Using a Mixed Methods Research Design in a Study Investigating the 'Heads of e-Learning' Perspective towards Technology Enhanced Learning

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Abstract: This paper outlines the research design, methodology and methods employed in research conducted in the context of Higher Education Institutions (HEIs) and focuses on the Heads of e-Learning (HeLs) perspective about Technology Enhanced Learning (TEL) by campus-based UK institutions. This paper aims to expand on the research design and the research methodology that was followed as part of this research, making a justified argument for mixed methods approaches in e-learning contexts. The background of this research and its research questions is outlined first to provide the context of this research. Following a review of the literature on TEL that informed this research, this paper provides an explanation of the researcher's worldview before discussing the chosen research design. The status of the findings and their generalisability based on the chosen methodology are then discussed. The research findings show that most universities represented in the survey offered various staff development opportunities to their academic staff in the effective use of TEL and that examples of innovative use of technology are evident in some areas in all participating institutions. Staff's digital skills and competencies coupled with a pedagogical underpinning as well as a supportive institutional culture were found to be the enablers for the effective implementation of TEL, according to the HeLs' expert informed responses. The paper is summarised and concluded making a case for the adoption of Mixed Methods Research (MMR) in e-learning settings..

Keywords: Mixed methods research, technology enhanced learning, staff development, HEIs.

1. Introduction - Research questions

This research focuses on the staff development needs in the use of learning technologies and on a range of institutional approaches to TEL, providing the Heads of e-Learning (HeLs) perspective. The research questions are:

1. What provision do a range of UK HEIs make for staff development in the area of TEL?
2. What do HeLs think lecturers need to know in order to deliver blended and online courses effectively? Are these needs addressed by a range of UK HEIs?
3. According to HeLs, what institutional approaches are required for TEL to be effectively embedded in the curriculum?
4. How do HeLs' perspectives compare to Laurillard's conversational framework for the effective use of learning technologies?

The first research question is mostly addressed in this study based on quantitative data gathered via an online questionnaire, while the second, third and fourth questions are addressed qualitatively, based on data gathered via semi-structured interviews with thirteen HeLs, drawing on their expert informed responses. The term staff development has been preferred here over the term training as it encompasses staff training but also includes other forms of professional development such as the Postgraduate Certificate in Teaching and Learning or Postgraduate Certificate in Academic Practice (PGCTL/PGCAP) course. Data gathered from the questionnaires plus some questions from the interviews address these staff development needs that include, pedagogic, technical and curriculum design skills. As the participants of this research provide a high level institutional perspective, the data gathered do not focus on particular subject areas or faculties.

2. Review of the literature on staff development will TEL

Since the last decade, institutions have been challenged to not only employ technologies to enhance learning, teaching and assessment but also to move beyond capital investment and invest further in staff development on the appropriate pedagogical use of the technologies in order to maximise their potential to aid students' learning (HEFCE 2009).

Aimard (2011) points out five main dimensions of e-learning: a) technology (internet, world-wide-web, e-learning platforms); b) content access and production (instructional design, content production, open source content); c) communication and interaction (asynchronous and synchronous online communications, access to peers, scholars and experts); d) e-pedagogy (e-tutoring, problem solving, project-based learning, metacognition and reflective learning, socio-constructivist learning); and e) organisational and cultural dimensions (looking at the ways the four aforementioned dimensions come together and interact with each other). These dimensions are interlinked and equally important in the implementation of e-learning courses.

It has been found that blended and online provision takes a lot of planning and requires IT infrastructure, platforms, administrative processes and online tutors-moderators in order to succeed. Many authors (Garrison and Vaughan 2008, Laurillard 2002, MacDonald 2008, Palloff and Pratt 2007, Salmon 2011, Tait and Mills 1999, 2003) have highlighted the fact that, for online learning to succeed, staff development is of crucial importance. According to MacDonald (2008, p.177):

> *The effectiveness of a blended course will be greatly influenced by the skill, enthusiasm and availability of the staff who work on it. They will need staff development to be effective, unless they already possess the relevant experience.*

Moreover, Salmon (2011) argues that an online tutor-moderator needs to develop technical skills but also become aware of new teaching practices that can be implemented in online environments. Currently, there is a plethora of approaches to staff development on TEL including staff training sessions, workshops, seminars, CPD short courses and online resources. Moreover, pedagogical aspects of online learning are often covered as part of the PGCTL/PGCAP course aimed at lecturers who are new to HE. These approaches currently in use by UK HEIs for staff development for blended and online learning from the HeLs' perspective are the main focus of this research.

Laurillard's conversational framework for the effective use of learning technologies (2002) emphasises the need for an effective organisational infrastructure to be in place. According to her, a learning organisation needs to be adaptive to the changing environment they find themselves in. Laurillard's framework is a dialogic process that takes place on two levels: the discursive level with a particular focus on theory and conceptualising, and the experiential level where the focus is on practice, activity and procedure building. In the second edition of her seminal book 'Rethinking university teaching: a framework for the effective use of learning technologies', Laurillard (2002) claims that learning is understood to occur through acquisition, practice and discovery, and discussion. Later on, in her 'Teaching as a design science' book, Laurillard (2012) adds learning through inquiry and learning through collaboration as ways that learning can arise. Inquiry learning is based on uses of learning resources but the learners need to actively engage with the material by adopting a critical and analytical approach. Laurillard's conversational framework has informed the research questions regarding staff development needs around TEL and regarding institutional approaches around TEL.

3. Ontology – Epistemology - Worldview

The researcher's ontological and epistemological worldview is of paramount importance in any research as it can dictate the research design, the main research questions and subsequently the chosen methodology and methods employed. Therefore, it is common for researchers to explicitly express their philosophical – ontological - stance and their epistemological worldview in order to frame their research and explain the chosen methodology. Creswell (2009) notes that although philosophical ideas remain largely hidden, they still need to be identified as they influence the research practice. Furthermore, as Feilzer (2010, p.7) acknowledges:

> *The choice of research questions and methods, albeit sometimes dictated by research funders, is a reflection of researchers' epistemological understanding of the world, even if it is not articulated or made explicit.*

Therefore, in order to justify the selection of the MMR paradigm, a brief description of the advantages and limitations of the two other paradigms is going to be attempted in the following sub-section.

3.1 Discussion of research paradigms

3.1.1 The positivist – postpositivist paradigm

Positivist/postpositivist assumptions have represented the traditional form of research (Creswell 2009) which is sometimes called the scientific method. Positivism dominated the westernised world following the French revolution and it was characterised by an overly confident belief that everything can be known through science (Cohen et al. 2007, Creswell 2009). The term postpositivism challenges the certainty of positivism arguing that we cannot be positive about the absolute truth of knowledge but we need to be able to replace established knowledge when new knowledge emerges, always following the scientific paradigm (Popper 2004). Postpositivists hold a deterministic worldview which emphasises the cause and effect relationship in studying various phenomena with experiments; postpositivists are also reductionists as they are trying to compartmentalise ideas in small sets of testable variables in order to test their hypotheses (Creswell 2009). According to Creswell 'postpositivists hold a deterministic philosophy in which causes probably determine effects or outcomes' (2009, p.7). For postpositivists research is the process of making claims and then refining or abandoning some of them for new claims in order to get closer and closer to the 'objective reality' that exists out there (Creswell 2009).

3.1.2 Critique of the positivist – postpositivist paradigm

Despite positivism's/postpositivism's apparent success, especially in natural sciences, its ontological and epistemological base has been scrutinised due to its mechanistic and reductionist view of nature which, some critics have claimed, defines life in measurable terms rather than inner experience, undermining life itself (Cohen et al. 2007). One of the early critics of positivism in the 19th century was the Danish philosopher Kierkegaard who is regarded as one of the main originators of existentialism (Cohen et al. 2007). Kierkegaard adopted an Aristotelian view of the meaning of existence, according to which the meaning lies in realising someone's potential, and this cannot be reduced and measured against abstract conceptualisation. He recognised that many characteristics of his time, such as democracy's trust in crowd mentality and the scientific and technological progress, contribute to the dehumanisation of the individual, giving people illusions. Objectivity, as perceived by the postpositivist paradigm, is a dangerous illusion that could reduce a person to an observer - in a Skinnerian behaviouristic way - trying to discover general laws governing human behaviour, according to Kierkegaard (Cohen et al. 2007). In the 20th century, other well-known thinkers who criticised positivism/postpositivism include Habermas, Horkheimer and Wittgenstein (Cohen et al. 2007). Habermas criticised the scientific mentality for being elevated almost to the level of religion, praising scientific knowledge alone and rejecting all other forms of knowledge such as moral, aesthetic, hermeneutic and creative, and reducing behaviour to technicism. Habermas, Horkheimer and Wittgenstein (Cohen et al. 2007) all argued that positivism/postpositivism is unable to address many important areas of life and that as scientific explanation seems to be the only means of explaining behaviour, it diminishes many of the characteristics that make humans human.

3.1.3 The constructivist – interpretivist paradigm

Contrary to the positivist/postpositivist paradigm, the constructivist/interpretivist paradigm puts an emphasis on the subjective experience and meanings that are multiple and varied. This paradigm holds the worldview that meanings are constructed by humans as they engage with the world and, in doing so, humans are influenced by social and historical perspectives (Creswell 2009). Meaning is generated socially for constructivists/interpretivists, a notion which challenges the main positivist idea that there is an objective truth 'out there'. Researchers who follow this paradigm are interested in detailed accounts about reality as it is constructed by certain individuals and they recognise that their own backgrounds shape their interpretations of the experiences of others. Sociologist Karl Mannheim was one of the founders of this paradigm (Cohen et al. 2007).

3.1.4 Critique of the constructivist – interpretivist paradigm

Criticisms of this paradigm include the view that subjective reports may be incomplete and misleading as anti-positivists have abandoned scientific procedures of verification (Cohen et al. 2007). Interpretivism has also been criticised due to the fact that it often overlooks the fact that the process during which one interprets a situation is itself a product of the circumstances in which one is placed (Cohen et al. 2007).

3.1.5   The mixed methods research (MMR) paradigm

Integrating quantitative and qualitative research strategies does not fall comfortably within one or the other worldview (Feilzer 2010). Purists of either side claim that quantitative and qualitative research belong to totally different paradigms and are underpinned by different philosophical positions in relation to ontology and epistemology; furthermore, purists claim that they address different questions, which dictate different approaches in data collection and analysis (Cohen et al. 2007, Creswell 2009, Feilzer 2010). At the other extreme, MMR literature can sometimes lead to the conclusion that by introducing an additional element in the research, some form of holism can be achieved; this, according to Bergman (2011) is not a valid assumption, as the additional element is not what makes MMR interesting but rather its fundamental characteristic; furthermore, it could be argued that no matter how many theoretical approaches, data sets and analyses are part of a project, a research question will never be addressed in all its complexity. The focus of MMR should be to improve on the findings of both quantitative and qualitative methods rather than illustrate the limitations of quantitative or qualitative methods per se (Bergman 2011).

According to Bergman (2011) MMR has generated a critical mass of both theoretical and empirical contributions in social sciences and education; however, there are still many theorists that consider this type of research as insufficiently rigorous (Bergman 2011). This apparent contradiction is, according to Bergman (2011), due to the absence of the right terminology and process description that characterised MMR before the 1990s, when the current generation of mixed methods researchers emerged. Some theorists have gone as far as to question the term 'mixed', claiming that the quantitative and the qualitative element are not really mixed but blended or meshed. As the term mixed is now established, moving away from it would most probably cause confusion rather than clarification, according to Bergman (2011).

While it cannot be argued that MMR is better than monomethod research in principle, MMR often offers considerable advantages compared to monomethod research. On the one hand, there are good reasons to limit a research project to a particular data set and a particular analysis, such as time and cost, complexity and ease of reporting the findings in print; but on the other hand, careful implementation of MMR can cross-validate and complement individual findings and the researcher can become more knowledgeable and critical towards research as they assess the possibilities and limitations of each research technique (Bergman 2011).

Pragmatism is the philosophical underpinning for the MMR paradigm (Bergman 2011, Creswell 2009, Denscombe 2008, Feilzer 2010, Johnson, Onwuegbuzie and Turner 2007) as it focuses its attention on a particular situation and is utilising pluralistic approaches to derive knowledge about that situation. Pragmatism sidesteps the contentious issues of truth and reality; it accepts philosophically that there are both singular (positivism/postpositivism) and multiple (interpretivism/constructivism) realities out there that are open to empirical inquiry and focuses on solving practical problems in the real world (Feilzer 2010, Rorty 1999). Pragmatists often reject the representational view of the world that attempts to match epistemology with ontology and focus more on the experiential world with its different layers, some objective, some subjective and others both subjective and objective.

Denscombe (2008) has identified four facets of the way in which pragmatism underlies the practice of MMR. He states that these four facets are not necessarily mutually exclusive but a degree of overlap between them may be evident in various MMR projects. The first facet of pragmatism as the underpinning theory in MMR is that it can provide a fusion of approaches, challenging dualisms as sterile and unproductive and looking for a level of compatibility between them. The second facet is that pragmatism can provide a third alternative in cases where researchers decide that neither quantitative nor qualitative approaches alone will provide adequate findings in the particular research question they have in mind. The third facet of pragmatism is more radical and pragmatism is seen as:

> *…a new orthodoxy built on the belief that not only is it allowable to mix methods from different paradigms of research but it is also desirable to do so because good social research will almost inevitably require the use of both quantitative and qualitative research to provide an adequate answer (Denscombe 2008, p.274).*
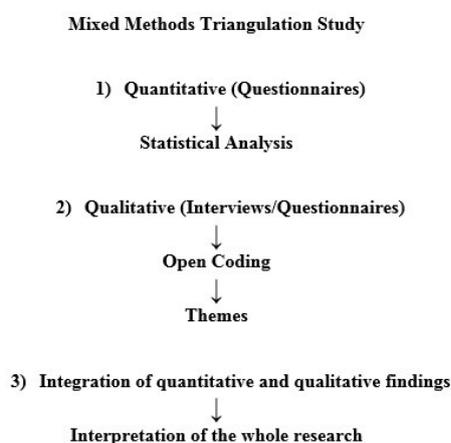
Finally, the fourth facet of pragmatism is when the word pragmatic is treated in its common sense way as meaning expedient; this last facet is dangerous and can undermine the MMR as a paradigm where 'anything goes' (Denscombe 2008).

4. Research design

A research design has been selected in order to align with the main research questions of this study, which focus on the staff development needs of the academic staff involved in blended and online course delivery. A MMR design was adopted for this research as it can best address the complexity of the four research questions as outlined in an earlier section of this paper. The first research question is mostly addressed based on quantitative data gathered via an online questionnaire, while the second, third and fourth questions are addressed qualitatively, based on data gathered via semi-structured interviews with thirteen heads of e-learning (HeLs). The sequence for data gathering used was: the questionnaire was sent out in late October 2011 and it was open for three weeks until the middle of November 2011, while the initial set of interviews (eight) took place between January and March 2012. Five additional interviews were carried out in January and February 2015. Both data collection methods used the same informants, the HeLs, for consistency purposes, as the study is focused on the HeLs' perspectives on TEL. However, the interviews used a smaller sample – thirteen – compared to the questionnaire, which returned 27 responses, which is approximately 20% of the HeL population subscribing to the HeL Forum at the time (27 out of 118). More details on the informants of this research, and the specifics of the triangulation mixed methods design used in this research, are discussed below.

The informants of this research were the HeLs in various UK HEIs. Most UK HEIs have a nominated contact to that group which meet on a quarterly basis and use a closed mailing list to communicate. An email was sent to the 'heads of e-learning forum' mailing list inviting them to participate in the research by filling out an online questionnaire. One hundred and eighteen (118) UK institutions each have a single representative as a member of that group (HeLF Membership 2013). The questionnaire was completed by 27 participants, eight of which were subsequently interviewed. Purposive sampling was used in the first round of the interviews as eight volunteers from those who completed the questionnaire were interviewed with an aim to achieve representativeness of both pre-1992 and post-1992 institutions, as purposive sampling techniques involve selecting certain units or cases 'based on a specific purpose rather than randomly' (Tashakkori and Teddlie 2003, p.713). Convenience sampling which 'involves drawing samples that are both easily accessible and willing to participate in a study' (Teddlie and Yu 2007, p.78) was used during the second round of the five additional interviews as these interviewees were selectively targeted directly via email.

Quantitative and qualitative methods were deployed as part of this research: data handled in a quantitative way were gathered via the online questionnaire and qualitative data were gathered via the semi-structured interviews, but also via some open-ended questions of the questionnaire. The whole research design is depicted diagrammatically in Figure 1.

Mixed Methods Triangulation Study

1) **Quantitative (Questionnaires)**
↓
Statistical Analysis

2) **Qualitative (Interviews/Questionnaires)**
↓
Open Coding
↓
Themes

3) **Integration of quantitative and qualitative findings**
↓
Interpretation of the whole research

Figure 1: Research Design – Methodology – Methods.

Keeping the research data gathering to a specific group of people (HeLs) made the research more manageable. The selection of the HeLs to be informants of this research provided a number of advantages such as fair representation of UK HEIs, as each UK institution can have only one representative in the HeLs' group. This means that the responses to the questionnaire reflect the perceived approach to e-learning by HeLs of 27 UK HEIs. Furthermore, the selection of the HeLs as informants of this research also provided expert input in the way TEL is approached institutionally in a number of HEIs in the UK, as these people are likely to be the most knowledgeable in terms of their own institution's approach to TEL, including staff development and other wider institutional issues around TEL implementation, due to their most senior position in the specific post areas they hold.

4.1 Data collection methods

Data were gathered sequentially, in two phases. The first part of the research utilised an online survey; following some initial desk-based research, a questionnaire was the main tool for data gathering. The questionnaire was first piloted with two people in order to be tested for clarity as well as fitness for purpose. Taking into account the feedback provided by those who piloted the questionnaire, minor amendments in the wording of a couple of the questions subsequently took place for clarity.

This questionnaire, which was emailed to the HeLs in UK HEIs, was asking for information on the training sessions, workshops, seminars, courses and support offered to academic staff in their institution in the area of TEL. The questionnaire also tried to establish whether there were any staff development requirements for academic staff before they get involved in blended or fully online courses and attempted to highlight the relationship between TEL and academic practice through TEL's integration within the PGCTL/PGCAP course. Most questions asked for responses that could be handled in a simple quantitative way, asking informants to identify whether their institutions were offering specific sessions and events or not; additionally, open-ended questions were part of the questionnaire where informants could provide more information about duration, uptake and frequency of those events as well as general comments about CPD in the area of TEL in their own institution.

During the second part of the research, utilising semi-structured interviews, the area of staff development in online learning was explored in more depth, to allow creation of, initially, eight illustrative case studies on how those HEIs in the UK were tackling the issue of staff development in TEL. These interviews with the HeLs focused on developing further understanding in the area of blended and distance learning provision, including staff development for TEL. The interviews were semi-structured in order to allow for more detailed data to be collected. The questions tried to explore the main targets and obstacles in the institution-wide implementation of TEL, to articulate the main ways that TEL is currently used and the staff development needed in order to enable academic staff to make the most of TEL. Furthermore, the interview questions approached other TEL-related issues such as staff's attitudes towards TEL and e-learning costing models. Subsequently, five additional interviews took place at a later stage that included additional questions in order to gain more clarity about the ways the HeLs' perspectives compare to Laurillard's (2002) organisational infrastructure for the effective institutional deployment of learning technologies.

Equal emphasis was placed on both the wide survey and the selective in-depth interview data and it was initially thought that both types of data would be gathered concurrently, as this is common in triangulation mixed method designs (Creswell and Plano Clark 2007). However, this was not possible due to time limitations, as the whole research was conducted by a single researcher; furthermore, by administering the online questionnaire first, the informants for the interviews could be self-selected on a voluntary basis, by optionally providing their e-mail address at the end of the questionnaire. A possible disadvantage of this could be that the self-selected informants might not have been representative of different UK institutions. It turned out that this was not the case, as the interview participants were equally split between pre-1992 and post-1992 universities, but also represented institutions that differed in many other ways, including, size of the institution in terms of student and staff numbers, geographical location and mission, as some were research-led while others were teaching-led, with a focus on vocational subjects. This plurality in terms of the participating institutions represents the different types of UK HEIs.

This research employed electronic methods for data gathering; the survey was delivered electronically to the heads of e-learning via a link which was embedded in the email-invitation to the research. All interviews took place via Skype.

4.2 Data analysis

Initially, quantitative data were gathered on the various ways that the staff development needs of the lecturers in blended and online learning had been addressed by UK HEIs. Simple frequencies and cross tabulations were applied to the data. As no individual universities are named, HEIs are divided into two groups, pre-1992 and post-1992 institutions.

The interview case studies have been written as descriptive narratives first and following that, the interview data were coded by open-coding, a procedure by which the data were conceptualised. Subsequently, a list of conceptual categories was created (Strauss and Corbin 1997). That way it was felt that the individual approaches are most likely discovered and explored, allowing for detailed analysis of the data gathered. Verbatim quotes have been included in order to keep the flavour of the original data. Key emerging issues have been highlighted and any commonalities, similarities and differences among the case studies are further discussed. Open coding was used initially to uncover, develop and name concepts in order to open up text and expose the thoughts and ideas contained within them. The interview transcripts were coded on a question-by-question basis; the codes were constantly refined as each transcript was added in order for the data to be organised into meaningful groupings. Following that, broader categories (themes) have been developed. Once saturation occurred in categories and no more information was able to be extracted, categories were then integrated and refined.

The two data sets are merged by bringing the separate results together through interpretation. The quantitative data analysis proceeded from descriptive to inferential analysis in order to build a more refined analysis. Qualitative data analysis began with coding and proceeded in creating categories (themes). This is in line with Creswell and Plano Clark (2007, p.137) according to whom:

> *Two techniques are available for merging the quantitative and qualitative data: Transform one type of data to make the qualitative and quantitative datasets comparable and then compare the datasets, or compare the data without transformation through a discussion or a matrix.*

The latter way of merging qualitative and quantitative data – through discussion – was followed in this research due to the fact that some of the data gathered were complementary rather than directly comparable.

4.3 Ethical issues

This research did not involve any vulnerable individuals, or any psychological experiments with its subjects, so no major ethical issues were involved. The main ethical-related issue was confidentiality, which was guaranteed by the researcher to those who volunteered to be interviewed. Questionnaire respondents remained anonymous to the researcher, apart from those who provided their email address in order to be contacted for an interview. Participants' confidentiality was discussed with the interview informants both in writing and at the beginning of the interview. All interviews were recorded using the Skype (Moving Picture Experts Group Layer – 3 Audio (mp3)) recorder and the audio files were subsequently safely stored. Full transcripts were sent back to the participants whose approval was requested in order for the data to be used in the research, both in parts, as verbatim quotes, but also summarised and paraphrased. All information that could possibly identify them or the institution they were working for was removed from the transcript and not included in this research.

4.4 Generalisability of the research - legitimacy – validity – reliability

The validity of the data and the results is an important component of research. According to Creswell and Plano Clark (2007) 'in quantitative research, validity means that the researcher can draw meaningful inferences from the results to a population'. In this context, the quantitative data gathered via the online questionnaire are indicative as the 27 participants out of a possible 118 represent approximately 20% of the HeLs who subscribe to the HeL forum in the UK. As the questionnaire was e-mailed to all HeLs twice, there was no selection bias either. In terms of self-selection bias, it could be a possibility that those with the stronger views on e-learning might have volunteered themselves to participate in further research and be interviewed. The interviews aimed for in-depth data to be gathered, knowing that due to their small number, interview findings would be illustrative rather than representative.

In terms of the qualitative data gathered through the interviews, 13 of the questionnaire respondents volunteered to participate, providing their institutional email address in order to be contacted for an interview. Ten out of them were contacted based on the richness of their responses to the open-ended questions in the questionnaire, and the eight who responded were interviewed via Skype. The informants represented a wide range of UK HEIs, as there was an equal split between pre-1992 and post-1992 institutions, with four participants of each. Participants represented institutions that included members of the Russell group and other research-orientated institutions, but also, other more teaching-focused institutions from different parts of England and Wales. The four pre-1992 institutions were described as research-led by the informants; one of them described their institution as research-led with an emphasis on teaching excellence. The four post-1992 institutions were described as teaching-led; however, two of the informants of the post-1992 institutions mentioned that they had aspirations to become more research active and that they seek to reposition themselves as more research-led respectively. All interviews were transcribed in full and sent back to the informants for their approval. Five additional interviews were conducted at a later stage; these included two pre-1992 research-led universities while the remaining three were post-1992 universities.

As this is a mixed methods study, validity is defined as the ability to draw meaningful and accurate conclusions from all the data in the study. Thus validity in this context denotes the 'inference quality', the accuracy with which the researcher draws inductive and deductive conclusions (Tashakkori and Teddle 2003). The results of this research are indicative, as this research discusses the situation of how TEL is approached by approximately 20% of informants (HeLs who subscribe to the HeL Forum) through questionnaires and by approximately 10% through in-depth interviews. The following section provides a summary of the findings of this research.

5. Addressing the research questions – Summary of the findings

This section considers the research questions and provides a summary of the findings of this research. The first research question is mostly addressed in this study based on quantitative data gathered via an online questionnaire. This question aimed to provide the rich picture on staff development provision around TEL by UK campus-based HEIs. The second, third and fourth questions are addressed qualitatively, based on data gathered via semi-structured interviews with thirteen HeLs, drawing on their expert informed responses. These questions aimed to highlight the HeLs' perspectives on staff development and TEL implementation, therefore they are addressed qualitatively.

5.1 What provision do UK higher education institutions (HEIs) make for staff development in the area of technology enhanced learning (TEL)?

Most universities represented in the survey offered a wide variety of staff development sessions/events for their academic staff that covers a range of digital skills as well as pedagogical considerations of various learning technologies; this includes hands-on training sessions, seminars on the pedagogically effective use of various learning technologies, online case studies, peer support via internal workshops/ conferences and, in some cases other CPD activities in the area of TEL such as e-moderating online short courses, Staff Educational Development Association (SEDA) certified e-facilitation courses and postgraduate modules. Training sessions on how to use the VLE, e-assessment tools, plagiarism prevention and detection tools as well as e-portfolios were the most popular sessions offered. Web 2.0 tools, personal response systems and web conferencing systems were also very popular among participating institutions (Almpanis, 2012). The only one option offered that proved to be less popular among training sessions was Second Life; however, virtual worlds were mentioned as examples of innovative use of technology in certain subjects by some universities, as evidenced in the interviews.

The perceived potential of technology to enhance the students' experience in general and students' learning in particular has led to the adoption of a wide range of approaches to staff development in this particular area. What is more, TEL is seemingly recognised as sound pedagogic practice as it is embedded in the PGCTL/PCAP course either as a module of study or as an integral part of the course.

5.2 What do HeLs think lecturers need to know in order to deliver blended and online courses effectively? Are these needs addressed by a range of UK HEIs?

Regarding lecturers' knowledge and attributes needed for effective online moderation and facilitation, recurring themes included e-moderating skills, pedagogical rationale and digital literacies. In terms of technical skills needed, recurring themes included understanding of the system or tool in use, basic ICT and digital

literacy and joined up pedagogical and technical skills. The recurring themes in the question to sum up lecturers' needs for blended and distance learning delivery were the following: pedagogy, curriculum design and learning outcomes, digital literacies, online engagement, experience of online learning and subject expertise.

The need for a pedagogical rationale and knowledge of constructivist pedagogical theories was emphasised by some HeLs who added that most academics are still holding onto an instructional pedagogy of content delivery and tend to replicate that online. The need to get academics away from thinking that online teaching is purely about content and their need to focus on student induction, support and student collaboration was reported too.

The digital literacies of academic staff was another recurring theme in terms of HeLs' perceptions about staff needs for effective online moderation and facilitation. These needs, according to the HeLs, included competent use of technology to support specific learning goals, the use of social media and understanding online identities. It is worth noting that 'digital literacy' intersects with the pedagogy and e-moderating skills. Regarding the tools used, a certain level of competence and confidence with the technology is needed as is a conceptual understanding of the tools they might use; as pointed out by some HeLs, although knowing how to use the VLE and basic ICT literacy are important, there is an overlap between the pedagogical knowledge and digital skills required for using TEL effectively.

The tutors' online presence is very important so that students are guided through the online environment; furthermore, students need to be supported online from induction to completion and their progress should be monitored. Therefore, teaching staff need to dedicate appropriate time to the online environment. The facilitation of discursive/dialogic learning requires a pedagogical understanding of constructivism and social constructivism and the lecturers involved should ideally have some experience of online moderation and facilitation in order to be able to support their students effectively online. On the other hand, experiential learning with technology can be resource heavy and specialist support staff are often needed to create the bespoke environment and the resources. Blended and fully online courses require more systematic use of TEL by their very nature and an explicit curriculum design.

The academic staff development needs in the area of blended and online learning are addressed by offering ample staff development opportunities as summed up in the previous question. While the aim by many participating HEIs is to upskill all staff in the area of TEL so that they are capable of being involved in blended course delivery, those members of staff involved in distance learning in particular often have to go through a specific development programme.

5.3 According to HeLs, what institutional approaches are required for TEL to be effectively embedded in the curriculum?

It became apparent that TEL's successful implementation by HEIs requires a coordinated institutional approach and a long-term investment; while there is evidence that TEL has started to become embedded in the teaching and learning practice, it still takes time and effort and this conflicts with other aspects of university practice such as research, face-to-face teaching and student support as well as other administrative tasks that often overload the lecturers' schedules. A coordinated institutional approach would require strategic buy-in from senior management and a vision around TEL, opportunities for staff development and incentives to teaching staff to develop themselves in this area and utilise TEL more in their teaching. These incentives may include some time allocation, as lack of time is one of the most common reasons behind staff's reluctance towards TEL (Almpanis, 2015).

5.4 How do HeLs' perspectives compare to Laurillard's conversational framework for the effective use of learning technologies?

Examples of innovative use of technology were evident in some areas of all institutions whose HeLs were interviewed, as technology was used to support learning not only through acquisition but also through all other ways that learning is understood to occur, according to Laurillard (2002), such as practice and discovery, discussion, inquiry and collaboration. It became apparent that online learning materials in various formats to support learning through acquisition were provided in all participating institutions, many of which were making provision for audio-visual content as well. Although elements supporting learning through practice and

discovery were reported in many cases, in most of those institutions this was limited to specific subject areas. Similar was the situation regarding learning by inquiry as it was taking place in some areas of some of the participating institutions. Supporting learning through discussion and collaboration using technology was reported to take place in some areas by most HeLs who were all very enthusiastic about the potential of technology to support discursive online activities and facilitate peer-to-peer interactions and collaborative work.

Most institutions aimed to create opportunities for sharing tacit knowledge around TEL. While this is important, it needs to be coupled with wider staff development opportunities, according to Laurillard's framework for an effective organisational infrastructure supporting TEL. Questionnaire responses and the interviewees confirmed the fact that staff development opportunities in the area of TEL are in place by all participating institutions providing a programme which is often varied and tailored to the needs of different staff teams. This explains the different offerings but also the varied levels of uptake of staff development activities around TEL which was evident in the questionnaires. While multi-skilled teams were in place in all participating institutions, some teams included multimedia experts with a focus on creating media-rich learning content as well, while other universities have started to move away from this idea due to the cost implications of such developments but also due to different approaches to TEL that aim to enable lecturers to engage with various learning technologies rather than creating learning materials for them. Regarding TEL costs, it became evident that costing of TEL projects and blended or fully online courses is an area where still a lot needs to be learned. In terms of time allowance for staff who engage with TEL developments, while sometimes staff get time allocation for participating in a TEL project, especially when this is an externally or internally funded, in most cases TEL is seen as part of the job and is often not part of the workload allocation model. In terms of the need for teaching excellence to be rewarded, a mixed practice was reported and while some institutions rewarded teaching excellence, the lack of recognition in teaching was confirmed by some participants.

6.   Summary - Conclusions

A mixed methods approach has been adopted in this research in order to provide both breadth and depth in understanding institutional practices around staff development in TEL. MMR has been adopted in an attempt to utilise the best tools available to address the research questions, rather than imposing some strict ontological views to the research itself, limiting in that way the possibilities to get both breadth and depth instead of either one of them. MMR recognises the fact that both quantitative and qualitative research are important and useful.

This paper has provided an outline of the research design, methodology and methods employed as part of this research. The researcher's worldview, which includes his ontological and epistemological stance, was discussed first. Following that, the chosen research design, data collection methods and data analysis procedures were described. Ethical issues and the way these were addressed were also covered as was the legitimacy and generalisability of this research.

The choice of research design as discussed in this paper provides the backbone of this research, informing the research questions and the selection of the methods used to address these. Furthermore, the research design has dictated the ways in which the findings of this study are approached and discussed (Almpanis, 2012 and 2015).

This research shows that staff development opportunities around various learning technologies in UK HEIs may be pervasive in the sector if the same pattern as indicated by this study occurs in all other universities. According to HeLs, effective online moderation and facilitation requires familiarity with the technology in use but also a pedagogical understanding. It also became evident that TEL's successful implementation requires a coordinated institutional approach by HEIs, according to HeLs. Innovative uses of technology were identified, as technology was used to support learning not only through acquisition, but also in some cases through all other ways that learning is understood to occur according to Laurillard (2002), such as practice and discovery, discussion, inquiry and collaboration.

This research study started with questions that arose from professional involvement with TEL. Once the research questions were formed, a conclusion was reached that these questions would not be adequately

addressed by either of the two dominant paradigms. MMR was adopted to address the research questions in a more comprehensive manner. According to Rorty (1999), what really matters is not whether our ideas correspond to some external reality, but more whether they help us carry out practical tasks and create a fairer and more democratic society. Therefore, the author makes the case that MMR is a sound research paradigm to be adopted by researchers in e-learning settings and, more generally, in education and social sciences.

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