Strategies for Digital Inclusion: Towards a Pedagogy for Embracing and Sustaining Student Diversity and Engagement with Online Learning

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Abstract

This paper reports on the progress of a current PhD research study. The research study will evolve through four phases and eventually develop a conceptual framework for effective teaching and learning approaches that influence digital inclusion and exclusion of students from diverse backgrounds. It will also seek to identify differences in learner characteristics and how these characteristics impact on needs, experiences and engagement with technology for learning, specifically within a blended learning programme. The research will move away from traditional definitions of diversity and explore the differing characteristics of a varied learner population.

The research adopts a critical realist perspective, using a qualitative multi-phase methodology that will evolve sequentially in the future. The focus of this paper is to outline the research to date. Phase 1 and Phase 2 have been completed and are reported in this paper. Findings suggest that digital exclusion cannot be predicted or dealt with by categorising students into groupings of: gender, age, ethnicity, geography, socio-economic status and educational background. Additionally, the findings indicate that digital exclusion is influenced by organisational factors, such as elements of the course content or navigation of the virtual learning environment rather than intrinsic factors such as individual technological skills.

Keywords: Diversity; characteristics; digital exclusion; blended learning.

Introduction

Diverse Students (Intrinsic Factors that Influence Digital Inclusion and Exclusion)

The current trend for encouraging widening participation in higher education institutions (HEI) (Department for Business, Innovation and Skills, 2012) and the vast range of courses on offer in the United Kingdom (UK) has resulted in a more varied learner population, compared to the traditional university population (Universities UK, 2012). Demographic measures, such as gender, age, ethnicity, geography, socio-economic status and educational background, once used to determine learner involvement with technology could now be seen as outdated. In a recent study of learner's participation in online learning, Johnson (2011) observes that it is essential to understand learner characteristics and how they may influence the learning process and outcomes. Johnson however, had not explored further the types of characteristics. By contrast, Draffan and Rainger (2013) are more specific saying, of blended learning,

> *'to ensure inclusive and accessible learning experiences that meet any challenges to the acquisition of knowledge, development of skills and experience, it is also important to take into account the full spectrum of learner characteristics. These include physical, sensory, and perceptual skills, abilities, attitudes and prior knowledge' (P. 55).*

While both the afore mentioned studies discuss the importance of learner characteristics, as with all other studies, the onus of characterizing the learner is with the researcher or educational institution. What distinguishes this research is that it seeks to understand what characteristics learners themselves identify in relation to digital exclusion.

Digital Exclusion (Extrinsic Factors or Organizational Factors that Influence Digital Inclusion and Exclusion)

Blended learning is fast becoming the teaching and learning method of choice by HEI. Blended learning is more than simply blending face to face and online learning. It is an opportunity for teachers to maximize the strengths of both approaches in order to create a more effective way to learn and is gradually becoming one of the most important mediums for education reform today (Picciano et al., 2014). So and Brush (2008) suggest that blended learning can increase student satisfaction therefore impacting on retention (Liu, Gomez and Yen, 2009). Benefits of blended learning are the opportunities it provides teachers to combine human relationships between learners and teachers with emerging technologies, to produce a learner centered approach that enables collaborative inquiry. With the development of digital communications, Web 2.0 and the Internet have provided rich learning environments in HE (Laurrillard, 2002). Within a blended learning model, networked collaborative learning is ideally placed to offer formal enhanced learning opportunities through collaborative inquiry and group discussions (Hutchings, 2002). On the other hand, object-oriented sociality theory (Conole et al., 2008) explains how effective social networks are not reliant on the relationships between the learners but on the value found in social objects. Implications of this in a blended learning environment is that course creators should endeavor to encourage social networks built around social objects, that is subjects and activities that are of interest to the learners. Not only is networked collaborative inquiry ideally placed for formal learning opportunities but is used by learners to communicate and learn informally.

The term social media defines a multiplicity of technologies that promote social aspects of connectivity through a channel of communication and is often linked to the term Web 2.0 (Dabbagh and Reo, 2011). Examples of social media include, Facebook, Twitter, Blogging, wikis, YouTube, LinkedIn and Apps that enable document sharing. Over 31 million people in the UK use Facebook (Social Media Today, 2014) and they are using such media for both informal and formal learning (Dabbagh and Kitsantis, 2011). Likewise, HEI are using social media to enable teaching and

learning activities (EDUCAUSE Learning Initiative, 2007). For example, educators are using blogging platforms to encourage group discussions and collaborative projects (Pachler et al., 2012).

Literature Review

The review presented below encompasses an understanding of student diversity, drivers in student engagement in Higher Education Institutions (HEI), blending learning programs, the potential for digital exclusion, digitally inclusive learning practices, and potential digital exclusion attributes.

Student Diversity

Diverse students are categorized by a widely used set of demographics. As far back as the 1800's authors and researchers refer to diversity in education. For example, Sir Edward Taylor (1870) writes about "race", "origin" and "culture" (p.2) when he discusses language learning in his book. Yet much of the literature that focuses on student diversity was before technology was common place in education and certainly does not reflect the rapidly gaining momentum of advances in technology and its impact on the learner and their needs. Furthermore, it is entirely possible that some students will fall into one or more of the groupings (Taylor and House, 2010). A review of historical and recent literature documenting diverse students shows that only demographics such as gender, age, ethnicity, geography, socio-economic status and educational background are used.

Drivers in Student Engagement

University costs have soared in the UK since the 2010 coalition government came to power, (UCAS, 2013) so financial savvy students have become more selective consumers looking for a product that meets all of their needs. Gone are the days when a university campus would mainly consist of college and sixth form leavers pursuing a four year taught degree to start a career. HEI now strive to cater equally for non-traditional students undertaking short and top up courses, foundation degrees and professional development, as they do for once conventional students. An exploration into five aspects of higher education by Haggis (2006) found that with so many non-traditional students, choosing HE, conventional support is unrealistic and that it is up to the educational establishments that provide for these students to move away from traditional support networks and concentrate on new teaching and learning approaches. Importantly, adapting courses so as to utilize new technology, may enable the diverse student population to access and learn the subject.

Blended Learning Programs

Not only has the student population and courses on offer evolved but the way in which the courses are delivered has advanced too. A modern online learning environment can offer blended learning programs that provide opportunities to access course materials, collaborative software, discussion boards, wikis and other learning technologies at university, from home or on ubiquitous mobile devices (Holzinger et al., 2005) and can assist the learning process, (Means et al.,2009). There are many definitions of blended learning, including the ratio of the methods being blended, the blending of different pedagogical models and the variation of learner experience (Oliver and Trigwell, 2005). According to Garrison and Vaughan (2008) a misconception of blended learning is that its aim is to combine face-to-face (f2f) and online delivery, often to minimize lecturer workload. Additionally, Launer (2010) suggests that blended learning does not even have to involve online learning but could utilize a blend of f2f delivery and self-research. However, this research defines blended learning as the facilitation of teaching and learning using a combination of f2f and online methods, where technology replaces elements of a unit (Mason, 1998) and it is this combination that this research will investigate.

Potentialities in Digital Exclusion

The rapid momentum that ICT gains in its development signifies an urgent re-evaluation of whether students' experiences of digital exclusion and inclusion are the same now as they were before technology was a ubiquitous part of life.

Historically, Information Communication Technology (ICT) use (or non-use) has been measured by researchers and educational establishments by categorizing students into non-traditional participation groupings such as: gender, age, ethnicity, geography, socio-economic status and educational background. For example Boonaert and Vettenburg's (2011) research of young people discuss a digital divide as 'unequal access to the internet and its use' that is influenced by demographic factors such as age, gender and socio-economic status. More recently Ofcom (2012) has suggested that traditional conceptions of this divide might be out of date and misplaced as over 95% of UK households with children now have access to the internet. Encouraging widening participation in higher education institutions (HEI) (Department for Business, Innovation and Skills, 2012) and the vast range of courses on offer in the United Kingdom (UK) has resulted in a more varied student population, compared to the traditional university population (Universities UK, 2012). It is fair to say that the basic set of measures above, once used to determine student involvement with technology could now be seen as outdated. In a recent research of student's participation in online learning, Johnson (2011) observes that it is essential to understand student characteristics and how they may influence the learning process and outcomes.

Digitally Inclusive Organizational Practices

A search for e-learning pedagogy in the literature revealed a lack of research into specific models and frameworks directly influencing teaching and learning using technology. Mayes and DeFreitas (2004) concluded in their e-learning review that there were no e-learning models, only e-enhancements of existing teaching and learning models and frameworks. An example of this is Mason's (1998) models which are influenced by distance learning. He states:

> *All of the elements I am about to discuss are very familiar educational approaches - they are simply being adapted and re-discovered in their online form* (p. 3)

Gilly Salmon's 5 Stage E-Moderating Model (2004) has been offered as an alternative, but this specifically describes the stages of participation in an online community and does not set out to address e-learning pedagogy per se. The most recent and influential review of e-learning was conducted by Conole in 2010. Her report sought to review pedagogical models and how they were being used in an e-learning context. Conole's review follows a number of other comprehensive reviews on e-learning pedagogy (Mayes and DeFreitas, 2004; Beetham, 2004; Dyke et al., 2006; Conole, 2008; Ala-Mutka, 2009) but as technology is a moving target with regards to development, dated reviews, although important, cannot account for these new advances. Additionally, all of these reports (on the most part) reviewed how e-learning 'fits' in with different pedagogical approaches, almost shoe-horning technology into something within which it can be given a pedagogical label. JISC's E-learning Program (2012) goes much further to understanding e-learning pedagogy. JISC ran a series of studies that incorporated different aspects of e-learning but nothing specifically investigating blended learning and student characteristics since 2009 (Conole et al., 2009), which looked at e-learning in a practice-based context. In practice, experienced teachers often use a tried and tested approach to designing activities that subconsciously incorporate theories and approaches to teaching and learning. With new technologies introduced into the learning environment there can be a difficulty in understanding how and why to use them (Falconer and Conole, 2006).

Potential Exclusion Attributes: Age, Gender, Socio-economic Status, Culturally and Linguistically Diverse Backgrounds and Geographical Locations and Life Experiences

A research study of university students conducted by Yorke and Longdon (2008) found that students failing to adjust to different and unfamiliar teaching and learning environments were 'at risk' of withdrawing from their program of study. Of those, mature students are more likely to 'drop out' in the first year compared to younger students (Coffield et al., 2004). According to Knowles (2012), older learners, argued to be 'digital immigrants' by Prensky (2009), learn in a different way to their younger counterparts. This humanistic view of andragogy, the science behind the teaching of adults, proposes that adult learners may need different support networks to younger learners such as, academic, technical or pastoral support for self-managed learning. Recently, a great deal of literature has argued against Prensky's digital native/digital immigrant concepts (McKenzie, 2007 Kennedy et al., 2010). Prensky's assertions concerning digital immigrants can be misunderstood. When he discusses digital immigrants, he refers to the time in which they were born and not the level of technological competence they possess. However, despite these gloomy assertions for older learners, over two thirds of students obtain qualifications later in life (Institute of Education, 2013). This signifies that older learners are using HE to improve life and career chances more than ever.

Gender can impact on how students learn (Bennet and Marsh, 2003; Wehrwein et al., 2006). Female students are less likely to speak out in a traditional face to face classroom environment yet in online course discussions are more likely to voice contributions, in turn impacting on perceived deeper learning, (Anderson and Haddad, 2005). Kay (2008) reports that male learners have higher self-efficacy than females when learning online but females are slightly more positive about the online learning experience and perform better on computer-related tasks. In contrast, research exploring gender perceptions of e-learning found that female learners place more importance on the planning of e-learning activities and value contact with the teacher (González-Gómez et al., 2012).

Teacher contact and more specifically monitoring of student progress and support, was found to be essential elements to successful online learning for multi-cultural students according to McNaught and Vogel (2004). A number of researchers have studied the preferences of different ethnic groups towards online learning (Chin et al., 1999; Munro-Smith, 2002). However, Boyette (2008) points out that there is little research on some ethnic groups with reference to online learning. Online content itself is a cause for concern. Heemskerk (2005) suggests that on a practical level, certain ethnic groups are under-represented in e-learning materials.

According to some of the literature, where students live impacts on their use of technology. There are areas in the UK that are 'digitally unengaged' (Longley and Singleton 2008). Longley and Singleton's research showed that approximately 1.15 million people in England live in an area of digital unengagement, in turn impacting on educational success with technology. Unengaged areas are more often than not linked to areas of material deprivation but not always. In some coastal and rural areas the geographies are different. There is little material deprivation but other factors influence digital unengagement, such as lack of or slow bandwidth is a major factor along with the ages of the population.

As previously mentioned, geographical unengagement is often linked to material deprivation. Generally, the digital divide represents the gap between people who can use and have access to technology and those that do not. Chen and Wellman (2004) describe the digital divide as 'differences between those who have all the necessary resources to participate in current society and those who do not ' (Eynon, 2009, p.27). Lichy (2011) talks about a 'second-level' digital divide within the UK. Their research investigated students and their use of the internet. Largely down to the Labor Government's 2008 'Home Access' scheme, which provided lower income families with IT equipment and internet packages, they concluded that there was no longer a significant 'divide' between students being able to access the internet or not; the 'second-level divide' appeared in the way in which the internet was being used. Although this scheme has now ceased, families will still benefit from the equipment provided and as stated earlier, 95% of families now have internet access

(Ofcom, 2012). Students from higher socio-economic backgrounds used the internet more for school and home work than lower socio-economic groups. This is backed up by an Ofcom (2012) research that suggests that internet access at home is now close to entirety across all economic classes. These are encouraging reports considering that school pupils who are eligible for Free School Meals (FSM) are less than half as likely to go to university as other pupils (BIS, 2012).

Many universities in the UK encourage students to enroll on courses regardless of previous academic success but with evidence of career experience in the subject. This has resulted in mixed academic (proven) ability within cohorts, (Wooden et al., 2001). Students who enter HE with 'non-traditional' qualifications could be disadvantaged due to the lack of preparation for essay writing and research skills (O'Driscoll et al., 2010). Students who are most likely to say they are not interested in connecting to the internet are those with lower levels of education (Helsper and Godoy-Etcheverry, 2011). However, Koivusilta et al. (2007) propose that links between educational background and technology use is in the activity itself and not the time spent on it. In particular, digital gaming was linked to poor school achievement in some cases.

Summary

It can be seen from the literature that there is no shortage of research investigating how diverse groups interact with technology. Studies which include research on these groups go some way to explain the challenges that certain students may face when using ICT within an HEI environment. Fewer studies however, have considered combinations of groups and no research could be located that has investigated whether there are other characteristics that may be influential in technology use or non-use. Additionally, e-learning pedagogy, which sets out effective strategies for online teaching and learning, seem to be adapted from traditional pedagogical frameworks, may be outdated in the context of emerging or disruptive technologies or are influenced by other forms of online learning such as distance learning.

Research Approach

The aim of the research is to identify differences in learner characteristics and how these characteristics impact on their experiences of using technology for learning. The findings will eventually be incorporated into a conceptual framework for effective teaching and learning approaches and of factors that influence digital inclusion and exclusion.

Specifically, the objectives of this research and discussed in this paper are:

1. To explore the characteristics of learners and analyze their influence on digital exclusion and inclusion.

2. To investigate what current and emerging pedagogies are being used for engaging students with technology enabled learning (TEL).

The first two phases of this research will be discussed in this paper and will form the starting point for the next two phases (3 and 4) which will be conducted in 2015. The objectives of Phases 3 and 4 are:

1. To assess the value of current and emerging pedagogies with a diversity of learners.

2. To examine what students need to be effectively engaged with a blended learning program.

3. To incorporate the findings into a conceptual framework for effective learning approaches and of factors that influence digital inclusion and exclusion.

By combining a sequential mixture of qualitative and quantitative methods, Table 1 below demonstrates how through four phases, a conceptual framework will eventually be created.

Table 1. Illustration of whole research design

Phase	Year of Commencement	Method	Sample
1	2013	Semi structured interviews	Undergraduate Heath and Social Care students, Bournemouth University
2	2014	Semi structured interviews	Undergraduate Heath and Social Care students, Bournemouth University
3	2015	Survey	Undergraduate students (mixed schools), Bournemouth University
4	2015	Action research	Undergraduate students, External Universities

Research Design

A qualitative multi-phase approach will be used sequentially in this research. (Creswell and Plano Clark, 2007). The research takes place at Bournemouth University (BU) in the south of England. Two samples of undergraduate Health and Social Care (HSC) students were the focus of Phases 1 and 2. The interviews took place after the completion of a particular unit on a blended learning course (Phase 1 in 2013 and Phase 2 in 2014). The Program Leader was approached to confirm that the unit remained the same from the previous year with no variables that could affect the analysis.

The research uses a critical realist approach. In the social sciences, critical realism has been a prominent approach for the past thirty years (Miller and Tsang, 2011) and a key feature is that ontologically you believe in one real world that exists independent of human perception and construction, yet at the same time, epistemologically believe that the world can be interpreted in different ways by each of us (Frazer and Lacey, 1993). In line with a critical realist approach, semi-structured interviews will allow participants to describe their experiences of digital inclusion and exclusion in their own words. Semi-structured interview techniques were adopted as the initial method to encourage rich descriptions (Kvale, 2008). This method will also expose which characteristics affect barriers to digital inclusion and uncover the wide-ranging needs that influence engagement with blended learning programs.

Since the research is concerned with identifying which characteristics affect digital inclusion and exclusion, the interview would start with an open question: *'Tell me a bit about yourself*'. It was hoped that this opening question would allow the participant to voice their characteristics in their own words without being influenced by any pre-determined (correct or incorrect) knowledge gained from literature. For example, the following excerpt was taken from one participant,

> *'... I am a mature student. I have two children, […] and […]. I worked in […], my career in the beginning in […]. We came to Bournemouth in […] and wanted to change my career so that I'm doing a […] degree. I always wanted to work in this kind of work with people […], so the reason I decided to do […] and that is quite hard at the moment because as you can imagine it was more than […] years ago that I studied and now I'm going back to that sort of studying more. Everything is really hard work for me and English is my second language so it makes it even harder.'*

They were then given the opportunity to express their experiences of technology during their program. It was not until the end of the interview that usual demographic questions such as: gender; age; ethnicity; geography; socio-economic status and educational background, (ONS, 2013), were asked.

A thematic analysis framework was adopted to analyze the data. At a rudimentary level, thematic analysis is a method for recognizing, analyzing, and reporting patterns within data. Thematic analysis is favored for a critical realist approach (Roulston, 2001) although its flexibility allows it to be utilized across many epistemological and theoretical stances. Braun and Clarke's (2006) hierarchy for qualitative data analysis has been adapted for the analytical process using Nvivo software to manage the data. To ensure a level of trustworthiness and quality in the research, the researcher used a triangulation of methods as suggested by Guba and Lincon (1989; 1994) as well as the consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist adapted from Tong et al. (2007).

Findings and Results: Phase 1

As a result of the data analysis, themes were generated from the nodes. Further, characteristics were identified from the participant's narratives and compared to the existing literature.

Diverse Students

After the themes had been identified, characteristics that were revealed by the interview participants, were organized to indicate which were dominant, that is most prevalent in each theme. They were:

- Age
- Geographics
- Previous jobs/life experiences
- Year of research
- Course of research
- Motivations
- Hobbies
- Family
- Previous qualifications

The most interesting revelation from the data is that there appears to be no age limit to digital exclusion or inclusion. Additionally, many of the students who shared characteristics across a number of themes also fell into one or more of the traditional groupings. This highlights the complexity of students and erroneous task of trying to group them in order to predict how they might engage with technology. Any age can experience aspects of exclusion. This is contrary to much of the literature that suggests that older learners experience digital exclusion more than their younger counterparts. Furthermore, digital exclusion was not greatly attributed to the other characteristics.

Digital Exclusion

Digital exclusion is defined in this research as being unable to access or use technology, or use it in the way it was intended to facilitate the learning process for any reason. 13 out of the 16 participants disclosed attitudes indicating digital exclusion in some form. The main themes that emerged are discussed below:

Table 2. Themes and sources

Theme	Sources
Appropriate Content	8
Compatibility	5
Clarity	6
Peers	6
M-learning	4
IT Support	6
Equipment	6
Navigation	3
Logging in	4
Online Submission	3

Note. Sources: number of participants expressing experiences of exclusion within the theme.

Appropriate Content

The data revealed that the most significant area of exclusion for the sample is in perceived irrelevant or confusing content of course material. Feelings of frustration and stress can be experienced if online content is not clear. For example, one participant states,

> *'…there was one unit that we started in our first year evidence to support guide practice. And it was just everyone hated it. There was no point in it and to be honest I don't think it should be part of the course. I don't see how it makes us better nurses. Replace it with something that is relevant.'*

Moreover, unclear face to face content can influence the frustration when students then work independently online. This mirrors a similar research by Beaudoin et al. (2009) who researched student's online experiences that affected satisfaction. As discussed in the literature review, Anderson and Haddad (2005) found that female students' perceptions of deeper learning were facilitated by online discussion. It could be the case that the students were not participating as planned or did not appreciate why they were being asked to complete this part of the course as they were.

Compatibility

Another significant finding is the experiences of participants with compatibility. A common pattern of frustration was not being able to access information at home due to incompatibility issues. One participant stated that,

> *'…I can't access everything I need to access, and umm last week apparently- I had tried to look at the formative test but I could only see the answers I could select, I couldn't actually see the questions, and I can't , can't rectify this. Apparently it's because my operating system is too old to support the technology used. So I found that quite frustrating.'*

This is a potentially significant problem for those students who are to research a blended learning program.

Clarity

The data clearly shows that regardless of age, students need clear instructions and structure to online content for it to be effective. One participant voices this in the following way,

> *'…OK we're adults we need to do self-study but you need to give clear structure to me and I'll be able to follow it.'*

Feelings of frustration and stress can be experienced if online content is not clear. Moreover, unclear face to face content can influence the frustration when students then work independently online.

Peers

Peers can contribute to digital exclusion by not participating appropriately in collaborative tasks. One participant stated,

> *'…I suppose if you did have a number that didn't pull their weight as much, it would make it quite awkward.'*

This can lead to other students feeling awkward and possibly not completing the task to their best ability. Peers also contribute to the problems that are encountered on group Facebook pages, generating rumors and false information.

IT support

The data reveals that IT support within the university is widely offered and utilized. There are a number of support networks in place within HSC that students seem to be unaware of. One participant stated,

> *'… they {IT Services}need to change some aspect of the support they're giving to their students.'*

Phase 2 will pursue the reasons for this in more depth.

M-learning & Equipment

M-learning is described as the use of handheld technology that relies on wireless and mobile phone networks, to aid teaching, learning and support, (m-learning.org). With this in mind, the BU app is very much part of the student's support network. However, some participants were unable to use it effectively, especially with iPhones and iPads. The app was installed on one participant's smartphone but was still unable to use it effectively. They stated that,

> *' … the new I_BU app crashes a lot sometimes.'*

Navigation and logging in

Negotiating the Virtual Learning Environment (VLE) through a number of tabs and entering your student password and ID three or four times to access one form causes some frustration with the participants. One participant was vocal about navigational problems with the VLE system. They state that,

> *'… The format of myBU umm, I know that's it customized, or you can customize it to some extent but it's just very messy, umm everything is under sub headings, and it makes it very difficult to access very simple information sometimes because you need to go through, you know, like several links to get to one thing. And I don't think that's very clear.'*

Online submission

A number of forms and assessments now utilize the technology for submission. One participant said of her placement form,

> *'... you have to fill out your evaluation to get your next bit of placement time, so once you fill out the form {POW}, it tells you where you are located next, so if the whole system crashes and you lose all of your answers, you lose your timetable for the next bit of your placement.'*

Others reveal that submitting essays online can be problematic if left until the last minute as others are also trying to submit and the system can crash. This is particularly concerning when a deadline has to be met.

Summary

The research presented here demonstrates that factors in the university structure of digital delivery were more likely to produce exclusion than characteristics of diverse students. This is evidenced by a wide variety of individuals from varying age groups reporting digital exclusion. The next section discusses Phase 2 of the research.

Findings and Results: Phase 2

Phase 2 addressed the points raised in Phase 1. A new sample was interviewed who completed the same unit as the sample in Phase 1. Ten participants were interviewed. The iterative process of data analysis produced some interesting results.

Diverse Students

Of the participants, 8 out of 10 reported that that there was an element of a 'Chinese whispers' effect that happens on the groups Facebook page. 5 of which went as far to say that this generated a sense of panic within the group. Looking at the characteristics of these 5 participants, there is no pattern as to which students experience this. Although most of the participants admitted to a 'Chinese whisper' phenomenon, this did not deter them from using the Facebook group as a support network, as what they gained from it was far more beneficial to them. The social circles within this sample that are created using social media play a part in constructing attitudes towards digital exclusion in as much as misinformed or incorrect posts lead to anxiety and concern. This did only seem to happen on social media sites as although rumors could spread verbally this did not seem to cause any panic as it was limited to the immediate social circle and not the whole Facebook group.

Previous Experiences with Technology

Phase 2 did not confirm that previous experiences influenced current perceptions of technology per se: it did however find that previous experiences of technology generated feelings of self-doubt towards using technology. 9 of the 10 participants voiced feelings of uncertainty with the technology to be used on the course and whether they had used it before. The older participants that had entered the course after a long period of employment perceived the technology to be different to that they had been using at work or at home and therefore unable or difficult to use. These feelings of self-doubt were experienced prior to the course starting but developed into something positive when the course started. Whereas the younger participants who shared similar views were not anxious about the technology until after the course had started and they knew which technologies they were to use. The older participants all agreed that it had not materialized in practice and that they were able to use the technology without any problems that related to their skills.

Age as a Barrier to Learning

Additionally, none of the older students shared any experiences of digital exclusion due to a lack of personal technological skills. Any experiences they had faced with new technologies, such as blogs, they had met with an opportunist and positive view which allowed them to pick up the new skills quickly. Phase 2 confirmed the findings from Phase 1 with regard to the digital native/immigrant debate. Phase 1 discovered that age played no part in digital exclusion. During Phase 2, this hypothesis was investigated further. Interestingly, the younger participants, considered by some to be digital natives, perceived the older participants, considered by some to be digital immigrants, as facing certain challenges with technology, yet none of the older participants interviewed shared this view. While the older students would admit that some technologies were new to them, they did not consider this to be a hurdle only an opportunity to learn something new. Furthermore, the older students perceived the younger students as having previous knowledge and experience of using new technologies, therefore an advantage. The younger students also perceived themselves as having an advantage with technology; however this did not translate into practice.

Digital Communication

The younger students in this sample were limited in which technologies they used, being very capable of using social media for communication and informal learning but not as comfortable using social media for formal learning. Additionally, they were unconfident of finding information on the internet for research purposes and using the VLE. This runs parallel with the literature from the Technology Acceptance Model (TAM) (Teo, 2009) which emphasizes younger students' perceived ease of use with ubiquitous technology and using technology for consumption and not creation (Bennett et al., 2011). A hypothesis for this could be that as technology evolves and becomes more ubiquitous in education and everyday life, older learners, through experience have caught up with younger learners. So even though older learners who are 'digital immigrants' due to being born before technology was commonplace, are now as comfortable using technology as their younger counterparts. Perhaps a renaming for this younger group: 'digital communicators' would now be more appropriate than 'digital natives'.

Digital Exclusion

Again, with the Phase 2 sample 'support' was a significant theme that emerged from the data. The support networks at the university that were commonly used by this sample were IT support and Library support. The group's Facebook page was an important source of support (academically and emotionally) and some participants relied on peers and lecturers for face to face support. 7 of the 10 participants were aware of being informed about support networks during their induction at the start of the course, however as the support was not needed then, they did not store the information. This raises an important point. Most universities will prepare a carefully organized induction for their new students in order to inform them of all the necessary information that they may need during their time there, yet it could be argued that most of that information is lost and only the information that is significant at that time is remembered. There is an argument here for universities and other institutions to stagger the induction process so that certain information is given later at a time when it might be more relevant.

Summary

The research presented here goes some way to confirm that factors in the university structure of digital delivery were more likely to produce exclusion than characteristics of diverse students. However, this phase also found links between age and digital exclusion. Younger students were more likely to experience challenges using unfamiliar technology, especially for formal learning purposes. Whereas older students faced with unfamiliar technology considered it as a positive

learning experience. This is evidenced by a variety of individuals from differing age groups reporting digital exclusion.

Table 3. A summary of the results from Phase 2

Participants report experiences of digital exclusion in the form of;	Characteristics of participants;
Support	Previous Jobs Age Year of Research Children Motivations Family Geographic's
Self-doubt and perceptions of technology	
Learning	
Perceptions of influence of own age and perceptions of influence of others' age	
Self confidence	
Convenience of learning and m-learning	
Collective opinions	
Beginning of the course	
Frustrations with the VLE	
Social Media	
Interactivity	

Preliminary Discussion-Diverse Students

This research suggests that there is no typical attribute that is more closely associated with digital exclusion or inclusion than any other. Most of the participants that took part in the research experienced exclusion of some form or other during the unit studied. Significantly, links between age and digital exclusion were not as expected. Younger students were more likely to experience challenges using unfamiliar technology, especially for formal learning purposes. Whereas older students faced with unfamiliar technology considered it as a positive learning experience. Younger students use social media to communicate and learn informally with friends and peers but are less willing to use social media for formal learning. This sentiment was not shared by the older participants who valued the opportunity to use social media for both informal and formal learning purposes.

In line with a critical realist approach, the participants shared their own perceptions of digital exclusion, which were unique to them, whilst recognizing that certain factors, such as organizational factors, were potentially the same for everyone on their program.

Preliminary Discussion-Digital Exclusion

Most of the participants felt exclusion in the form of the content being used to facilitate the unit and not their own technological skills. It could be argued that technological advances within IT are so ubiquitous and widespread in our homes, learning to cope with technology is becoming a lifestyle. Many of the perceptions of the participants were similar. Even in the cases of misguided information about support networks for example. If you consider Salmon's five stage e-moderating model (2004) to communicating online, a prerequisite of achieving Stage 1 is that the learners know how and where to access help and support. It would seem that as students talk with each other, it may be the case that a miscommunication of information or a 'Chinese whisper' scenario can develop amongst cohorts. Additionally, this can be fuelled by the student's Facebook group.

The timing of when information is given was found to be important. Information given during the induction process at the start of a program of study can be futile, as students in this research want to be given the information at relevant times, for example immediately before they will need to use that information. This suggests that a staggered induction process could be beneficial, giving out information throughout the program of study.

Limitations

As this research utilizes interview data collection techniques and is grounded in critical realism beliefs, it is subjective and based on personal interpretations of the researcher. The findings are limited to one unit of a course being studied within one school at Bournemouth University. The unit is delivered with a blended learning model but it is recognized by the researcher that other courses/units may have a different blend of methods. It is also recognized that the samples in both phases were fairly small, although saturation had been reached.

Future Directions

The obligation by HEI to provide competitive TEL offers, results in an abundance of studies and reports into pedagogical must haves for successful designs however, further investigation is needed into whether this is being translated into practice. For example, the disparity between what a student needs to do to be a successful e-learner, what the student actually does and whether they understand why they are doing it. This confirms the need for e-learning strategies to address the new factors determining the divide. The future direction of this research is to implement Phase 3 to evaluate the trustworthiness of the data analysis in Phases 1 and 2. The final Phase 4 will be the creation of a conceptual framework for effective learning approaches and of factors that influence digital inclusion and exclusion.

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