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# **Digital Ensemble: The ENaCT design-based research framework for technology-enhanced embodied assessment in English education**

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## **Abstract**

This article outlines the ENaCT educational design for Digital Ensemble, an innovative approach to English assessment integrating drama pedagogy with mobile computing (e.g. iPad). ENaCT represents the key themes that framed and informed the research: ensemble, narrative, collaboration and technology. Starting with ENaCT as a prototype concept design for the development and evaluation of technology-enhanced embodied assessment in English, the research developed and refined the model through collaborative cycles of design with post-primary schools. The design-based research study reported here was undertaken in three significant design iterations, totalling 15 weeks and 85 teaching hours. 131 Irish Senior Cycle pupils, aged 15 to 17 participated: 45, 46 and 45 pupils respectively in iterations one, two and three. Two teachers participated throughout. The article outlines for English teachers and educational designers the adaptable ENaCT framework for Digital Ensemble, including design and assessment criteria and evaluation rubrics, illustrated by exemplars of pupils' work.

## **Introduction**

Pupils are disengaging from learning and literature learning in second level education in Ireland due to an over-emphasis on rote learning practices and the constraints of high-stakes, summative assessments (Chief Examiners' Reports 2008 and 2013, Hyland 2011, Smyth 2009, Smyth et. al. 2006). Within the current educational system in Ireland, such research findings initiated the reform of the junior school curriculum, the Junior Cycle, which is the first of two stages of second-level education catering for 12 to 15 year-old pupils. This new Junior Cycle emphasises continuous and formative school-based assessment; the development of literacy; collaborative and individual project work; and the use of ICT in the classroom (NCCA 2011). However, at the second, Senior Cycle stage (16- to 18- year olds), no such reform is forthcoming and the pressures of terminal examinations are even more pronounced with pupils defaulting to learning answers and essays by rote. Consequently, there are limitations regarding the degree to which pupils evidence critical literacy and authentic, meaningful personal engagement with literary genres and texts that constitute the upper, second-level English syllabus in Ireland (Chief Examiners' Reports 2008 and 2013). This issue is principally due to the pressures of the Senior Cycle examination, the Leaving Certificate, which is Ireland's predominant state examination that determines progression to third-level education.

The research reported in this paper explored the potential of combining two innovative approaches to English learning and assessment—ensemble pedagogy and digital storytelling—and whether the integration of these two novel approaches in English education could enhance Irish Senior Cycle

pupils' creative and critical engagement with English literature. The authors characterise ensemble pedagogy as the use of collective drama practices and activities within the classroom or educational settings to collaboratively explore and engage with literature. The rationale for this study was predicated on the potential of ensemble-based pedagogy, multimodal texts, technology-enhanced learning and digital content creation, which can render learning experiences more engaging, dynamic and creative (Dowdall 2006, Kress 2003, Livingstone and Haddon 2009, Neelands, 2009, Pahl 2006).

As design-based researchers, English teachers and English teacher educators, the authors are interested fundamentally in educational innovations that are locally effective and impactful in our English teaching, but also the development and enumeration of an integrative framework, including guidelines and design resources, for English educators wishing to implement similar innovations in their respective classrooms and educational contexts.

The article outlines key results of our multi-cycle, four-year development and refinement of Digital Ensemble (the use of technologies to enhance drama pedagogies), including resources that we hope can be adapted and repurposed by English educators, educational technologists and syllabus designers to facilitate innovative, technology-enhanced embodied assessment. Our goal ab initio was to conceptualise, test and evaluate an innovative approach to learning and assessment, wherein the affordances and potential of mobile and ubiquitous computing could be utilised to augment the creative and inclusive possibilities of dramatic and performative, ensemble teaching methods in the classroom. This design-based research was predicated on, and informed foundationally by the contemporary view of

literary engagement as an aesthetic, personal and experiential process of actively and critically reading a wide range of texts within an enjoyable, creative and productive community of practice (Goodwyn 2012; Lave and Wenger 1991; Rosenblatt 1986).

The predominant measure of success for the DBR study reported here was whether Digital Ensemble could be designed in such a way as to mediate and promote creative, drama-based and experiential processes whereby pupils would creatively and meaningfully engage with, and enjoy their literary studies. Furthermore, we hoped that designing and implementing novel technology-enhanced embodied assessment would support pupils to undertake critical interpretation and expressive, affective, and abstract learning of personal significance to them.

### **Methodology: design-based research**

Brown (1992) originated the idea of 'design experiments' or design-based research (DBR) as a systematic approach to designing and developing innovative, solution-oriented, technology-enhanced learning for complex, naturalistic educational settings. A conceptually informed design of an educational solution or technologies marks the inception of a DBR study, which is subsequently implemented, tested and refined, in situ over time. The research typically happens over multiple cycles or years of interventions. The design-based research reported here employed three substantive cycles of design, evaluation and redesign.

The aim was twofold; to develop a local solution and bespoke technology-

enhanced learning and assessment to enhance English education for the pupils and teachers involved, but also to theorise and design a Digital Ensemble framework—guidelines, resources, technologies—that would be adaptable to cognate teaching, learning and assessment contexts to achieve similar educational impacts for English education.

### **Multi-cycle design: Conceptualising the ENaCT model for Digital Ensemble**

The authors engaged in three main research activities to inform the nascent ENaCT design concept. First, relevant policy and research literature was consulted and systematically analysed to conceptualise the current issues and possible design solutions for enhancing pupils' processes of engaging with English literature. This was undertaken through research into two fundamental areas within English education: ensemble as pedagogy and the integration of technologies for learning and assessment. The second research activity involved the theorisation of English education, drawing on extant concepts of literary engagement such as that of Goodwyn (2012) and Rosenblatt (1986). Third was the elucidation of the authors' biographical experiences. Of significance to this research were their backgrounds as former teachers of English, their current role as English teacher educators and design-based researchers, and their interest in the potential of educational technologies to augment learning and assessment in the contemporary English classroom.

These three research activities identified four multiple dependent variables

(MDVs) that acted as the pillars of the designed Digital Ensemble model. These MDVs were ensemble, narrative, collaboration and technology, or ENaCT, and reflected the primary thematic domains influencing the research and design of Digital Ensemble in English education. Each MDV or thematic domain, comprised a set of design sensitivities as criteria for evaluating pupils' learning processes and artefacts while engaging with a range of texts. Such design sensitivities included actively reading a text using freeze frame images or blocking; writing a well-structured narrative for their final digital artefact; collaborating in groups to enrich their literary and skills-based learning; and using mobile technologies productively and creatively for learning and assessment.

As outlined in the introduction, this research conceived of literary engagement as an aesthetic, personal and experiential process of actively and critically reading a wide range of texts within an enjoyable, creative and productive community of practice (Goodwyn 2012; Lave and Wenger 1991; Rosenblatt 1986). As part of the designed solution to redress pupils' disinterest in English education (Chief Examiner's Report 2013) and their documented inadequacy to employ technologies productively in their learning (Livingstone and Haddon 2009) the ENaCT model situated pupils' literary engagement activities within an ensemble and technology-enhanced learning environment. Therefore, the success of this Digital Ensemble approach to literary engagement would be evidenced in the learning artefacts produced by the pupils. These digital artefacts would need to evidence pupils' literary engagement through the construction of unique meaning from their embodied reading of the texts;

active participation in learning; expressive, affective and personal responses to the world of the texts; a comparative analysis of selected emotive key moments across texts; and the creation of personally significant digital products that demonstrate an enhanced confidence with language use. Hence, the creative assessment of such products was essential. Thus, the two-tiered assessment framework for this learning approach focused on extensive formative and summative evaluative strategies to motivate and engage learners. Assessing outcomes such as meaning making and enjoyment is complex and potentially problematic. Owing to the fact that this learning process relies upon the embodiment and integration of thinking, feelings, sociality, beliefs, values and emotions, assessment strategies would need to cognisant and rewarding of personal opinion, uniqueness, making intentional choices regarding the texts, and a demonstration of the capacity to adapt, edit and redo a created artefact. Collaboration is crucial to such an innovative learning process and therefore, evidence of negotiation, engagement, maturity, respect and building relationships in learning must be assessed. Such evidence was gathered through the designed learning activities such as the Digital Ensemble Portfolio, group demonstrations, showcasing and feedback sessions and were assessed using rubrics, graphic organisers, and collaborative formative feedback. While collaborative learning and assessment practices develop learners' confidence, sharing abilities, sociality, cooperation and achievement (Johnson and Johnson, 1994), it is also necessary to cater for individual results given the examination-focused context of the Irish education system. Assessing group work and cooperative learning is a complex and dynamic process and in this research study both

the processes and products of learning were evaluated. The processes were evaluated through teacher, self, and peer -evaluation using a rubric, feedback and re-evaluation strategies. This included evaluating and providing feedback on the individual roles undertaken by learners, the success of the group process (meeting deadlines, co-operating, negotiating), and individual or group vlogs. In this study these vlogs were termed Digital Reflective Learning Logs (DRLL) and are described in more detail in *Phase 7* below. Assessment of the digital artefacts (both in progress and the final version) was facilitated by the use of story circles, peer feedback sessions and evaluation rubrics, which detailed the extensive success criteria for the learning artefact. Figure 1 is a synthesis of the rubric categories utilised to assess the Digital Ensemble process employed throughout this research study. The evaluation rubric was informed by the research literature and theory for the first design cycle and subsequently was redesigned in the second and third cycles in accordance with participant feedback. The categories highlighted in yellow signify the changes that were made to the rubric for the final design cycle, to exemplify the types of design decisions that were implemented to ensure meaningful integration and assessment of Digital Ensemble in English education. Due to the constraints of a journal article, it is not possible to enumerate here all the steps and design decisions made as part of this comprehensive, long-term multi-cycle design process. The focus of this article is the presentation of the ENaCT (ensemble, narrative, collaboration and technology) model that emerged from the design process with schools, pupils and teachers, couched within relevant English education research literature. For a more detailed exposition of the four-year design process, the reader is directed to the PhD

study and related monograph (Flanagan, 2015) on which this article is based and the informative webpage [www.elisflanagan.com](http://www.elisflanagan.com), detailing the interactive ENaCT framework.

Criteria	Description	Citation
<b>Category 1: Planning Portfolio</b>		
Storyboard	Complete and detailed evidence of planning including sketches, sequencing, script and audio.	(Barrett 2006) Retained from DCI
Graphic organisers	Complete and detailed evidence of using graphic organisers where appropriate such as mind maps, stairwells and shape organisers	(Sandoval and Bell 2004) (Hoadley 2004)
Writing tasks	Complete and detailed writing tasks included in the planning portfolio.	(Graves et al. 2010) (Tabak 2004)
<b>Category 2: Mechanics</b>		
Spelling & Grammar	No spelling or grammar errors made	(Robin 0206) Retained from DCI
Length	Between 4-6 minutes in length.	(Robin 0206) Retained from DCI
Titles & Credits	Excellently written and positioned. All work credited.	(Robin 2006) (Joseph 2004)
<b>Category 3: Use of Technology</b>		
Voiceover	Clearly audible, Excellent tones.	(Tabak 2004)
Soundtrack & sound effects	Greatly enhances the emotions of the story. Does not interfere with voiceover.	(Tabak 2004)
Video Editing Software (iMovie)	Exceptional use of iMovie. Titles, transitions and effects greatly enhance the experience of watching the digital story.	(Bell 2004, Boggs et al. 2007)
Digital Fluency	Superb evidence of proficiency in using mobile device(s) productively to enhance creativity and innovation. Excellent evidence of collaborative use of the device(s) to encourage skills development such as problem-solving, researching, critical reflection and analysis.	(Robin 2015)
<b>Category 4: Content</b>		
Key moments	Excellent performance of a variety key moments.	(Barrett 2006) Retained from DCI
Originality	Extremely original, creative and thought provoking.	(Ohler 2008; Robin 2015)
Digital Ensemble	Excellent use of ensemble to create extremely aesthetic, authentic and reflective video clips.	(Robin 2015)
Use of quotations or purposeful paraphrasing	Extremely appropriate use of quotations and/or paraphrasing of the texts to greatly enhance the story of and meaning within the literature.	(Barrett 2006) Retained from DCI
<b>Category 5: Literary Engagement</b>		
Textual Content Knowledge	Demonstrated a supreme and in-depth knowledge of textual content such as plot, character, thematic resolution and language use. Knowledge used to emphasis meaning and analyse conceptual framework of the literature.	(Keene and Zimmermann 1997)
Text-to-Self	All ensemble performances vividly convey a very emotive response to the literature. Excellent evidence of drawing on prior knowledge and/or personal experience to identify with the texts in a variety of ways.	(Keene and Zimmermann 1997)
Text-to-Text	Superb evidence of connecting two or more texts under the categories provided or other categories where appropriate. Inter-textual links demonstrate access to the textual worlds and an exceptional appreciation for different perspectives.	(Keene and Zimmermann 1997)
Text-to-World	Outstanding communication of socially constructed values, civic engagement and cultural contexts. Superb evidence of thematic connections between community and social stories paralleling those in the literature.	(Keene and Zimmermann 1997)
<b>Category 6: Narrative</b>		
Story structure	Excellent use of personal narrative, sequence, dramatic tension and a powerful conclusion. Clearly engages the audience through a persuasive narrative.	(Porter 2006) Retained from DCI
Cohesiveness	Extremely well organised narrative. Demonstrates an excellent logical structure that greatly enhances meaning. A sophisticated sense of flow and personal expression is evident.	(Barrett 2006) Retained from DCI

*Figure 1 – Categories of the Evaluation Rubric utilised in Design Cycle III to assess the digital products of learning*

## ENaCT: development and refinement

The ENaCT model illustrated the emergent design of Digital Ensemble in English education but also provided a framework for evaluating the inclusion

of pupils' feedback regarding Digital Ensemble as well as assessment of pupils' learning and engagement with literature. Figure 2 illustrates the data collection and analysis methods that were employed throughout the multi-cycle Digital Ensemble design process. Of significance to this paper is the use of the evaluation rubric, showcase and peer feedback sessions and story circles to assess the pupils' engagement with literature in the digital ensemble stories, which they created collaboratively.

<b>Data collection instruments</b>		
<b>Type of data</b>	<b>Instrument</b>	<b>Analysis</b>
Students' initial perspectives, opinions and experiences of the Digital Ensemble process for engaging with English literature.	<b>Student feedback questionnaires</b> (Creswell 2003)	Framework analysis based on ENaCT; Thematic analysis: immersion in the data, coding, categorising, and identifying themes.  Excel (Gibson 1998, Greene 1995)
Evidence of pupils' authentic learning moments when engaging with English literature during the Digital Ensemble process.	<b>Video recorded workshops</b> (Derry 2007)  <b>Ethnographic observations</b> (Hammersley 1990)	As above. Video analysis: data selection (macro and micro events), pattern finding, cross-referenced indexing  Tables, indices, flow charts and Excel (Derry, Pea et al. 2010)
Pupils' feedback regarding the Digital Ensemble approach to engaging with literature.	<b>Group interviews</b> (Denscombe 1998)	As above.  Tables, indices, flow charts and Excel (Gibson 1998, Greene 1995)
Evidence of pupils' engagement with literature through expressive embodiments of the world of the texts.	<b>Students' digital artefacts</b> (Brown 1992, McKenney and Visscher-Voerman 2013)	Evaluation rubrics Digital showcases and peer feedback Story circles (Goodrich Andrade 1997)

**Figure 2 - Data collection instruments and analysis methods**

ENaCT was deployed in three design cycles with pupils and teachers over four years. In each cycle ensemble strategies for active, embodied and aesthetic reading of texts were combined with the creative use of technologies

to support and showcase literary engagement. Ensemble strategies included whoosh circles, freeze frame, and ensemble and echoed reading. In this DBR study, we employed *low-threshold applications* (Gilbert 2002), which are defined as easy-to-use and widely available software and technologies. Figure 3 details the selection and structure of integrated drama and technology-based activities within the final iteration of this learning and assessment innovation.

Design Cycle Three					
2 Schools x 6weeks (4 x on-campus workshops, 2 x in-school workshops; 1 x 40-minute English class per week)					
Workshop title: Making Connections: the "Digital Ensemble" approach to engaging with literature					
Literature:					
Drama: <i>Our Day Out</i> , William Russell; <i>Big Maggie</i> , John B. Keane; <i>Macbeth</i> , William Shakespeare					
Poetry: Selected poetry from the W.B. Yeats collection; 'The Earth Circles The Sun', Gerry Hanberry					
Fiction and Scripts: <i>The Secret Life of Walter Mitty</i> , <i>A Game of Thrones</i> , George R.R. Martin; <i>Private Peaceful</i> , Michael Morpurgo					
Non-Fiction: Selected Documentaries, Video Clips; Audio Clips and Diary Entries					
Activities	Design Aims	Student Learning Aims	Learning Outcomes	Assessment	Resources
1. <b>Making Connections:</b> Text-to-Self; Text-to-Text; Text-to-World  (a) Collaborative Writing Tasks (Brainstorm, Stem sentences, story map, storyboard, story circle)  (b) Digital Ensemble Portfolio * Performative Level * Comparative Level * Reflective Level	1. Deepen the practice of engagement with literature by incorporating the following elements into the digital Ensemble design:  * Narratively structured learning activities; * Choice of texts * Making Connections approach	1a. Empower students to make personal, literary and abstract connections with the texts.  1b. Facilitate students to create a digital ensemble portfolio evidencing the use of ensemble strategies to engage with literature.	1a. Connect with texts on three levels using the "Making Connections" handout  1b. Create a digital ensemble portfolio that demonstrates embodied engagement with the texts.	1a. Can pupils plan, draft, edit and organise a Digital Ensemble Portfolio?  1b. How do pupils create an original 'digital mash up' chart or infographic that evidences their learning?  1c. Can students complete the stem sentences and create storyboards and graphic organisers?  * Assessment strategies: Story circles, rubrics, Digital Ensemble Portfolios, Micro-feedback sessions.	1. Texts Paper Pens/Pencils Mobile devices (e.g. iPads) Applications (e.g. iMovie, iMotion, Storyboarder, Comic Life) Design Brief Assessment Checklist Rubrics Flashcards

**Figure 3** - Excerpt from the Design of Digital Ensemble Module employed in Design Cycle Three

### The ENaCT design model

Exploring potential design criteria and informants was a significant part of developing the ENaCT design model. These criteria and informants are based on the comprehensive and creative processes of teaching, learning and assessment that were implemented in this study, which are outlined later in this article and illustrated in Figure 7. Although finessed through three

substantive design cycles, the model is not exhaustive and represents a finessed prototype integrative framework. Its purpose is to provide a developing theory of practice that is potentially transferrable and adaptable by others desiring to implement similar innovation in learning and assessment. Further to this, the research study also informed the design and development of a short course for the reformed Junior Cycle in Ireland for pupils typically aged between 12 and 15 years. The researcher designed a curriculum specification, entitled *ENaCT-It©* for developing creative digital content through literary engagement, using mobile, ubiquitous and low threshold technologies such as iPads and iMovie.

In each cycle pupils participated in a series of Digital Ensemble learning and assessment activities, which were designed to support their engagement with the curricular texts. For the purposes of this article the authors provide a description of such activities that were facilitated in the third cycle of implementation. Therefore, to implement this Digital Ensemble innovation within English classrooms the following seven phases are of paramount importance.

#### *Phase 1: Housekeeping*

At the housekeeping phase the teacher introduces the Digital Ensemble approach to pupils, preferably providing snapshots of the process in action and the digital artefacts created by other pupils or by the teacher as exemplars. This phase provides opportunity for teachers and pupils to consider the intended purpose and potential outcomes of employing the

Digital Ensemble approach to learning. Potential outcomes include: discuss the design of the programme and co-create a learning contract, which are aligned to 11<sup>th</sup> Statement of Learning<sup>1</sup>, and key skills such as Managing Myself and Working with Others of the new Junior Cycle Framework. Additionally, this activity provides for such learning outcomes as 'communicating as a listener, speaker, reader, writer' in the Oral Language Strand, as described in the new English specification (NCCA, 2015). For instance, if this approach is to be utilised to augment pupils' engagement with literature and facilitate embodied assessment practices, the teacher would need to facilitate a discussion about current teaching and assessment practices within this learning remit and to ascertain a shared sense of the potential benefits and outputs of the innovation for pupils' learning experiences.

### *Phase 2: Icebreaker Activities*

The international context of standardised assessment practices has pressurised schools into measuring their performance by high-stakes testing and external evaluations rather than by how they foster creativity, social experiences and meaning in learning (Sahlberg, 2007). Therefore, the ice of rote learning and standardised testing must be broken in order to introduce a truly engaging and innovative Digital Ensemble approach within the classroom. Fun-oriented icebreaker activities such as a PersonQuest<sup>2</sup> game must be employed at the beginning of each lesson or workshop in which the

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<sup>1</sup> SoL 11: takes action to safeguard and promote her/his wellbeing and that of others

<sup>2</sup> See [www.elisflanagan.com](http://www.elisflanagan.com) for description and exemplars of icebreaker activities.

Digital Ensemble pedagogy is used to encourage pupils to relax into the approach and to familiarise themselves with active, embodied participation.

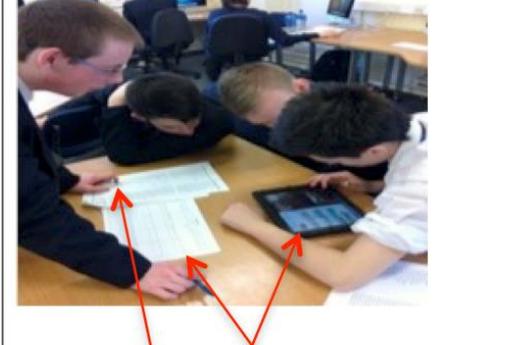
### *Phase 3: Ensemble Fluency*

The icebreaker activities are used as a preface to the development of a collaborative, creative and productive ensemble-based learning environment. To build on this introduction to embodied learning, ensemble warm up activities are then employed to introduce pupils to the concept of an embodied approach to learning. Ensemble fluency activities were selected and developed specifically for this purpose. Timpson and Burgoyne (2014) suggest that performance enhancing exercises can 'serve dual functions: to help individuals explore various aspects of performance, and to build a supportive group dynamic' (p.209). These activities involved embodied reading of texts using ensemble practices such as choral reading, family portrait, choral characters, circle blocking, punctuation walk and sculpting.

### *Phase 4: Digital Fluency*

The data from this research indicated the need to provide pupils with the opportunity to become digitally fluent prior to commencing the in-depth literary engagement tasks associated with the Digital Ensemble approach in English education. First, it is imperative to facilitate a demonstration of the functionality of the technologies to be employed (e.g. iPad, *iMovie*, *Storyboarder*, *Voice Record Pro*). Second, an ensemble News Item task was designed to overcome barriers to integration of technologies in learning such as time, knowledge, skill development and experience (Ertmer 1999; Mumtaz

2000) and to support pupils' confidence, self-efficacy and proficiency with technologies (Bandura, 1977; Ertmer 1999; Illich 1973, Sahlberg 2009). The purpose of this learning activity is to enable pupils to enjoy the ensemble process while familiarising themselves with the mobile technologies to be used. Such a low-stakes and fun-oriented task enables pupils to become digitally fluent in order to 'construct things of significance with those tools' (Resnick 2002). Figure 4 conveys the types of ensemble techniques that were employed with pupils as well as the collaborative process of using iPads to create digital ensemble stories.

		
<p>The <i>whoosh circle</i> is employed as a warm-up ensemble activity to create energy for learning among students. Students stand in a circle. One student begins by sending a 'whoosh' energy ball around the circle. This is created by saying "whoosh" while waving your arms from left to right once to pass the energy ball from you to the next person in the circle. This action and sound progresses around the circle until the whoosh energy ball reaches the first person again. Then various sound and action combinations can be incorporated into the whoosh circle to help channel and maintain the energy:</p> <p><i>Whaw</i>: This sound changes the direction of the whoosh energy ball to travel in the opposite direction. After the whoosh is passed to you, grab the energy ball with your hands formed as if you were going to catch a ball and throw it to the person on your opposite side. "Whaw" must be voiced with effort, commitment and conviction to pass the ball!</p> <p><i>Zap</i>: Instead of passing the whoosh to the person beside you, zap it to someone else across the circle by pointing to them with both arms outstretched, palms together, and throws the energy ball to them while shouting aloud "Zap".</p> <p>As each person in the circle drops the energy, misses a turn or otherwise makes a mistake they step out of the circle and let the rest continue. The whoosh circle activity continues at a progressively faster pace until there are only two people left in the circle.</p>		
		<p>The pupils create a freeze frame image to signify the themes of loyalty, morality and sacrifice as inspired by the key moments in the texts: <i>Easter 1916</i> (W.B. Yeats), <i>Private Peaceful</i> (Michael Murpurgo) and 'The Earth circles the Sun' (Gerry Hanberry)</p> <p>The student circled above is holding an iPad and recording the ensemble performances of his teammates.</p>
		<p>Ensemble and choral reading with voice intonation and accompanying actions are employed here to encourage students to connect with and respond personally using actions and voice to the texts: <i>Big Maggie</i> (John B. Keane), 'The Wild Swans at Coole' (W.B. Yeats) and <i>A Game of Thrones</i> (George R.R. Martin).</p> <p>Pupils' work collaboratively to plan and draft their digital ensemble story using an iPad, the iMovie application as well as their text excerpts and storyboard.</p>

**Figure 4 - Digital Ensemble: warm up activities, ensemble techniques and digital ensemble stories.**

### *Phase 5: Making Connections*

The Making Connections approach of Keene and Zimmerman (1997) provided scaffolded instructions to pupils concerning the use of ensemble activities to engage with the literature. Consequently, the learning activities were divided into three pedagogic sections for comprehending and engaging with texts: (a) Text-to-Self, (b) Text-to-Text and (c) Text-to-World. Making connections with the world of the texts becomes central to pupils' understanding of the particular social and cultural contexts and also enhances their sense of perspective within the meaning making process (Keene and Zimmerman 1997, Miller and Pennycuff 2008). Therefore, the researcher developed the *Making Connections* worksheet for pupils in order to support their engagement with the world of the text in relation to their personal experience and understanding, their comparative analysis with other texts and their conceptual understanding of the text. Each section of the worksheet included stem sentences, graphic organisers, mind maps and story organisers to support pupils' engagement with the texts. This worksheet, both paper and digital formats, was also employed as an evaluative method and was assessed using peer assessment and audio recorded feedback.

### *Phase 6: Digital Story Showcase*

The showcasing of the digital products created by the pupils was a vital component of learning and assessment of this Digital Ensemble approach in English education. The digital showcase concept was modelled on that of microteaching for pre-service teachers. This Stanford University-developed

teacher education technique enables groups of pre-service teachers to plan, teach, view, analyse and re-teach a lesson (Dwight 1967). Once pupils had produced their digital ensemble story to reflect the criteria set out in the Design Brief and the evaluation rubric, a digital showcase was organised to provide all pupils with an opportunity to review their stories with the entire class and to receive supervised, constructive and critical feedback regarding their digital artefacts and their literary engagement in accordance with the guidelines and rubric provided. The reason for this phase of the process was threefold: 1) to encourage a practice of self-reflection and self-evaluation; 2) to sensitise pupils to visual, physical and emotive cues in their ensemble embodiments of the literature and 3) to provide a frame of reference for analysing and assessing the digital artefacts and making necessary emendations (Dwight 1967).

To exemplify pupils' creative products resulting from their engagement in the process, Figure 5 illustrates a successful digital ensemble story - an artefact of significance (Resnick 1996, 2002). The pupils in this group demonstrated that responding personally to a text is an aesthetic process that draws on personal experiences, as described by Goodwyn (2012). Edited to a high standard, this digital ensemble story evidenced not only 'efferent reading' (Rosenblatt, 1986), but also a transaction between the readers and texts, which encapsulated a process of making meaning from the literature and living through the world constructed from that transaction.

	
The opening scenes. Two chairs appear under the spotlight. The chairs are used to signify thrones and power.	In the next scenes the middle chair is brought into light slowly.
	
The spotlight gets brighter to reveal a man sitting in an armchair, smoking and looking quite annoyed. The spotlight brightens further to the extent that the character's face is blurred out.	
	
Another person enters, revealed to be his son.	The pair discusses the son's future concerning fortune and family.

**Figure 5** - Example of high-quality, creative digital ensemble artefact created by pupils

#### *Phase 7: Digital Reflective Learning Log*

The digital reflective learning log (DRLL) required participants to reflect on their digital ensemble story and critique their learning journey within the context of Digital Ensemble in English education. Ultimately, this final digital product provided invaluable insights to pupils' overall experience of the module and formed an essential component of the assessment strategy for

evaluating pupils' individual and collaborative contribution and learning. Pupils planned their DRLL using a Socratic circle and peer feedback process, mind maps and various other paper and digital graphic organisers. Appended to their final digital ensemble stories, pupils could complete their DRLL in written, audio, ensemble or illustrative formats and each DRLL contained an individual and a collaborative element. The DRLLs evidenced experiential learning, individual contribution, collaboration, and skills such as problem-solving, negotiating, critical reflection, analysis, digital literacies, creativity, self management, goal setting and achieving and effective communication. Figure 6 exemplifies one group's DRLL.



Since this is not a galaxy far, far away we found it too weird to say what we thought in front of the camera. So we merged all the recordings of what we thought and wrote this amazing reflection!

The way we learned how to act out small parts of the text was useful, fun and exciting. It really encouraged us to think about how we can understand a text ourselves without relying on the teacher or another person to tell us what the author or poet meant. For example, in the Game of Thrones excerpt that we read, we were not familiar with the characters or the plot. Only one of us read the book. Sometimes the characters' names were difficult to pronounce but we just settled on a pronunciation ourselves and that was fun. We felt like we were in control. We thought the death of Stark in that scene could be likened to the death of Private Peaceful and it gave us ideas of how that could actually be played out. We think the reason we found similarities in the two is because of the universal themes of war, love, hatred and justice. The recorded ensemble parts allowed us to explore different ways of portraying the texts as we discussed them because each time we acted it out something new came to light that we did not think about before. It turns out that our understanding of it was right. In conclusion, we think that this whole process of acting and using the iPad to make a movie about it meant that we all actually remembered the plays, novels and poems much better than we usually would. Also, the experience itself was incredible and so much fun. We all feel that we have more to say about the texts now because we actually did them for real, not just learned everything off by heart. Thank you for this.

**Figure 6** – *A vignette from one group of pupil's DRLL*

Reflecting on their experiences of English these pupils communicated that 'learning how to analyse the texts was the best part. Once you do it [...], act it out, and film it it's like an essay you've written but like, way less boring' (DCIII, Group interview 2, Pupil 29). Such feedback spoke to the heart of what Young, Long and Myers (2010, p.9) proposed for 'Enhancing English

Language Arts in Education With Digital Video'. Their view was that:

To become fully literate in today's world, pupils must become proficient in the new literacies inspired by 21-century technologies [...]. Together, these new and emerging digital technologies are redefining the ways we read, write, think, and learn.

This research also emphasised the necessity for original and nuanced teaching methods to accommodate this redefinition of reading, writing, thinking, learning and assessment, which is the ultimate goal at the heart of this project.

### **The ENaCT model for digital ensemble**

The ENaCT model presents the culmination of four-years of the accretive, multi-cycle design innovation with Digital Ensemble. The four key thematic areas (MDVs) of ensemble, narrative, collaboration and technologies and their respective design sensitivities are sequentially addressed and discussed.

#### *Ensemble*

1. Quality participation: the quality of participation from pupils and teachers is a foundationally important criterion for enhancing the effectiveness of this Digital Ensemble model in English education (Neelands 1985). Ensemble activities should encourage active, emotive and embodied collaboration and critical thinking while embodying the world of the texts (Boyd 2008a, 2008b; Heathcote and Herbert, 1985; Neelands, 2009).

2. Distribution of power: It is imperative that the Digital Ensemble approach to literature learning and assessment emphasises pupils' learning empowerment. The teacher should act as facilitator, supporter and encourager (Britton 1970), or as 'stage crew' as referred to by one of the study's participants. To re-negotiate the laws and boundaries of learning, democratic processes should be preserved during this approach (Neelands 2009, Lave and Wenger 1991, Heathcote and Herbert 1985, Freire 1970).
3. Space: The effectiveness of Digital Ensemble in terms of creative, energetic and embodied learning, is dependent on the use of large open spaces (Aitken et al. 2007, Boyd 2008b, Petty 2009). Obstructions, both physical and conceptual, to the flow of work should be addressed (Irish 2008, 2011) and a dynamic learning space should be developed in which pupils feel safe and comfortable to express themselves physically. Suitable spaces can include a school gymnasium, sports hall or common room, and suitable outdoor spaces.
4. Creativity and aesthetic experience: Pupils must be afforded the time, the sense of freedom and suitable resources to be creative, innovative and productive in their learning (Robinson 2006). Digital Ensemble should be an interactive and social experience that builds self-awareness and confidence through making authentic and aesthetic connections with the literature or subject matter (Boyd 2003,2008b). To this end, the ensemble approach should be taken seriously, relevant to real life, and expressive in order to allow learners to make memorable meaning from their engagement with the literature (Boyd 2008b, Catney McMaster 1998, Irish 2011).

## *Narrative*

1. Structure: Two elements of structure concerning the narrative of the approach were important: the layout of the learning approach and the structure of the story. The designed learning experiences should be comprehensible and familiar to learners. Therefore, maintaining the routine and structure of the seven-phase approach outlined above is essential for authentic embodied learning and assessment practices. Subsequently, the story structure must encourage and facilitate learners to be creative and critically reflective while supporting the construction of meaning through systematic embodied interactions with the texts (Bruner 1990). Pupils must be provided with clear instructions, inspiring and purposeful resources such as a design brief, rubrics and worksheets during assessment for learning activities such as story circles, intermittent showcases and feedback sessions (Ohler 2008, Barrett 2005, Jakes 2005, Bruner 1991).
2. Relevance: Narrative approaches can augment the relevance of literature to pupils by fostering familiarity, by linking context to the curriculum and the lives and needs of the pupils. The Making Connections approach should be employed in this regard (Keene and Zimmermann 1997) to encourage reflection on and engagement with the literature.
3. Personal voice: Creating first-person narratives and employing personal voice encourages pupils' connections with the subject matter and empowers their self-expression (McDrury and Alterio 2002). Fortifying personal narrative with multimedia such as images, video and music increases the power of the story to connect to its audience (Craft and Jeffrey 2003, Graves et al. 2010, Mendelowitz 2014).

4. Ownership: Creating a meaningful artefact of significance and relevance encourages pupils to become more personally committed to and academically invested in the process and to claim ownership of the products of their learning (Papert 1987, Schiff 2012). Furthermore, creating meaningful, sustainable digital content is increasingly important for helping young people make meaning from their lives and learning today through a familiar and ubiquitous medium (Livingstone and Haddon 2009).

### *Collaboration*

1. Team building: Forging a group identity and team building is a significant stage of this Digital Ensemble learning process (Petty 2009). Intuitive grouping and assigning groups roles encouraged effort, inclusivity and literary engagement among pupils. Likewise, permitting self-designating grouping also encouraged a sense of responsibility and ownership of the learning process (Lave and Chaiklin 1993, Lave and Wenger 1991, Maxwell 2013).

2. Fun: Creating and allowing a sense of fun to develop was important for effective collaboration in learning. To attend to the full range of human needs, fun, laughter, pleasure and enjoyment should be encouraged through this technology-enhanced and ensemble-based approach to story creation. (Goodwyn 2010a, 2010b, 2008a, Neelands 2009).

3. Scaffolded instruction: Designing and employing scaffolded instruction contributed to the development of fluency and mastery in learning tasks by creating a safe, familiar space where learning through collaboration was encouraged (Larkin 2001, Van Ments 1999). Such collaborative practices as warm up activities, story circles, feedback sessions and showcasing

opportunities can help to make pupils feel comfortable with being together in the moment and sharing their authentic and emotive responses and opinions. Embedding these scaffolded essential requirements that are pitched within the Zone of Proximal Development (ZDP) of the pupils, assuaged their fears through collaborative embodied learning and ensured some level of attainment for each learner (Dixon and Ishler 1992, Wood et al. 1976).

4. Socialising opportunities: It is essential to appreciate that a healthy level of noise and conversation is acceptable and indeed important during such innovative and active teaching, learning and assessment endeavours. Such activity supports the development of trust, respect, friendship, cooperative behaviour and citizenship (Cohen 1994, Zins and Elias 2007).

### *Technology*

1. Intuitive technology: It is vital to choose technologies that are user-friendly, constructionist and learner-centred to promote a process of inquiry, communication, construction and expression (Bruce and Levin, 2001; Gilbert, 2002; Papert, 1990, 1993; Soloway and Guzdial, 1994). Mobile devices that are reliable, durable, safe and intuitive with excellent connectivity between applications, storage options and an in-built microphone should be deployed during the implementation of such a Digital Ensemble innovation. The devices used in this study were iPads as well as applications such as iMovie, Voice RecordPro, Camera, iBooks, iMindMap, iMotion.

2. Digital fluency: Affording pupils sufficient time to build their technological self-efficacy is vital for Digital Ensemble. Accordingly, including a demonstration and low-stakes digital ensemble tasks such as a News Item at

the outset of the process addressed pupils' technological concerns and developed technology fluency or self-efficacy (Bandura 1977, Ottenbreit-Leftwich 2007).

3. Artefacts of significance: This creative embodied approach to English education should encourage pupils to make multifaceted and meaningful artefacts of significance as they progress through the Digital Ensemble learning journey (Bruner, 1990, 1987; Papert 1990, 1993; Resnick, 2002).

Activities such as the digital ensemble story, the digital ensemble portfolio and the digital reflective learning log encouraged pupils to think reflectively and critically about how to evidence their learning journey. It also supported the development of skills such as time and information management, collaboration, well-being, self-management, organisation, problem-solving and communication, which are also addressed in the reformed Junior Cycle framework (Barrett, 2014; NCCA, 2015; Ohler, 2008; Porter 2005).

4. Creativity and productivity: Technologies should support pupils' creativity and productivity in their learning (Bruner, 1990; Livingstone and Haddon, 2009; Papert, 1993). Promoting tasks and activities that encourage the use of interactive content inspires pupils to be original, unique, resourceful and innovative through a mature and responsible approach to learning (McEuen, 2001). Such activities included using digital mind maps to synthesise voice, image and video into a coherent plan of their literary engagement process. Potential barriers to implementing technology-enhanced learning with pupils (Ertmer, 1999, 2005) should be addressed and various supports must be made available to learners including: the teacher(s), peer-to-peer learning, or a virtual learning environment (VLE).

## **Design informants of the ENaCT model**

Owing to the potential richness and diversity of learning experiences with literature that such an approach would entail, it was necessary to articulate the design informants for consideration when implementing such an innovation. So as to create an effective design for the digital ensemble pedagogy to enhance literary engagement, this research recommends that the following five informants be incorporated into the educational design process.

### *1. Student voice*

Of significance to the design of this model was the voice of the pupils. The digital ensemble process should be developed in situ and form part of the daily routine and life of pupils' learning experiences in school. Such an informant should detail the pupils' experiences, feeling and opinions with regard to their learning experiences, ensemble and technological fluency, interests, their Zone of Proximal Development (ZPD) and their *a priori* knowledge.

### *2. Educational context*

Digital Ensemble designs must be sensitive to local, national and international practices and trends in education systems, while being particularly conscious of current and pending transformations in pedagogical practices to support learning. The design must consider the affordances and the constraints of the English curriculum, cross-curricular opportunities, educational ethos, as well

as the requirements and pressures of both formative and summative assessments.

## *2. Building partnerships*

The collaborative element of this approach is of paramount importance for developing the potential efficacy of Digital Ensemble to enable pupils to engage actively and emotionally with literature learning in a safe and supportive environment. A collaborative process based on learning integrity is fundamental for realizing and harnessing the messy nature of this creative approach to literature learning and assessment. Although collaboration may be framed and scaffolded by bespoke teaching and learning strategies and resources, it is important to build trusting relationships with pupils to facilitate them working on their projects in class, around the school building or on school grounds during their class time or possibly outside of school time. It is also important to mimic and exemplify this collaborative process professionally among teachers, staff and professional bodies when possible.

## *3. Local context*

The design and implementation of Digital Ensemble must be sensitive and respondent to the local context of the school or learning environment. This can include the school's tradition, the ethos, the school calendar, the support of management, the provision of adequate information to the pupil and staff cohorts, and sourcing the Digital Ensemble resources required.

## *4. Ubiquitous technology*

An effort should be made to conduct the innovation iteratively in situ with

ubiquitous technologies that are suitable for undertaking the Digital Ensemble process and achieving the programmes' design and learning aims and outcomes. When considering the technologies to deploy, the above informants of one to four are of particular utility and significance.

## The ENaCT design model

As evident, this study explored the potential of these four design criteria (MDVs) and supporting five informants to comprise the ENaCT design model, depicted in Figure 7. These criteria and informants provide an integrative framework to those in cognate educational settings wishing to implement ensemble and technology-enhanced pedagogies to facilitate and augment learners' creative and embodied engagement with English literature.

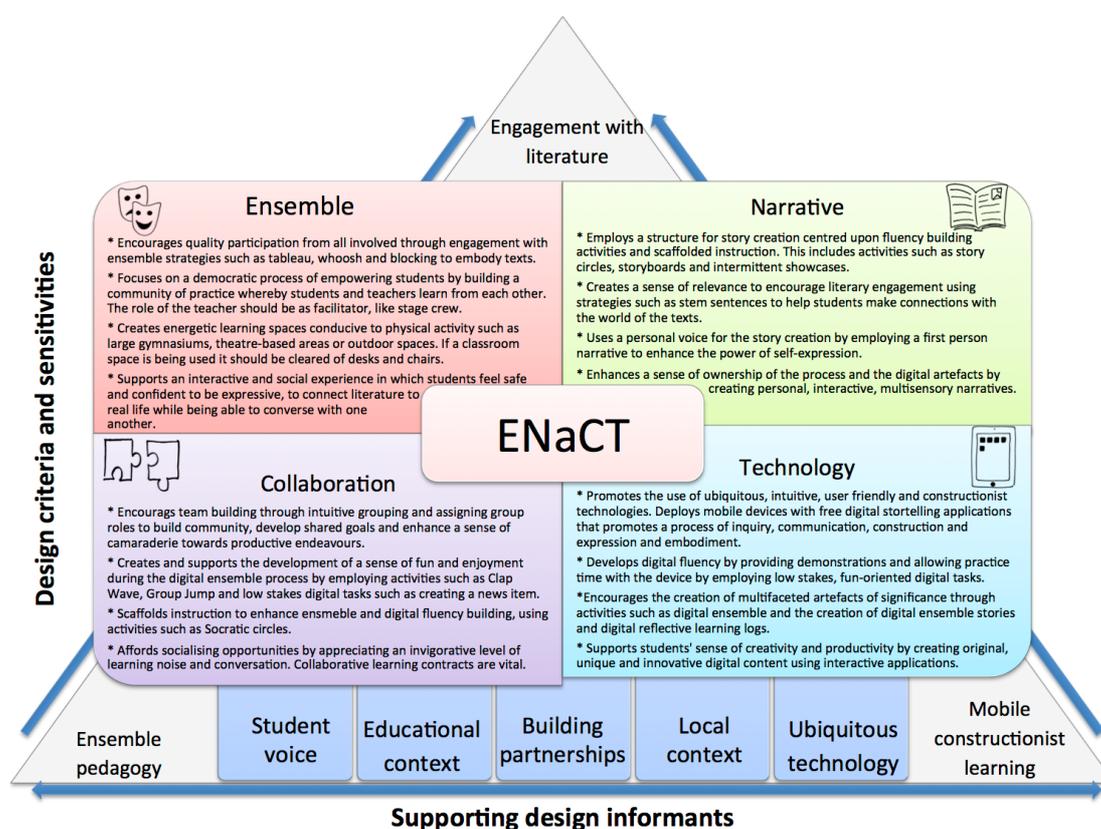


Figure 7 – The ENaCT design model for digital ensemble

## **Summary and Conclusion**

The three cycles of design that were implemented with second-level pupils demonstrated the impact of the digital ensemble storytelling approach within English education and in particular on enhancing pupils' engagement with a range of literature and multimodal texts. The development of this pedagogical approach is particularly timely in the context of the Irish second-level system. The reformed Junior Cycle places greater emphasis on developing the skill sets required to live sustainably, communicate effectively, promote well-being, become digitally literate, take initiative, collaborate and be creative (NCCA, 2015). Moreover, this bespoke Digital Ensemble pedagogy and ENaCT educational framework are particularly germane to the new Junior Cycle English specification and teaching guidelines. Significantly, this specification advocates the active, social and personal involvement of learners in the integrated skills of language use and lively engagement with a variety of texts, both literary and multimodal, both in an individual and a collaborative manner (NCCA, 2015, p.4). Accordingly, the Digital Ensemble process formed pupils' learning of literature and assessment of embodied English education in a participatory and dynamic manner and the overall response from the pupils concerning their learning experience was overwhelmingly positive. Consequently, the affordances of the Digital Ensemble approach to English education marked the substantial contributions of the study. These included active participation, collaborative engagement, physical involvement, embodied texts and digital representations of the literature. This research highlights that the majority of the pupils involved in the learning and

assessment approach evidenced enhanced literary engagement during and subsequent to the process. Pupils were positive about connecting with the texts actively and collaboratively on three levels of critical thinking: Text-to-Self, Text-to-Text and Text-to-World (Keene and Zimmermann, 1997). Some reasons pupils cited for this included their engagement in video recording their individual and collaborative learning processes, which encouraged greater reflection on the choice of texts, selection of excerpts as evidence and key moments for emotive and embodied analysis. Also, witnessing their performances in their groups and during the feedback and assessment sessions supported their connections with the texts personally, emotionally and critically. Another positive aspect of pupils' feedback was that the digital ensemble process enabled pupils to organise their thoughts, reflect on their engagement with the texts, refine and organise their learning into an interlinking snapshot of their experiences with the literature. Pupils reported that recording their ensemble performances of the literature helped to mature their understanding of the process of critically reading and appraising a text while offering personal insights to and critical reflections of it, drawing on prior knowledge and experiences.

Selecting the digital ensemble vignettes for their final story also proved significant since it encouraged pupils to interact with the world of the texts through themes, feelings, and social and cultural contexts. Pupils articulated that organising these vignettes reflected the prewriting stages of writing while the digital reflective learning log (DRLL) encouraged them to encapsulate their learning experiences. Another reason pupils provided for their perceived

deeper literary engagement was the digital storytelling process. Learning events such as storyboarding, the story circle, creating the narration, and creating and choosing music and sound effects for their digital artefact enabled pupils to portray their learning story. Being able to demonstrate and reason their selection of the most pertinent moments, themes and contexts within the literature, as well as their interrelatedness and relevance to the lives of the pupils proved important to them. The music and sound effects further encapsulated and communicated their feelings, opinions, thoughts and projections of those critical readings and performances.

Further reasons pupils provided concerning their critical engagement with the literature was the discursive process of peer work while the teacher/researcher adopted the role of facilitator and helper rather than as the untouchable sage. The group activities in the pre-ensemble (building ensemble fluency) stages helped pupils to develop confidence in the active process and in their own learning ability. In this respect the element of trust was significant. The process of building fluency in the educational implementation of technologies and ensemble was crucial, as was the fact that it was fun and enjoyable for the pupils. The pupils articulated that being afforded the opportunity to engage with literature, as a process—to plan it by employing critical thinking or collective intelligence approaches and to engage in a trial and error process—was beneficial to their understanding of how to engage with literature.

This DBR study explored how Digital Ensemble can be integrated into English education to encourage pupils to engage with literature. Against the backdrop of innovation in English education, the development of digital fluency and the

landscape of educational change, the importance of this research topic lies within the shift from systems of rote learning and standardised assessment practices to collaborative and creative schooling of the future (Boyd 2008b, Hodgson and Wilkin 2014, Ohler 2008, Sahlberg 2009, Mitra 2005 and Mitra et al., 2010). Data from the Organisation for Economic Co-operation and Development (OECD) concerning the potential of technologies for learning are particularly timely for this research. The publication, entitled 'Students, Computers and Learning: Making the Connection' (OECD 2015), asserted that the potential of technologies for teaching and learning has yet to be harnessed by schools. The OECD report noted that although certain countries had invested heavily in the digital infrastructure of their schools, the results of the Programme for International Pupil Assessment (PISA) attest to the fact that there has not been a marked improvement in young people's proficiency in reading, mathematics or science. Significantly then, this design-based research study and the extant research literature reported in this article underscore the importance of affording pupils the opportunity to be creative and productive in their learning. Allowing pupils to learn in their own space, in their own time and with reference to their own experiences is of paramount importance to the design of technology-enhanced learning practices in English education. This research concurs with that of the OECD, which highlighted that the type of technology tools available in schools impacts the use of digital media for teaching and learning. The report stated that:

[w]hether pupils can access computers in their classrooms or only in separate computer labs or at the school library makes a big difference.

Laptop and tablet computers offer much greater flexibility than desktop computers, and PISA data show that more and more schools have opted for these mobile computing solutions (OECD 2015).

Therefore, this relevant and timely research illuminated the opportunities and recommendations to augment pupils' learning and assessment through their embodied engagement with literature by deploying learner-centred mobile technologies within English education to complement ensemble pedagogy.

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