How technology can facilitate high quality social learning in online and blended environments within teacher education
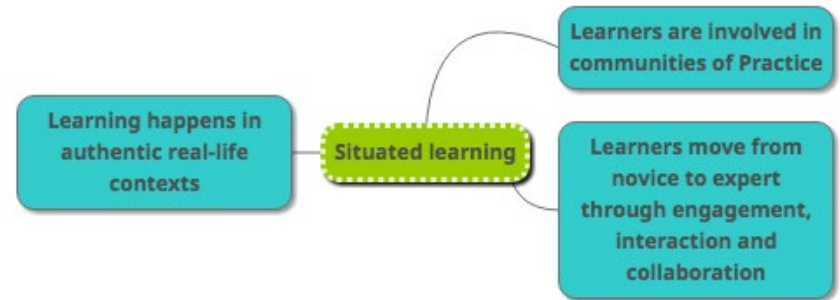
Column 1:
Definitions
Theoretical background relevant to technology facilitated social learning

Definition of communities of practice

The fundamental idea of Communities of Practice (CoPs) is that learning is ongoing and social rather than discrete and individual. This idea has its origins in social learning theory, which explores how people learn in a social setting (Bandura 1977). Lave and Wenger's model of situated learning (1991) took this concept a stage further by considering the impact of the structural framework in which the social learning takes place. They suggested that learning takes place 'in situ' through active social participation in the environment of the Community of Practice (CoP) (Wenger, 1998). Learners connect prior knowledge to new contexts within authentic social and physical settings.

CoPs are also rooted in constructivist ideas, which place learners in control of their learning journeys and which emphasise that knowledge is co-constructed (Oliver and Herrington, 2000). Recognising the link between learning and performance, constructivist approaches typically seek to replicate realistic problem situations and involve learners developing problem-solving skills through social interdependence and shared goals, which together encourage their ownership over the learning process.

Learning happens in authentic real-life contexts → Situated learning → Learners are involved in communities of Practice

Learners move from novice to expert through engagement, interaction and collaboration

Read more about communities of practice here: Jean Lave, Etienne Wenger and communities of practice
and here:
A Critical Review of the Use of Wenger's Community of Practice (CoP) Theoretical Framework in Online and Blended Learning Research, 2000-2014
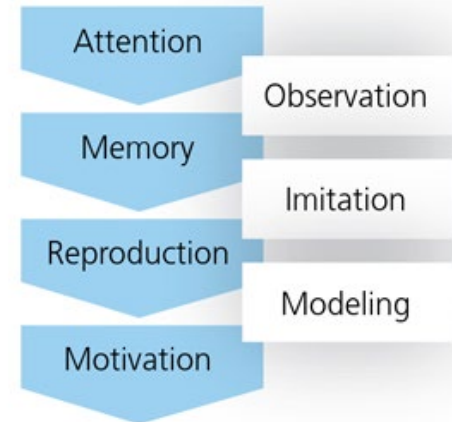
Theoretical background

Communities of Practice (CoPs) and social learning

Bandura's social learning theory is based on the idea that people learn from one another, via observation, imitation, and modeling. Attention, memory, reproduction and motivation are necessary conditions for learning through modeling. This theory links cognitivist and behavioural theories by focusing on the reciprocal interaction between cognition, behaviour and environment. Vygotsky's Social Development Theory and Lave's Situated Learning also emphasise the social aspects of learning. A key idea from Vygotsky in relation to this MESH guide is that higher order thinking stems from the use of tools such as talk and writing to mediate our social environments and internalise ideas. The role of the teacher is to facilitate this meaning construction.

CoPs provide a way of exploring the complexity and dynamics of social learning and of collective knowledge building as a means of participating in the community, improving both the personal knowledge of the participants and their knowledge within the domain (Lave and Wenger, 1991). Advocates of using a CoP approach to learning take the view that application of knowledge to innovate and generate new ideas is more valuable than just knowledge generation (Wick, 2000).

According to Lave and Wenger's definition, 'Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.' (Wenger, 2011, p.1). Other definitions place a similar emphasis on the sharing and applying knowledge to their practice, viewing CoPs as 'individuals united in action' (Liedka, 1999, p5) or as groups with similar aims purposefully solving authentic problems (Wick, 2000; Johnson, 2001). This real world context is a hallmark of situated learning and many argue that applying previous knowledge to real situations and building upon previous understandings through interactions better prepares learners for their future practice (Coppola, 1999).

Read more about dialogic learning here: Dialogue, conversation and praxis and here Dialogue and conversation for learning, education and change
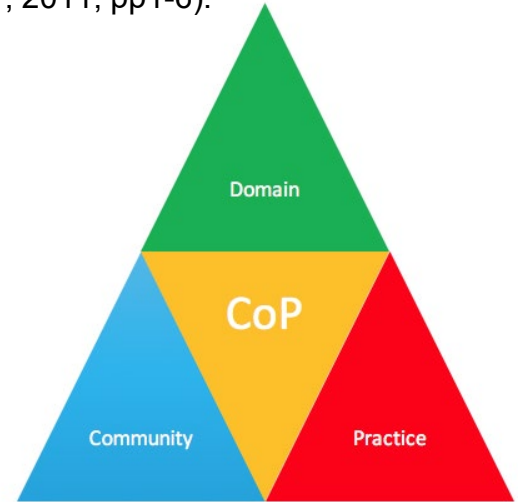

Theoretical background

Characteristics of communities of practice

Wenger identifies three elements that need to be in place to form a CoP: the domain, the community and the practice. There is a shared domain of expertise or 'collective competence' that is valued by the group, which leads to the development of a repertoire of resources and strategies as the group solves problems together, seeks information from each other, reuses solutions and evaluates new developments in their field (Wenger, 2011, pp1-6).

Belonging to a CoP therefore gives increased agency to practitioners as it enables them to take collective responsibility for determining what they need to know and cuts across boundaries and formal structures. Key CoP features, then, are autonomy, informality, peer-to-peer learning and the existence of a structured framework within which the social learning takes place (Wenger, 2011).

Furthermore, communities have been described as having a life cycle (Palloff and Pratt, 1999; Seufert, 2000). Seufert, for example, identifies four phases, content, intention, contracting and settlement.

Read more about the notion of community in the context of education here: What is community?

Theoretical background

Online communities of practice

Many researchers have recognised that technology can facilitate situated learning by providing an environment in which learners can interact and share ideas using collaborative technologies. Since Wenger's original work on CoPs in 1991 there has been a widespread increase in online learning and in the adoption of social learning as an instructional method. This has resulted in the adoption of the term CoPs to describe socio-technological learning environments that are purposefully designed to facilitate knowledge construction (Ozturk and Ozcinar, 2013).

Such 'virtual CoPs' have the potential to link people across time zones and to remove geographical boundaries. They have the added advantage of allowing for synchronous and asynchronous communication, giving learners control over the pace and place of engagement (Wenger et al. 2002; Gannon-Leary and Fontainha, 2007). Two key differences between physical and virtual communities are the absence of 'traditional group norms' and the asynchronous communication that takes place through posting and commenting; both of which are seen as positive developments (Palloff and Pratt, 1999). However, many studies note that some face to face contact can be a strength and make a case for multimodal learning that mixes physical interaction with asynchronous learning (Hammond, 1998). Contemporary CoPs may thus combine physical and virtual spaces and make use of a range of social media and networking technologies. Learners may belong to several CoPs as their learning trajectory moves in and out of a number of 'digital habitats' (Wenger, White and Smith, 2009).

The learning that takes place through these online networks and virtual CoPs is often labelled Connectivism (Siemens, 2005). According to Downes (2010), a connectivist learning environment is characterised by openness, autonomy, diversity and interactivity. Connectivist learning describes a process of making connections with people and resources, of co-creating ideas and making personal choices within an environment mediated by technology (Saadatmand, M., & Kumpulainen, K., 2014). "Connectivist models explicitly rely on the ubiquity of networked connections between people, digital artifacts, and content" (Anderson and Dron, 2011, p. 87).

Mayfield (2005) notes a distinction between the degree to which social networks, online communities and CoPs are user-generated and how much they focus on connections or content. Virtual CoPs make use of social media but, like their physical counterparts, they are characterised by shared common purpose and by application to practice.
Read more about situated learning here: The social/situational orientation to learning and about connectivism here: https://opentextbc.ca/teachinginadigitalage/chapter/3-6-connectivism/

Theoretical background

Social learning in online communities of practice

Online CoPs can provide a fertile ground for social learning. Social network tools such as blogs, Google communities, Facebook and Twitter allow learners to join a social community where interaction, cooperation, and social engagement continue to be part of the learning away from the classroom and where learning occurs naturally, arising out of social behaviour. In this way, learning opportunities are multiplied as the collective learning potential of the crowd outstrips that of the individual working on their own. They can thus lead to accelerated learning (Richardson, 2010; Hung, 2002). Johnson highlights this as a key idea when saying, "The learning that evolved from these communities is collaborative, in which the collaborative knowledge of the community is greater than any individual knowledge" (Johnson, 2001, p34). Self ownership of knowledge and its management and use are crucial to success:

"*The aim [of social learning] is to engage thousands of people in productive discussions and the creation of shared projects, so together they share experience and build on their previous knowledge*" (Sharples, et al., 2014).

Several researchers make a link between social networking and problem based learning, recognising that in web communities learners are engaged in active exploration, negotiation and interpretation, and in constructing solutions together. The emphasis is thus on active knowledge building using collaborative technologies (Hung, 2002; Markham, 2003). This moves away from teacher-directed pedagogy towards a flexible learner-directed approach. The Pedagogy-Andragogy-Heutagogy (PAH) continuum (Hase and Kenyon, 200; Luckin et al. 2010) offers a useful way of considering the redefinition of teacher-learner roles in this context.

	Pedagogy	Andragogy	Heutagogy
Locus of control	Teacher	Learner	Learner
Education sector	Schools	Adult Education	Doctoral research
Cognition level	Cognitive	Meta-cognitive	Epistemic
Knowledge production context	Subject understanding	Process negotiation	Context shaping

The pedagogy, andragogy and heutagogy (PAH) continuum (from Luckin et al., 2010 ,p.78)

Read more about self-directed learning here: Self-direction in learning and here Self-directed learning

Theoretical background

Roles within online communities

Wenger's definition of CoPs (1998) acknowledges that there can be layers within the communities and that members might adopt a central or peripheral position. Self-directed involvement by the participants is therefore crucial to the success of the community. Unlike traditional learning events where a cohort of learners learn the same content at the same pace, a CoP may have different types of participation and differing degrees of expertise. Knowledge transfer can occur at any time as experts pass expertise on to novices.

As Johnson (2001) points out, individuals in an online CoP may move from the periphery to the centre in a flexible way as their expertise increases. Indeed, individuals may belong to a network of communities at any one time (Ozturk and Ozcinar, 2013) bringing a new fluidity to learning. Similarly, Wick (2000) notes that collaborative teams might form and dissolve resulting in cross-pollination of ideas. Types of interaction include peer-to-peer or expert-to-apprentice (Bielaczyc and Collins, 1999; Wenger, 1998). The idea of knowledge capital can be useful as a way of analysing the output of a CoP. This may take different forms, such as human, social, tangible, reputational and learning (Wenger et al., 2002), as the community generates 'a common history' and its own 'artefacts' (Wenger, 1998).

In contrast, others note that CoPs can have many layers and that sub-communities can exist within them. For example, working with a face-to-face CoP, Triggs et al. analysed the interactions between teams of teachers, teacher educators and researchers and suggested a model in which 'micro', 'meso' and 'macro' communities interconnect and fuse in clusters to provide a broad context for knowledge transformation within educational professional development (Triggs et al., 2004). They sought to understand the relationship between the communities of research and practice, how CoPs can inter-relate and overlap, and how the connections between communities may be nested within each other. This model might be applied to virtual CoPs.
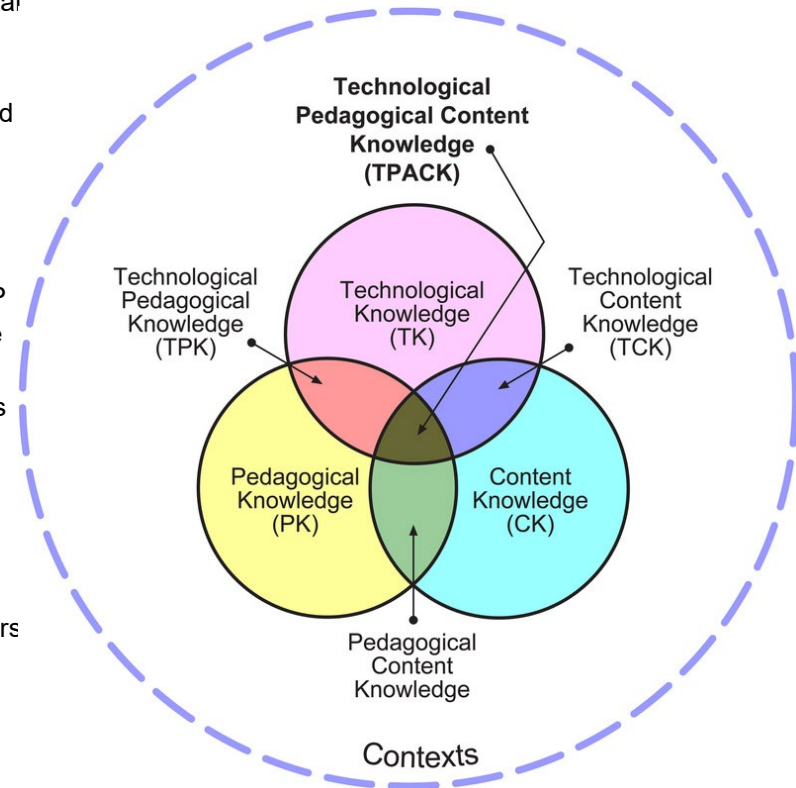
Read more about self-directed learning here: Self-directed learning

Adapted from: https://www.haven2.com/index.php/archives/icann-participants

Implications for teachers

Wenger suggests three types of CoPs within the field education: those that are internal to a particular educational institution; those are external to a particular educational institution; those addressing the lifelong needs of learners beyond formal education. Furthermore he suggests that traditional learning environments could be re-envisaged as community hubs that facilitate real-world, ongoing learning (Wenger, 2011). Such practices provide opportunities for teachers to make links with others in more expansive ways than traditional learning environments allow.

Educators who use a social learning approach take on the role of developing the CoP so that participation and conversations can flourish. Rather than acting as knowledge providers, they aim to help the community grow its own knowledge and develop metacognitive learning strategies (Johnson, 2001). This role is variously described as a facilitator, moderator, coach or mentor (Johnson, 2001; Powers and Guan, 2000).

Wenger et al introduced the idea of 'stewardship' to describe the way in which CoPs benefit from being nurtured. For example, technology stewards might play an active role in making sure that technology tools meet the needs of the community (Wenger, White and Smith, 2009). This acknowledges that a particular challenge facing teachers using technology is that they need to know not only how to use it, but how to blend it with their pedagogical understanding and with their subject knowledge, an issue addressed by the Technological, Pedagogical Content framework (TPACK) (Schmidt et al., 2009).
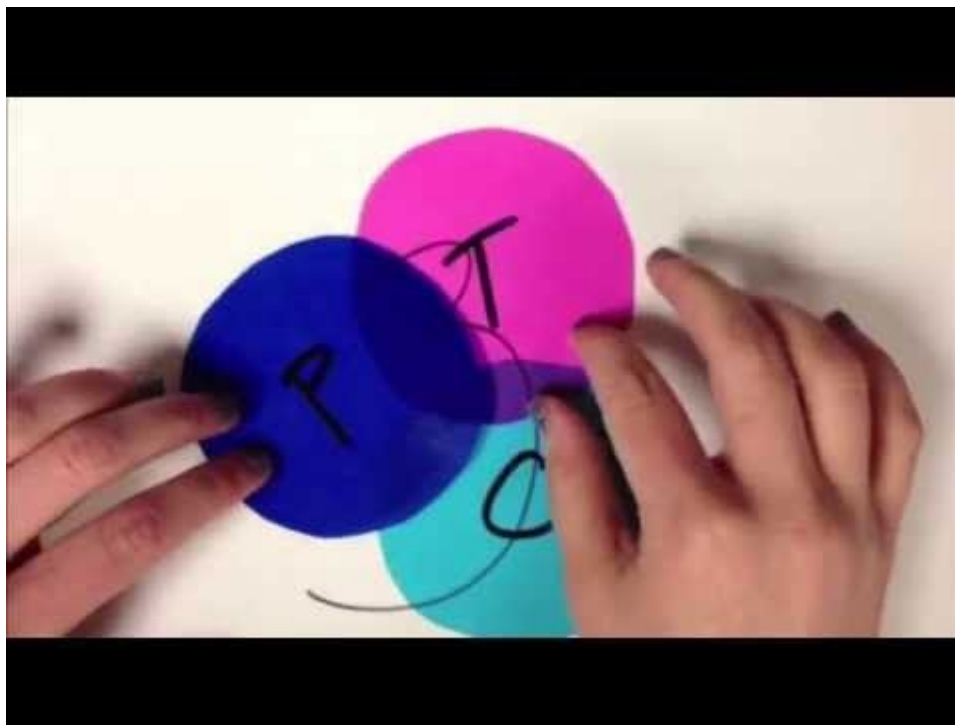

From: http://tpack.org/

Read more about how technology is changing the way we teach: https://opentextbc.ca/teachinginadigitalage/chapter/section-1-7-from-the-periphery-to-the-center-how-technology-is-changing-the-way-we-teach-2/

Theoretical background

The TPACK framework

Click to view the video

This video gives a quick introduction to the TPACK framework (Mishra & Koehler, 2006). TPACK stands for the interaction between Technological, Pedagogical, and Content Knowledge within a technology enhanced learning environment.
Read a systematic literature review on TPACK here: http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2729.2012.00487.x/full

Theoretical background

The SAMR model for technology integration

The SAMR Model, developed by Dr. Ruben Puentedura, describes four levels of technology integration defined as follows:

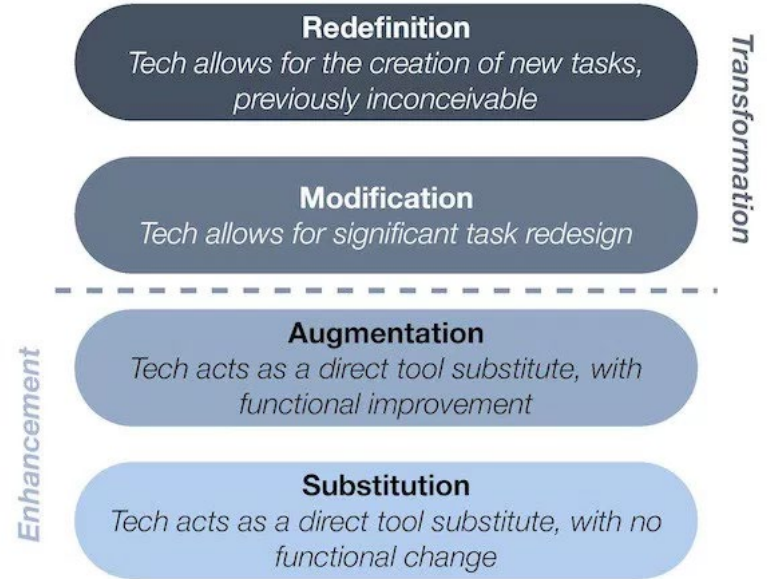Substitution: a substitute for what you might do already, with no functional change.
Augmentation: improvement over what you did without the technology.
Modification: significantly redesigning the task.
Redefinition: allowing you to do what was previously not possible.

The SAMR model can be a useful tool for thinking about what technology use adds to learning. Some suggest that using technology for collaboration and individual inquiry may be key to the redefinition stage:

"Opportunities for teamwork and peer-assessment are evolving rapidly and present educators with an amazing opportunity to fast-forward through the stages of the SAMR model. Creating a file, sharing it with others for real-time feedback and then receiving it back for alterations will become the standard in education and beyond. Teams of students creating parts of a larger, multimedia presentation prepares them for the inevitable expectations and logistics of the modern workplace. Surely this is the best way to access the Redefinition stage?' (Bambury).

Redefinition
Tech allows for the creation of new tasks, previously inconceivable

Modification
Tech allows for significant task redesign

Augmentation
Tech acts as a direct tool substitute, with functional improvement

Substitution
Tech acts as a direct tool substitute, with no functional change

Transformation

Enhancement

Podcasts on iTunes U: http://tinyurl.com/aswemayteach

Theoretical background

Pedagogy before technology

'It is important that teachers do not get seduced by the power or novelty of the technology or us it for its own sake. That will be obvious to most teachers, but the investment in new technology, the enthusiasm many students show for digital tools and media, and the temptation to be seen to be up-to-date and following educational trends, can all act as seductive drivers.'
(Taber, 2016, p.398)

These 'seductive drivers' might conversely be seen as keys to engaging others by highlighting attractive features to gain 'buy-in'.
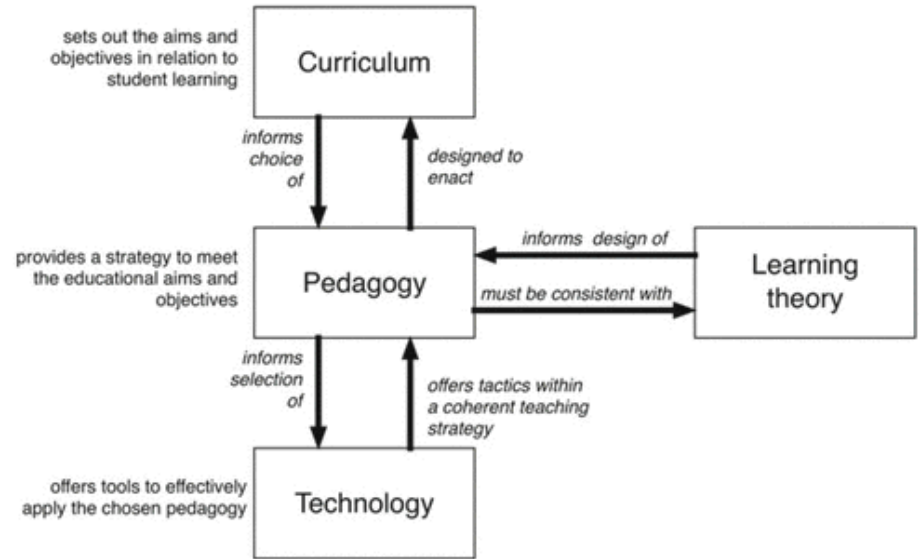
The role of educational technology in the planning of teaching (Taber, p.398)

Summary

In this column a range of literature sources have been explored which offer definitions pertinent to the themes of this Mesh Guide (and associated article). This serves to provide context for the other columns and to create a secure base for the argument put forward for the role of social learning in teacher collaborations, in particular in blended and online learning environments.

Our fundamental notion is that the best online learning is social and active rather than discrete and that, within the field of teacher education, it is connected with authentic classroom contexts and a shared domain of pedagogic and subject knowledge. We draw from the large body of research on communities of practice, connectivism, social network theory, and situated learning. We also look at roles within CoPs, thinking about how these differ from roles in F2F learning situations and how they result in a different kind of knowledge construction.

Social learning theory, which evolved from social constructivist thinking, was used by Lave and Wenger (2011) in creating the notion of communities of practice (CoPs). It rests on the three key elements of the domain, the community and the practice. In unpicking the nature of communities of practice Seufert (2000) likens their development to a life cycle, evolving and dissipating towards 'settlement'. This sits in contrast to Lave and Wenger's notion of the learner being on a journey from novice to expert, rather than the evolution of the community.

The roles of participants in CoPs were recognised by Johnson (2001) as fluid. The synchronous and asynchronous nature of communications in these virtual environments further supports this. Downes (2010) suggests the term connectivism for the learning in blended and online environments, characterised by openness, autonomy, diversity and interactivity. Virtual CoPs can demonstrate these characteristics which Anderson and Dron (2011) explain as networked connections between people, digital artifacts and content.

Models such as TPACK have emerged (Mishra and Koehler, 2006) to further unpick the interaction between technological knowledge, pedagogic knowledge and content knowledge in a technology enhanced learning environment. This informs the view of the authors that social learning taking place in an online or blended environment must be informed by both technical and teacher knowledge on the part of members a CoP. Puentedura's (2010) SAMR model can inform the ways in which the knowledge domains mentioned above play out in practice. That is to say that technology within the practice of an online community member might be used through substitution, augmentation, modification and/or redefinition. The contention underpinning this MESH Guide is that online and blended learning through a CoP is likely to be largely socially constructed and supportive. Exemplification of this can be found in the case studies section.

Column 2:
Research Evidence
Systematic literature reviews on the theme of technology facilitated social learning

A critical review of the use of Wenger's Community of Practice (CoP) theoretical framework in online and blended learning research 2000-2014 (Smith et. al., 2017)

This paper applies content analysis to a sample of 60 articles representing empirical work grounded in Etienne Wenger's communities of practice (CoP) theoretical framework to investigate ways in which this theoretical perspective has influenced the development of online and blended learning in higher education and in professional development (Wenger et al.,

> *Among those studies identified, which ones established strong linkages between the CoP framework and their findings?*
> *Within this last group of identified studies, what do the patterns in their use of the CoP framework suggest as opportunities for future research in online teaching and learning?*

Findings and discussion:

The majority of the studies (41) stated that Wenger's CoP framework provided direction for their research, however the authors call into question the use of the theory in 24 of these. A common thread running through the remaining studies was that they looked for evidence of the three essential characteristics of a CoP in their data: mutual engagement, joint enterprise and shared repertoire (p.218).

The authors argue for a new phase of analysis of online and blended learning environments employing the CoP theory, with the aim of providing more complex understandings of the learning process: 'We…believe that more attention is needed to highlight the specialized ways of knowing, thinking, and doing that people need to internalize in order to participate in a particular social practice' (p.221). They recognise that learners do not necessarily form a CoP when they are part of a learning environment and that time remains an unexplored variable in learning research grounded in this theory.

Several studies shed light on online learning in teacher education. These included Adams' (2007) investigation of the use of forums for personal exploration of identity and agency for art teacher trainees, and Clark's (2008) study of ways in which a teacher education course can use online learning to foster aspects of a CoP.

The paper also considers the use of technology tools to support learning activities in CoP focused courses:

'When introducing technology into a CoP, Wenger, White, Smith and Rowe (2005) warned of the danger of "confusing the community with the technology". In these environments, web-based technologies such as asynchronous and/or synchronous discussions typically serve as a means of ensuring learner engagement with each other for the purposes of generating communal knowledge and resources that form their social practice. Nevertheless, just adding these interactive spaces to an online/blended learning environment does not guarantee that the resulting interactions support the kinds of meaning making necessary for the development of a CoP.' (p.222).

Discussion forums are the most common source of data for CoP oriented research and there is a need to look at ways in which other collaboration tools can support social learning. For example, (Goggins et al., 2011) used a learning management system-based wiki as a space to support both participation and reification of shared and negotiated meaning in an online learning environment. The authors outline a process of participation and reification: making something real.

'Participation involves acting and interacting, and reification involves producing artifacts (such as tools, words, symbols, rules, documents, concepts, theories, and so on) around which the negotiation of meaning is organized.' (p.210).

The authors suggest that future CoP oriented research in online/blended learning goes beyond the analysis of discussions, and considers the integration of alternative spaces for interacting and for producing digital artifacts representing communal knowledge. An area in need of further consideration is '*the functions and uses of the technological tools that most effectively support and mediate a community's social and intellectual engagement*' (p.224).

Evidence

What's in a name: Dimensions of social learning in teacher groups (Vrieling et al., 2016)

This article is a content analysis of 23 selected articles with the aim of presenting a theoretical framework of dimensions and indicators of online and offline social learning in groups of teachers. The starting point is the three overarching perspectives of social learning: social networks, communities of practice and learning teams. Wenger et al. (2011) distinguish between a community as a partnership with a common agenda and a network as a set of connections between people (Wenger et al., 2011). A further distinction is the idea of team learning defined by tasks and schedules within organisations rather than by knowledge (Knapp, 2010). However, in practice these definitions often overlap (Doornbos & De Laat, 2012). The focus of this review study is on the aspects of social learning that facilitate a group's knowledge creation and sharing and its application to practice. Social learning in teacher groups is defined as: *'undertaking (a series of) learning activities by teachers in collaboration with colleagues, resulting in a change in cognition and/or behaviour at the individual and/or group level'* (Doppenberg, Bakx, & Den Brok, 2012, p. 548-549). The authors acknowledge the role of technology in facilitating interactions between learners, learners and teachers, and learners and content.

Four dimensions were identified: **Dimension 1: Practice**
'Based on the review results, the dimension Practice can be summarised in two indicators:
'Integrated or non-integrated activities', representing the extent to which group knowledge and activities are integrated in everyday practice
'Temporarily or permanent activities', which describes the social learning attitude as reflected in the duration or sustainability of learning activities.
Dimension 2: Domain and Value Creation
Group dialogues can lead to reframing existing perceptions: 'In this way, the group integrates these views into a new mental construct that is collectively held.'
'Key indicators of domain and value creation in teacher groups are: *'Sharing or broadening/deepening knowledge and skills'*, reflecting the extent to which the group develops collective knowledge and skills through dialogue and *'Individual or collective value creation'*, which describes the level to which the group develops shared value such as group ownership, mutual inspiration, or positive interdependence.
Dimension 3: Collective Identity
'When group members work interdependently with a shared purpose and responsibility for collective success it can result in a shared identity (Knapp, 2010).' Diverse learning positions may be fulfilled within the group as they collaborate as knowledge workers such as 'gatekeeper', 'network star', 'technological guru', 'e-facilitator', 'braiders, or 'accomplished fellows'.
'The dimension collective identity can be characterized by: '*Shared or unshared identity'*, which is related to group history and social and cultural background and *'Strong or weak ties'*, which reflects the sense and intensity of general contact among group members; The extent to which group members perceive each other as 'task executors or knowledge workers'.
Dimension 4: Organisation
'Teacher group organisation can be characterized by: The extent to which the group shows 'externally directed or self-organised learning', the focus on 'local or global activities', the presence of 'hierarchic or equal relationships and the extent to which the group shows a shared interactional repertoire, reflected in 'shared or non-shared interactional norms'.'
Findings
The dimensions can help to understand the group behaviour in relation to their learning goals:
'Our findings suggest that it is beneficial for groups to discuss the following questions: given this group, how are the dimensions and including indicators intertwined and integrated, how do they contribute to the cohesion and functioning of the group, and which one tends to dominate? What learning opportunities do they offer and what value do they produce? The importance of this approach is to acknowledge the unique social setting, dynamics and desires of each group as it is situated in their practice. Based on the configuration of the group, professional development applying these dimensions can be encouraged.'

Online PDF source: http://dspace.ou.nl/bitstream/1820/5783/1/What's%20in%20a%20name%20TTTP%20accepted.pdf

Evidence

Technology-enhanced learning and teaching in higher education: what is 'enhanced' and how do we know? A critical literature review (Kirkwood, A. and Price, L., 2014)

This is a review of 47 articles from a sample of technology-enhanced learning interventions in HE.

Summary and key points

'The term technology-enhanced learning (TEL) is used to describe the application of information and communication technologies to teaching and learning. Explicit statements about what the term is understood to mean are rare and it is not evident that a shared understanding has been developed in higher education of what constitutes an enhancement of the student learning experience.' (p.1) Relationships are explored between the aims of TEL interventions, the evidence presented, and the ways in which enhancement is conceived. Rather than asking 'does technology enhance learning' a better question might be 'how can we design technology that enhances learning, and how can we measure that enhancement?' (p.7).

Three levels of potential benefits that TEL might bring (HEFCE, 2009):

Efficiency – existing processes carried out in a more cost-effective, time-effective, sustainable or scalable manner.
Enhancement – improving existing processes and the outcomes.
Transformation – radical, positive change in existing processes or introducing new processes.

Questions guiding the thematic analysis:

What types of technology intervention might be connected with teaching and/or learning enhancements?
How is enhancement conceptualised in relation to teaching and learning processes and experiences?
What evidence is considered necessary or appropriate to demonstrate the achievement of enhancement(s)? (p.11)

Categories of analysis included: whether the studies **replicated** or **supplemented** existing practices, or whether they **transformed** the learning experience by providing active learning opportunities or qualitatively richer learning. The transformational category accounted for less than one third of the interventions. In the first two categories quantitative measures tended to be used, whereas the transformational category tended towards qualitative measures of learning experiences. There was a distinction between 'doing things better' in the first two categories, while the third goal appears to be focused on 'doing better things' (Reilly 2005). A question that was important for self-reporting data was whether there was a shared interpretation of 'enhancement of learning' between teachers and students.

Differing data collection methods of participation in online discussions or group collaborations meant that nature of the evidence varied: *'Measures that are sensitive to the complexities of human interaction are more appropriate for gathering evidence of enhancement'* (p.24). A difficulty in analysing evidence of TEL leading to transformation of learning is the that the substantial curriculum changes meant that several variables were altered in the interventions. Although richer forms of evidence were often collected in these examples, it was acknowledged that many interrelated factors influence student learning in such 'real' learning contexts (Price and Richardson, 2004). In addition, published reports often provide insufficient detail about the context in which the technology is used, making it difficult to generalise across contexts. A clearer articulation of what is meant by TEL is needed and about whether the technologies were used in response to a genuine learning need.

Conclusions:

The term TEL is often used without sufficient consideration.
The study did not reveal a substantial uptake of the transformational potential of technology.
Researchers in the field of educational technology need to explicitly state the limitations and the generalisability of their studies.

Evidence

Learning to teach online: a systematic review of the literature on K-12 teacher preparation for teaching online (Moore-Adams et al., 2016)

This systematic literature review of 26 studies considers the need for teachers to provide online learning opportunities for K-12 students. It uses the TPACK framework to aggregate the types of knowledge and skills required to teach online, and examines both the extent to which these elements are addressed in existing programs and are based on empirical research. The TPACK theory stands for **Technological Pedagogical Content Knowledge**. It was developed to explain the set of knowledge that teachers need to teach their students a subject, to teach effectively, and to use technology.The research questions are:

> *'What are the types of knowledge and skills teachers require to effectively teach online?*
>
> *To what extent are the types of knowledge and skills required by teachers to teach online suggested by the literature based on empirical research?*
>
> *To what extent are the identified types of knowledge and skills required by teachers to teach online addressed in teacher learning programs?' (p.334)*

The TPACK framework (Mishra & Koehler, 2006) provides a lens for looking at teacher knowledge in the field of technologies for online learning, including MOOCS, Open Educational Resources, social media, digital making and creativity. It also helps to clarify changing relationships between teachers and students, between students themselves, and between students and content. For example:

'In an online environment, teachers must effectively convey content-specific ideas and concepts without face-to-face interaction, but rather, through text, synchronous and asynchronous video, or digital audio. The knowledge and skills required to do this were categorized under the TCK domain. TPK, the understanding of how technologies are used for instruction, includes the ability of an online teacher to apply his or her PK to the virtual platform. The knowledge and skills categorized under this domain include an online teacher's capacity for selecting the appropriate media to enhance interaction and learning among students. PCK is the unique knowledge required by teachers to transform specific content into attainable knowledge for students. PCK in the online environment includes the knowledge and skills for creating opportunities for students to interact with the content. The intersection of all core and intersection knowledge domains results in a teacher's TPACK' (p.335).

There were three key findings:

> *'The knowledge and skills based on empirical research came from only two studies: DiPietro et al. (2008) and Rice and Dawley (2009).*
>
> *Of the nine programs examined that were designed to prepare teachers to teach online, only one addressed at least six of the seven knowledge domains of TPACK.*
>
> *Programs to prepare teachers to teach online varied greatly, without uniformity in content or learning experience.'(p.341)*

These findings suggest that, *'many of the reported skills and types of knowledge required for effective online teaching are not based on empirical evidence and are often adaptations of face-to-face teaching practices.'* (p.345). There is a clear need for further empirical research on preparing teachers for virtual teaching and how face-to-face pedagogic strategies may transfer to online teaching. This is especially important given the increasing prevalence of one-to-one devices in classrooms, which create 'hybrid' teaching environments.

'It seems likely that, in the near future, all teachers will be required to teach in both environments, and be able to seamlessly switch between environments to maximize the affordances of each. This type of knowledge is effectively articulated in the TPACK framework… By considering virtual teaching best practices alongside of face-to-face instruction, affordances of both should become evident.' (p.346)

Evidence

Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence (Tondeur et al., 2016)

This systematic review of 14 studies across educational sectors and eight countries examines the link between teachers' pedagogical beliefs and their educational uses of technology. It is based on a recognition that successful technology integration is a complex process that is influenced by teachers' pedagogical beliefs.

In the field of educational technology, teachers' beliefs have been commonly classified into one of two categories: teacher-centred beliefs and student-centred beliefs. Teacher-centred beliefs are typically associated with behaviourism, whereas teachers with student-centred beliefs typically adopt classroom practices associated with constructivism and/or social constructivism. These teachers tend to be active technology users (Deng et al. 2014). However, a multi-dimensional view suggests that teachers hold varying degrees of both kinds of beliefs (Ertmer and Ottenbreit-Leftwich 2010).

Findings

The review findings are presented in terms of five patterns in the literature:

(1) Technology is viewed as a way to motivate teachers to experiment, implement, and refine new approaches to teaching and learning. The integration of technology within classroom educational processes has the potential to change teachers' beliefs towards more student-centred, constructivist beliefs. Learning to teach with technology is an iterative process: beliefs lead to actions, which, in turn, lead to the development of reconstructed or reaffirmed beliefs (Haney et al. 2002). At the same time, teachers with constructivist beliefs are more likely to adopt technology in student-centred ways within the context of teaching and learning. For example, one study stated that computers promoted dialogues in the classroom and *'encouraged students to explore and research new ideas and understand the ideas for themselves'*.

(2) Teachers' pedagogical beliefs may hinder or prevent technology integration. Recurrent barriers include a lack of time, a rigid schedule of classes, examination requirements, lack of control and the idea that students are not ready to learn from a technology-integrated constructivist approach.

(3) Teachers' pedagogical belief systems can be complex and multifaceted, making it important to use a multidimensional approach to addressing the relationship between pedagogical beliefs and technology use, rather than the bipolar distinction often made between teacher-centred beliefs and more student-centred educational beliefs. This supports the idea that the technology integration process is an individual process, unique to each teacher.

(4) A better understanding of the role of pedagogical beliefs is needed for teachers to benefit from professional development aimed at increasing teachers' use of tools that facilitate knowledge construction rather than knowledge transmission. For example, Kopcha (2010) suggested a model that begins with individualised mentoring and culminates with the creation of a teacher-led community of practice.

(5) The influence of context on pedagogical beliefs and technology use was a key theme. Successful technology integration is dependent on a supportive school environment, which includes school policies that are based on the development of a shared vision that incorporates the meaningful integration of technology and building a coherent and supportive school community of practice.

Conclusions

'The results presented in this review study fuel the development of theory concerning the complex relationship between teachers' pedagogical beliefs and educational innovations, with a special focus on technology. Past programs aimed at increasing technology integration in education have often failed due to a mismatch between the educational change and the meanings attached to that change by those involved in the instructional process. Consequently, the process of effective technology integration should not be facilitated as a stand-alone event, focusing solely on technical skills. Based on the results of this study, teachers' beliefs about "good" education should be a critical dimension in professional development programs that support teachers learning about the meaningful use of technology in education.'

Evidence

An international literature review of 1: 1 computing in schools (Islam et al., 2016)

Summary and key points

A review of 145 papers covering all 1-1 devices in primary and secondary schools across all countries. The study finds mixed results including positive, negative and no-effects.

The authors acknowledge the enormous potential for technologies to implement constructionist learning approaches and student-centred pedagogies, via active, collaborative, experiential and problem-based learning methods. However, they suggest that we are at an early stage in figuring out how best to integrate technologies in schools and that in most cases their implementation fails to take into account the constructivist pedagogy (Tedre et al. 2011). There are many impact studies but not so many conclusive and generalisable results. A large research review by the US Ministry of Education showed that technology itself does not entail positive effects but work methods that include student self-reflection, self-assessment, and self-explanation do (Means et al., 2009). *'The most important ingredient in 'positive change' is the interaction between teacher and student.'* (p.202)

An overall theme is that technology does not itself lead to positive effects: it can make good schools better but increase problems at less successful schools (Warschauer, 2006). However the implementation of new learning models can also cause tensions.

Increased 'engagement and motivation', 'quality of work and achievement', and 'independent learning' are the three most frequently cited findings on positive impacts. Other areas of impact include improved research and writing skills, positive attitudes towards writing, computing skills, access to online content, impact on attendance, time spent on homework. Another key area is assistance for students with special needs, such as visual representations of learning material, easier ways of writing, and increased engagement in active learning and retention. Teachers reported using a more constructivist approach. For example, according to a survey among kindergarten teachers in Kent, Ohio, '*oftentimes, the teacher saw her role as more of a facilitator, trying to provide opportunities and resources for students to discover or construct knowledge'* (Katz and Kratcoski 2005, p. 52). p.204. Other positive impacts for teachers were opportunities for improved feedback and assessment, individualised learning, collaboration between teachers, and access to networking and professional development opportunities. Positive impacts on classrooms include increased interaction and communication, and more collaborative work: For example, '*Increased communication and respect among students and between students and the teacher help to create a 'community of learners'* (Fairman, 2004, p. iii).

Negative impacts can be broadly categorised into distraction, insignificance to academic achievement, psychological strains and over-dependency. These can create obstacles to learning and, depending on the nature of the use of technology, may help or hinder learning. Some studies found that negative effects decreased over time. Implementation can also be an issue: a research review by Rosso (2010) concludes that '*extensive computer use requires a thorough change in the view of teaching and learning, including the relation between teaching/work and tests, teachers work methods and role, and the students' view of school work'* (p.209).

Conclusions

Warschauer et al. (2012) suggest that, '*the technocentric approach is counterproductive and that any educational reform effort with digital media needs to be grounded in solid curricular and pedagogical foundations, include requisite social and technical support, and be carried out with detailed planning, monitoring, and evaluation'* (p. 73).

Slay et al. (2008) find that incorporating technology into teaching without the required confidence, training and competence can weaken learning experiences. A robust infrastructure and a dynamic visionary leadership is needed, together with an effective monitoring and evaluation programme.

'*The study finds that 1:1 programs in schools are generally motivated on the ground of constructivist learning theory (in contrast to traditional instructionism) that advocates the use of computing technology in education and strives for enhancing learning processes by doing and playing and helping to prepare students for life and work in the highly connected digital environment of the twenty-first century. There are several impacts reported in this paper which are broadly categorized as 'positive', 'negative' or 'no-effect'. The positive effects, which are considerably more frequent in the literature than the negative or no-effects ones, are described here in terms of four categories—students, teachers and teaching, classrooms, and community. Much evidence suggests that 1:1 initiatives enhance students' academic engagement and motivation, quality of academic work, independent learning, computing skills and collaboration. Teachers are reported to benefit from engaging with flexible teaching, collaboration, and professional development. Classroom environments improve due to ICT facilitating improved teacher–student interactions and reducing disciplinary problems. The community as a whole benefits as technology contributes to reducing socio-educational inequalities, increasing parental involvement in school and technology literacy'*

'*There are some contrasting results that bring into debate the issue of to what extent 1:1 programs help improve students' academic achievements (generally measured in terms of GPA). Some evidence suggests that computer use by children in their learning process may provoke distraction, psychological as well as physical strains, and over-dependency on technology which can disrupt the 'art of thinking'.*

'*The most important implementation challenges found in this study are, (1) efficient management by a strong leadership, (2) having adequate contextual knowledge or understanding about local environment for effective implementation of ICT-supported work processes, (3) shifting educational paradigm, (4) teachers' professional development, (5) stakeholders' commitment and uninterrupted support, to ensure program sustainability, (6) monitoring and evaluation, and (7) a robust infrastructure that includes localized creative contents, adaptive technology; sufficient Internet connectivity, and power supply. Local implementation emerges as the most difficult factor as similar interventions yield different results in different schools.'* (p.213)

Evidence

Summary

This column contains reports of a number of systematic literature reviews, which are varied in nature. They range from a review of 145 papers about 1-1 computing devices to a review of Wenger's thinking about communities of practice. This range of reviews bring to bear a number of key issues in how technology can facilitate high quality social learning in online and blended environments within teacher education. The notion of communities of practice sets the scene for this section.

The review by Vrieling et al (2016) is a content analysis of 23 studies from which 4 dimensions of teacher social learning, among other notions, are identified. They are practice, domain and value creation, collective identity and organisation. These are useful in considering group behaviour in relation to learning goals.

Enhancement of teaching and learning in teacher education through technologically supported learning is explored in the review by Kirkwood and Price (2014). Based on 47 articles this review highlights potential benefits to learning in HE environments, making it particularly relevant to the present MESH guide.

The learning to teach review from the USA (Moore-Adams, 2016) looked at 26 studies and reports on the practices in use in technology enhanced learning. It is highlighted that these practices are not sufficiently well researched and the hybrid teaching environment not well enough understood. The linking of pedagogy to technology enhanced practice is explored by Tondeur et al (2016). This begins to bridge current thinking among teachers with technology available to them by reviewing 14 studies; they emphasise that teacher views of learning can be more confined and functional than expected.

Each of the studies selected has both positive points related to the topic and issues subject to debate. Overall it is clear that much remains to be securely understood in relation to how technology and social learning play out in teacher education. Among those of particular interest are the importance of context to effectiveness, the role of the informed protagonist in supporting learners in online and blended environments and the criticality of social learning as a framework for success.

Column 3:

Research Context

A selection of key studies on the theme of technology facilitated social learning

Key Studies - Zhang et al., (2017)

Zhang, S, Liu, Q, Chen, W, Wang, Q and Huang, Z. (2017) *Interactive networks and social knowledge construction behavioral patterns in primary school teachers' online collaborative learning activities, Computers and Education, Vol 104, pp 1-17.*

This study of Chinese primary school teachers looked into social networking and knowledge construction among a group of 83 teachers who were involved in a 6 month on-line CPD project . The article acknowledges the increasing prevalence of on-line CPD in the teacher community and sets about exploring the features of communication in the sample group during the structured CPD they took part in. The key relevance of this study to this MESH guide rests on its intention to investigate collaborative relationships and social knowledge construction in primary school teachers' online collaborative learning activities.

Among the findings of the study was that participation in the online collaborative learning activities enabled the teachers to become acquainted with each other and that through participation in posting they received more information to support their development. It was also found that the nature of interaction was not always deep and considered, which they suggest may be the result of teachers' lack of personal learning time, lack of development of online discussion skills, and a lack of organisation by a key figure in the CPD programme.   They go on to note that a teacher friendly convenient learning environment with a variety of online synchronous and asynchronous discussion tools and support might be helpful for addressing the latter issue.

Of particular interest for the current purpose is the discussion of the authors' observations around constructivist learning theories. They note that beneficial interaction depends on teachers' active interaction with content and with others. They highlight the importance of some low level actions such as teachers needing to read comments posted by others and to actively reflect on the meaning of these comments. This they indicate is a precursor to participation through the expression of their own ideas and experiences and active interaction with others. This is described as a beneficial interaction which involves multiple, reciprocal and iterative processes of knowledge creation. The resonance of these findings in the MESH guide context is the acknowledgement of the role of social learning in the on-line environment and the need for skill building among the group members as the iterations build among the community.

Implications of the study to develop understanding of how technology can facilitate high quality social learning in online and blended environments within the field of teacher education can be summarised as follows: skills need to be in place or to be developed for effective communities of practice to function beneficially, both loose and tighter collaborations have the potential to be beneficial to the community and that key players in an online or blended learning environment need particular organisational skills.

Key studies - Garner and Rouse (2016)

This is an account of an Australian teacher education module, delivered through online and face to face tutorials to a community of pre-service teachers in early years education. The paper builds in part on the work of Parker, Maor and Herrington (2013) who highlight the need for interaction with peers and staff as well as content for successful blended learning. With this in mind the study described considers social presence on the part of participants and staff in supporting successful engagement and social learning. The article provides a wealth of contextual and historical background to this notion.

The findings bear on the issue of learning communities in teacher education in a variety of ways. Students reported the combination of face to face sessions with online study and communication with peers supported their learning. In some cases relationships from campus contacts were built upon and deepened through online communications. The role of a staff member proved very influential, supporting students to feel connected and supported through what are described as reciprocal relationships.   This notion can be seen as a potential characteristic of the communities of practice in teacher education which this guide addresses. Among the suggestions for success proposed by the authors are the critical nature of a pedagogy which includes relationship building, fostering collaborative relationships in the community, teacher presence to raise student perceptions of support and care through an interface which remains 'human'. Suggestions for the final point in the list provide signposting for others, with recommendations including the use of professional narratives by staff in the community, video exemplification, sharing of personal experiences and feedback on concerns. Reciprocal relationships will inspire deeper student engagement they contend, leading to more successful learning experiences.

Key studies - McKnight et al (2016)

Teaching in a Digital Age: How Educators Use Technology to Improve Student Learning. McKnight, K, O'Malley, K, Ruzic, R, Horsley, Franey, J and Bassett, K (2016). Journal of Research on Technology in Education, Vol. 48 Issue 3 pp194 -211

This paper focuses not on technology but on its affordance of teaching and learning. Taking data from seven schools in the USA the study uses focus groups, interviews and observations to identify common themes by documenting six common strategies used across the schools and identifying five roles that technology plays in enhancing teaching and learning.   Referring to Clark and Mayer (2011) the paper usefully highlights the observation that unless teaching strategies change learning does not change, even when technology is used to support delivery.   The SAMR model explored in column 1 describes more deeply how change can develop in stages and provides a useful and more detailed conceptualisation. This MESH guide shares a view that there is potential for change and development and this is illustrated in the case studies section. It is also noted in the McKnight paper that research on active learner centered approaches affirms this. The data is set out clearly and diagrammatic representation of the data is strong, Five roles of technology to support learning are described: It improves access to more up to date resources for both teachers and learners; it improves communication and feedback between teachers and learners and between learner groups; technology restructures teachers' time; technology extends purpose for student work and opens wider audiences for it; technology shift teacher and student roles. These notions concur with much other writing and with the propositions of this MESH Guide.

The authors comment that the change in teacher roles is of key importance but to many readers the breadth of finding rather than this one will be of significant value. The findings are discussed in relation to other studies and models including the SAMR model described in this guide, showing the increasing cohesion of findings in this field. The paper goes on to discuss the implications of the finding which are predominantly for schools. However there are key messages which transfer well to the teacher education context and to online and blended learning. Table 2 usefully links instructional strategies to learning theory with links to allow the reader to explore this more fully.

Key studies - Trust (2016)

New Model of Teacher Learning in an Online Network Trust, T. (2016) Journal of Research on Technology in Education, Vol. 48, Issue 4, pp 290-305.

This paper has a focus on investigating what factors influence how teachers learn in online contexts by looking at their learning processes. The writers state that a new model of teacher learning is developed to display teacher learning as an iterative, multistep process that is socially constructed, distributed, and situated in the contexts in which teachers work. This aligns closely with this MESH guide, and informs the thinking which shaped it. However it is useful to challenge the newness of Trust's model, which has similar elements to those in other studies. More interesting is Trust's view that online communities and networks provide ongoing, self-directed, bottom-up learning experiences for teachers.

Similar claims can well be made for teacher educators and trainee teachers in similar contexts. Trust takes Putnam and Borko's (2000) social learning theory as the structural context for her study, this theory states that learning is situated, social and distributed in nature - none of which will surprise the reader of this MESH Guide. Trust goes on to use the definition of situated cognition of Brown et al (1989) which refers to learning that takes place within the context where the knowledge will be applied. In working among teacher communities or among teacher and trainee teacher communities of practice this is a useful notion. Trust goes on to consider the range of factors which can shape online learning as it might any other kind of learning. In teacher education the application of the knowledge we generate can be in the classroom but might equally be in a professional network or team. This is less explored in the Trust article.

Key studies - Luckin et al., (2010)

Learner Generated Contexts: a framework to support the effective use of technology to support learning (Luckin et al., 2010)

The authors of this paper consider in depth the affordances of the technologies which are part of contemporary teaching contexts. Learner Generated Contexts (LGC) is viewed as a framework that might support the more effective use of technology to support learning across a range of technological tools and devices. Key to this is the process through which knowledge is constructed and understanding is gained. The foremost proposition of the paper is that Learner Generated Contexts as a series of adjustments to the dynamic learning environment allows learners to have greater agency in the creation of their learning contexts. For most teachers this is an appealing proposition and links to the notions of real world learning and problem based learning.

The nature of the context is not a physical one, aligning with the expanded view of learning context that underpins this MESH guide. This key article critiques current models of learning contexts and suggests to the reader that the current models that underpin the education system are not communicative and learner centric. They are seen as instrumental and organisation-centric. This however is not static and there exists the potential to create more open, creative and participatory learning experiences, through a diversity of technologically supported means. Accessing case studies in this guide provides some exemplification and jump off points to enable more effectively interactive learning experiences. More about this can be found in the article by Koohang et al which is also reviewed in this column.

Key Studies - Koohang et al (2016)

Koohang, A, Paliszkiewicz, J, Goluchowski, J, & Horn Nord, J. (2016) Active Learning for Knowledge Construction in E-learning: a replication study. Journal of Computer Information Systems, Vol 56, Issue 3 pp 238-243.

Based on a previous study this paper considers how active learning for knowledge construction works in an e-learning context. It uses a three stage model consisting of underpinning, ownership, and engaging to explore e-learning. It suggests that the underpinning and ownership stages both contribute positively and significantly to the engaging stage - which is when knowledge construction for the most part takes place. The authors reiterated the value of the model for active learning for knowledge construction in e-learning. This could be contrasted with the SAMR model in which change is viewed at four level, though in each case the idea of iterative change is embedded in the proposition of the authors.

Though structurally constrained this model resonates with the views and experiences that the current MESH guide puts forward. That is to say that a life cycle for a learning community can be recognised which grows towards high levels of engagement and contributes to the generation of new knowledge among the participants. The value of synchronous and asynchronous engagement is not fully explored and this is an area of key interest in the current MESH guide which must also be reflected on.

Further key studies

McKnight, K., O'Malley, K., Ruzic, R., Horsley, M.K., Franey, J.J. and Bassett, K., 2016. Teaching in a digital age: How educators use technology to improve student learning. *Journal of Research on Technology in Education*, 48(3), pp.194-211.
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Summary

In this column are accounts of a number of key studies. These include both international and UK studies and there is also a list of additional literature likely to be of interest to the readers of the guide. The key studies inform the thinking behind this MESH guide in a variety of ways, both specific and general. The additional studies also have the potential to do this and will be of interest to guide readers too. In addition literature will continue to move on as the guide is published. This is not a disadvantage to the reader as what is contained here is a stimulus to reflection and to action.

Bringing together themes from the works described is complex. The article about Chinese teachers highlights how both the cultural context and the learning context are influential factors in the success of teacher communities of practice. Amongst other things the Australian study is informative in its clarity of the value of blended learning, with respondents being very explicit about the value of face to face contact alongside other technologically facilitated elements. The multi author study of how teachers use technology to support effective teaching and learning reminds the reader of the facilitative nature of technology in the learning environment, which links well to the SAMR model.   What technology allows us to do is the important aspect of this article and others, reminding the reader that the devices are only that, and teaching and learning are supported by technology - using technology is not an end in itself. An article about 21st Century skills (in the next column) also maintains that the technology is not an end in itself and a strong theme in the conclusion is the importance of appropriate pedagogy. This is the focus of the next column of the MESH guide.

Column 4:
Pedagogy
General strategies and frameworks for technology facilitated social learning

Implementing 21st Century skills in schools (Islam and Grönlund, 2016)

Summary

While much research notices the change in teacher's roles and the need for increased focus on 'twenty-first century skills', there is little research exhibiting proven methods for achieving such change. We know that twenty-first century skills are in competition for time with traditional curriculum items such as basic reading and math. This means that twenty-first century skills must be developed not in competition with, but alongside and integrated with the 'traditional' skills.

One example of such integration is the literacy development method developed in Sollentuna, Sweden (Grönlund and Genlott 2013). This method led to considerably improved student results, about 20 percentage points better than control groups. This was achieved in literacy as well as numeracy. The authors suggest that the key to success was that it drew on twenty-first century skills, namely communication and social interaction using online tools to improve the traditional skills. These were measured by means of the traditional standardised national tests in Sweden. The same study also showed that using ICT without a clear method does not bring improvement but may rather lead to worse results. The result for the control group that used ICT in, *'a spontaneous' manner performed 8 percentage points worse than the 'traditional' education group (i.e. no ICT used)'*.

'We have seen a slow development of measures for such new skills that are not easily measurable. One example, which was not sustained, was the "digital reading" measure used in the latest PISA study. We can indeed see that more of this is in the making. The next PISA measurement will for example include a measure of the ability to take part in collaborative work.'(p.214)
'Erstad (2009) points out that this is a systemic change process. The educational system in any country is complex and involves actors at different levels in a usually complex hierarchy, ranging from the political level (often both local and national politics) over several administrative levels and audit and control agencies to the individual schools and teachers. No major change, such as 1:1, can be achieved without actors at all these levels taking concerted actions.'

The authors note that so far, within the 1:1 field, the focus has been on the technology, however educational change is complex: '*For example, teachers increasingly require changes in national tests to reflect new work methods.' (p.215)* '*We can by now see that the early focus of the 1:1 discussion, the computer, is no longer the only or even the major focus.'* (p.215)

The authors conclude that one-to-one cannot be the leading concept for school development; there is a need for a change to something related to the core task of school: i.e. students' learning. The multitude of devices coming into use and the increased role of networked resources make ubiquitous computer use in schools increasingly an issue of leadership.
This includes two sizeable tasks:
1. Managing an increasingly complex set of resources, physical as well as educational and/or informational.
2. Managing human resources, students and teachers, in increasingly diverse work situations stretching time and space from office hours and school buildings to include the home and public places like libraries and cafes as well as evening hours and weekends.

Conclusion

Using technology in the classroom can go either way; student results can improve or deteriorate. Only good pedagogy guarantees improvements.
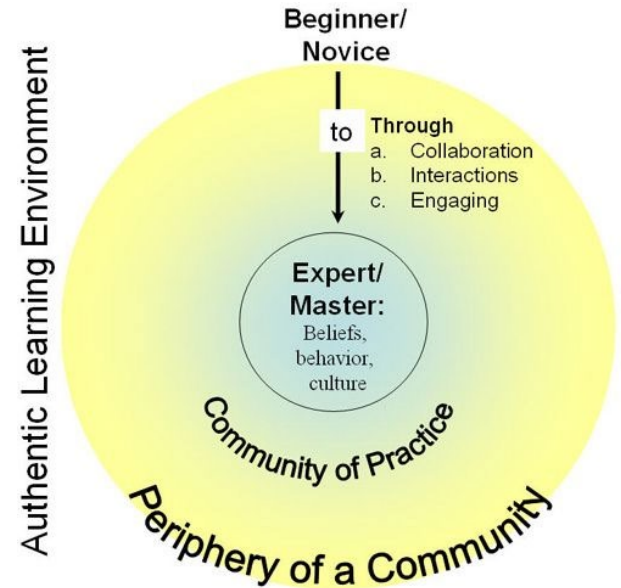
Strategies

Situated learning in practice

The idea of situated learning underpins authentic e-learning opportunities. It is essentially a matter of creating meaning from the real activities of daily life and follows the work of Dewey, Vygotsky and others who claim that students are more inclined to learn by actively participating in the learning experience. Collins (1988) defined situated learning most simply as: '*the notion of learning knowledge and skills in contexts that reflect the way the knowledge will be useful in real life*' (p. 2).

The concept of situated learning suggests that learning takes place through the relationships between people and connecting prior knowledge with authentic, informal, and often unintended contextual learning. For example, real world examples of situated learning may include teaching placements where students are immersed and active within an actual classroom environment or sports practice which may replicate an actual game.

In the context of teacher education, online learning communities allow a merge of real and virtual worlds as participants engage in discussions about real practice in the virtual world. The learning process and some of the tools they are using are embodied in the virtual world, however the participants themselves and the artefacts they were creating and using are very much located in the real world. The online community represents a continual crossover between these two spheres (Burnett, 2016).

This links with CoP ideas which suppose knowledge acquired in the virtual world can be applied in the real world. Online learning communities offer teachers the opportunity to make meaning from the engagement with other educators. They engage in a cycle of knowledge building through online social interactions followed by transfer to classroom practice. Context is therefore important: as learners use new skills in their familiar contexts and adapt them to relevant subject areas, the learning becomes authentic, directly relevant to their own classroom practice and the culture within it. (Brown et al. 1989).

Read more about situated learning here: http://hlwiki.slais.ubc.ca/index.php/Situated_learning_theory

Model of situated learning showing legitimate peripheral participation as newcomers become experienced members.

Strategies

Role of the teacher in a CoP

Community of Inquiry

Social Presence · Cognitive Presence · Teaching Presence · Educational Experience

Garrison, Anderson, & Archer (2000)

In their model of online communities of inquiry, Garrison, Anderson, and Archer (2003) suggest that online communities have three forms of presence: cognitive, social and teaching. They believe that these three forms of presence overlap to create the educational experience. Cognitive presence is described as the element most often associated with success in education and can be defined as:

 "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication...[it] is a vital element in critical thinking, a process and outcome that is frequently presented as the ostensible goal of all higher education" (2003, p.4).

They noted that teaching presence is generally the role and function of the instructor, although this role may be shared among the participants. Teaching presence is further divided into two major functions—first, the selection, organization, and design of content, activities, and assessment and second, the facilitation of the course.

To develop an effective online learning community, all of these functions need to be shared with the learners; they need to be empowered to take on the responsibility for their own learning as well as that of their student colleagues. This is achieved in an online community of practice through co-construction of meaning for cognitive presence and shared roles for teaching presence. It has implications for the role of the course facilitators empowering the interactions rather than undertaking direct teaching. There are clearly roles in an online community and individuals need to act on these roles in order for it to function. Palloff and Pratt (1999, 2005, 2007) raise and discuss the concept of social presence and its importance in the development of a community. Building on the work of Garrison, Anderson and Archer (2003), they stress that there must be a sense of who everyone is as real people in order to be successful. Teaching presence is the role and function of the instructor, although this role may be shared. Palloff and Pratt suggest that all elements need to be shared with students in order to create an effective online learning community.

Strategies
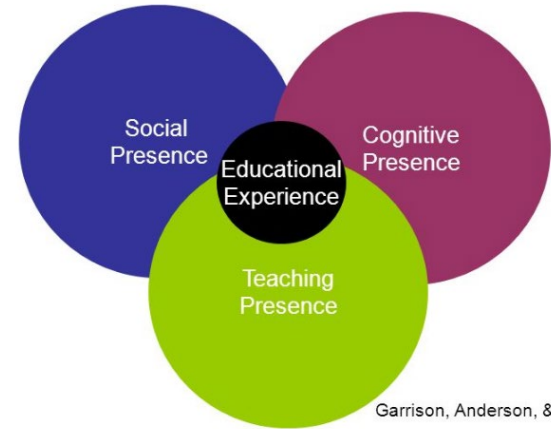
Role of the learner: technology stewards

From Lave and Wenger (1991) onwards, socialisation among members has been emphasised as an important and defining factor in the procedure of building a Community of Practice. Wenger et al. (2009) introduced the term 'technology stewardship' to describe how the role of cultivating an online CoP is often taken on by an individual or small group actively playing a facilitating role within the community. Peer support and encouragement appear to have a huge impact on peer to peer learning. Wenger et al. (2009) note that when a new member brings a new element into the practice this may pull the competence of the whole community along if they accept or adopt it, resulting in the newcomer becoming the teacher.

The online community allows for dynamic interaction between tasks, instructors and learners. Instructors and moderators undertake the role of facilitators, asking questions and supporting interactions, and can be equally involved in learning from each other (Holt and Willard-Holt 2000). As Herrington et al., (2010 p.23) contended, often it is the person who has recently acquired the skill who is the best position to share the key elements of the constructs.

Kirkwood (2006) suggests the learning affordances of Web 2.0 applications (such as wikis, blogs, and social bookmarking) assist the self-organizing creation of CoPs as self- regulating knowledge networks in which individuals are motivated to participate. In negotiating these, members become enculturated into the community's practices, language, and behaviours. Numerous commentators have stressed the importance of including some face-to-face communication in a virtual CoP in order to build trust (Kimble et al., 2000).

More about the changing nature of knowledge in online environments:
https://opentextbc.ca/teachinginadigitalage/chapter/section-2-4-does-technology-change-the-nature-of-knowledge/
The website and blog complementing the book, Digital Habitats: stewarding technology for community (Wenger et al., 2009): http://technologyforcommunities.com/

Strategies
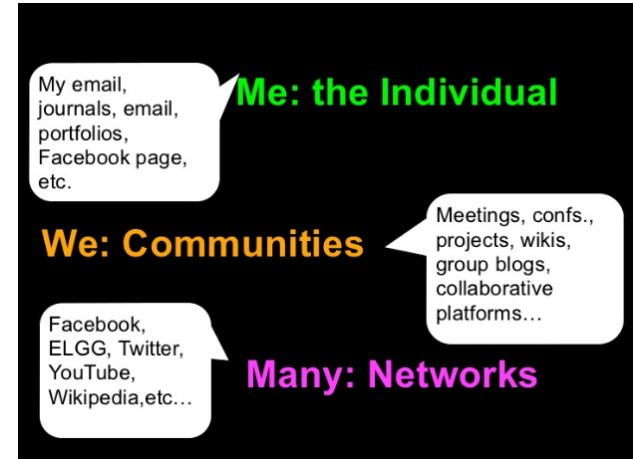
Active Blended Learning

A new pedagogical model Active Blended Learning (ABL) has become the normal mode of delivery for learning and teaching at the University of Northampton based on the effective use of blended learning approaches, and on making strong, explicit links between on and offline activities.

Definition of Active Blended Learning:
The programme is taught through student-centred activities that support the development of subject knowledge and understanding, independent learning and digital fluency. Our face-to-face teaching is facilitated in a practical and collaborative manner, clearly linked to learning activity outside the classroom. Opportunities are provided for students to develop autonomy, Changemaker attributes and employability skills.
Source: https://www.northampton.ac.uk/ilt/current-projects/defining-abl/

A recent report investigated barriers to student engagement in ABL (Palmer et. al., 2017). Students valued multimedia approaches, dynamic ways of engaging with content, active online tasks that gave them a chance to do things, classroom work extending online work, and the chance to contribute to developing understanding within a group. They recognised that relationships were crucial to the success of active blended learning and emphasised the importance of socialisation and collaboration within the online work (Palmer et. al, 2017).

Recommendations from this report include:
- Connect face to face and online components together
- Ensure that staff are regularly visible online.
- Vary the tools and types of activity. Be creative – mix up options.
- Foster a positive, experimental attitude towards technology for learning through creative experimentation.
- Establish relationships with and between students through frequent and constructive online, as well as offline, interaction.
- Do not assume that online social interaction happens 'naturally'. Embed it, expect it, and facilitate it.
- Encourage interaction with content through concrete doing or producing activities.
- Embed small passive tasks (reading, watching or listening) into active tasks.
- Make use of quizzes, blogs, wikis, discussions, collaborative projects and documents, etc.
- Work towards 'knowledge creation', i.e. students creating content themselves.
- Encourage peer-to-peer and tutor interaction
- Make use of student-generated content as "your presentation".

Read more about Active Blended Learning here: https://activeconversation.wordpress.com/2017/02/16/first-blog-post/

Strategies

Massive Open Online Courses: What is a MOOC?
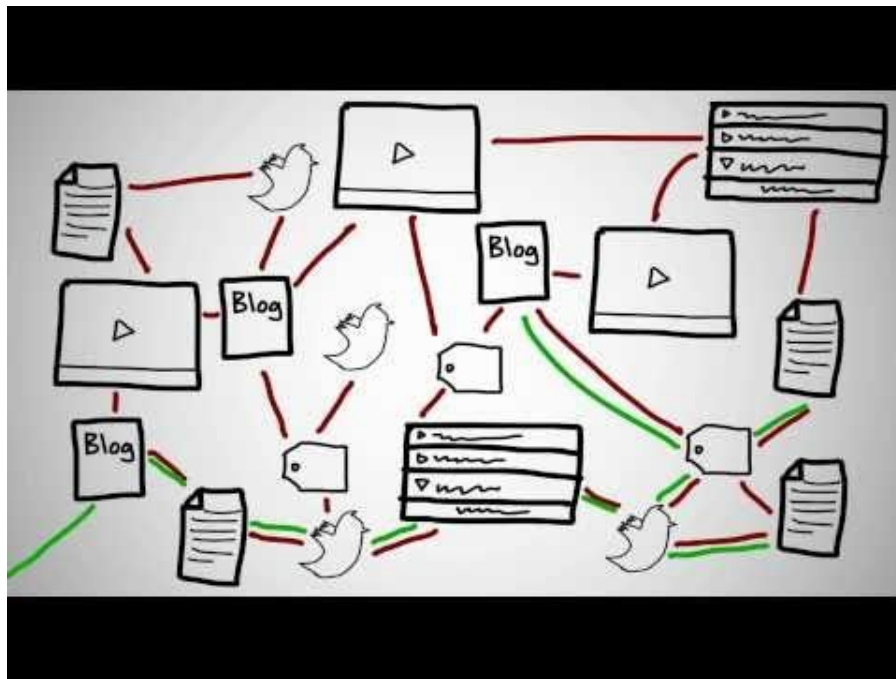
This video narrated by Dave Cormier gives an introduction to the characteristics of learning within a Massive Open Online Course or MOOC.
Read an overview of MOOC research here: A Systematic Analysis and Synthesis of the Empirical MOOC Literature Published in 2013– 2015
http://www.irrodl.org/index.php/irrodl/article/view/2448

Theoretical background

4 STAGES: THE INTEGRATION OF TECHNOLOGY IN LEARNING

Directed — Access — Mobile — Self-Directed

Learners are directed in their use of technology.

Mobile technology erodes traditional classroom. Truly mobile learners should disrupt non flexible curriculum.

This stage is characterized by powerful access to information, networks, and communities, but is mostly unable to leverage that access without supporting frameworks or planning.

This final stage of technology implementation necessitates learners to consistently self direct critical, core components of learning experiences.

THE LEARNING PROCESS

Asynchronous access to information and peer networks. Some ability for learner to select platform, technology, or even content. Traditional classroom learning begins to be disrupted.

Self-direction based on curiosity and play while supported by personalized learning algorithms and the connectivity of authentic networks characterizes this final stage of technology integration. Traditional classroom learning is fully disrupted.

Learners are directed in their selection and constructivist use of technology in the learning process, traditionally to accomplish purely academic tasks that are fully accessible without the technology.

Mobile learning experiences are inherently unpredictable, requiring varied communication, critical thinking, and aggressive resourcefulness. Standards based academic work struggles for gravity working against this stage of technology integration.

DIGITAL MEDIA

TEACHTHOUGHT.COM

Digital media, including music, is accessible to a new generation of users in a way that is unparalleled in human history. Technology embraces this naturally- so must education.

Learning networks are framed by niches, nurtured by digital avatars of one's sense of self, and endlessly dynamic.

Game-based learning, learning simulations, serious games, and gamified mobile apps are changing the way users view information & community.

Powerful digital platforms already exist, from YouTube to iTunesU, learnist to MITx, reddit to Steam, capable of providing varied, powerful, and authentic content.

Stages of integrating technology learning

The four stage model of technology integration frames learning in stages that move from externally directed learning to self directed learning, based on a gradual release of scaffolding and support. It may be useful when planning learning experiences to think about which stage applies. An aim is to match the technology available with the abilities of the learners to use it to meet their personal learning needs.

Stage 1: Learners have asynchronous access to information and peer networks and may select technologies and content.
Stage 2: Learners have access to information, networks and communities together with supporting frameworks and direction.
Stage3: Learners make self-directed and varied use of mobile learning experiences within flexible curriculum.
Stage 4: Learners engage in self-directed learning accompanied by the connectivity of authentic networks. Learning results in personal and social change. Technology tools are used collaboratively to facilitate higher order learning activities that may not have been possible.

Strategies

R2D2 Model

The read, reflect, display and do model (Bonk and Zhang, 2006) provides one way of creating a constructivist learning environment. It suggests that we should draw from an array of technology options available to online learners through a range of media for accessing information and expressing ideas, and give learners an option to apply their learning to a real life context.

Offering a choice of visual and auditory modes of access and expression alongside text can enrich learning and help to meet learner needs, making learning personally meaningful. A multi-modal approach for collaboration and feedback can make learning more dynamic and responsive.

Results from an academic skills course at Auckland University found perceived benefits from students. The researchers suggest that the application of the R2D2 model as a learning and teaching 'lens' promotes active learning by making sure that students are at the centre of the design process (Cartner and Hallas, 2009). Such an approach 'magnifies' **reflection** and **doing** as part of online learning, making sure that blended spaces are collaborative, active and authentic.

Image source: Fondren, 2015)

Read more about the use of online tools here: Blended instructional practice: A review of the empirical literature on instructors' adoption and use of online tools in face-to-face teaching: http://www.sciencedirect.com/science/article/pii/S1096751616300203

Strategies

Tips for using technology to support online and blended learning

- Repurpose time and restructure delivery methods using technology in favour of collaborative, problem-based learning
- Use online tools such as communities, blogs, forums and collaborative documents to create an online classroom where interactions occur rather than just a static website
- Increase the availability of content in different media so that students have choice over their learning pathways facilitating self-directed learning
- Increase student collaboration so that they look to each other for feedback rather than just their tutors and understand the value of belonging to a community of practice
- Increase student control over time, pace, place and learning path, blurring the boundaries between formal and informal learning
- Make a seamless connection between online and offline learning so that there is a strong connection with the face to face learning
- Rather than focusing on the technology tools, use technology to support a range of modes of delivery and types of interactions e.g. collaborative walls and video conferencing alongside synchronous online events such as webinars or twitter chats
- Support students expressing their understanding by creating media-rich digital artefacts
- Support visual and auditory access methods and alternative ways of expressing ideas

(Caldwell, 2016)

blended

face-to-face **classroom aids** **flipped** **hybrid** **fully online (distance)**

no technology **(delivery)** **all technology**
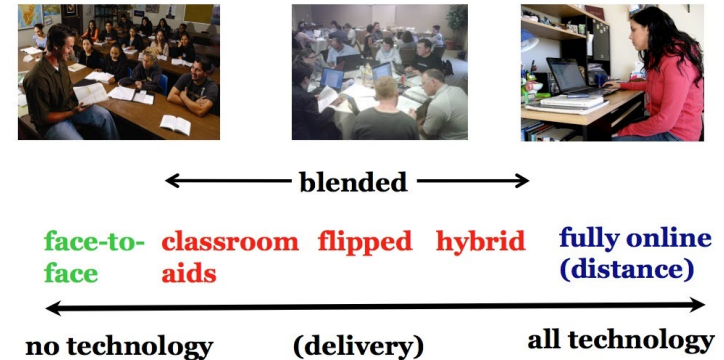
Read more about the continuum of technology-based learning:
https://opentextbc.ca/teachinginadigitalage/chapter/10-2-the-continuum-of-technology-based-learning/

Strategies

Summary

Summarising this column about pedagogy is perhaps the most complicated of all, with a huge range of strategies, ways working, pedagogical tools and more to consider. In this respect the reader is best advised to read the items in the column with an informed eye, based on their current knowledge, interest and context.

However in summarising this column, entry to reflecting on pedagogy comes via 21st century skills - both for learners and for teachers. The role of novice and master are fluid in communities of practice between teacher educators and beginning teachers for a range of reasons which are both personal and professional. The openness of the master to become the novice is critical to many exchanges which are blended and online. Sharing information effectively to empower community members has been found to be key as has the presence that individual's share; being seen as 'human' is very important and the power relationships which can play out in didactic environments are damaging in blended and online learning. The cognitive apprenticeship and technology stewardship are both terms for roles which can be student or teacher led. This might be seen by many as one of the key components of how technology can facilitate high quality social learning in online and blended learning environments within teacher education.

The University of Northampton, as it moves towards relocation into a highly technology resources new campus in September 2018, has focused on 'active blended learning'. This has brought about a clearer view of this task for teacher education providers as well as the rest of the university. Recommendations from a report on this are contained in a slide and provide a shortcut to practical and theoretical perspectives.

In addition this column includes a wealth of hands on tips which can be used to raise the quality of current practice and which provide reflection points for the development of practice in teacher education across phases, subjects and locations.

Column 5:
Case Studies
Examples from practice of technology facilitated social learning

Example 1: Digital Learning across Boundaries (DLaB) Project and MOOC
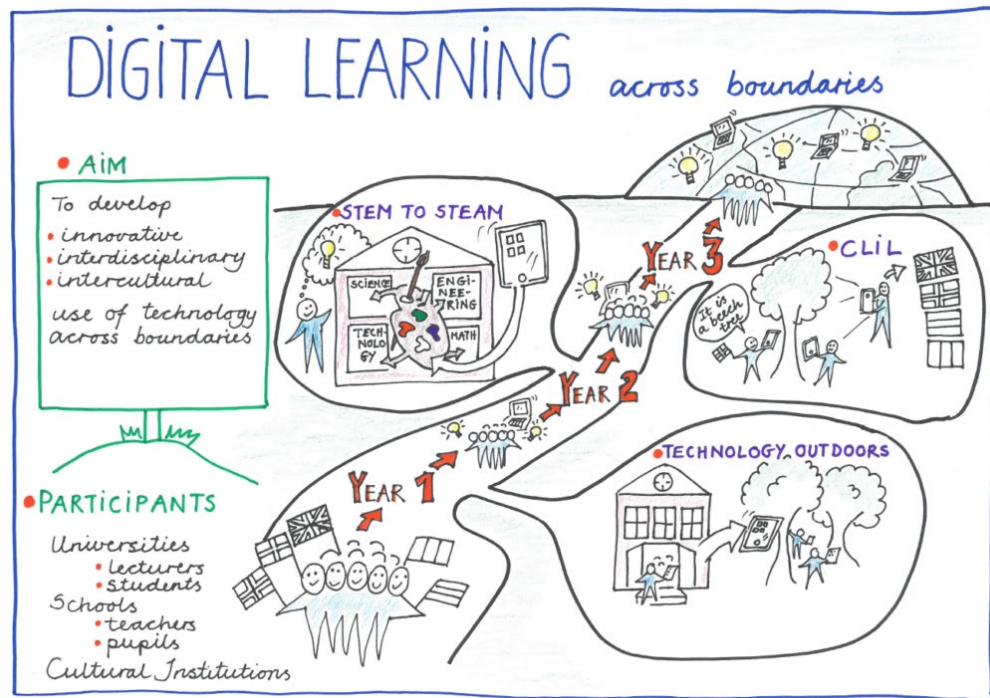
A 3-year Erasmus+ funded project consisting of 50 participants from 9 schools, universities and cultural institutions from Norway, Belgium, England and Denmark, working to addresses the need to align European educational practice with ways in which digital technology is changing how and what we learn, and how we apply this in education.

The project aims to promote digital learning across the boundaries of physical spaces, across curriculum subjects and across languages and cultures, to facilitate collaborative learning across national boundaries.

Over three years three 'learning across boundaries' themes have been adopted:

1. **Technology Outdoors**: bridging formal and informal learning by extending learning beyond traditional classroom spaces and supporting learners with disadvantaged backgrounds by managing transitions positively through collaborative outdoor learning experiences.
2. **Stem to SteAm**: adding the Arts to the integrated study of Science, Technology, Engineering and Maths creating interdisciplinary challenge-based online learning resources.
3. **Technology Enabled CLIL**: using curriculum contexts to teach language competencies and cultural sensitivity with aim of meeting the language needs of a diversity of learners, including learners for whom English is an additional language (EAL/EFL).

Intellectual outputs include eTwinning projects, Digital Leader programmes and a yearly international MOOC.

Examples from practice: DLaB

Overview of the DLaB project activities

Click to watch the video

Some activities were designed to help the pupils from different countries get to know each other. For example, pupils swapped newscasts about their countries and about outdoor science themes in their countries. They used Tellagami avatars to tell each other about their spare time activities. And they made instructional videos of each other's outdoor games. A Thinglink image of a set of drawers made it possible for classes in different countries to post and respond to digital content they made on the theme of outdoor celebrations.

Several activities focused on the idea of wild writing, manipulating images to create personal responses to the environment. For example, pupils 'hacked nature' by manipulating panoramas to create unusual photo effects. They used apps to bring inanimate objects to life and then collaborated on an ebook called, 'the secret life of the outdoors'. And inspired by the work of Richard Long, our learners experimented with the idea of 'walking a line' and recording observations in words and images as they went, making the most of the potential for the outdoor environment to stimulate all their senses.

Thinking about the Fourth plinth in Trafalgar Square during the art in the environment week, children created virtual sculptures to place on landmarks in each other's countries. They explored the theme of ephemeral art using found objects, ice, water, and light trails and investigated associated scientific processes such as evaporation, melting and decay. In the unit titled, 'I am the pencil', children used route marking apps to draw shapes and patterns on a large scale using themselves as the drawing tool. These artworks were shared by tagging on an international art map.

Thought was given to ways of bringing the outside in using techniques such as green screening and virtual reality, also by creating immersive multisensory environments for storytelling using apps, lights and sounds inside dark dens.

The science outdoors group filmed falling parachutes in slow motion and collected data about speed, velocity, acceleration. Children were challenged to use science to escape from being marooned on an island.

Two key ideas that emerged from this project are to find ways of bringing together physical and digital exploration of the world, and to use technology innovatively to connect classrooms in different locations.

Examples from practice: DLaB

Fifty people make a Technology Outdoors MOOC

The team of 50 trainee teachers, teachers and lecturers met for 5 days in Norway to create the materials for the online course based upon their national and international collaborations during the year on five Technology Outdoors themes: Wild Writing, Art in the Environment, Creating Trails and Outdoor Science.

They had been collaborating at a distance over the course of the academic year, using Skype for online meetings and for their pupils to talk to each other.

The potential of a range of tools was explored for connecting classrooms and collaborating on the creation of digital artifacts.

Some key technology tools used in the MOOC authoring:
1. LearnDash plugin within the WordPress project blog for course navigation: http://dlaberasmus.eu/courses/technology-outdoors-online-course/
2. Embedded Google Docs so that authors could add content: http://dlaberasmus.eu/topic/see-think-unit-1-newscasts/
3. Padlets for sharing visual examples.
4. iMovie and Green screening for the video introductions
5. Google+ for the online community: https://plus.google.com/u/0/communities/117458443566280105364
6. Zeemaps for mapping the community: http://j.mp/2qiuSNA

Click to view the video

Examples from practice: DLaB

Technology Outdoors MOOC structure

Click to view the videos

The use of the LearnDash plugin meant that the course had a clear structure with four weekly themes, each containing 7 units. The first 5 units began with an introductory video, followed by a case study, lesson plan and Padlet of examples.

A high proportion of visual content and videos introducing the MOOC units helped the authors to capture their ideas and share them with an international audience. This made the ideas more accessible and set a precedent for how to share examples from practice in the online community accompanying the online course. After browsing the content, participants moved on to units 6 and 7, which encouraged them to reflect and share in the online community.

The Teaching with Tablets MOOC was multi-modal in both the way content was shared as well as within the material produced and shared by participants. This sets it apart from the other online MOOCs currently available. The visual nature of digital artefacts both drew in and inspired other participants resulting in a community of practice developing quickly for a core group of users.

Example unit from the Art in the Environment week:

http://dlaberasmus.eu/topic/see-think-unit-3-virtual-sculptures/

Course Navigation

▼ Section 1: Creating Trails

● A: See and Think – Unit 1: Newscasts

● A: See and Think – Unit 2: Spare time activities

● A: See and Think – Unit 3: Hacking Nature

● A: See and Think – Unit 4: Outdoor games

● A: See and Think – Unit 5: Mapping Nature - Bird Marking

● B: Reflect

● C: Share

▶ Section 2: Art in the Environment

▶ Section 3: Wild Writing

▶ Section 4: Science Outdoors

The MOOC online community

Click to watch the video

A Google + community gave us a visual platform for reflecting and sharing ideas prompted by the course materials and a forum for discussions on the weekly themes. This relates to Wenger, Trayner, & De Laat's definition of social learning as the collaborative construction of new knowledge through dialogues sharing familiar concepts, problems and insights in a constructive way. (Wenger, Trayner, & De Laat, 2011).

Link to the online community: https://plus.google.com/u/0/communities/117458443566280105364

Examples from practice: DLaB

Example community post and commentary

Steve Tipton ▸ **DLaB Project**   3w

Delayed my create/reflect for week 2 because I knew we had a trip to the local park with reception class. I discussed with class teacher using Unit 2 'Exploring Art Vocabulary'. She was delighted to help out and we agreed to use our iPods because the children are familiar with them, for smaller children we find them ideal. We decided on colour, texture and shape for our vocabulary.
We set off to the park in our school minibus in the pouring rain but our spirits were not dampened, when we arrived we had to change our plans and rather than exploring outside decided to visit the butterfly house. Once inside we explained to the children we wanted them to take pictures of different textures, colours and shapes. The children needed very little help and fully engaged with the task as we walked round I was amazed how using the cameras made the children so much more focused and their concentration level was a delight to observe.
After lunch the weather improved and we repeated the lesson in the garden area where the children found many more items to photograph.
22 children sharing 8 iPods managed to take 800 pictures without this focus this would have been just another walk in the park and the best thing is we get to do it again on Thursday with Class 2.
I have attached a few examples but also plan to let the children make some collages during their next IT lesson.
Thanks for great ideas, Steve
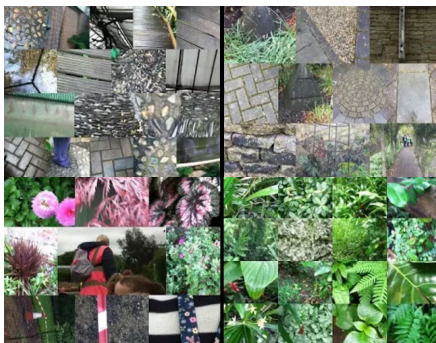
Sue Pownall, artist & illustrator +1
It's great to read and see how inspired the children were with this exercise. Enjoy Thursday too.

Katie Mason +1
That sounds fantastic and the photos are brilliant too. I chuckled slightly at the amount of photos taken...young children are quite snap happy!

Steve Tipton
"Tell me and I forget. Teach me and I remember. Involve me and I learn" Benjamin Franklin

Ian Pilkington +1
Wonderful! The outcomes speak for themselves, not just in the engagement but the stunning imagery. These would look brilliant enlarged as canvas prints and placed around school What an inspiration to the older kids!!

Jean Edwards
These are great, thanks for sharing them! When I did this with my adult students they were very snap happy too: its good in that it makes them evaluate later and make choices maybe! Great idea to print them out and display them too.

Jean Edwards +1
Looking at the album I was thinking it would be good to remake them in drawing, painting, printing or collage as big abstracts perhaps?

Helen Caldwell Moderator
Such lovely textures! I agree they would be fantastic enlarged as canvases or collages, or used as an inspiration for physical artwork. 800 photos!

Jean Edwards
I was stuck for drawing ideas this evening, so I used your pic collage as inspiration!

Steve Tipton
That's amazing, I can't draw for toffee!

Jean Edwards +1
Don't feel you can't draw - it might be that you haven't found a way into it that suits you yet! Producing a realistic representation of something is only one aspect of drawing, and we tend to give too much importance.

Chantelle James
I love this idea! The pictures are brilliant and from this could be used further (as you said) within the classroom as a basis for IT, Art or a stimulus for English.

Examples from practice: DLaB

Transfer to practice within the MOOC

'I'm going to develop this idea to use on the trip next week to give a far more interactive experience. If we use ID apps for plant life and the native birds I think it will be less passive than such visits can be.'

'I was also really intrigued by the photocollage work; I'm planning on using this to explore colour and texture in our forest in the future.'

'This week I have really felt inspired by Unit 5: The Island of Science. I think a video, perhaps using Tellagami or Puppet Pals to present the character of the Professor, would be a good way of introducing this series of challenges to the children.'

'I've found some teaching opportunities today. Had a couple of post school play lessons which leant themselves to flexibility. So first up was an opportunity to explore Art Vocabulary.'

'I will be sharing the work you have done with the rest of the staff during INSET in the Autumn term so thank you all for the great ideas.

'In order to try out this kind of activity myself, I went to the local park and walked for ten minutes, observing every minute in order to write a rhyming couplet for the scene.'

'I really enjoyed this week and would like to do some Ephemeral Art with my students. Here in Singapore the connection between nature and child is not as strong as in Europe. This will be a project I will be doing in the coming weeks and we will report in our online magazine about it.'

'It was difficult to know which to focus on for my reflection this week. Three units have given me ideas I want to try and develop into writing experiences – unit 2 secret life outdoors, unit 3 walking a line, unit 4 dream travel.'

'I have already really enjoyed looking at the range of case studies and have been thinking about how I can introduce these with my primary trainees next year'

'I'm a little behind but I'm determined to catch up because I found the Northampton University MOOC so inspiring last year.'

'This MOOC has been supremely stimulating and many ideas from the course and its participants have inspired me and will work their way into next year's curriculum.'

Click to watch the video

Creating trails idea scaled up to make an outdoor group shapes activity
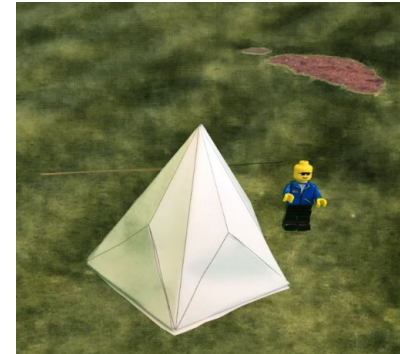
Virtual sculptures idea applied to a maths lesson.

Examples from practice: DLaB

'I was inspired on our school journey this week to create a resource. We visit a museum in the north of The Netherlands with Y4 children. The museum is about the 20th century and contains many interesting artifacts. All the labeling is in dutch. So my trail creation project involves translating the labels into more accessible English for staff and students.'

Personal blog and community combined

Technology Outdoors: Week 4 Science Outdoors.

Redshift Swan ©Sue Pownall 2017

As an art teacher to adult students, I was dubious about what this last week could bring in terms of personal inspiration and for my classes.

Unit 2 reintroduced me to the Doppler Effect, which I had forgotten, and continued with RedShift, which I don't recall having ever learnt. However, as I studied physics back in the dark ages, including Einstein's theory of relativity, I assume I must have.

Finishing the unit, I bounced around the internet reading more on this. I liked the simplicity of the illustration below, and found space.com a good site for info, but nasa.gov was a bit complex.

This observer sees **blueshift**

This observer sees **redshift**
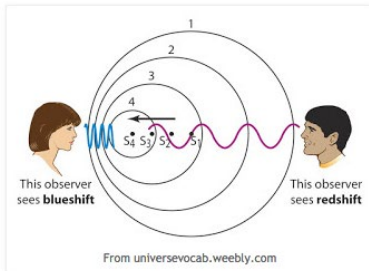
From universevocab.weebly.com

Apart from spending a long time surfing, I continued my exploration of the weekly ideas through my dog walks and took a Doppler effect photo.

Dogwalk Double Doppler Effect

This would not be an image to share with young learners, but from an artistic viewpoint the resulting patterns of colour and light as the cygnets swim towards the swan and she swims towards them could be the beginning of some printmaking patterns. In fact, I have been playing with monoprints based on Redshift and Doppler Effect, here are some of them.

Variations on a theme. ©Sue Pownall 2017

I am sad that this is the last week of the DLabErasmus course, but have an idea to develop the dogwalk images I have created for it.

Sam Rutsaert +1
Great how an artist can take some inspiration from 'non-art-things'. This could even be something you could do in a STEAM lesson.

Sue Pownall, artist & illustrator
+Sam Rutsaert what's a STEAM lesson?

Sam Rutsaert +1
STEAM is an extension of STEM. STEM stands for science, technology, engineering and mathematics. This is all about integrating all of these fields in a problem-solving situation.
STEAM is when you add the Arts component in it, the theme of the DLaB project next year actually is 'STEM to STEAM', so if you're interested you can definitely learn more then ☺

Sam Rutsaert
This short video explains it pretty well:
https://youtu.be/vSAXJCPC5C4

Barbara van Duijne
This is great imaging, I am intrigued by exactly how you created these images. I think I have my own personal summer project to work on. Thank you

Sue Pownall, artist & illustrator +1
+Sam Rutsaert Thanks Sam. I like this idea of integrating the various fields.

Sam Rutsaert +1
It's a great way to motivate the pupils more and simulate situations they might face later in the work field

Sue Pownall, artist & illustrator
+Barbara van Duijne Thanks Barbara. I used a Gelliplate with acrylic paints. I created a pattern on the plate with some textured wallpaper, which I then printed on textured paper. Once dried, I stencilled the swan (I made the stencil by cutting into a plastic sheet), then finally painted on top.

Examples from practice: DLaB

Technology tools used for connecting classrooms
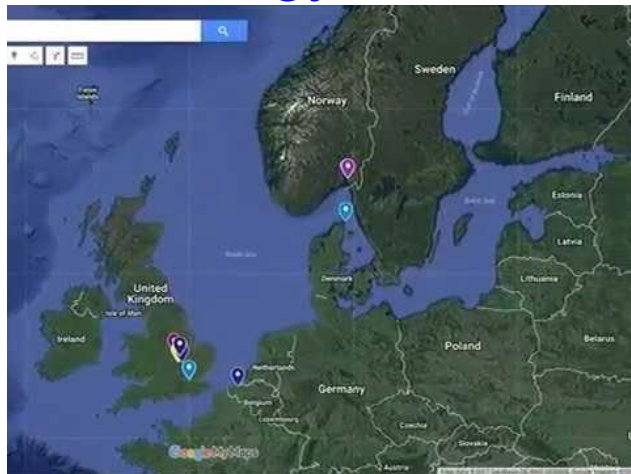
Click to view the videos

Ideas from the DLaB community for using technology to collaborate with other classrooms around the world on the theme of technology outdoors:

Post and respond to photo writing prompts on a set of Interactive drawers using Thinglink.
Make virtual sculptures and 3D models using Greenscreen by DoInk and placing them in different environments.
Collaborate on eBooks using Bookcreator.
Record Skype and Google Hangouts to facilitate ongoing dialogues.
Add markers to Google Maps to make a digital art map sharing work from different places: https://goo.gl/MZOZaB
Join together iMovie newscasts to make one film.
Manipulate travel pictures using Pixlr to create a photobook.
Swap postcards made in Canva based on virtual reality tours using Google Expeditions.
Use Pictaculous to exchange colour palettes of places and use them to inspire artwork.
Make outdoor treasure hunts and trails using QR codes, Aurasma or Actionbound.
Participate in Citizen Science projects (e.g. woodlandtrust.org.uk, www.ispotnature.org) using nature identification apps such as Chirp!, Leafsnap or Mushtool.
Make 'un-nature trails' using man made objects and record finds as a photo collage using PicCollage or Padlet.
Create media trails for others recording journeys using the idea of 'walking a line', based on words, sounds, images or film.
Swap ideas about environmental issues such as climate change, suggest solutions for each other and collaborate on infographics using Piktochart.
Animate inanimate outdoor objects using Morfo or Chatterpix and engage them in conversations with each other, building up an iMovie of clips.
Create virtual trips around places using Google maps.
Use Google StreetView to walk around a location virtually to find something to paint.
Create photo-journeys of sounds, images and movies of a journey to school and use these to inspire writing.
Add new layers to images and pass them on to make sketchbook circles.
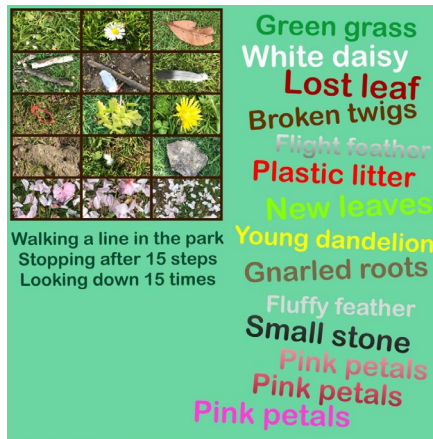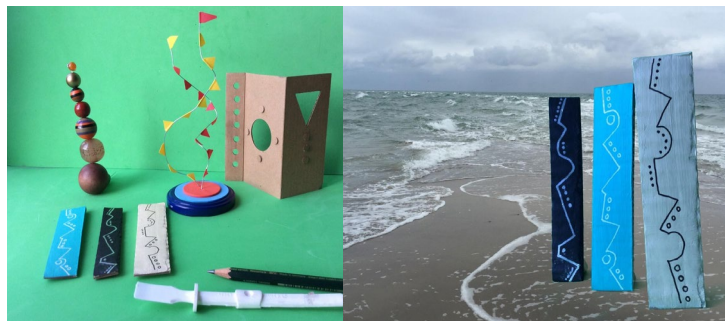Add images to group photo collages using PicCollage or BeFunky.
Swap Tellagami introductions to each other's hobbies.
Film instructional videos of how to play outdoor games.
Use MadPad to collect soundscapes of the environment, edit in Garageband and then share to compare contrasting environments.

Examples from practice: DLaB

More examples of DLaB tools

Example 2: Technology supporting social learning in a school

Elizabeth Jones from The British School in The Netherlands shared an example from her recent practice on the Technology Outdoors MOOC. She ran a **'Follow the Panda'** challenge day with the aim of building shared understanding of the new Canvas VLE for 200 year 6 students and 20 staff across 4 school sites. This took the form of a competition with three digital tasks where the year 6 pupils get year 7 pupils to find answers to a quiz. There were three tasks:
1. Set up your avatar, birthday and calendar and submit a screenshot as a PDF to be peer assessed by three other students.
2. Create a group quiz with three question types: one to be googled, the second needing online help from a year 7 pupil, the third needing to email or Skype an expert.
3. An online FAQ session submitting and answering questions about the school facilitated by year 7 pupils.
This was followed by a videoconference using Google Hangouts to share the quiz results.

Liz describes her project:
'We created an event called 'Follow the Panda'. The Panda is a symbol of the Canvas product and a friendly face to share new ideas and support with new users. We joined together individually and in teams to share some of the Canvas tools. It is a learning platform where learners and teachers can share ideas, activities and skills together individually and in groups. The platform can be accessed via internet tools so works via many devices through Wi-Fi.
The Year 6 students and their teachers worked simultaneously on each site. We also engaged with Year 7 teams who responded to quiz questions live through email, and facetime. We also teamed up with staff from Senior school who came to each Junior site for the morning. There was a tremendous buzz as we used team work and digital skills to answer questions and create knowledge. The other benefit was to create a link between people to support our transition strategy and initiatives that are already in place.
The opportunities that Canvas presents for Year 6 to work next year by linking with Senior school and by linking across BSN were explored next. We saw many different possibilities. We can also enabled students to continue sharing their ideas so that they are more sure what to expect on their new school site.
All those involved enjoyed the collaboration. Our winning team from JSD also enjoyed their success and some woolly prizes. But the success was really tangible amongst all those involved. The buzz created has really impacted on everyone.
The main impact was enlightenment and togetherness. Our senior colleagues were impressed at the capacity of the Year 6 students to take on the new skills in such a fast and furious way. The Y6 students were engaged and excited to do something so collaborative and the staff in general had the opportunity to see something on a large scale that could be replicated in the future. We also acknowledged that we can do more with it in future. We saw we couldn't have done this another way which is also the technology benefit. In the words of a Year 6 pupil 'Canvas Day was amazing!' '
Read more here: https://voices.britishschool.nl/teachingandlearning/2017/06/16/follow-the-panda/
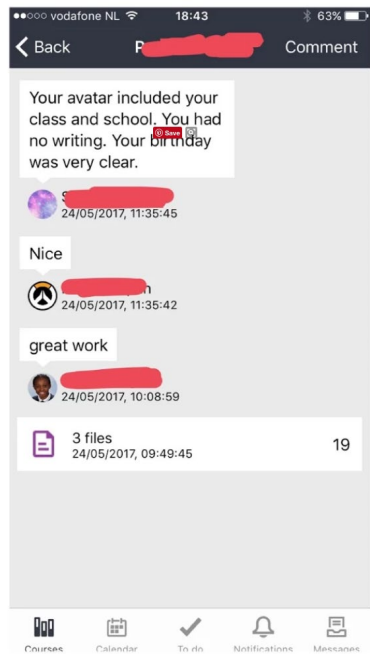
Examples from practice: schools

Example 3:
Teaching with Tablets (TWT) MOOC

A 7 week structured programme of browsing and eTivities (See www.gillysalmon.com/e-tivities.html) hosted in Blackboard Open Education together with a G+ community (bit.ly/GplusTWT16)

Based on six themes from a book: Exploring apps, Manipulating Media, Visible Learning, Technology Outdoors, Digital Storytelling, Talk and Collaboration.

Pedagogy

The first MOOCs (Stacey, 2014), now termed cMOOCs, used a social constructivist pedagogy where participants developed a shared understanding of the topic simultaneously with forming a community of practice around the subject, but these MOOCs are sometimes considered too open-ended and wooly (Nkuyubwatsi, 2013). Other MOOCs, termed xMOOCs, have adopted a much more didactic approach where students read or watch pre-prepared material and complete automatically-marked exercises. Predictably, xMOOCs have sometimes been criticised for being too directive.

There is a range of pedagogic approaches between these two extremes and there is potential to adopt a nuanced design that navigates these poles in a way that is appropriate for the audience and subject (Conole, 2013). Again, the pedagogic approach taken in a MOOC will have a significant on the design of the course.

Much of the content for this MOOC was drawn from the book Teaching with Tablets (Caldwell & Bird, 2014) and was intended to allow practising educators to translate current theory into classroom practice. The MOOC was an extension of that idea, with the intent to develop a community of practitioners sharing and learning from each other's practice.

The MOOC used an innovative, hybridised design that combined features of both x- and cMOOCs in a 'structured connectivism' approach that sought to harness the acknowledged power of learning in social settings with the power of a structured design. Online synchronous interactions were combined with asynchronous interactions, and participants were encouraged to collaborate and share examples of their developing practice in an online community space. (Smith, Caldwell and Richards, 2016).

School news

Mike, Lauren and Dawn from Dorothy Goodman School using green screening to present school news

Purpose

To explore ways of using chroma key (green screen) video creation and presentation in your learning context.

Task

Green screen video editing (also known as chroma key) can add people or objects to a different background. The resulting videos are fun to watch and fun to make. It's a powerful way of producing engaging presentations that merge people and objects with exotic locations. Your learners can present from inaccessible places: underwater, outer space, back in time, or in the bloodstream, for example. As well as enticing learners to watch the presentation, the process of creating the presentation can prompt learners to engage with the topic more deeply than passive consumption of media.

For this e-tivity, we would like you to make a short video using greenscreen technology. It may or may not use your learners*, but it should be useful to them in some way. Good green screen video creation suites are Green Screen by Do Ink (iOS), often used in combination with iMovie for editing, and InHandStudio (Android).

To complete this task you need to:

1. Record a short video (between one and two minutes) against a plain background. You do not necessarily need a green background in order to use green screen technology - just make sure that the colour of the background is different from the colours you are wearing and the colour of your skin. If you're wearing a yellow jumper and filming against a yellow wall ... well, it's pretty obvious what's going to happen!

2. Use a green screen app to replace the background.

3. Upload your green screened video to YouTube. You could choose to set it to unlisted.

4. Share your video in a link on the Week 1 section of the G+ Community.

If you use your learners in the video you will need to get permissions.

Reflection and Feedback

Please share your thoughts on the activity in the Week 1 section of the G+ Community. You might like to use some of these questions to prompt your reflection.

Did the technology work?

- How easy was it to create the video?
- Were there any obstacles when uploading or sharing the video?

How could you use this technique in your own teaching?

- What presentations do you make that would be improved by green screen segments?
- What videos could your learners make that would help their learning?
- How would you assess a learner-created video? Would the video form part of a summative assessment?
- Did this activity prompt any ideas for use of non-green screen video in your learning context?

Read some comments from other course participants. Did they have a similar experience to you? What good ideas or tips did other people have that you could incorporate in your future use of green screen video creation?

Examples from practice: TWT

Hybrid MOOC design

Affordances	Platforms			
	Blackboard Open Education	Google + community	Twitter	Google Hangouts
	Access to course content	Posting text, video and image-based content	Synchronous timed twitter chats scheduled in Tweetdeck and summarised in a Storify	Synchronous face-to-face chats
	e-tivities	Asynchronous commenting on posts	Asynchronous commenting	
	Announcements			

Features of the hybrid MOOC design

Building an international community of practice preparing educators across sectors to use mobile devices effectively.

- 570 students registered
- 273 Google+ Community members
- 103 pins from 28 different countries.
- 85 responses to a poll indicated a spread across Primary (38%, Secondary (25%) and Higher Education (22%)

Examples from practice: TWT

Social learning within the TWT MOOC

According to social constructivism, influenced by Vygotsky's (1978) work, knowledge is constructed in a social context where meaning is made through interactions with each other. The social elements of the hybrid MOOC enabled the practical elements and the discussions about these (the social element) to converge, a point Vygotsky claimed is significant in the course of intellectual development. Through practical activities, learners constructed meaning on an **intra-personal** level, while the discussions in G+ and Twitter connected this meaning with the **interpersonal** world shared by the learners and their culture. Context was also important; learners were using new skills in their familiar contexts and adapting them to relevant subject areas. As a result, the learning became authentic, directly relevant to their own classroom practice and the culture within it (Brown et al. 1989).

Furthermore, the MOOC allowed for dynamic interaction between tasks, instructors and participants (learners). Instructors (Moderators) on the MOOC took on the role of facilitators, asking questions, supporting and continuing the interactions. They were also involved as learners, learning from the participants (Holt and Willard-Holt 2000).

Our hybrid MOOC included virtual versions of the face to face elements via Google Hangouts and Twitter Chats. This built trust. From Lave and Wenger (1991) onwards, socialisation among members has been emphasised as an important and defining factor in the procedure of building a Community of Practice. Numerous commentators have stressed the importance of face-to-face communication in a virtual CoP; even in the modern distributed environment with a wide range of communications media (Kimble et al. 2001).

Examples from practice: TWT

The Online Learning Hive: Transfer to practice within a MOOC community of educators (Caldwell & Smith, 2017)

Full text available here: *https://docs.google.com/document/d/1focUPFBLO20ty00E3ZgDbomGydUvp9odmrvi_uB_NKU/edit?usp=sharing*

Summary

In this paper we draw an analogy between the hybrid MOOC and a bee colony. Honey bees are social creatures who live within their own community which they build themselves and collaborate with specific roles within that community to produce honey. We use this metaphor to describe the analysis of online engagement by participants in a MOOC on teaching with tablets and mobile devices. The MOOC was aimed at educators, prompting them to use tablets in novel and innovative ways in their own educational practice. The MOOC included instructor-led and student-led activities and had a substantial social and constructivist component. We analysed the online discussions (across several platforms) and identified clear and frequent examples of participants providing evidence of their own practice, and many examples of peer to peer learning. While the MOOC was designed to facilitate the transfer of novel teaching approaches to the participant's practice, there were fewer examples of this happening. A surprising finding was the degree to which peer support encouraged participants to engage more fully in the MOOC.

This paper examines the nature of the interactions within a community of practice associated with an online hybrid MOOC, 'Teaching with Tablets' (TWT), to see whether the learning environment facilitates a more effective transfer of skills to practice.

Our key questions were:

> Does participation in a hybrid MOOC prepare educators for using tablets more effectively in their classrooms?
>
> Is the hybrid MOOC format effective in influencing the teaching practices and pedagogical beliefs of those involved?

The TWT MOOC had 570 students registered, of which 294 accessed the course website and 171 accessed some learning material. The Google+ Community had 273 members.

Samples of the Google+ posts were taken for analysis; every third post made by participants was taken from all categories. The Storify of each Twitter chat for each week and other data from video, multi-modal reflections (such as Thinglink) and Google Hangouts was also analysed.

The connections between postings and identified codes allowed us to understand the types of interaction that surrounded each e-tivitiy.

We found that the hybrid MOOC demonstrated clear elements of an active and supportive community of practice as identified by Lave & Wenger (1991) and Rogers (2000). The community was originally driven by the moderators but shifted in balance and tone throughout the progression of the MOOC. The common goals of the e-tivities as well as the diversity of outcomes from the same task brought a sense of mutual engagement to the community.

Examples of shared discourse as well as humour can be found within the comments on the Google+ community. Questioning and reflection, both by participants and moderators and this often led to statements of intention to transfer to practice (figure 3), or evidence of actual transfer to practice. This generated a real learning community and enabled additional peer-peer and instructor-participant learning. Where there were clear roles at the beginning (participants and moderators) these appeared to blur as the course continued. Moderators learned from participants and vice versa. Participants took on the role as the expert, sharing, answering questions of other participants.

In all cases, the journey into practice was not as straightforward as we expected. Participants did not take the suggested sample activities presented in the e-tivities and other MOOC material and directly transfer it. Instead, they seemed to reflect on the provided material and discuss it in the various communities, where they engaged in peer to peer learning about the uses and possible impact of the new practices. When participants did successfully transfer content from the MOOC to their practice, they did so after this interaction and a subsequent period of self-reflection. Only then did they apply the new practice to their context, following it up with a reflective post on the activity in the MOOC community.

> 'It 's so inspiring. That's why the course has been so interesting. Because you might not have an idea. And then you might not know what to do with something so seeing someone else use it effectively just makes you go 'OK, I'm going to try that.'
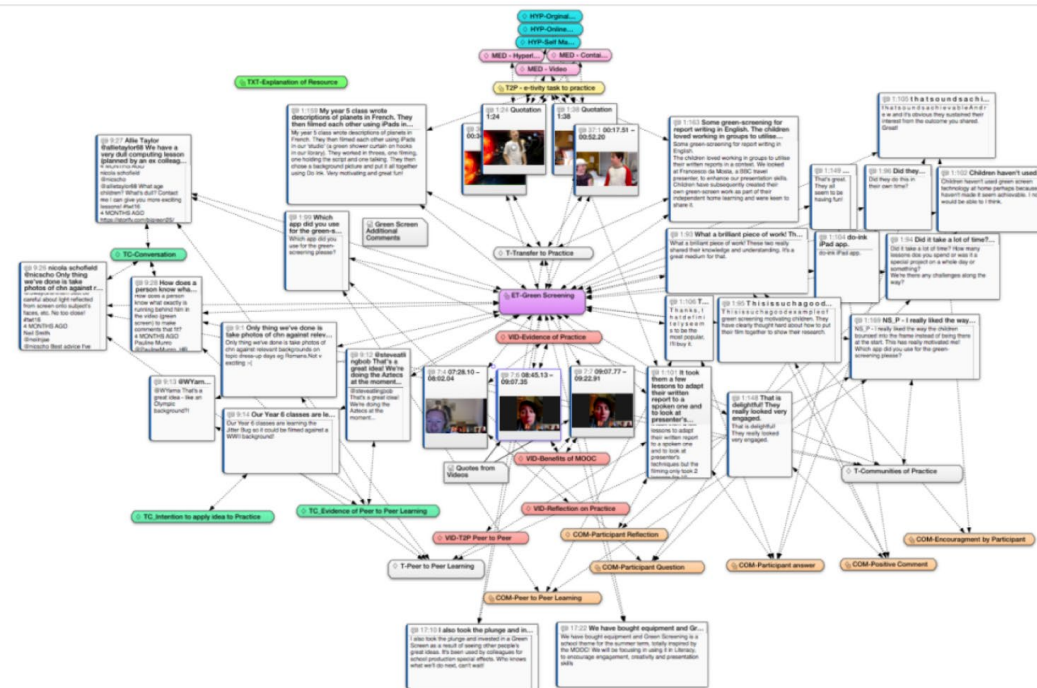
There was clear evidence of knowledge transfer, both from instructors to participants and peer-to-peer between participants.

In the MOOC creating the artefacts appear to be catalyst for individual understanding and reflection, however the sharing of the artefacts appear to be the springboard for more learning. Analysis of the interactions in the MOOC suggests that something more aligned with rhizomatic learning (Cormier 2011) is taking place.

Examples from practice: TWT

Visualisation of networks within the TWT community

The Green Screen story

'This (MOOC) is a **complex hive** for sure. The connection is very specific. A bee colony has a large community working together in a hive to achieve the same goal. Here, I've already seen many bee behaviours.

- Bees chipping in and helping with suggestions,
- a waggle dance to show others the way to good ideas and learning paths,
- passing resources from mouth to mouth until they become honey,
- encouragement for new bees and newbies,
- a cluster of bees t o g e t h e r t h a t generates warmth and security.'

Liz Jones, participant

Clear evidence of knowledge transfer, both from instructors to participants and peer-to-peer between participants.

Not as simple as implementing the e-tivities, but much more complex as people learn from each other.

Examples from practice: TWT

A visual network around the theme of green screening.

Visualisations supporting analysis of interactions

Analysis of interactions across a range of media using Atlas.ti.
Inductive examination of qualitative data to identify key themes.
Use of codes to explore relationships.

Examples from practice: TWT

Types of interactions within the TWT community

Visual content + Explanations = Transfer to practice
The content participants uploaded to the G+ Community was predominantly visual, often it was interactive or hyperlinked to other media.Combined with their explanations, it offered us examples of the e-tivity tasks being used in practice. This is an example of a straight 2-way relationship.

Comments + Conversations = Peer to peer learning
Here the hybrid mooc moves on from Blackboard by bringing in the community. The linked codes show us a pattern of interactions around themes. We looked at types of interactions within the comments. We can see how strongly the comments influence across the process.Peer to Peer learning was evident in all media on the MOOC, G+, Twitter, in comments and in conversations. Conversations grew as people asked questions and answers were given. There were many "Ooo I'm going to try that now…" and Good idea - you've inspired me to have a go" type comments. We are sure a lot of "lurkers" also gained from these interactions, but it is evidence we will never have.

Reflection + Peer to Peer Learning = Transfer to Practice
Our participants are having virtual discussions about real practice. The knowledge transfer is not so much in what they have posted so much as the discussions around the posts. It is not as simple as implementing the eTivities, but much more complex as people learn from each other and knowledge transfer becomes closely linked to participants' roles within the CoP. Reflection comes across all the media that we analysed. Some had done an eTivity, learnt from each other, and now intended to do something different. Their learning journey looks like this: eTivity> peer to peer learning> self reflection> action.
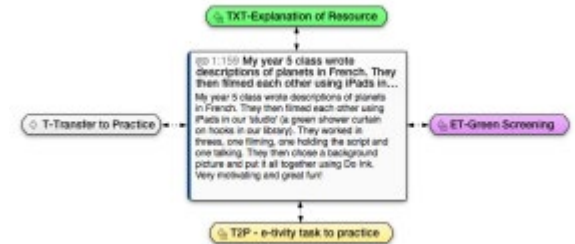
What a brilliant piece of work! These two really shared their knowledge and understanding. It's a great medium for that.

Participant

'We have bought the equipment for Green Screening and it is (now) a school theme for the summer term, totally inspired by the MOOC! We will be focussing on using it in Literacy to encourage engagement, creativity and presentation skills.'

Examples from practice: TWT

Knowledge sharing in the TWT CoP

To draw these social theories together we identified that Hoadley and Kilner's C4P framework on how knowledge is created and disseminated by participants in a CoP offered the most flexible framework on which to apply our findings (Hoadley and Kilner, 2005). The C4P framework is based on the idea that that knowledge is generated and shared when there is purposeful conversation around content within a context. This framework is based on the theory that knowledge and learning exist as by products of social processes that take place in a community of practice (2005, p1). The C4P is short for '**content**, **conversation**, **connections**, **context**, and **purpose**' and comprise the non-linear system that occurs in a community of practice. Hoadley and Kilner (2007) surmise that the more each of these elements are present in a community the more likely and effective the knowledge will be. Each of the five elements are defined in specific ways and feed and reinforce each other. We discuss each of these in more detail, explore how they relate to each other and give examples from the Teaching with Tablets MOOC. Hoadley and Kilner (2007) surmise that the more each of these elements are present in a community the more likely and effective the knowledge will be. Each of the five elements are defined in specific ways and feed and reinforce each other.

Content refers to the explicit, static, one-way production of information or knowledge objects such as documents or in the case of the hybrid MOOC the images or hyperlinks of digital artefacts and videos. In the examples of the hybrid MOOC, the visual nature of the content attracted community members by providing immediate value. We also assume that it allowed visitors to deduce quickly what sort of topics were being covered and the level of the technology abilities within the member group, therefore allowing those observers to either act independently (by copying and replicating examples in their own classrooms) or by joining in. The content certainly motivated active participants to try different things.
Conversation refers to two-way face to face or online discussions (dialogue), which in the hybrid MOOC took place via the Google Hangouts (live streamed video conferences), Google Plus community posts and comments and the Twitter chats.
Connections refer to the interpersonal contacts between the community members which demonstrate some sort of relationship. In the hybrid MOOC these connections were demonstrated in the threads of comments on posts in the Google Plus community and Twitter chats.
Context refers to the information that enables the community members to assess how the information is relevant to them. Hoadley and Kilner propose that it is this context which creates the richness of detail and makes the information meaningful and memorable for the participants in a community. The examples from the hybrid MOOC demonstrate that the context in which the participants shared their artefacts added relevance and meaning to the content. The high proportion of visual images was a key factor, as so much could be gained from looking at the context offered rather than just reading what the participant had decided to share in their explanation.
Purpose is the reason for which the members come together in the community relates to everything that occurs within a community. In the hybrid MOOC, the overall purpose was to share practice about using tablets in an educational setting, but the purpose varied for each participant.

According to Hoadley and Kilner, all five elements work in partnership. The content provided the basis for conversation and allowed connections to develop. The various platforms used on the hybrid MOOC provided participants with a platform to share representations of their work in various media, which allowed conversation, connections and information from both participants and moderators to develop. The comments feature supported new connections through text, emojis and visuals. Comments stated how friendly and supportive the community was and this helped participants to belong and continue to engage with the community. The social aspect of this Hybrid MOOC thus added to the depth of learning for those who have taken part.

Authentic learning within a MOOC

The hybrid MOOC included a number of characteristics of authentic learning as outlined by Herrington and Oliver (2000), and these facilitated both some of the social interactions, changing of roles and ultimately the demonstration of learning which took place. This framework is based on the proposal that usable knowledge is best gained in in learning setting which feature a number of characteristics. The characteristics that were relevant to our CoP are:

1. Authentic contexts that reflect the way the knowledge will be used in real life
2. Authentic activities
3. Access to expert performances and the modelling of processes
4. The opportunity and impact multiple roles and perspectives
5. Support collaborative construction of knowledge
6. Promote reflection to enable abstractions to be formed
7. Promote articulation to enable tacit knowledge to be made explicit
8. Provide coaching and scaffolding by the teacher at critical times

The MOOC provided authentic activities; e-tivities were designed with choice and relevance for a variety of users and institutions in mind but with a strong focus on pedagogy and learning with tablets in classrooms. By using the Google Plus platform to display a range of related finished examples, the hybrid MOOC offered participant access to expert performances and the discussions around these initial examples offered an insight into the processes involved in both creating them and how they might be best used in a classroom. The visual nature of these artefacts generated interest, discourse and engagement in the particular weekly task. The participants posting their own examples of classroom activities promoted the collaborative construction of knowledge. Many of the posts provided opportunities for coaching and scaffolding. Unlike Herrington and Oliver (2000), who suppose that this should be done by the teacher, in the hybrid MOOC the scaffolding role was taken on by both moderators and participants. As new participants posted variants of the etivity tasks, others commented and encouraged, causing questions and further discourse to arise. In this way, the balance shifted with new participants being able to teach the more experienced members of the group.

For example, a participant who had rarely posted before, posted an example of a MyPad app but an image only and received no comments, they then added a new post with a video of the resultant artefact and received many comments:
"That's a delightful thing! I really want to use this! I suspect if I hadn't seen this example I'd have passed over this. A really great inspiration, thank you!"
This resulted in discourse teaching others:
"I emailed the link to myself and then copied it across. When I made the clip there was the option to save it- I saved that and then copied it in."
Participants went on to suggest additional ideas which it could be used for:
"The idea of collecting the sounds of my toys is a nice example of personalised learning. Echo Location is another tool for making soundscapes of a location, with some interesting example projects on the website http://ww12.echo-location.org/*".*

Such analysis of the Google + community demonstrates that the MOOC promoted reflection and articulation based on authentic activities, enabling knowledge to be made more explicit.

Student reflection on the Teaching with Tablets MOOC

'This course has been **a veritable 'Teacher's Centre'** for me. Something I've missed since moving to an international context. I'm very impressed with the range of benefits and the way that the collaboration has worked. Meanwhile I've found new enthusiasms as a result of joining.

Learning on your own has never been very successful for me before. I can sit down and do an assignment but it's always hard to get stuck in. With Teaching with Tablets the fluid and flexible nature of this course has been a real transformation. Of course, this means that I've learned more about learning too. I'll be exploring how to take that to my colleagues and students.
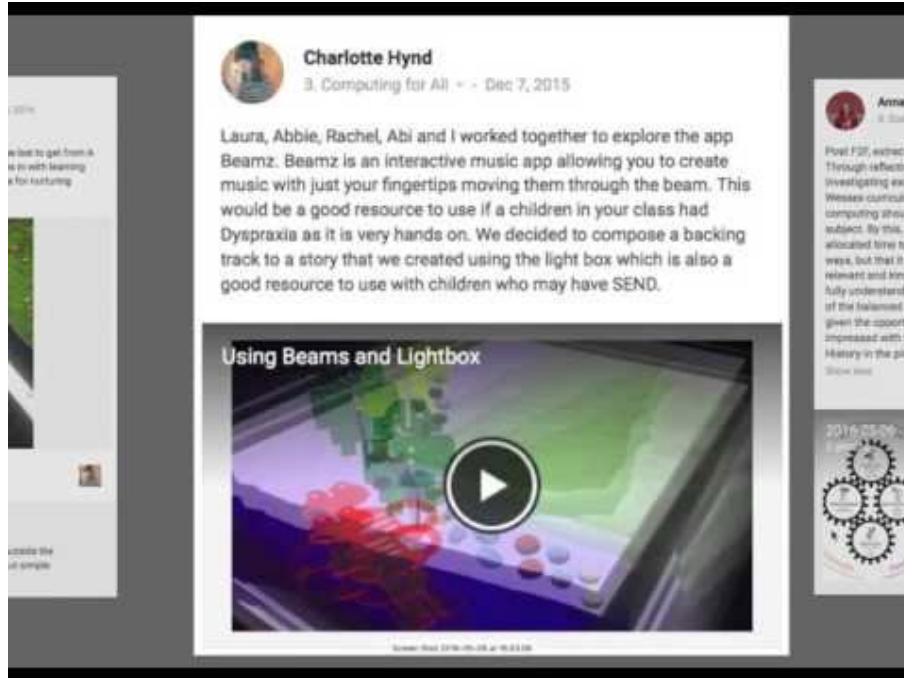
It's been really interesting to find **a medium that feels truly 21st Century** and about as far removed from the Victorian classroom setting as I can get.

The mechanisms of the course have also been helpful. I had a Google+ account that I'd really never used. I'm keen on joined up thinking. I want to develop tools in different spheres. I was also able, and committed, to using my phone to participate as this is how I do everything. And it worked! (almost)

This was important to me because I think devices can be barriers to learning and interaction if they're not convenient. And to be able to participate during the day in lots of different settings was a great way for me to work. I don't respond well to coming home sitting at a desk and doing a three hour study session anymore. I **prefer to graze** and that's what I was able to do. I think the **personalized access** was a real benefit to me.'

Liz Jones, Teaching with Tablets https://www.thinglink.com/scene/771282009031966721

Example 4: Using blogs and communities for student assessment in HE

Click to view the video

Course: BA QTS undergraduate computing modules

Assignment: Create and maintain a blogfolio as a reflective journal and multimodal portfolio of work

Tools: Edublogs Pro and Google+ community

Marking strands: use of the blog format, subject knowledge, reflection on pedagogy, contribution to group outcomes

Key idea:
Writing for a live and responsive audience is a transferable skill for class teaching. The presence of a commenting audience provides an incentive to write and facilitates informal peer-to-peer learning.

Video script:
https://docs.google.com/document/d/1F89j9B5y092KSOQo6WR1p8x3lD498iP7iteFj1LN-Vs/edit?usp=sharing

Examples from practice: student assessment

Example student posts

Jennifer Cullingford
3. Computing for All ▾ · Nov 10, 2015

Algorithm
Through our pre - reading we learnt that making activities relevant to children with SEN is key to encouraging their learning. We used the idea we saw on Scratch to help with following instructions (linked
Read more (10 lines)

Getting Dressed
by Sheffield_T

Helen Caldwell OWNER
Nov 14, 2015
I love the way you have transformed the screen activity into a physical activity in the real world :)

Racchh708
1. Visible learning ▾ · Apr 26, 2016

Pre Task Computing Session 1

In the pre task we had to order 5 statements of how important we think they were. Gabby, Amy and I created this visual image on skitch
Read more

Allow students to submit their learning in their own medium

This is a skitch created by myself, Rachael and Gabriella. It shows students...
plus.google.com

This is a skitch created by myself, Rachael and Gabriella. It shows students submitting their learning in their own way. This allows them to show their... - Amy Varnsverry - Google+

Hollyann Brissett
1. Visible learning ▾ · Nov 13, 2015

As part of my first post i have created a prezi on the pre-reading for the session, would appreciate any comments.
Please follow the link to see my prezi and the rest of my post. :)

Technology for visible learning – Session 1 | Hollyann Brissett
mypad.northampton.ac.uk

3 comments ▾

Chantelle James
Nov 17, 2015
I love the way this is presented Holly, I think it is very creative! I think it would also be a great idea to incorporate into teaching in the classroom. Prezi could be used to present a childs'
Read more

More here: https://mypad.northampton.ac.uk/digitalassessment/helen

Examples from practice: student assessment

Student comments on blog assignments

"I feel that other students on the course provided me with effective feedback that helped me to improve…I liked that people could comment; it made me more aware of my audience…being able to see what other people think can be very thought-provoking."

"blogging has provided me with a communication link to my colleagues' ideas and thoughts…I was always on task, which is rare for me!"
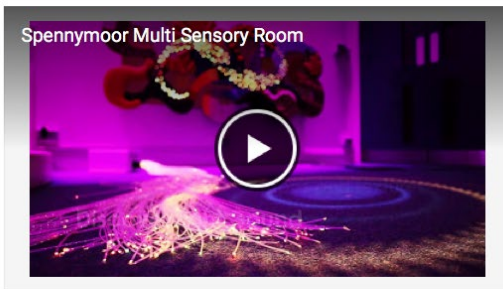
Examples from practice: student assessment

Harriet Smith
3. Computing for All ▾ · May 5, 2016

Extract from blog post:
When teaching computing to pupils with SEN there can be many challenges. Computing can be a difficult concept for many children and adults alike. The new national curriculum has seen the change
Read more (15 lines)

Spennymoor Multi Sensory Room

▶

+1 ↗ ▾

Hide comments ︿

Leanne McGuire
May 5, 2016
Wow this clip is fantastic Harriet, i think the use of a multi sensory room can help all children as it facilitates many ways of learning in an engaging way. What sorts of things would you
Read more

Harriet Smith
May 5, 2016
Definitely think a corner would be great.. By a 'room' I meant more like the little tent we had in our sessions just as somewhere to go to get away from the class and feel like you're alone

Leanne McGuire
May 6, 2016
Yeah great idea - I would love to use this great idea in my classroom, especially for young children who have social communication difficulties.

Anna Buczynski
4. Coding and art ▾ · May 2, 2016

Post F2F:

2016-05-02
2 photos

+1 ↗ ▾
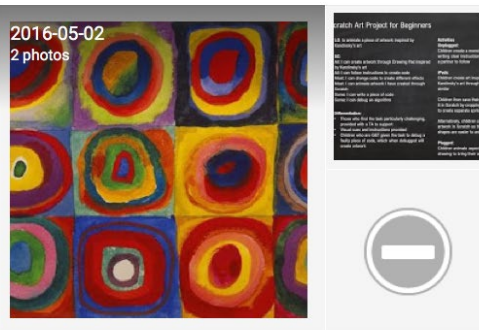
Hide comments ︿

I really like this example lesson plan. You have differentiated well and clearly shows that this lesson can be applied to all children. Could you differentiate this even more than just art?

Anna Buczynski
May 4, 2016
Thanks Emily, I think you could use differentiation by outcome for the art aspect of the session. To particularly extend learning for children who are G&T, I would encourage
Read more

Harriet Smith
May 6, 2016
I really like how you have stated the typs of questions you would ask. The leading questions would really show the childrens understanding and get them to explore Scratch for themselves!!

Anna Buczynski
2:25 PM
Thanks Harriet! I would also use the leading questions to scaffold children's learning if they were finding a particular

Student group blogs to explore learning outside the classroom pedagogy

Group blogs were used as an assessment tool to demonstrate how Primary PGCE students applied a Learning Outside the Classroom (LOC) approach to study foundation subjects in the UK National Curriculum. The students created blogs in groups of four over the course of an academic year documenting reflection on their own learning experiences of LOC practices. The LOC practices shared included generation of short and long term plans, and examples of their application of ideas to practice. Over time, the students' reflection occurred both *in action*, *on action* and *for action* (Schon, 1983[1]) as they refined their ideas through site visits, on campus and during school placements. They documented this ongoing development over time through regular journal entries on their blogs, often using collaborative online tools such as Google Docs, Prezi, Padlet, Skype and Facebook. At the end of the year, they used the page options on the blogs to present summaries of their learning in the form of a theoretical rationale, a justification for LOC, a set of curriculum plans and a group presentation. In this way, the finished digital artefact provided evidence of how the collective competence of the group grew over time as they built a shared repertoire of strategies for teaching foundation subjects through LOC.

The Learning intentions were:

· To use a blog as an assessment tool to demonstrate learning across the foundation curriculum.
· To use blogs as a reflective tool to unite theory, pedagogy and practice.

Example:

The sample group blog below demonstrates an example of student practice. The blog has acted as a tool for the students to communicate their knowledge and understanding of creative approaches to learning within an authentic real world context. They have been able to work collaboratively despite being geographically dispersed and the medium gave them control over the time, pace and place of learning. The students have been able to add and reflect on each other's contributions whilst creating innovative learning opportunities that they can now take forward into their professional practice.

Group blog learning outcomes:

· Peer to peer learning has occurred and evidence has been provided that student learning has been developmental throughout the year spanning pedagogy and practice. This represents a move away from teacher directed pedagogy towards a flexible learner centered approach.

· The use of the blog as an assessment tool has been effective to demonstrate group contributions and critique of practice; the students have also been able to produce a variety of media within the assessment, multiplying the learning opportunities.

· Learning has spread across multiple institutions. The students have been able to draw on pedagogy in different school settings and have shared this collaboratively to alter practice in different learning domains.

Source: Caldwell et. al, 2016

PARK RANGERS : WIDER CURRICULUM

HOME   JUSTIFICATION   LESSON PLANS   MEDIUM TERM PLAN   PRESENTATION   RISK ASSESSMENT

LEARNING OUTSIDE THE CLASSROOM

08.03.15	01.03.15	15.02.15	19.01.15
08.03.15	**01/03/2015 – MEDIUM TERM PLANNING**	**MEETING**	**PLUGGED ACTIVITIES**
Today Anna, Becky and Kiri met up to write the justification....	Today Anna and Becky met to devise the medium term plan....	We met and added the history ,geography and the risk assessments...	In the computing lecture we investigated the use of plugged activities...

Blog url: http://mypad.northampton.ac.uk/parkrangers/

Examples from practice: student assessment

Interdisciplinary use of blogs and online communities in teacher education (Caldwell & Heaton, 2016)

Available at: https://www.researchgate.net/publication/303412418_The_interdisciplinary_use_of_blogs_and_online_communities_in_teacher_education

This paper captures through five case studies how blogs and communities have been used in our setting. It extends Deng and Yuen's (2011) research to consider how multimodal blogs and communities combined with face to face learning events can promote collective learning and reflexivity, and how they can develop teachers' confidence and skills in using technology in their practice. We have conducted a thematic analysis of five case studies in the teacher education division, which used blogs and communities singularly and in combination to enhance learning. The posted content in these spaces consisted of a range of media-rich digital artefacts and resources, along with related commentary and discussion, and so a theoretical framework was required that took account of this (see tables 1 and 2). We were interested in how multimodal content might be analysed to acknowledge the visual culture in which we all teach and learn (Heaton, 2014). Our model is developmental; we know that multiple approaches exist to analyse multimodal content (Banks, 2007; Pink 2012), but we focus specifically on how the multimodal content shared in our blogs and communities demonstrates three themes: the process of reflexivity; the creation of communities of practice and the adoption of technologic tools and strategies. `

The case studies shared in this paper enable participants to belong to online communities of practice with a shared common purpose in improving their classroom pedagogies. Our learners were able to co-construct knowledge by documenting learning that took place in a number of different contexts: at teacher sharing events, at network meetings, in classrooms, and via the creation of digital artefacts. Contemporary online communities of practice, such as those modelled, can thus combine physical and virtual spaces enabling the participants' learning journeys to move in and out of a number of 'habitats', a process which increases the opportunities for learning (Wenger, White and Smith, 2009; Hammond, 1998). This generated some key questions for us; when participants of the communities of practice navigate these habitats how does the learning itself take place and how can educators facilitate this learning to move forward? These questions prompted an interest in reflexivity.

Our research design is focused around the analysis of multimodal content in five blogs and communities to examine the common, successful and limiting factors in enhancing learning through the three themes of communities of practice, reflexivity and use of technology.

Findings

Findings suggest that blogs and G+ communities are both useful tools for demonstrating reflective and self-directed learning. They enable the generation of socially shared content within learning communities, and promote the use of technology-based teaching practices. When blogs and communities are used in combination, as in cases 3 and 4, they can encourage reflection before, during and after the application of theory to practice adding reflexive learning. By observing how blogs and communities can be used together our analysis emphasises the twin aims of generating content through interaction and curating content in a 'communal repository' to use Wenger et al.'s term (2009, p.1). We suggest that the sharing of multimodal content makes these aims more achievable by using media to transmit explicit and succinct examples of classroom practice and subsequently provides opportunities for students to interact with shared content. When further supported by face-to-face events, blogs and communities can promote continuous learning through active experimentation and sharing within the online community (Kolb, 1984; Schon, 1983). Our findings suggest that reflexive cyclical learning occurs across habitats as ideas are picked up by peers, responded to and reinterpreted in the form of new digital artefacts. This process gave our participants the confidence to try technological approaches in their own teaching contexts, easing the transfer of technologic innovation to classroom practice.

Conclusions

Through our cases we have shown that online communities of practice in the form of blogs and communities, such as G+, can provide a fertile ground for social learning. Like their physical counterparts, our virtual communities of practice are characterised by a shared common purpose and by the application of ideas to practice. Our belief, supported by our findings to date, suggests that reflexive learning can be amplified and accelerated due to the number of opportunities learners have to engage with others who are exploring the same topics in different contexts. Our discussion of blogs and communities highlights the value of mixing physical, digital and social learning spaces. And it also demonstrates the potential of digital technology to support individual learners in a personalised way, recognising the value of documenting personal learning through a range of media 'as it happens' rather than demonstrating mastery of a field through a text-based assignment at the end of a module (Ovens, 2003).

Examples from practice: student assessment

Example 5: Using digital tools for student assessment

We share two example digital assignments:

1.Course: Foundation Degree Learning and Teaching (FDLT) Year: 2 Module: PDT2016 Enriching the Curriculum: beyond the school.
Assignment: Digital artefact (ThingLink)
Students will identify a location beyond the school site, visit and research it and create a ThingLink to communicate key features and learning opportunities.
Tools: ThinglinkEDU and associated multimedia tools linked through this.

2. Discussion board: Course: Early Years BA top up Year: 3 Module: EYS3121 Specialist Option: Education
Assignment: To discuss and debate a controversial issue in Early Childhood within an online debate forum.
Tools: Blackboard discussion board on Northampton ILE
Marking strands: formulate and respond to arguments; utilise features of the discussion board; work as a group; professional responses

JISC recommends that assignment design should include:
'Learning and assessment activities through which learners' digital practices can be demonstrated, recognised and progress'.
'Good design should make the assessment experience **inspiring and motivating** for both students and staff. It should create a positive climate that **encourages interaction and dialogue**. Assessment should appear **relevant and authentic** and wherever possible allowed students to draw on their **personal experience** and to **exercise choice** with regard to topics, format and timing of assessment." (JISC, 2016, p2)

Student feedback:
A greater feeling of engagement than expected and than they would normally feel when writing for an essay
Inspiring and motivating
Encourages interaction and dialogue - by its very nature and design a discussion or debate does this
Relevant and authentic - through the discussion topics chosen, of relevance to the students working the field of Early Years
Personal experience - opportunities to use experience from work based practice alongside wider academic reading

Example 6: Mobiles in Higher Education

The Apps for Innovation Group is a group of lecturers in Initial Teacher Training piloting the use of iPads for teaching and learning at the University of Northampton. They used F2F meetings, a blog and a G+ community.

Learning intentions:

· To document and support the use of iPads by academic staff within the School of Education at the University of Northampton over the course of an academic year and provide a platform for sharing expertise more widely.

· To provide a Google+ (G+) space for academic staff to ask questions, share resources and ideas, and reflect on their practice during the implementation of the iPads project.

Overview: The G+ community and blog aimed to document the rollout of the use of iPads by academic staff in their teaching and learning. The project provided support for novice users who were able to seek advice from their peers, who shared what worked for them, until they gained sufficient confidence to experiment for themselves. New skills developed, supported by a collaborative team with a common purpose that tested and shared strategies and resources.

Learning Outcomes

Knowledge continued to be transferred between novices and experts within the group outside of face-to-face meetings via the G+ community discussions.

Over time, a core set of open-ended content-creation apps emerged as users trialled them for different purposes and recorded successes as mini case studies on the blog. The group provides an example of collective knowledge-building around a common purpose.

Project summary

As the group solved problems together, sought help from each other, reused solutions and evaluated new apps, they developed a 'collective competence' and a shared repertoire of resources and strategies. A core set of apps for content creation evolved over the course of the year, with tools being reused to meet a range of learning objectives across different subject areas within the group. A shared consensus emerged that apps such as these can help make students' learning more visible. Knowledge continued to be transferred between novices and experts within the group outside of face-to-face meetings via the G+ community discussions. Cross-pollination of ideas occurred as apps for art activities bringing together the 'app smashing' combination of Rollworld, Fragment and BeFunky, which has been independently explored by three academics and has resulted in several related posts and a series of comments on the blog and community.
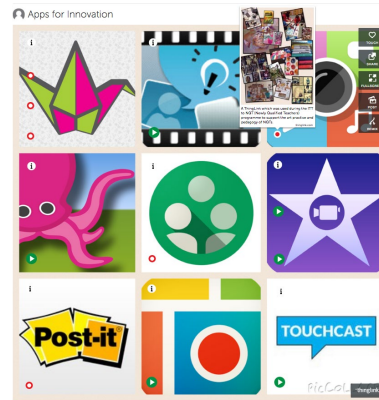
The blog and online community together provided a structured framework in which social learning could take place (Wenger, 2011). It can be seen as a connectivist learning environment in which participants make connections with people and resources, co-create ideas and make choices within an environment mediated by technology (Saadatmand and Kumpulainen, 2014; Downes, 2010; Siemens, 2005); "Connectivist models explicitly rely on the ubiquity of networked connections between people, digital artefacts, and content" (Anderson and Dron, 2011, p. 87).

A benefit of online learning is identified here; learning opportunities are multiplied as the collective learning potential of the group exceeds that of the individual working on their own and can thus lead to accelerated learning (Richardson, 2010; Hung, 2002). Johnson highlights this as a key idea when saying, "The learning that evolved from these communities is collaborative, in which the collaborative knowledge of the community is greater than any individual knowledge" (Johnson, 2001, p34).

(Source: Caldwell and Heaton, 2016)

Summary of benefits

- Online spaces creating a hub for a **community of practice** external to the institution
- **Peer to peer learning** across phase boundaries of schools and university, and between students, academics and teachers
- Contributions from students sit side by side with posts and comments by academics, cutting across formal structures and forging new understandings **across educational sectors** of the ways in which technologies can transform learning
- Learning opportunities are amplified as the **collective learning potential** of the group exceeds that of the individual working on their own.
- Technology enables **fluid learning journeys** across a combination of locations, times, online spaces and social settings in higher education.

[Apps for innovation Thinglink](#)

Community URL:

https://plus.google.com/u/0/communities/110218249780833007111

Blog URL:

http://mypad.northampton.ac.uk/appsforinnovation/

https://haikudeck.com/p/9suurg2cOj

Example 7: Students making a context for social learning through mobile devices.

The PGCE Top Up Programme is delivered through blended learning to in-service teachers who hold QTS through the Graduate Teacher Programme and are working to gain a PGCE.

Learning Intentions: To provide a learning context through which teachers across a range of physical locations can undertake professional development and build academic skills to complement their existing teacher qualification.

Overview:40 students located in the UK, Australia, New Zealand and a number of european countries have joined the programme. They attend either 3 face to face learning events or take part in 3 skype learning events alongside blended learning to complete 2 30 credit modules at level 7 which investigate personal professional practice.

Learning Outcomes: Alongside the formal learning environment provided by the university VLE teachers have formed local and wider alliances and working groups to support their learning and to share practice. This has manifested through Whatsapp groups primarily and additional skype contact between students to support their learning and development. Groups formed and shared information and ideas, through discourse and exemplification. Issues were addressed and resolved through this sharing and individuals were encouraged to be confident to access the support of remote tutors.

Description and outcomes: Following a skype event a subgroup of the whole cohort began to communicate through a dedicated Whatsapp group and to share information and respond to one another's questions and queries. It also became clear that individual interactions with the tutor were also shared, supporting a high level of confidence in the programme despite the fact that the students and tutor had only met virtually. Some clear self structured online learning was clearly taking place and this enhanced the learning opportunities available to individuals and the group, a self generated community of practice developed which facilitated engagement at a high level (Johnson, 2001).
(Source: Caldwell and Heaton, 2016)

Summary of benefits
- The online space provided by the programme leader was expanded to a community of practice by participants beyond the institution
- Peer learning took place between teachers in practice on different continents, in different educational climates and teaching in different phases and subject areas
- As in example 6, learning opportunities were amplified as the **collective learning potential** of the group exceeded that of the individual working alone
- And it was clear that technology enabled **fluid learning journeys** across a combination of locations, times, online spaces and social settings based loosely on the higher education provider network.

Mobile technologies as a catalyst for pedagogic innovation within teacher education (Caldwell, 2017)
Available at: http://bit.ly/2rj5lEq

This paper reviews the use of mobile technologies within teacher education at the University of Northampton. In order to develop a strong commitment to digital literacy the School of Education is using sets of teaching iPads with trainee teachers and has allocated an iPad to every member of academic staff. Experiences from mobile technology projects involving ITT students, primary teachers and academics are shared to illustrate how mobile technologies have been a catalyst for new pedagogies based on a social constructivist model of learning in our teacher education programmes. We aim to develop creative, self-directed learners who can work in collaborative teams within a professional community of teachers, academics and students. We have considered ways in which mobile devices extend learning beyond taught sessions, and how the use of apps to make shareable digital artefacts can lead to purposeful engagement. To this end, the School of Education is focusing on a set of core apps that facilitate the *creation*, *collaboration*, *curation*, and *capture* of content.

Many studies note that some face to face contact can be a strength and make a case for multimodal learning, mixing physical interaction with asynchronous learning (Hammond, 1998). Contemporary learning communities may thus combine physical and virtual spaces and make use of a range of social media and networking technologies. It may be that one of the reasons for a lack of hard evidence regarding the efficacy of using learning communities to bring about pedagogic innovation is the difficulty of analysing the many modes in which such communities interact (e.g., virtual meetings mixed with physical meetings, synchronous interactions mixed with asynchronous interactions, text-based posts mixed with multimedia posts). In our experience, mobile technologies have functioned as the glue pulling together this varied activity.

In learning and teaching environments then, mobiles have the potential to 'contribute simultaneously to pedagogical innovation and to transformed practice' (Danaher et al. 2009, p.1). And as Hwang et al. (2015 p.1) acknowledge in their discussion of 'seamless flipped learning', a classroom enhanced with mobile technology can facilitate across learning contexts, times, and social settings. Along with other researchers, (Song, 2014; Kong & Song, 2015), Hwang et al. (2015) note that good use of multimedia is a key feature of successful flipped learning and that multimedia apps on mobile devices make it easier to engage with, revise and share content.

The paper provides examples from practice of how some of these affordances of iPads, such as increased connectivity, mobility, ubiquitous access and the potential to make media-rich digital artefacts, have acted as a catalyst for our academics, pre- and in-service teachers to develop and document their mobile learning pedagogies. Together, our face-to-face and online initiatives have made way for new pedagogies in our teacher education programmes at the University of Northampton. We aim to develop creative self-directed learners who can work in collaborative teams within a professional community of teachers, academics and students. With this in mind, we are moving in the direction of informal, networked, technology-enabled learning, which extends learning beyond our face-to-face sessions.

Summary and conclusions:

Our examples from practice have demonstrated that mobile technologies can act as a catalyst for pedagogic innovation by providing:
- enhanced opportunities to develop shared understandings of content and pedagogy in a social environment
- a bridge between formal and informal learning and across disciplines
- first hand experience of the sense of purpose that content sharing can bring to learning
- contextualised experiential learning opportunities that combine real world interaction with the creation of digital artefacts
- captured teaching events as a springboard to discuss which pedagogical strategies are most effective
- opportunities to revisit learning, making for a smooth transfer of pedagogy to practice
- multimodal learning journeys that move in and out of physical and social learning spaces, a cyclical process that increases the cross-pollination of ideas

By giving learners control over the time, pace and place of their learning, and by providing opportunities for authentic engagement with the physical world, the iPads have acted as a bridge between formal and informal learning, and across disciplines in primary education. This process has been facilitated by a combination of online learning communities and face-to-face learning events. Within the online communities our pre and in-service teachers have co-constructed knowledge by documenting learning that took place in a number of different contexts: at teacher sharing events, at network meetings, in classrooms, and via hands-on activities. This makes a case for 'multimodal learning', which mixes physical interaction with asynchronous learning (Hammond, 1998). Mobile devices can thus enable learning journeys to move in and out of a number of 'digital habitats' (Wenger, White and Smith, 2009). The emphasis on social learning has multiplied learning opportunities and has led to the development of a shared common purpose between academics, pre- and in-service teachers. In this way, mobile technologies have the potential to prompt social transformation leading to innovative pedagogical practice.Our example cases also demonstrate that apps that allow for collaborative content creation have enabled a natural learning process that arises out of social behaviour and engagement with the world. As a result of this, we acknowledge the need to embed the use of technology in educational contexts through interdisciplinary approaches mixing physical, digital and social learning spaces. Whilst hard research evidence from our iPad journeys has yet to be analysed, we are confident that mobile technologies combined with online learning communities in this way can provide a fertile ground for social learning.

Examples from practice: teacher education

Summary

This is the column which attempts to take you to where the magic happens. There are a large number of practice examples and to summarise them would be to reduce their power to influence. What can be summarised from this column is that technology can be used to support social learning in diverse contexts and for diverse purposes. The range of 'teachers' whose experience is captured here is great and the range of 'learners' also. Perhaps most interesting of all is the fluidity of positions taken as a learner and a teacher in a community of practice in which strong commitment to effective blended and online learning happens. That is for us where the magic happens.

We have have looked at ways in which some technologies can work together to facilitate social learning. Some of these include:
- Blogs and communities working together for education students thinking about theory and practice
- Moocs combining online spaces: Wordpress or Blackboard Open Education with a Google + community providing a place for content and a place for shared reflections and shared understandings to evolve into ideas for classroom practice
- The importance of visual postings for teachers to be able to immediately grasp ideas and adapt them to their own contexts

We have also looked at the nature of interactions within an online community and recognised that it is a complex mix of browsing, commenting and reflecting that leads to transfer to practice. We agree with Smith et al. that there is an interplay of participation and reification (2017), and we would suggest that the sharing of artifacts can be a prompt for reflection and action. The exchange of artifacts or collaboration to produce a joint artefact can also be an integral part of the interactions.

We conclude that, at its best, blended and online learning is social, peer to peer, technologically enhanced, synchronous and asynchronous, expansive and innovative. We recommend that authors and facilitators of online learning:
- repurpose time and restructure delivery methods using technology in favour of collaborative, active learning
- use online tools such as communities, blogs, forums and collaborative documents to create an online classroom where interactions occur rather than just a static website
- increase the availability of content in different media so that students have choice over their learning pathways facilitating self-directed learning
- increase student collaboration so that they look to each other for feedback rather than just their tutors and understand the value of belonging to a supportive community of practice
- increase student control over time, pace, place and learning path, blurring the boundaries between formal and informal learning
- aim for an interplay of digital making, reflection, and interaction based on student-generated content

Themes to take further

Whilst our hybrid MOOCs functioned with strong elements of communities of practice and behaviours similar to that of a hive and it was clear that the roles created shifted between individuals who took part, we have no idea of the behaviours of the "lurkers". Lave and Wenger (1991) proposed that observation from the boundary, 'lurking' or more formally, legitimate peripheral participation is a valid form of participation in the online learning community. How many of these took something from the MOOC and were able to transfer skills into classroom practice. One might assume that the real knowledge was gained through reading and observing the interactions of the other participants online rather than just taking an e-tivity and completing it in isolation. For future MOOCs it would be interesting to explore how such online learning impacted on this type of learner.

The hybrid MOOC does not provide for authentic assessment of learning within the tasks apart from the peer assessment and encouragement by moderators. Is this enough for participants?

Other social learning themes to explore further include peer support and encouragement within CoPs; different levels of involvement; reflection on transfer to practice; the process of building, growing and developing communities of practice; further analysis of how online conversations develop understanding; and examination of the process of collective knowledge-building in online environments.