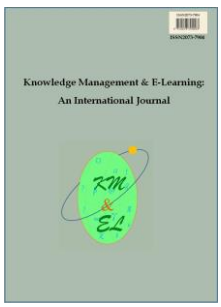
Knowledge Management & E-Learning, Vol.9, No.3. Sep 2017

An exploration into pedagogic frailty: Transitioning from face-to-face to online

Irina Niculescu
Roger Rees
Darren Gash
University of Surrey, Guildford, UK



Knowledge Management & E-Learning: An International Journal (KM&EL)
ISSN 2073-7904

Recommended citation:
Niculescu, I., Rees, R., & Gash, D. (2017). An exploration into pedagogic frailty: Transitioning from face-to-face to online. *Knowledge Management & E-Learning, 9*(3), 392–403.

Knowledge Management & E-Learning, 9(3), 392–403

An exploration into pedagogic frailty: Transitioning from face-to-face to online

Irina Niculescu*

Department of Technology Enhanced Learning
University of Surrey, Guildford, United Kingdom
E-mail: i.niculescu@surrey.ac.uk

Roger Rees

Department of Technology Enhanced Learning
University of Surrey, Guildford, United Kingdom
E-mail: r.rees@surrey.ac.uk

Darren Gash

Department of Technology Enhanced Learning
University of Surrey, Guildford, United Kingdom
E-mail: d.gash@surrey.ac.uk

*Corresponding author

Abstract: Pedagogic frailty and concept mapping can simultaneously encourage personal and organisational change by supporting critical reflection and resilience. These ideas are nascent within higher education institutions and currently, at the University of Surrey, are only developed through face-to-face sessions. This revealed the need for a scalable intervention which engages academics with the discourse on introspective and professional development practices. In response, we have created the design for a blended programme of online foundation for concept mapping leading to face-to-face workshops to explore the pedagogic frailty model. This paper will discuss some significant challenges arising from transitioning self-reflective practices from face-to-face to online spaces. In the process, we will consider ways in which learning design can take the learner context into account.

Keywords: Pedagogic frailty; Online learning; Blended learning; Academic socialisation; Academic identity; Liminality; Learning design; Professional development

Biographical notes: Irina Niculescu is an educational technologist at the University of Surrey. She is particularly interested in learning communities, the discourse around learning within and outside of the institution, access and outreach.

Roger Rees is currently Head of the Department of Technology Enhanced Learning at the University of Surrey. He has a particular interest in ecological and systemic approaches to the adoption of new and emerging technology to enhance learning and collaboration.

Darren Gash is a staff and educational developer for the Department of

Technology Enhanced Learning at the University of Surrey. His work focuses on enabling academic staff to gain the confidence to embed technology enhanced learning in their teaching practice.

1. Developing initial aims: What the online resource should support

Exploring the creation of online resources for pedagogic frailty was initiated at the University of Surrey as part of a collaboration between the Department of Higher Education and the Department of Technology Enhanced Learning. The aim of our project was to create and evaluate an innovative online resource which supports key aspects of pedagogic change – self-reflection and continuous professional development (CPD). We agreed that the structure and content of the online toolkit would be explicitly guided by the emerging model of 'pedagogic frailty and resilience' (Kinchin et al., 2016). The original aim of the online resource was to be a learning toolkit that would simultaneously encourage organisational and personal change by supporting self-paced, critical reflection which leads to the development of resilience. Sharing the toolkit at an institutional level would be a step towards building a collaborative approach for developing resilient behaviour. This would support the University's strategic aims in improving teaching quality and enhancing the student experience. Moreover, online learning would be used to increase awareness of shared underlying values that can support staff development.

It became clear that achieving our goal required a design for an online toolkit which would scaffold learners in exploring the links between pedagogic frailty and resilience. We acknowledged that results would be personal and would relate to discipline as well as personal motivation and personality and that they could help the academic focus on areas that can be explored and enhanced within their own disciplinary context. So, the major aim of the initial design was to create an online toolkit with the following benefits: foster an informative and transformative experience and support the integration of the following types of learning: theoretical, experiential and practical. Learners would use the pedagogical frailty model as a theoretical framework. Learning would be developed through interaction with case studies, videos, and micro lectures. By creating concept maps they engage with experiential knowledge which is applied through practical knowledge as the participants authentically engage with self-reflection and the University's CPD framework.

Previous research has shown that the pedagogic frailty model resonates with academics' concerns and ambitions, and that the methodology, concept mapping, is effective in gaining access to their beliefs, values and assumptions about teaching (Kinchin & Francis, 2017). In these previous studies, reflections were framed by map-mediated individual interviews, in which the interviewee was guided through the construction of concept maps that represent each of the major themes within the model (Kinchin et al., 2016):

- the values discourse that guides teaching;
- the relationship between the pedagogy and the practice of the discipline;
- the research-teaching nexus;
- the regulatory frameworks that facilitate teaching.

Furthermore, learning resources and activities would encourage the academics to actively express, develop and share relevant ideas and values and enhance the University's teaching environment in an integrated and coordinated manner. The initial aim of our project was to create a channel which would make the approach to pedagogic frailty scalable for implementation across an entire institution through an online toolkit, which would provide the necessary support for colleagues to engage in the map-mediated reflective process (individually or in groups), and would allow them to reflect on their teaching at their own pace and in their own timeframe (Correia & Aguiar, 2017).

2. Our evolving ethos

Our main drive was to create a sustainable online toolkit to support pedagogic resilience and concept mapping. Engaging with the pedagogic frailty model provides academics with a platform which enables introspective processes (Kinchin & Winstone, 2017). Evaluating the impact reflection can have on one's teaching practice is not an easy task although the process generally leads to a fruitful source of information. As Palmer (1998, p. 9) argues, '*the most practical thing we can achieve in any kind of work is insight into what is happening inside us as we do it. The more familiar we are with our inner terrain, the more surefooted our teaching and living becomes.*' Furthermore, mapping out one's experience, value and ideas about teaching can reveal opportunities and challenges which otherwise would have been indirectly dealt with (Correia & Aguiar, 2017). Not proactively dealing with one's limits and potentials has an impact on one's pedagogical practice and consequently the knowledge passed on to students (Palmer, 1998).

Also, Brookfield (1996, p. 7) stresses the importance for educators to maintain an 'autobiography as a learner' as doing this and continuously learning about one's own teaching 'is essential practice if one's goals is to offer powerful support to students as they begin to traverse new intellectual terrains.' The broader benefits are summarised by Barnes (2014, p. 179):

> *'If staff development consists of active opportunities to express, develop and share values, it has been suggested that institutions would quickly become more positive places ... and a shared values literacy would result in a shared direction for resilient behaviour.'*

Having established the value of exposing teachers to tools that support reflection within a shared space we wanted to understand how this can be achieved within an online environment. In this process we recognised the need to design ways of addressing the very significant challenges involved.

This paper will first elaborate how we approached these obstacles in relation to online learning. We will then discuss the additional barriers associated with the context of higher education and academic discourses. We will analyse these areas separately, although an overriding principle for us is that to design learning online or otherwise without regard for the context is to forget that 'Activity, concept, and culture are interdependent. '(Brown, Collins, & Duguid, 1989, p. 33). We should therefore 'think about knowledge as a set of tools: since tools and knowledge can only be understood through use and using them entails both changing the user's view of the world and adopting the belief system of the culture in which they are used.' (Brown et al., 1989).

3. An integrated approach to developing online learning

'A conversation is only as good as the question it entertains' (Palmer, 1998, p. 11)

Advancing our understanding of online learning's potential will remain challenging as long as the value of the medium is neither questioned nor creatively analysed. Current conceptions of technology enhanced learning are closely connected to the legacy created by two of its main qualities: accessibility and transferability. It is important to understand that the paradigm shift triggered by the internet and online learning (Garrison & Anderson, 2003) cannot be clearly discerned in the context of a university which, as a social institution, developed during times when 'politics moved faster than technology' (Harari, 2014, p. 679). Thus, as Garrison and Anderson (2003, p. 54) noted, '*to realise the potential of e-learning as an open but cohesive system, it is essential that we rethink our pedagogy*' and acknowledge that we '*have yet to experience the full effects*' and advantages of online learning. By doing so we can discover innovative ways of processing information, co-creating knowledge, and as a consequence provide opportunities for collaboration that supports social change.

If the process of discovery is to result in sustainable innovation, we need to not only consider the impact of learning technology but also acknowledge existing limiting perceptions and the false promises that have helped to sustain them. What is more, Aguiar and Correia (2017) argue that a similar critical approach should be used when considering the potential of concept mapping. Further enhancing the ways in which academics engage with educational technology is an increasingly recognised and sought after goal (Higher Education Policy Institute, 2017; Johnson, Adams Becker, Estrada, & Freeman, 2015). The challenge is that many academics 'adapt technology to fit the familiar practices of teacher centred instruction' (Cuban, 2001, p. 83). Furthermore, the lack of Higher Education sector-wide mechanisms for raising awareness about online learning principles and creating spaces for collaboration and innovation (Higher Education Policy Institute, 2017) means the digital literacy required to make confident decisions is currently not a natural component of academic socialisation.

There is growing evidence for the effectiveness of online learning and its impact on student engagement and learning outcomes (McFarland & Hamilton, 2005; Clark & Mayer, 2011; Palloff & Pratt, 2001). This, along with institutional policies and pressures, encourages increasing numbers of academics to transition their teaching to online spaces. Online learning can however lead to reduced teacher explanation and less interaction between those participating in the learning process (Jaggars, 2014). Also, the tangible outcomes of many modules are not known in advance in the case of personal development practices. In this respect, our aims in developing online learning contrasts with predominant approaches in the field -rather than start with how to deliver learning outcomes in an efficient way or consider how technology can overcome or get around existing constraints we considered the overriding ethos and principles.

Online environments for professional development should create an open space which encourages investigation, experimentation and development that is self-directed and regulated. These capabilities are often the main goals of education theories (Nicol & Macfarlane-Dick, 2006) as well as formal curricular development, although in the hidden curriculum they are often not considered as important. This educational process is facilitated successfully through face-to-face workshops about pedagogic frailty – as such one of our challenges was how to achieve this in an online environment. To this end we drew on some initial principles for example those outlined by Littlejohn, Hood, Milligan,

and Mustain (2016), who state that in order to successfully support professional development, online learning should:

- make it easy for professionals to create personal goals that link newly acquired concepts and ideas with their practice;
- create opportunities for the learners to assess their progress during and beyond the course;
- cater for the diversity of the student cohort by considering their prior knowledge, motivation, and desired outcomes;
- adapt and value the existing expertise of professionals/learners;
- facilitate peer-to-peer discussion both during and after the course.

Peer learning is an essential element of developing meta-cognitive processes since it enables learners to share and further develop their reflections (Brookfield, 1996). Therefore, for reflective practice around the topic of pedagogy to disseminate university wide, there needs to be space for academics to share and discuss their values and teaching practices. What is more, '*collaborative inquiry aims at a kind of organisational learning (… to develop learning environments conducive to the sort of teaching and learning that consists in reflective conversation with the situation*' Schön (1992, p. 136) which facilitates new avenues for discovery.

Access to information does not guarantee knowledge shifts (Brown et al., 1989), therefore accessible online resources by themselves do not necessarily result in meaningful learning. As previously discussed, the environment in which online learning operates must be considered. In this respect, an online CPD resource which takes into account the implications of the complex and varied processes involved in academic socialisation across disciplines raises numerous challenges.

For both CPD online resources and autonomous individual, reflective practices rewards and recognitions (formal and informal) are required. Good practice must be consistently reinforced and shared at both small and large scale. As Winstone (2017) observes, numerous reports analysing the status and rewards associated with teaching in Higher Education (HE) show that promotions are mainly associated with disciplinary research rather than innovative pedagogy. Pedagogic frailty creates an opportunity to recognise and address the 'unresolved tensions within the research-teaching nexus' and the imbalanced 'reward structure for teaching and research excellence' (Winstone, 2017, p. 37). The following section will uncover more risks and challenges within the academic context which we have taken into consideration while designing the online toolkit.

4. Self-reflection and uncertainty through the lens of academic socialisation

To understand the potential barriers to academics embedding self-reflection into their teaching practice we need to explore the institutional context and the processes of academic socialisation. Integrating online CPD practices with existing life strategies which might 'resist flexibility and fluidity in order to make aspects of their lives solid' (Burkitt, 1999, p. 109) is a significant challenge. We can only expect academics to self-enrol onto online CPD courses that prompt critical thinking and challenge existing secure patterns if self-reflection and fluidity play an important part in academic socialisation. There is considerable evidence that this is far from the case.

Hyland defines academic socialisation discourse as '*the way that individuals collaborate and compete with others to create knowledge, to educate neophytes, to reveal learning and define academic allegiances'* (Hyland, 2009, p. 2). In this respect academic socialisation discourse refers to the actions and performances perceived as an essential component of 'being part of the academic community' (Hyland, 2009, p. 3). Potgieter and Smit (2009, p. 219) provide an honest and direct overview of the challenges encountered whilst navigating the journey of creating and strengthening their academic voice. Being at the beginning of their career, they observe that:

> '*We are still forced by academic custom to talk about our own experiences in about the same way as we might talk about bacteria, or the moon or about white rats, assuming the subject-object cleavage, assuming that we are detached, distant and uninvolved, assuming that we are unmoved and unchanged by the act of observation ... assuming that all observation, thinking, expression and communication must be cool, never warm, assuming that cognition can only be contaminated or distorted by emotion*'

They also add that engaging with reflective practices, talking about the connection which one has with their field of expertise and refusing to adhere to the rigid (pre)conceptions about academic voice challenges their academic socialisation, which equates communities of sophisticated hermits with communities of academics (Potgieter & Smit, 2009, p. 225). An overlapping challenge is the fact that teaching is widely recognised as a 'private' and individualised activity (Seldin, 2006, p. 5). The impact of this is further explained by Krause who points out that that 'unlike strong affinity with disciplinary research communities' (Krause, 2014, p. 6) there is no consensus among academic staff about 'the existence of a discipline-based teaching community' (Krause, 2014, p. 15). Furthermore, if there are no clear positive outcomes which act in favour of change an individual may not engage in innovative practices (Winstone, 2017). What is more, natural aversion to loss and a preference for familiarity make it harder to embrace teaching practices outside of one's comfort zone (Winstone, 2017). Relying solely on time to encourage academics to embrace pedagogical innovations is not enough (Brownell & Tanner, 2012; Winstone, 2017).

> '*Evidence suggests that talking together about risks makes people more positive in their attitudes about taking risks in an educational context, the so called "risky shift" (Spitzer, 1975). This may occur because the risk feels more like a shared than individual endeavour, which is perceived to buffer the individual against the full force of any negative outcomes.* (Winstone, 2017, p. 42)

The lack of any shared space where pedagogic questions can be discussed, developed and valued is a major impediment to academics engaging with notions of frailty. This underlines the importance of sharing reflections and having an ongoing dialogue about teaching ideals and challenges. In order to design a learning experience which incorporates such a space we sought to understand the challenges faced by academics as they experience uncertainty and transitions. Shulman's (2005) description of 'pedagogies of uncertainty' suggests that:

> *'Professional education is about developing pedagogies to link ideas, practices, and values under conditions of inherent uncertainty that necessitate not only judgment in order to act, but also cognizance of the consequences of one's action. In the presence of uncertainty, one is obligated to learn from experience.'*

This description encapsulates many of the most important characteristics of the context that academics need to work within, and highlights the importance of providing

space and tools to support them in developing their ability to cope with uncertainty. In order to develop such space and tools we examined the processes and challenges associated with dealing with uncertainty and making significant transitions of the type experienced by teachers undertaking CPD courses. The framework of Threshold Concepts provides a way to understand transformative learning as a process which involves encountering uncertainty while passing through a 'conceptual gateway'. The authors argue that within disciplines there are particular topics or concepts which when understood provide learners with 'a new way of understanding, interpreting or viewing' a subject (Meyer & Land, 2005, p. 373). Examples include 'precedent in Law, depreciation in accounting, the central limit theorem in Statistics, entropy in Physics and so on.' (Meyer & Land, 2005, p. 374). They also explain the experience of this type of learning as being one of moving through a liminal space. This is characterised by significant changes in perspective and even potentially identity. However, these changes can often be challenging and are associated with uncertainty and often discomfort (Meyer & Land, 2005). The ideas of threshold concepts and liminal spaces therefore highlight many of the most important challenges in experiencing uncertainty and developing reflective practice. Particularly they foreground the ways in which transformative and integrative learning experiences are also likely to be 'troublesome' since they are not only complex but also challenging to our existing models and practices. Other explanations of transformative learning and transformative learning relationships also foreground the potential as well as the challenges. For example, Schön's (1983) work shows how interactions between learner and expert can facilitate significant moments when learners are able to recognise the limitations of their 'model' and can move on from this. Land recently discussed the importance of the experiencing the process as a learning opportunity, which is also our focus.

> "Through encounters with liminality and 'troublesome Knowledge' students, as co-enquirers, are encouraged to develop a research-mindedness in tackling complexity which helps them develop resilience and other dimensions of affective robustness (hope, optimism and self-efficacy)." (Land, 2017, p. 179)

If this is important for students, then it must be even more so for those who are learning to teach to develop 'the resilience to tolerate periods of uncertainty and an openness to transformation.' (Land, 2017, p. 180)

A liminal spaces perspective also points to the transitional nature of this development and the ways in which it can impact on identity. For example, teachers who are accustomed to being expert in their discipline have to learn how to be novices in relation to teaching. This again underscores the potential value of providing the opportunity for academics to develop resilience through a process of scaffolded introspection. Being able to experience the role of a student by participating either through online learning or attending a CPD workshop is a further benefit.

Meyer and Land (2005, p. 1) distinguish between changes in the "internal view of subject matter, subject landscape and world view". This forms a very useful framework to consider the type and scope of transformation that teachers could experience in how they relate to content, ideas, the discipline and ultimately their identity within the discipline. To this we can add themselves in relation to knowledge and learning and therefore to learning and teaching practice. For this reason, it is important to have the space and support within an institution for academics to explore these areas in ways that open up the potential of transformative learning. It is also a further reminder of how challenging such learning can be. Our aim therefore was to provide the opportunity for academics to develop capabilities and understanding about their practice and to

recognise, tolerate and value the disjuncture and uncertainty that are inevitably encountered in this process.

Meyer and Land (2005) themselves explore some of the challenges involved in redesigning or developing learning and teaching from the perspective of Threshold Concepts and liminal spaces. Notably their discussion highlights how some approaches to scaffolding are likely to be counterproductive because they close down exploration and help learners to recover a sense of certainty too quickly. This is a crucial consideration in the approach we have designed. To create tools and resources in order - counterintuitively - to allow teachers as learners to spend more time and attention exploring liminal spaces. The intention of this is that the liminality of the experience is deliberately attended to, and that support is offered not to simply get through the experience or achieve the right outcomes but to learn as much as possible from it.

5. Proposed design: Blended workshop and online concept mapping

Having considered the culture around online learning, academic identity and resilience we concluded that it would be detrimental to regard online learning materials as self-contained resources. Instead we decided to design a blended solution, part online and part face-to-face.

To inform the instructional design for the online Pedagogic Frailty toolkit we carried out a detailed analysis of existing face-to-face workshops on concept mapping and Pedagogic Frailty offered at University of Surrey. As a result, we identified the key elements and stages of learning required for establishing a foundation for pedagogical reflection. The workshops run separately and, even though attending the concept mapping workshop is not a pre-requisite for the one on Pedagogic Frailty we concluded that for an online learning environment where there is no real-time guidance from the teacher, being introduced to Pedagogic Frailty without having a good understanding of Concept Mapping would be detrimental. Generating excellent Concept Maps (Cmaps) is an essential skill as it supports learners in organising narratives, making visible subtle and conceptual relationships (Caňas, Novak, & Reiska, 2015). Without acquiring this skill, academics cannot successfully engage in introspective practice (Correia & Aguiar, 2017).

Furthermore, having an online course for concept mapping which can be used without reference to the pedagogic frailty framework has numerous advantages. ‘Cmaps have a decades-long background of research and application, dating back to the 1970s when the concept mapping tool was first introduced by Joseph Novak and his colleagues at Cornell University’ (Novak & Cañas, 2006; Novak & Cañas, 2007; Kinchin, 2014). Having concept mapping as a standalone online resource could also bring numerous pedagogical advantages as academics could make use of this tool in their teaching by organising content to be taught or scaffolding critical thinking.

What is more, academics could make the resource available for students which would allow them to engage with their discipline in a more reflective manner. Concept maps could also be used as a form of assessment or to facilitate group discussions. Presenting all the potential uses and advantages of concept mapping through the online resource introduces more rewards and creates more avenues for practice and therefore increases opportunities for academics to become excellent Cmappers and increases the motivation for staff to start using Cmapping. Creating an online toolkit for the academic community to ‘gain better control of the use of technology’ (Laurillard, 2012, p. 8)

supports cultural change and increases the likelihood of Cmaps being used for CPD purposes.

A blended learning experience that facilitates deeper learning by creating a space for people to connect 'specialized information sets' with their own knowledge (Siemens, 2005) is central to achieving our aims. Coming to the CPD workshop on pedagogic frailty with prior knowledge and experience of concept mapping creates the opportunity for active learning and offers staff the chance to share their thoughts and further develop their concept map on pedagogy by sharing them with their colleagues. Reflection and collaboration are crucial elements of educational design as they can facilitate meta-cognitive skills (Brookfield, 1996). Talking about challenges and problems with a community of peers builds resilience and makes changing, innovating and therefore taking risks 'feel more like a shared than individual endeavour, which is perceived to buffer the individual against the full force of any negative outcomes' (Winstone, 2017, p. 36). A blended CPD workshop creates 'active opportunities to express, develop and share values' among the academic community which results in 'a shared direction for resilient behaviour' (Barnes, 2014, p. 179). The maps created before the workshop provide a medium which facilitates the externalisation of personal views and values. These artefacts will be furtherer developed, shared and discussed by attending a workshop on pedagogic frailty.

Our analysis of the concept mapping workshop has identified the key elements an online learning toolkit for concept mapping must address. The analysis drew on cognitive load theory which 'provides a framework for investigations into cognitive processes and instructional design' (Paas, Renkl, & Sweller, 2003, p. 1). To create a situation where the learner can co-produce knowledge, the instructional design needs to be layered and developed in a chronological manner with recognition of the cognitive load and memory capacity so that 'scaffolding of activities evolves from simple to complex activities' (Paas et al., 2003, p. 1).

Navigating the learning environment will be structured in clear and customisable ways which will allow for a self-paced learning journey. The following outline of the learning design for Concept Mapping illustrates the elements and sequence that we are now developing further:

1. **Exploration**: This section introduces learners to the 'anatomy' of a Cmap. The main focus of this stage is to provide the foundational elements and principles required to create Cmaps. Learners first watch a short video which leads into an exploration of the notion of concepts and how they can be used to integrate the different characteristics of a chosen topic. Then, participants consider the relationships between concepts and how these can be represented in Cmaps through links. From this they learn the principle that ideas only make sense when you connect them with other ideas. Participants are encouraged to distinguish simple from complex links through introducing the idea of different patterns of connections. An activity in which learners are prompted to provide links between pairs of concepts and given feedback on the implications of their choices aims at developing this skill
2. **Appreciation**: Here, participants develop a greater appreciation of what makes a good Cmap via three interactions. Firstly, case studies of peers discussing varied uses of Cmaps are provided, which are designed to develop an understanding of the different purposes of Cmapping. Secondly, participants watch a video of a live map being created along with a commentary explaining the process. At various points in the video participants are asked to choose an appropriate next

step in the mapping process. They then compare their choice to those made in the worked example, thereby developing an appreciation of the range of options available. Thirdly, participants are asked to evaluate several examples of Cmaps. Questions are asked in order to focus attention on the most important criteria which distinguish good from excellent Cmaps. This online practice is designed to put the learners in an active and critical position in relation to their own use of Cmaps.

3. **Creation**: This phase offers a structured and guided opportunity to apply knowledge and understanding gained from the previous stages. Participants create their first Cmap on the topic of 'Teaching at university'. This topic is both accessible and valuable for academics from all backgrounds. It provides a solid foundation for engaging with the theory of pedagogic frailty and as such forms a bridge between online and face-to-face elements of our blended workshop. The activity is supported by a number of scaffolding features such as a checklist providing questions and tips to guide participants through each stage of constructing their map. This offers learners a structure which they can follow and interact with while mapping.

6. Conclusion

We have discussed the process of taking a successful face-to-face workshop and making it more widely accessible through an online toolkit. In the process, we have addressed some fundamental questions in the area of online learning and CPD within the UK HE sector. The first of these was to critically contrast the opportunities of online learning with perceptions about the limited role of technology within education. As a working principle, we have adopted an integrated approach to online learning design which challenges popular patterns of online learning including the tendency to replicate content which was originally designed for face-to-face learning. Instead we focused on the 'gestalt' of the learning experience across both online and face-to-face environments. In order to do this successfully we had to engage with relevant academic mores of the UK HE context.

This brought us to consider the challenges of engaging in reflective CPD practices when academic socialisation does not provide a space for introspection. We highlighted how uncertainty, change and liminal experiences currently sit uncomfortably with aspects of academic norms. These include conceptions about academic voice and the tension arising from simultaneously being a disciplinary expert and a pedagogic novice. In addition, we highlighted the lack of a shared space to discuss and value evolving teaching practices. This led to our second working principle - to provide tools and resources that encourage learners to embrace uncertainty and build resilience.

These working principles have been based on a small-scale project focussing on one example of a face-to-face CPD workshop. We have grounded our examination in appropriate theory about online learning and academic identity, at the same time recognising the tentative nature of our proposed principles. Within this limited scope we feel we have established the potential value of approaching online learning design in a systemic and situated manner. Given this ambitious aim and the considerable challenges associated with it, any approach to constructing a design pattern for online pedagogic frailty resources should not be '*classically experimental, but iterative, progressively refining the initial theory-based design as it is actually implemented*' (Laurillard, 2012, p.

7). Therefore, we argue for the use of approaches that are co-designed in collaboration with the academic community and supported by empirical research.

References

Aguiar, J. G., & Correia, P. R. M. (2017). From representing to modelling knowledge: Proposing a two-step training for excellence in concept mapping. *Knowledge Management & E-Learning (KM&EL), 9*(3), 366–379.

Barnes, J. M. (2014). Interdisciplinary, praxis-focussed auto-ethnography: Using autobiography and the values discussion to build capacity in teachers. *Advances in Social Sciences Research Journal, 1*(5), 160–182.

Brookfield, S. (1996). Through the lens of learning: How experiencing difficult learning challenges and changes assumptions about teaching. In L. Richlin (Ed.), *To Improve the Academy* (Vol. 15, pp. 3–15). Stillwater, OK: New Forums Press and the Professional and Organizational Development Network in Higher Education.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32–42.

Brownell, S. E., & Tanner, K. D. (2012). Barriers to faculty pedagogical change: Lack of training, time, incentives, and…tensions with professional identity? *CBE-Life Sciences Education, 11*(4), 339–346.

Burkitt, I. (1999). *Bodies of thought: Embodiment, identity and modernity*. London: SAGE.

Caňas, A. J., Novak, J. D., & Reiska, P. (2015). How good is my concept map? Am I a good Cmapper? *Knowledge Management & E-Learning (KM&EL), 7*(1), 6–19.

Clark, R. C., & Mayer, R. E. (2011). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. San Francisco, CA: Pfeiffer.

Correia, P., & Aguiar, J. (2017). Profiling pedagogic frailty using concept maps. In I. M. Kinchin & N. E. Winstone (Eds.), *Pedagogic Frailty and Resilience in the University* (pp. 196–206). Rotterdam: Sense Publishers.

Cuban, L. (2001). *Oversold and underused*. Cambridge, MA: Harvard University Press.

Garrison, D., & Anderson, T. (2003). *E-learning in the 21st century*. London: Routledge.

Harari, Y. N. (2014). *Sapiens: A brief history of humankind*. New York, NY: Harper, an imprint of Harper Collins Publishers.

Higher Education Policy Institute. (2017). *Rebooting learning for the digital age: What next for technology-enhanced higher education?* HEPI. Retrieved from http://www.hepi.ac.uk/2017/02/02/rebooting-learning-digital-age-next-technology-enhanced-higher-education/

Hyland, K. (2009). *Academic discourse: English in a global context*. London: Continuum.

Jaggars, S. S. (2014). Choosing between online and face-to-face courses: Community college student voices. *American Journal of Distance Education, 28*(1), 27–38.

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2015). *NMC horizon report: 2015 higher education edition*. Austin, Texas: The New Media Consortium.

Kinchin, I. M. (2014). Concept mapping as a learning tool in higher education: A critical analysis of recent reviews. *The Journal of Continuing Higher Education, 62*, 39–49.

Kinchin, I. M., Alpay, E., Curtis, K., Franklin, J., Rivers, C., & Winstone, N. E. (2016). Charting the elements of pedagogic frailty. *Educational Research, 58*(1), 1–23.

Kinchin, I. M., & Francis, R. A. (2017). Mapping pedagogic frailty in geography education: A framed autoethnographic case study. *Journal of Geography in Higher Education, 41*(1), 56–74.

Kinchin, I. M., & Winstone, N. E. (2017). *Pedagogic frailty and resilience in the*

university. Rotterdam: SensePublishers.
Krause, K. L. D. (2014). Challenging perspectives on learning andteaching in the disciplines: The academic voice. *Studies in Higher Education, 39*(1), 2–19.
Land, L. (2017). Enhancing quality to address frailty. In I. M. Kinchin & N. E. Winstone (Eds.), *Pedagogic Frailty and Resilience in the University* (pp. 179–194). Rotterdam: Sense Publishers.
Laurillard, D. (2012). *Teaching as a design science: Building pedagogical patterns for learning and technology*. New York, NY: Routledge.
Littlejohn, A., Hood, N., Milligan, C., & Mustain, P. (2016). Learning in MOOCs: motivations and self-regulated learning in MOOCs. *The Internet and Higher Education, 29*, 40–48.
McFarland, D. J., & Hamilton, D. (2005). Adding contextual specificity to the technology acceptance model. *Computers in Human Behavior, 22*(3), 427–447.
Meyer, J. H. F., & Land, R. (2005). Threshold concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning. *Higher education, 49*(3), 373–388.
Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199–218.
Novak, J. D., & Cañas, A. J. (2006). The origins of the concept mapping tool and the continuing evolution of the tool. *Information Visualization, 5*(3), 175–184.
Novak, J. D., & Cañas, A. J. (2007). Theoretical origins of concept maps, how to construct them, and uses in education. *Reflecting Education, 3*(1), 29–42.
Paas, F., Renkl, A., & Sweller, J. (2003). Cognitive load theory and instructional design: Recent developments. *Educational Psychologist, 38*(1), 1–4.
Palloff, R. M., & Pratt, K. (2001). *Lessons from the cyberspace classroom*. Paper presented at the 17TH Annual Conference on Distance Teaching and Learning.
Palmer, P. J. (1998). *The courage to teach: Exploring the inner landscape of a teacher's life*. San Francisco, CA: Jossey-Bass,
Potgieter, F., & Smit, B. (2009). Finding academic voice: A critical narrative of knowledge-making and discovery. *Qualitative Inquiry, 15*(1), 214–228.
Schön, D. (1983). *The reflective practitioner*. New York, NY: Basic Books.
Schön, D. A. (1992). The theory of inquiry: Dewey's legacy to education. *Curriculum Inquiry, 22*(2), 119–139.
Seldin, P. (2006). Building a successful evaluation program. In P. Seldin & Associates (Eds.), *Evaluating Faculty Performance: A Practical Guide to Assessing Teaching, Research, and Service* (pp. 1–19). Bolton, MA: Anker.
Shulman, L. S. (2005). *Pedagogies of uncertainty*. Association of American Colleges & Universities. Retrieved from https://www.aacu.org/publications-research/periodicals/pedagogies-uncertainty
Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning, 2*(1), 3–10.
Winstone, N. E. (2017). The '3Rs' of pedagogic frailty: Risk, reward and resilience. In I. M. Kinchin & N. E. Winstone (Eds.), *Pedagogic Frailty and Resilience in the University* (pp. 34–48). Rotterdam: Sense Publishers.