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Title	Enhancing K-12 pre-service teachers digital pedagogical literacy lesson planning for teaching online
Author(s)	Flynn, Paul
Publication Date	2020-07
Publication Information	Flynn, Paul. (2020). Enhancing K-12 pre-service teachers digital pedagogical literacy lesson planning for teaching online. In Richard E. Ferdig, Emily Baumgartner, Richard Hartshorne, Regina Kaplan-Rakowski, & Chrystalla Mouza (Eds.), Teaching, Technology, and Teacher Education during the COVID-19 Pandemic: Stories from the Field. USA: Association for the Advancement of Computing in Education (ACCE).
Publisher	Association for the Advancement of Computing in Education (ACCE)
Link to publisher's version	https://www.learntechlib.org/p/216903/
Item record	http://hdl.handle.net/10379/16214

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Enhancing K-12 Pre-Service Teachers' Digital Pedagogical Literacy Lesson Planning for Teaching Online

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Lesson planning is an essential component of teacher professional development. COVID-19 has ushered a rapid transition from classroom based teaching to online engagement with K-12 students placing new demands on teachers to apply their lesson planning skills to new digital classroom environments. This paper presents a rationale for innovation in lesson planning for online teaching. Early results from a pilot project indicate that a Rhythmic Approach to lesson planning translated well to online classrooms and facilitated dialogic interactions between teachers and students. In addition nascent challenges associated with the transition from physical to online classrooms were mitigated. Early results and outcomes are relevant to K-12 preservice teachers, teacher educators and established inservice practitioners.

Keywords: K-12, Lesson Planning, Teaching and Learning, Teaching Online, Pedagogical Literacy, Pre-Service Teacher Education, Teacher Education

INTRODUCTION

Pedagogical literacy can be viewed as the capacity to identify classroom challenges and to develop literature informed responses (MacLellan, 2008). Agile Pedagogical Content Knowledge (PCK) (Shulman, 1986) is often expressed 'on-the-fly' as part of dialogic exchanges between students and inservice teachers. For Pre-Service Teachers (PSTs) developing this capacity, or pedagogical adaptivity (König et al., 2020), as a core practice (Grossman, Hammerness, & McDonald, 2009) is both desirable and daunting. While there is a clear need for structured lesson planning to help PSTs transition into inservice teaching (John, 2006; König et al., 2017), there is also a need for in-lesson flexibility capable of responding to the fluid nature of teaching contexts (Mutton, Hagger, & Burn, 2011). Informed by social constructivism (Dewey, 1988; Vygotsky, 1978), this paper presents a response to this challenge by introducing a Rhythmic Approach to lesson planning in order to facilitate dialogic exchange within online classrooms representative of real-world inservice practice.

INNOVATION

In the physical school setting there is a natural erosion of class time as a consequence of K-12 students transitioning through corridors and into class. Further time constraints are often imposed by external class interruptions and everyday classroom challenges. While some of these challenges are mitigated through a migration to the online space others, such as technical issues, can emerge in their place (Kearsley & Blomeyer, 2004).

As part of pilot phase of a larger design-based research (Barab & Squire, 2004, 2016) project, aiming enhance the digital pedagogical literacy of PSTs in order to support the development of pedagogical adaptivity (König & Kramer, 2016; König et al., 2020), participants were encouraged to adopt a Rhythmic Approach to developing the main body of their lesson plans (Figure 1). The purpose of this approach was fourfold: to address issues of timing in the physical and online classroom; to create ring-fenced teaching time so as to maintain curricular momentum; to create conditions for in-lesson dialogic teacher/student exchange and; to create opportunities to pivot 'on-the-fly' in response to challenges presented by class groups, particularly when teaching online.

A generic lesson plan template, familiar to the PSTs (John, 2006; Petty, 2004), was adapted to include three ring-fenced opportunities for teacher/student engagement in the main body of the plan. Typical rhythms encouraged were 5 or

7 minute periods of teaching time followed up by a 3 or 4 minute break-out room activity depending on the length of the planned lesson. Breakout rooms were set to close automatically and return students to the main room after the required time was up. The rhythmic timings were determined by the typical length of class time (40-60 minutes). Planning for the rhythmic sections presented a secure period of teacher-student engagement between 24-33 minutes excluding in-class correction of pre-work, interruptions and assignment of post-lesson tasks. Finally, PSTs were encouraged to engage with students using various formative assessment strategies to develop a deeper understanding of emergent challenges in the classroom within breakout room deliverables (Vonderwell & Boboc, 2013).

Main Body of lesson			
Rhythm Section 1			
Rhythm: 5/3	Teacher Activities	Student Activities	Timing:
7 min	<ul style="list-style-type: none"> Recap of why the Renaissance began in Italy x 4 reasons (LO1) Introduction to Leonardo de Vinci (LO2) 	<ul style="list-style-type: none"> Partially complete Cornell Notes Renaissance template (1 of 8) (finish for homework) 	4 min
			3 min
4 min	<ul style="list-style-type: none"> Respond to emergent challenges Visit breakout rooms 1 & 2 	<ul style="list-style-type: none"> Respond to question: Why would others want to steal L.d.v.s' ideas? 2 ideas per B.O. Room typed into chat-box 	4 min
Rhythm Section 2			
7 min	<ul style="list-style-type: none"> Quick-fire response to student ideas (watch out for misconceptions) Intro 2 Key L.d.v major works (LO3) 	<ul style="list-style-type: none"> Partially complete Cornell Notes Renaissance template (2 of 8) (finish for homework) 	4 min
			3 min
4 min	<ul style="list-style-type: none"> Respond to emergent challenges Visit breakout rooms 3 & 4 	<ul style="list-style-type: none"> Respond to question: How are these works different to medieval works? 2 ideas per B.O. Room typed into chat-box 	4 min
Rhythm Section 3			
7 min	<ul style="list-style-type: none"> Quick-fire response to student ideas Focus on 2 Key L.d.v techniques (LO4) 	<ul style="list-style-type: none"> Continue to partially complete Cornell Notes Renaissance template (2 of 8) (finish for homework) 	4 min
			3 min
4 min	<ul style="list-style-type: none"> Respond to emergent challenges Visit breakout rooms 5 & 6 	<ul style="list-style-type: none"> Respond to question: Where do you see the use of perspective in your life? 2 ideas per B.O. Room typed into chat-box 	4 min

Figure 1. Example of Rhythmic Approach to lesson planning (European History).

RESULTS

Early results indicate that using a Rhythmic Approach to lesson planning supports the planning of online lessons. Typical timing issues experienced by these novice teachers were mitigated and emergent challenges were considered to be addressable as time had been planned in advance to consider appropriate responses when students were engaged in scheduled tasks (König et al., 2019; Mutton, Hagger, & Burn, 2011; Stigler & Miller, 2018;). It was noted that the introduction of a Rhythmic Approach to the main body of the lesson plan provided opportunities to break down lessons into tasks that were considered manageable and well defined for both teacher and student (Borko, Roberts, & Shavelson, 2008; Kang, 2017) within their scheduled, core teaching time of 24-33 minutes. In some instances an additional rhythmic section was deemed necessary and PSTs adjusted subsequent plans accordingly. In this pilot phase there is some evidence that suggests this may be relevant to specific subjects such as science. Finally, it was evident that including a Rhythmic Approach was advantageous in allowing time, 'on-the-fly', to deal with emergent student needs. This was prompted by dialogic teacher-student exchange and was most evident where students were engaged in online breakout rooms. This facilitated teacher responses with differentiated strategies during live lessons and in post-lesson reflection.

IMPLICATIONS

It is posited here that during a rapid transition to online teaching challenges established teacher education pathways for the development of PCK (Schulman, 1984), typically forged in K-12 face-2-face classrooms, may become disrupted. However, during this period, opportunities to develop strategies and techniques that enhance the digital pedagogical literacy of PSTs and have affordances for future engagement in the physical classroom settings do exist. Here, some practical suggestions and advice on implementing a Rhythmic Approach to lesson planning for teaching online are now offered to teacher educators, pre-service teachers and established in-service practitioners.

Teacher Educators: are very aware of the myriad of challenges that PSTs face (Ceana, 2014; McCulloch, 2011) and the importance of lesson planning in providing much needed scaffolding (John, 2006; Vygotsky, 1978). Taking a Rhythmic Approach to lesson planning can help trainee teachers to learn how to adapt and overcome emergent challenges in both the online and face-2-face settings. Some considerations related to programme integration include:

- Early introduction of the Rhythmic Approach in courses;
- Care should be taken to emphasise to trainee teachers that it is okay not to progress to the next section and that in-lesson adaptations are encouraged;
- Encourage the inclusion of short (3min) active learning methodologies within breakout room sessions;
- Particular attention should be paid to communicating the necessity for detailed instruction for participation in breakout room activities.

Adopting a Rhythmic Approach to lesson planning can help student teachers begin to develop the pedagogical adaptivity (König et al., 2020) that experienced practitioners often display.

K-12 Pre-Service Teachers: are continually beset by issues that relate to time management and maintaining curricular momentum across terms with class groups (Conway et al., 2009). Introducing active learning methodologies can, initially, prove challenging when trying to deal with emergent class group issues or technical challenges pertinent to teaching online (Mutton, Hagger, & Burn, 2011). The Rhythmic Approach to lesson planning has the potential to mitigate some of these challenges. Advantages to using this approach include:

- Improvements related to in-lesson time management as a consequence of ring-fencing teaching time;
- Maintenance of curricular momentum over the duration of a term;
- Planning for scheduled active learning methodologies within breakout rooms can allow time to solve emergent technical challenges;
- Using a Rhythmic Approach can facilitate an emergent necessity to revisit a concept with students and reset the related breakout room activity;
- The Rhythmic Approach is time-conservative and so it is important to have additional materials and activities in reserve for when things move more rapidly than anticipated.

The Rhythmic Approach to lesson planning has the potential to aid lesson planning for both physical and digital learning environments. Building in time, as the Rhythmic Approach does, by segmenting out teacher and student periods of focus facilitates periods of time for in-lesson reflection in order to address emergent student needs. Many experienced educators do this intuitively (König et al., 2020). This is a stepping stone towards developing that capacity.

Established Inservice Practitioners: often intuitively mitigate emergent classroom challenges, however, even seasoned professionals may need to revisit lesson planning while transitioning to online teaching order to support the PCK (Shulman, 1986) forged through years of experience. Some practical considerations include:

- While the approach presented here is a didactic-to-active combination it can also be used as didactic-to-questioning strategy. This presents an opportunity to employ effective lower to higher order questions (Shahrill, 2013);
- Use the Rhythmic Approach to build in time to solve technical challenges when students are engaged in activities;
- Lesson planning using the Rhythmic Approach presents opportunities to change the course of the lesson ‘on-the-fly’ should the need arise as might occur in the classroom;
- Encourage students to use the chat functions on the platform being used to communicate challenges that they are experiencing.

Experienced teachers know that there is a need for in-lesson flexibility in order for emergent student needs to met (Mutton, Hagger, & Burn, 2011). The use of the Rhythmic Approach affords such flexibility.

The Rhythmic Approach to lesson planning has the potential for application in both physical and digital learning environments. Perhaps the current situation has presented an opportunity to attend to persistent pedagogical challenges relevant to both contexts that teacher educators, PSTs and established in-service professionals experience whilst we are ‘under the pump’ to address challenges related to online teaching.

FUTURE RESEARCH

It is intended that next steps will involve, a mainstream sample of PSTs from across the full range of K-12 subject areas will be asked to test this approach to lesson planning to determine the suitability of the approach for widespread integration into PST training programmes. In addition it is intended that the Rhythmic Approach to lesson planning will be shared with experienced inservice teachers to gain a deeper understanding of the effectiveness of this approach in both physical and online classrooms. Future research will include a longitudinal study on the impact of using the Rhythmic Approach to lesson planning on the practice of graduates once they enter inservice practice. Of particular interest will be the impact of this approach on the their pedagogical literacy and the development of their pedagogical adaptivity.

References

- Borko, H., Roberts, S. A., & Shavelson, R. (2008). Teachers’ decision making: From Alan J. Bishop to today. In *Critical issues in mathematics education* (pp. 37-67). Springer, Boston, MA.
- Ceana, F. (2014) Initial teacher education in Europe: an overview of policy issues. Report Commissioned by the European Commission Directorate-General for Education and Culture.
- Conway, P., Murphy, R., Rath, A., & Hall, K. (2009). Learning to teach and its implications for the continuum of teacher education: A nine-country cross-national study.
- Dewey, J. (1988). *The Later Works of John Dewey, 1925-1953: 1938-1939, Experience and Education, Freedom and Culture, Theory of Valuation, and Essays*. SIU Press.
- Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re imagining teacher education. *Teachers and Teaching: theory and practice*, 15(2), 273-289.
- John, P. D. 2006. “Lesson Planning and the Student Teacher: Re-thinking the Dominant Model.” *Journal of Curriculum Studies* 38 (4): 483-498.
- Kang, H. (2017). Preservice teachers’ learning to plan intellectually challenging tasks. *Journal of Teacher Education*, 68(1), 55-68.
- Kearsley, G., & Blomeyer, R. (2004). Preparing K—12 Teachers to Teach Online. *Educational Technology*, 44(1), 49-52.
- König, J., Bremerich-Vos, A., Buchholtz, C., & Glutsch, N. (2020). General pedagogical knowledge, pedagogical adaptivity in written lesson plans, and instructional practice among preservice teachers. *Journal of Curriculum Studies*, 1-23.

- König, J., Bremerich-Vos, A., Buchholtz, C., Fladung, I., & Glutsch, N. (2019). Pre-service teachers' generic and subject-specific lesson-planning skills: On learning adaptive teaching during initial teacher education. *European Journal of Teacher Education*, 43(2), 131-150.
- König, J., & Kramer, C. (2016). Teacher professional knowledge and classroom management: On the relation of general pedagogical knowledge (GPK) and classroom management expertise (CME). *ZDM*, 48(1-2), 139-151.
- Koehler, M.J., Mishra, P., Bouck, E.C., DeSchryver, M., Kereluik, K., Shin, T.S. & Wolf, L.G., 2011. Deep-play: Developing TPACK for 21st century teachers. *International Journal of Learning Technology*, 6(2), pp.146-163.
- McCulloch, G. (2011). *The struggle for the history of education*. Taylor & Francis.
- Mutton, T., H. Hagger, & K. Burn. 2011. "Learning to Plan, Planning to Learn: The Developing Expertise of Beginning Teachers." *Teachers and Teaching* 17 (4): 399–416.
- Petty, G. (2004). *Teaching today: A practical guide*. Nelson Thornes.
- Shahrill, M. (2013). Review of effective teacher questioning in mathematics classrooms. *International Journal of Humanities and Social Science*, 3(17), 224-231.
- Stigler, J. W., & Miller, K. F. (2018). Expertise and expert performance in teaching. In A. Ericsson, R. R. Hoffman, A. Kozbelt, & A. M. Williams (Eds.), *The Cambridge handbook of expertise and expert performance* (2nd ed., Ch. 24, pp. 431–452). Cambridge University Press.
- Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners*. Ascd.
- Toppin, I. N., & Toppin, S. M. (2016). Virtual schools: The changing landscape of K-12 education in the US. *Education and Information Technologies*, 21(6), 1571-1581.
- Vonderwell, S. K., & Boboc, M. (2013). Promoting formative assessment in online teaching and learning. *TechTrends*, 57(4), 22-27.
- Vygotsky, L.S., 1978. Socio-cultural theory. *Mind in society*.
- Borko, H., Roberts, S. A., & Shavelson, R. (2008). Teachers' decision making: From Alan J. Bishop to today. In *Critical issues in mathematics education* (pp. 37-67). Springer, Boston, MA.