 10.45
To address issues developing on Twitter	Students to ask questions regarding content and personal histories.	10.45 -10.55
Wrap-up and reminders & Twitter contributions	Notes and Q&A	10.55 - 11.00

ED116: The History & Structure of the Irish Education System

Date:	2nd November 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (8 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the eighth of eleven sessions in relation to this module. Students will have prepared for this lesson by engaging in a flipped classroom production. This flipped classroom will give a limited review of fourth level or postgraduate education in Ireland. Moreover, it will ask students to consider their future role with the education system they have spent the last number of weeks engaging with.

This session will take the form of a full workshop where student will work as members of collaborative groups to develop their story exchange templates and further develop their interaction with each other as members of the educational community.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• Partially Completed Introductory Template No.4 • Story Exchange Template No.4 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Re-introduce students to Story Exchange
- Encourage students to exchange stories relating to their expectations of third level education and as pre-service teachers
- Help students to relate personal experience to course content
- Guide students towards a collaborative investigation of their future with education

2. Learning Outcomes

- Students will further develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will carefully consider their future relationship with education not only as individuals but as a community
- Students will develop there reliance on each other as members of a collaborative groups and as a community

5. Self Evaluation

How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

3. Opening	
The video you watched before attending this workshop challenged you to consider a number of questions. In this session you will try to consider these questions a group based on historical events you have studied ….	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module.	Notes and Q&A	9.10 - 9.15
Interact with groups as they explore their position in the education system guided by questions on screen and with books sourced by students	Students to begin to develop Story Exchange Template No.4 Students to use post-its to develop their collaborative narrative construction prior to webpage placement	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitator to introduce a contemporary issue related to historical content with a particular emphasis on employment and continuing professional development	Students to research individually and in groups national and international issues that are related. Continue to develop their collaborative narratives. No digital formation of webpage in this session	10.00 - 10.20
Interact with groups as they explore their future relationship with education prompted by questions place on the screen that were in the flipped classroom production	Groups to continue to develop introductory template No.4	10.20 - 10.45
		10.45 -10.55
To address issues developing on Twitter	Students to ask questions on content and personal histories.	
Wrap-up and reminders & Twitter contributions	Notes and Q&A	10.55 - 11.00

ED116: The History & Structure of the Irish Education

System

Date:	9th November 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (9 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the ninth of eleven sessions in relation to this module. At this point students may have been expecting a traditional lecture or a full workshop. On this occasion the students are asked, in groups to review where they see themselves in 5 years time and their view on the Irish education system.

They will relate this, informal to what they have covered in thee weeks before

The second half of the session will be a short preservation by each student about their take on where they view themselves in 5 years and the relationship they feel that they might have with education at all levels that they have studied.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• All Introductory Templates 1-4 • All Story Exchange Templates 1-4 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Encourage students to voice their opinion join issues that they have studied and their relationship with contemporarily issues covered or discover.
- Help students to relate personal experience to course content
- Guide students towards a collaborative investigation of their future with education

2. Learning Outcomes

- Students will further develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will carefully consider their future relationship with education not only as individuals but as a community
- Students will articulate how they perceive their future relationship with education and how past events may have shaped this.

5. Self Evaluation	
How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

ED116: The History & Structure of the Irish Education

3. Opening	
This session is all about where you see yourself in 5 years timing how you think your relationship will develop beyond that point. This relationship will be moulded by your environment and the history of education ….	Timing: 5

4. Body of Session		

Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module.	Notes and Q&A	9.10 - 9.15
Interact with groups as they explore their position in the education system guided by questions on screen and with books sourced by students	Students to discuss and make notes for the second half of the session where they will present individually	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitator to create a circle of chairs and facilitate the presentation of their efforts from the first half of the session	Students to articulate their future relationship with education and if the they feel past events will shape that interaction.	10.00 - 10.50
To address issues developing on Twitter	Students to ask questions on content and personal histories.	10.50 -10.55
Wrap-up and reminders & Twitter contributions	Notes and Q&A	10.55 - 11.00

System

Date:	16th November 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (10 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the tenth of eleven sessions in relation to this module. This penultimate module session will be split into two distinct parts.

Part A - students will be, again, made a ware of the requirements for assessment, university guidelines on submission etc and then a brief focus on the rubrics that they students have been given to guide them through the assessment procedure.

Part B - this will form an interactive session where each student will work noter submission with the help of the facilitator where required.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• All Introductory Templates 1-4 • All Story Exchange Templates 1-4 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Encourage students to voice their opinion join issues that they have studied and their relationship with contemporarily issues covered or discover.
- Help students to relate personal experience to course content
- Guide students towards a collaborative investigation of their future with education

2. Learning Outcomes

- Students will further develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will carefully consider their future relationship with education not only as individuals but as a community
- Students will be clear on the assessment guidelines and the submission requirements of the university in relation to this programme and the module

5. Self Evaluation

How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

ED116: The History & Structure of the Irish Education

3. Opening	
This session is both a revision of some housekeeping issues and an opportunity for you to enhance your assessment submissions, to ask key questions and to work together to refine your submission.	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module.	Notes and Q&A	9.10 - 9.15
Overview of requirements, rubrics etc	Notes and Q&A	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitator to interact with groups and students where required	Students encouraged to ask questions and to develop with assessment submissions.	10.00 - 10.50
To address issues developing on Twitter	Students to ask questions on content and personal histories.	10.50 -10.55
Wrap-up and reminders & Twitter contributions	Notes and Q&A	10.55 - 11.00

System

Date:	23trd November 2015
Location:	D302 - D-Block, School of Education, NUI Galway
Cohort:	1BME1 - Bachelor of Mathematics & Education - First Year Cohort
Topic:	Introductory Session - (11 of 11)

Where does this lesson fit in the topic/unit being taught?

This is the final session in relation to this module. Students will be given a full 60 minutes to work on their submission with guidance where possible.

The final part of the session will be used to facilitate focus group interviews relating to the effectiveness of the module conducted by the facilitator in line with the ethical approval granted to the researcher and consented to by the students at the start of the module and inroad by the questionnaire administered in session nine.

Materials used during lesson:

Facilitator:	Students:
• Powerpoint Slides • Lesson Plan • Clicker / Laser Pointer	• All Introductory Templates 1-4 • All Story Exchange Templates 1-4 • A5 Multi Coloured Post-its & Markers • Relevant supporting documentation

1. Aims

- Encourage students to voice their opinion join issues that they have studied and their relationship with contemporarily issues covered or discover.
- Help students to relate personal experience to course content
- Guide students towards a collaborative investigation of their future with education

2. Learning Outcomes

- Students will further develop a collaborative narrative based on their personal histories of education
- Students will root personal histories of education in historical fact
- Students will carefully consider their future relationship with education not only as individuals but as a community
- Students will be clear on the assessment guidelines and the submission requirements of the university in relation to this programme and the module

5. Self Evaluation

How did the session go?	
What would you do differently next time?	
What can you learn from this session?	

6. Issues arising:

Appendix 12: Exemplar Student Submission - Design Cycle 2

3. Opening	
There are two parts to this session.the first is dedicated to helping you resolve any issues you have in relation to the assessment and the second is dedicated to establishing the effectiveness of the module in focus groups …	Timing: 5

4. Body of Session		
Teacher Activities	Student Activities	Timing:
Initial opening as above	-	9.00 - 9.05
Facilitator to introduce the learning outcomes and session structure.	Notes and Q&A	9.05- 9.10
Reiterate the concept of transition and the purpose of the module.	Notes and Q&A	9.10 - 9.15
Facilitator to interact with groups and students where required	Students to finalise submission documents and commit them to PDF for submission through BlackBoard	9.15 - 9.50
Break	Break	9.50 - 10.00
Facilitation and recording of focus group sessions	Students to participate in focus groups to be conducted in a separate room	10.00 - 10.50
Instruct students that Twitter account will remind them of submission dates	Students to ask any questions that they may have	10.50 -10.55
Wrap-up, reminders on submission dates and thats to all	Notes and Q&A	10.55 - 11.00

Digital Historical Portfolio

ED116 – History & Structure of Irish Education

LOUGHLIN, NICOLE

Table of Contents

1. Bio:

Studying BA in Mathematics & Education at NUI Galway
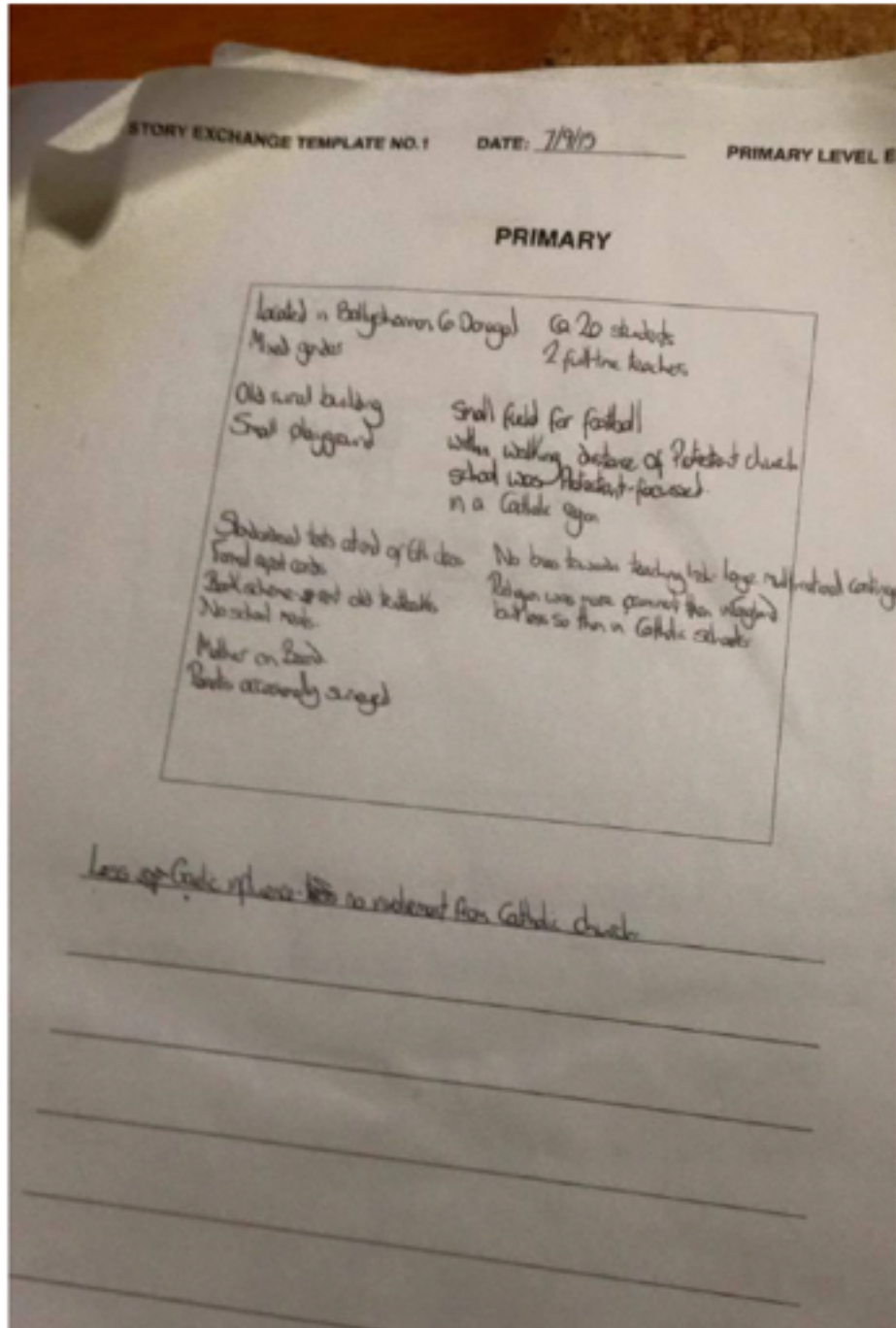
♀ Mayo, Ireland

🌐 Born on April 24, 1997

My name is ▮▮▮▮▮▮▮▮▮▮ and I'm an 18 year old NUI Galway student studying BA in Mathematics and Education.

2

3. Primary Level

3.1 Story Exchange Templates

STORY EXCHANGE TEMPLATE NO.1   DATE: 7/9/15   PRIMARY LEVEL EDUCA

PRIMARY

St. Joseph's NS - Shrule
- opposite Church
- Mixed
- around 100, class 22 after this
- 4/5 teachers
- extension when I was in 5th class
    new GP hall, classrooms - bigger classrooms
- School yard, Football pitch
- 6th class - Student teacher
- minimal ~~teacher~~ parental involvement

→ Big religious involvement → Prayer start of day/end o
                                    before meal/afternoon
→ emphasis on Gaelic football ↓cultural emphasis
→ Extension in 5th class due to Celtic Tiger years
→ After I left numbers dropped, they are now
rising again, myself and others believe that
this may be due to during te recession, people got
laid off so they, they started having kids
again and now numbers have started to rise.

BME - ED116 - 2015/16   STUDENT   GROUP NO: D

5

STORY EXCHANGE TEMPLATE NO.1   DATE: 7-9-2015   PRIMARY LEVEL EDUCATION

PRIMARY

ST. PATRICKS BOYS (ALL BOYS)
GALWAY CITY
CRUEL TEACHERS (12)-(14)
USED CORPORAL PUNISHMENT
40 PUPILS PER CLASS (450 total effort.)
LAY TEACHERS WORSE THAN BROTHERS
HATED HISTORY, LIKED GEOGRAPHY.
SPORTS FIELD ½ MILE AWAY. (BIG INTO SPORTS)
BESIDE CHURCH.
GAELIC / TRACK AND FIELD / TABLE TENNIS, BASKET BA
TEA & JAM & WHITE BREAD (free)

from the start; Brothers taught boys; Nuns taught girl
Mentality at the time - children should be seen not heard -
Large classes - not enough schools.
Bigger families - influenced by clergy

- ED116 - 2015/16   STUDENT NO: _____

3.2 Group Story Exchange

Handwritten group notes:

STUDENT NAME: [illegible]

* ALL BOYS
* MOSTLY RELIGIOUS BROTHERS
* 40 PER CLASS
* VERY CRUEL - CORPORAL PUNISHMENT
* RELIGION - INFLUENCE
* SPORTS / IRISH - IMPORTANT

STUDENT NAME: NICOLE

* SOCIAL CHANGE → Mid 1900s to present
* Religion + its importance
* Class sizes → big families
  How it developed   ↓ church
* Celtic Tiger - Recession
* 21st century - primary source of information from our own point of view

3.3 Weebly Screenshot

GROUP D - WHERE WE STARTED - PRIMARY EDUCATION

Primary education is the initial stage of education, with children typically entering into it aged 4-5 years, and staying there until they make the step up to secondary school aged 13. In our group we were lucky to have a wide range of topics to discuss, with Leo attending an all boys primary school through from 1964 to 1972, Nicole attending a predominantly Catholic school, and me attending a predominantly Protestant school. We also had input about Leo's grandson, who attends a Gaelscoill. In this piece I'll be looking at how our own experiences with in the primary school system have been influenced by historical context.

The foundations for the Irish primary school system were laid in 1831, with the publishing of the Stanley letter. The Stanley letter called for, and got, the establishment of a body to disburse funds for the construction of schools, as well as funds for teachers and school inspectors. Funds were available for both Protestant and Catholic schools, but as in Stanley's own words "one of the main objects must be to unite in one system children of different creeds", applications for mixed denomination schools were favoured. Prior to the Catholic Emancipation, the sole way for Catholics to get an education was through the "hedge schools", which were strictly illegal, yet still flourished. Following the publication of the Stanley letter, and the establishment of the primary school system, hedge schools gradually declined as Catholics were encouraged to attend primary schools which were under the control of the Catholic church. A nominal education was set up in 1839, following the publishing of the Stanley letter, but it wasn't until the Education Act of 1870 that gave the state greater control over the primary education system. The 31 year delay is indicative of the British government's laissez-faire approach to political ruling over its colonies, and is in stark contrast to the sharp manner in which continental countries such as France, Holland, Prussia and Italy acted swiftly and decisively in the setting up of their education systems (Coolahan, J., Irish Education: Its History and Structure, 1981). In 1870 a system of "payment by results" was established, but this wasn't universally popular and just 20 years later there were calls in the Belmore Commission for the abolishment of this system, which ultimately happened in 1890.

In 1900 the primary school system was shaken up drastically with the Revised Programme for National Schools (1900). The programme was introduced following a comprehensive review of international trends and policies, and it was a huge change from what went before. Along with the end of payment by results, the programme also introduced a wide range of practically applicable subjects, such as Drawing, Science, Cooking and Laundry, to complement the mandatory subjects of English, and Arithmetic (Walsh, T., 2004). The programme also called for an integrated and child-centred approach to teaching, which was intended to make the subjects more relatable for the students. Subjects were also no longer meant to be compartmentalised, but taught seamlessly in an integrated manner (Commissioners of National Education, 1901). Unfortunately the programme encountered funding problems, due to the political friction between Britain and Ireland, which left the British government unwilling to commit funds to the programme, which meant that pay conditions for teachers were poor, discouraging many to join the profession, which led to understaffed schools with excessively large class sizes. Attendance was also a problem, with average attendance following the First World War dropping below 70% (Akenson, D., 2012). The Fisher Education Act (1918) raised the school leaving age to 14 years old in England and Wales, as well as allowing for the provision of services such as medical inspection and centres for pupils with special needs. The McPherson Education Bill (1919) attempted to do the same for the Irish primary school system, making school compulsory between the ages of 6 and 14, as well as restricted the minimum age for employment and allowing for schemes such as book rental and dental schemes, but unfortunately this potentially groundbreaking bill was never passed.

Following the establishment of the Irish Free State in 1922, John J. O'Kelly of Sinn Fein was made the first Secretary for Education, following the establishment of the Department of Education. In 1922 the National School Programme was introduced, which placed a heavier bias on Irish culture. Studying Irish became compulsory, and Irish history and culture had a far heavier emphasis than before, in an attempt to return to the tradition of passing down cultural heritage, which had been lost under British rule. However, due to the lack of Irish in the curriculum prior to this, only 10% of teachers were actually capable of teaching in Irish when the programme was introduced. Under this programme, the practical subjects were no longer compulsory, requirements in arithmetic were lowered and, over time, made English an optional subject. The church still had a large say in the running of the school, which was only changed upon the introduction of the Curadam na Bunscoile (1971).

St. Patrick's National School, Galway
(www.saintpatrickagalway.com, accessed 22/11/2015)

It was to the end of this time that Leo attended primary school. He attended an all boys primary school in Galway between the years of 1964 and 1972. In a carry-over from the days of the Revised Programme for National Schools, class sizes were far larger than optimal, and there was a shortage of teachers. Leo's school had roughly 40 pupils per class, and in a school of approximately 450 pupils there was only roughly 12 teachers. The school was situated right next to a Catholic church, and the involvement from the clergy was significant, with brothers and lay teachers from the church teaching the pupils. Corporal punishment still took place, with the lay teachers frequently administering beatings, and the mentality of "children should be seen and not heard" was still very much in place. Leo's school was situated not far a sports field, and his school was very athletics orientated. Tying into the National School Programme's desire to maintain the Gaelic culture and heritage, Gaelic games were played regularly, as were track and field events.

The Curadam na Bunscoile was introduced in 1971, as barriers between countries came down and globalisation became more prevalent. The new curriculum was designed to be more accessible for children, and gave schools more control over individual aspects of the curriculum, and subjects were to be better integrated between each other. Greater emphasis was placed on the learning environment, with smaller class sizes and greater emphasis was placed on individual and small group learning. Religion took a position of lesser importance, and parents could choose to opt their child out of religious learning, although in many schools no provision for this was actually made. The heavy emphasis on arithmetic and English was re-introduced, almost 50 years after it took a position of lesser importance, and the cultural nationalism of the National School Programme disappeared.

The National Convention on Education (1994) introduced modern technology into the course, and the Education Act (1998) was focussed on increasing teacher numbers and training requirements. Since 2006, all teachers of primary and secondary schools have to be registered with the Teaching Council before they can apply for a teaching job, which ensures that standards are met.

Nicole attended a national school in Shrule, County Mayo. The school was opposite a church, and there was strong religious involvement, with daily prayers at the start and end of each day, as well as before and after meals. The heavy religious involvement bears some resemblance to the cultural nationalism from the days of the National School Programme, as does the emphasis on Gaelic football within the school. The school had roughly 100 pupils, divided between 5 teachers, and during the Celtic tiger money was invested to modernise the classrooms.

The primary school I attended was a Protestant school in Ballyshannon, County Donegal. The school building was a small, old rural building with a small playground. While there was no obvious religious involvement from outside, religion was still a highly prominent subject. There was very little cultural nationalism within the school, although that may be down to the vast majority of pupils not being Irish. The school had 20 pupils and two teachers, and the only modernisation evident in the building was a small room with 3 computers for pupils use.

Bibliography:
Books:
Coolahan, J., (1981), *Irish Education: Its History and Structure*

4. Secondary Level

4.1 Story Exchange Templates

STORY EXCHANGE TEMPLATE NO.2   DATE: 15/10   SECONDARY LEVEL EDUCATION

SECONDARY

- Presentation College Headford
- 1942
- 1953 - Building of Post-Primary School
- At first it was girls only & in 1955 it became a mixed school
- Around 700 pupils
- 40/50 teachers
- Uniform = Light blue shirt, navy trousers, navy crested jumper + black shoes
- Extension in 1978, 1982 (posts centre), 1991, mid 1990s, 2004 + 2009
- green area, tarmacadam store
- Football pitch across the road behind the church
- Rugby pitch, handball alley
- opposite a church beside Headford primary school
- Presentation Sisters
- Transport to school - Bus
- No Book scheme

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BME - ED116 - 2015/16   STU...   GROUP NO: _____

4.2 Group Story Exchange

STORY EXCHANGE TEMPLATE NO.2   DATE: 5-10-15   SECONDARY LEVEL EDUCATION

SECONDARY

Look International Trends.

Homemonastin to Community College.
Galway City, mixed
Built in 1962 - Due to demand and
population expansion of Galway
20 classrooms at first. Then (because of
bad state of economy prefabs added 70's.
As many prefabs as classrooms. 1990's proper
extension built. Approx 30 pupils per class.
30 teachers, many with connections with G.A.A.
Uniform not compulsory till '80's. Principal
a former captain County Galway football.
P.E. and sports very big. Small gym first 80's
proper one built. Played mostly in local pitches.
Parent teacher meetings 2 for year (students not involved)
No IT in my time. (teacher not part in running of school)

@ ed 11/62015 — threat

History of Education

SME -

Going back to the late 1790s/early 1800s, we were in an era where penal laws, hedge schools and famines all existed. At this time in history, education of the nation is calling. Before the 1878 Intermediate Education (Ireland) Act, there was no state system of secondary education. This act recommended compulsory school attendance until the age of 16. It is important to note at this time, Ireland was under British rule, and Ireland would not have been a priority to the British government. As a result, the 1878 Act relapsed and it took over 25 years from this time to see that education reform is calling. A significant mark in education history would be the 1905 Dale & Stephens Report. This report found "grave educational defects in the results fees system" (Coolahan, 1981, p.67). It feared that the focus on high results would discourage the meaning of education. Dale & Stephens also recommended an intermediate and leaving certificate, with the division of higher & ordinary level within subjects. It would be fair to say that Dale & Stephens recommended equality across the nation, taking into consideration the needs of the various abilities of teenagers. In 1924 we had the establishment of the Department of Education. Prior to this we only had a secretary. The Department of Education had very little money and the day-to-day running was left to the church. A momentous time in the history of education was in September 1966, when the Minister of Education, Donogh O'Malley announced his free education scheme. This largely publicized announcement caused uproar within the parliament. O'Malley allowed for free bus transport for pupils over a certain distance from the local school. This marked a major jump in the number attending secondary schools: 1966 – 148,000 to 1974 – 239,800. 1967 also marked the abolition of the Primary Certificate. This meant that to be recognised by employers children needed to go further in education and attend secondary school.

Now that we have an understanding where Ireland stood with Education up to the 1970s I will focus on how all of the lead up to this time led to a shift in subjects studied. Prior to this time there was a huge focus on the 3 R's (Reading, wRiting, & aRithmetic). "Industrialists & politicians are not sufficiently aligned to technological changes in areas such as electronics & bio engineering." (Coolahan, 1981, p. 205). In 1978, my own secondary school, Presentation College Headford (See Figure 2), were forced to build an extension due to rapid increase in pupils after the 'free education' announcement of 1966. This new extension offered a Woodwork room, Metalwork room, Technical Drawing room, Art room, Computer room, Music Room, Home Economics room and a number of new classrooms for the teaching of traditional academic subjects. This was a major change in subject studied as more modern subjects were offered. This was to accommodate students with an interest in more practical subjects (Woodwork, Metalwork, etc.). This would also encourage the more practical minded students to stay longer in school.

Figure 2: Presentation College Headford

4.3 Weebly Screenshot

GROUP D - WHERE WE CAME FROM - SECOND LEVEL EDUCATION

Second-Level education falls between Primary and Third-Level. Over the past two-hundred years we have seen major changes to the system. We are very fortunate in Group D as with an insight into each member's varied experience at second-level we have had the ability to deduce an extremely interesting report. I attended a Voluntary Catholic Presentation secondary school from 2009-2014. Edward attended a non-denominational Community secondary school from 2009-2015, and Leo attended a Community secondary school from 1972-1977. In our discussion we have decided to direct our main focus on the development of second-level subjects/curriculum due to the fast changing economy.
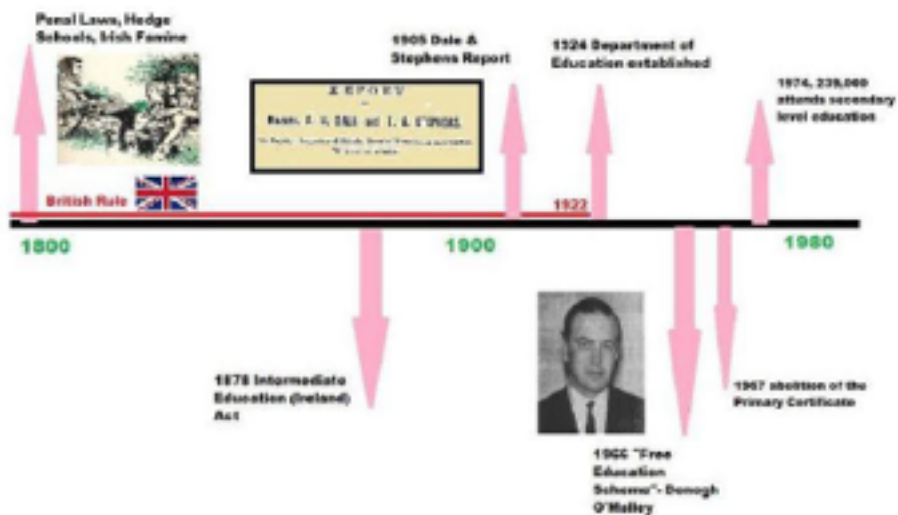

Figure 1: Timeline of events from 1800-1980

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5. Third Level

5.1 Story Exchange Templates

STORY EXCHANGE TEMPLATE NO.3   DATE: 12/10/15   TERTIARY LEVEL EDUCATION

THIRD LEVEL

→ Maths, English, Irish, French, Physics, Applied Maths, Economics & Geography
→ No
→ Yes – I ended up taking a year out – but I also knew Maths was my desirable area.
→ Yes – used the change of mind in the first year
→ I'm travelling up & down
→ Yes – NUIG was my first choice
→ This year it was but last year it wasn't
→ No I didn't think we would have to study History
→ Similar course in Maynooth – but too far away for me.
→ Yes, I wouldn't be in college if I wasn't eligible for the susi grant
→ Huge change from second-level but I feel I benefited greatly from the year out
→ free to express that points of view as curriculum focused
→ learning to adapt to learning in large lectures
→ ~~A second-level student ambitions~~

• I enjoyed studying Mathematics in the early stages of the Junior Cycle so I knew I was going to incorporate Maths into my Senior Cycle options (ie Physics, Applied Maths)
• I learn alot better in a small class/group situation. I find large lectures difficult to learn in
• Utilisation participation doesn't mean increased Mathematics

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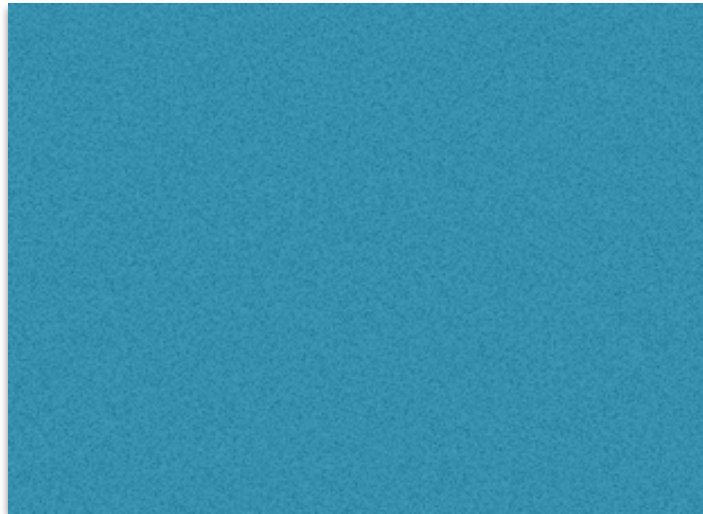
5.2 Weebly Screenshots

GROUP D - WHERE WE ARE NOW - THIRD LEVEL EDUCATION

History and Structure of Irish Education 2 - 3rd level-

Because of its relative remoteness from other European countries, and free from wars, Ireland had for centuries attracted some of the top intellectuals and theologians, who could come and study in peace. The phrase Island of Saints and Scholars was born, and in 1311 Pope Clement V authorised its first University. After periods of highs and lows and even inactivity, it finally came to an end in the 1530s with the Protestant reformation. After the Tudor conquest of Ireland, Trinity College was built in Dublin and gained University status in 1592. Funded by state and private sectors, it was mainly a Protestant College with most Catholics having to go to Europe to further their studies. St. Patricks College in Ma;nooth was established in 1795, primarily for the training of Irish priests, but it wasn't until 1896 that it received its charter as a Pontifical University. Queen Victoria established, by Royal Charter, three Universities in 1850.These were built in Belfast, Cork and Galway, and were open to students of all religions. This didn't sit well with either the Catholics or the Protestants, the Catholic hierarchy calling them ^The Godless Colleges^. The Catholic University of Ireland was established in 1854 in Dublin, while in Londonderry in 1860 Magee College was founded, mainly as a theological College for the Presbyterian Church. The next major change came in 1908 whereby; the Queens Colleges of Galway and Cork, St. Patricks College Maynooth, and the Catholic College of Ireland, all came under the title of National University of Ireland. As if prophesising near future events –the partition of Ireland in 1922- Queens University Belfast was allowed to continue its own way, and Trinity College Dublin remained primarily a Protestants only College.

Things remained practically unchanged for the next number of decades, when rapid advancements in technology and a growing economy meant more money needed to be spent on education. In 1968 The Higher Education Authority was established, and this acted as a buffer between the Universities, and the Department of Education and Science As existing Universities grew and expanded, two more were built, the NIHE in Limerick opened in 1972 and the NIHE Dublin which opened in 1980; both were awarded University status in 1989. Also in the 70s, the building of IT Colleges began and now they can be found in; Dublin, Waterford, Cork, Galway, Athlone and Sligo. The Governments policy at the moment is that these Colleges can aspire to the status of Technological Universities. After Donnagh O'maleys announcement of free education and free transport in 1966, -not including third level-, Primary and Secondary school attendances rose dramatically, so the pressure for more Third level funding increased. In 1997, with 50 million donated by Chuck Feeney the Government invested over one billion-euro in Third Level Education, in a three to five year plan. The benefits of this can be seen all around us here in Galway and nationwide.

National University of Ireland, Galway
Ollscoil na hÉireann, Gaillimh

NUI Galway Campus Map

NUI Galway Campus Map: http://23229538-592628174902777518.preview.editmysite.com/uploads/2/3/2/2/23229538/3964746_orig.jpg

Above is an up to date image of the campus map of NUIG, with the original quadrangle just left of the main entrance.

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6. Fourth Level

6.1 Story Exchange Templates

STORY EXCHANGE TEMPLATE NO.4   DATE: 2-11-'15   FOURTH LEVEL EDUCATION

LEO KINNDEN

FOURTH LEVEL

Must have a degree for Teaching Council
NQT qualification (2 more years)
DO NOT THINK ABOUT MIDDLE or SENIOR MANAGEMENT
HAVE NOT CONSIDERED RESEARCH
WOULD LIKE TO WORK ABROAD (WINTERS)
SEEMS TO BE A SHORTAGE OF WELL
QUALIFIED MATHS TEACHERS GLOBALLY.
NO FURTHER TRAINING REQUIRED.
THINK STUDENTS WILL BE OF GREAT
HELP TO ME. KEEP ME UP TO DATE ON
DEVELOPMENTS IN TECHNOLOGY.
MY VIEW OF FOURTH LEVEL EDUCATION
IS IMPROVING ON YOUR DEGREE — PHD. DOCTORATE
ETC. WHERE A LOT OF RESEARCH WORKING
ON OWN INITIATIVE / COMPILING A THESIS IS REQUIRED

WITHOUT THE SUSI GRANT AND THE

BACK TO EDUCATION ALLOWANCE I WOULD NOT BE HERE

PROBABLY APPLIES TO AT LEAST 50% OF STUDENTS IN IRELAND

BME - ED116 - 2015/16   STUDENT NO: 14104215   GROUP NO: _____

6.2 Weebly Screenshots

GROUP D - WHERE WE ARE GOING - FOURTH LEVEL EDUCATION

Figure 1: National Framework of Qualifications

Fourth Level Education lies in Level 9 and Level 10 of the National Framework of Qualifications (See Figure 1). It is the follow on of Third Level or Higher Education. It is usually referred to postgraduate education. As seen in Figure 1, this period of education takes in the form of a Masters or Doctoral degree. Of course Fourth Level Education can also take place in the form of training on the job when employers send employees on training days in order to up skill them in a particular area. Modern self-taught Postgraduate programmes are now available on-line and can be accessed around the world. This gives students the opportunity to either take up employment overseas or travel while also completing a postgraduate course. Research Postgraduate programmes are becoming increasingly popular as Ireland tries to improve and compete on an international level. The Irish government sees the value in these research programmes and is funding a particular amount of them.

Figure 2: Mathematics Teacher

We have each put together a piece below on how we feel we will encounter Fourth Level Education in the future.

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The main reason that I applied for B.A. Mathematics & Education was that all the way through school maths and maths related subjects were my favourite subjects, and I was always able to understand the key concepts behind what I was being taught in these subjects. While subjects like English had a multitude of correct answers, with maths you were either right or wrong, and this kind of structured approach appealed to me. Throughout my time in secondary school I also gave my friends help with any maths related problems that they had, and over time I found that I enjoyed explaining maths problems to them and on the whole they found it beneficial. It is for these reasons that I wished to study a maths related course at Third Level education. Although B.A. Mathematics & Education wasn't my first choice course for third level, I'm still deep down not fully sure what career path I want to take when I graduate; all I know is that my ideal job will have something to do with maths.

If I do enter the teaching profession I wouldn't mind becoming qualified to teach physics and/or DCG as well, as both of these subjects also captivated me at second level education. I can also see myself going on to Fourth Level education to complete at least a masters degree in maths, as I feel that maths is my true strength, and I wish to study it to the best of my abilities. While at present I don't know what I want to do with my life just yet, over the duration of this course I'm sure my life will open up and I'll leave university hopefully with a clear idea of what my future holds.

I applied for B.A. Mathematics & Education as Mathematics was my favourite subject throughout secondary school and I also never wanted to rule out teaching. For my Leaving Certificate 2014 I also sat Applied Mathematics and Physics, which are both Mathematics related. I enjoyed studying Mathematics and got a certain 'buzz' out of solving problems or answering something correctly. I liked the fact that in Mathematics you get the question either right or wrong, whereas markings for subjects like English were much more complex. I found simplicity and structure in Mathematics and knew for quite a while I wanted to incorporate it into my Third Level education. I entered this course with the notion that I most likely wouldn't continue on with teaching. Of course, teaching is a good job - it is rewarding and the holidays are excellent. But it still can be stressful, especially dealing with teenagers. I have witnessed student teachers losing complete control of a classroom and did not ever want to be in their position. When I finish this course I will be 22 years old. I feel at this age I would be vulnerable to a class of teenagers and feel they wouldn't take me seriously. I also feel going straight into a profession at 22 years old would mean I would be in a period of so called 'adult working life' for a long time. I would rather get the most out of my 'student life' as I can.

I don't know exactly where the future will bring me but I do know that I most likely won't be finishing my education at Third Level and will certainly carry on to Fourth Level education. With that said, I also would love to spend a certain time traveling and completing a so called 'bucket-list' in life. At the moment, I don't know will this happen before or after my Fourth Level education but right now I am not making any finite decisions.

I have being encouraged to pursue a career in the Actuary profession and have always kept this option on the side. Obviously one of the main perks of an Actuary profession is the money €€€! But it can be a very intense profession and I don't know how I will feel in years to come in relation to family and priorities. If down the line family becomes a major priority to me then maybe a profession such as teaching would work out better as with the long holidays there is more time for family.

Over the next four years I'm sure I will shift my interest and ideas back and forth and weigh up the advantages and disadvantages of certain Fourth Level programmes and career paths but I will certainly keep all of my options open and in the meantime not close any doors.

In four years time when I finish my degree, I'll be close to 60 years old. My intentions are to get a teaching job, hopefully in a local school and even after retirement, to continue on part-time or in a private capacity. I don't think it would be feasible for me to continue on with any more studies as I look forward so much to teaching and helping the next generations for the remainder of my life. That said, I would still keep an open mind as one never knows what opportunities might arise.

BIBLIOGRAPHY

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Figure 2: http://www.edutopia.org/sites/default/files/styles/feature_image_breakpoints_theme_edutopia_desktop_1x/public/slates/fuentes-math-teacher-knowledge-Thinkstock.jpg?token=nMN900, accessed 22/11/15

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7. Conclusion

In conclusion, I thoroughly enjoyed studying the module ED116 – History & Structure of Irish Education. Our lecturer explained to us how statistics shows that majority of students would not have picked the module ED116 be it optional. If this module was optional I would place myself in the minority group and would have most certainly chosen it. Understanding how the history and structure of education in Ireland has changed greatly over the past 100 years or more will make us as student teachers understand that we have to be ready for future change and more so embrace it than reject it. If past events in education in Ireland show anything it is that education has changed for

workforce and begun to place great emphasis on Education and getting us on par with other educated countries across the globe. Understanding this on our first semester of first year prepares us to make better judgments and formulate stronger opinions in the future. I hope you enjoyed reading my Digital Historical Portfolio.

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