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Information Technology and Constructivism in Higher Education:
Progressive Learning Frameworks

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Chapter XIII
Critical Survey of Information Technology Use in Higher Education:
Blended Classrooms

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ABSTRACT

Reception and use of information technology by lifelong learners within a "blended" learning environment needs to be articulated within a constructivist paradigm. Increasingly, the term reflective practice is appearing in the vocabulary of adult education discourse. Educators have become familiar with the concept of reflective practice through Donald Schön's writings. Schön's work is founded on a tradition of learning supported by Dewey, Lewin, and Piaget. As a learning group, lifelong learners are receptive to constructivist learning interventions where facilitated activities provide learners with opportunities to enact and collaboratively construct meaning as interventions unfold. This case study reviews learning enactments through an online discussion forum in an evening diploma in European Art History, University College Cork, Ireland.

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INTRODUCTION

In Ireland, the majority of lifelong learners are part-time students trying to maintain work and family commitments. Ireland's participation in the European Union's Bologna Declaration (1999) is establishing a higher educational qualification framework that predicts flexible career progression paths and greater educational opportunities by 2010. If course providers are to fully integrate non-traditional learners within higher education they need to consider opportunities afforded by learning technologies to enhance self-directed inquiry.

Studies in the application of learning technologies in higher education continue to focus on an 18-30 age group. The reception and use of information technology by lifelong learners still needs to be articulated within a constructivist paradigm. The Internet facilitates student and teacher access to many inquiry-based learning experiences. Online social networking, as mediated through discussion boards and chat rooms, allows for information collaboration and knowledge construction outside of the formal educational institution. Judith V. Boettcher (2007) argues that online tools are particularly valuable in this context because they provide a public forum in which the cumulative, step-by-step process of concept formation, refinement, application, and revision is fully visible to student peers as well as their mentors. Boettcher suggests that discussion forums, blogs, journals, and small group work are all excellent strategies for allowing learners to enlarge their mental models, to clarify concepts, and to establish meaningful links and relationships.

Malcom S. Knowles (1970, 1975 & 1984) acknowledged the importance of prior experience and self-direction in adult education. Increasingly, the term reflective practice is appearing in the vocabulary of adult education discourse. Broadly speaking, reflective practice is a mode that integrates thought and action with reflection for the benefit of improving one's professional practice. Over the past two decades, educators have become familiar with the concept of reflective practice through Donald Schön's writings about reflective practitioners (Schön, 1983, 1987). Schön's work has an historical basis in a tradition of learning supported by Dewey, Lewin, and Piaget, each of whom advocated that learning is dependent upon the integration of experience with reflection and of theory with practice. Lee S. Shulman's paper on signature pedagogies in the professions (2005) implicitly owes a debt to the work of Donald Schön. Signature pedagogies are composed of three elements: surface structures, deep structures and implicit structures. The surface structure, applies to the acts of teaching and learning. The deep structure refers to the values of the discipline (e.g., what makes a lawyer or a doctor?). The implicit structure or hidden curriculum is revealed through performances of student understanding. In his seminal paper, Shulman mentions in passing the transformative potential of learning technologies upon a traditional curriculum design, but he does not expand on this. (Shulman, 2005, pp. 52–59).

This case study reviews learning enactments, through an online discussion forum on an evening diploma in European Art History at University Cork, as a means of demonstrating that lifelong learners, as a learning group, are receptive to constructivist learning interventions where facilitated activities provide learners with opportunities to enact and collaboratively construct meaning as interventions unfold.

Since 2004, the Centre for Adult Continuing Education, University College Cork, has seen the potential for using online resources to enhance disciplinary understanding within "blended" learning environments whereby online is integrated with class-based teaching and learning (Cronin, 2005, 2008; Young & Cronin, 2005).

The two-year, part-time diploma in European Art History aims to provide lifelong learners

with a sound base in the historical, critical and contextual study of European painting, sculpture and architecture. Teaching and learning is enacted through lectures, case studies, tutorials, workshops, field trips, and web-based media supported on the university's Blackboard Virtual Learning Environment. This "blended" model supports social interaction appreciated by adult learners. A recent shift to a modular structure is facilitating greater student self-direction than previously available. In future, students will be able to exit the course after the first year with a certificate qualification. Prospective students are expected to demonstrate a genuine interest in the visual arts when making their application. The diploma is examined through continuous assessment. There is no final examination. Students take four modules in first year and four in second year. In order to achieve the award of diploma all modules must be passed in both years. There are opportunities for students to matriculate onto the degree in Art History, Department of History, University College Cork.

The impact of art history education in Cork has been dramatic over the past decade. The two-year diploma in European Art History, co-ordinated by the Centre for Adult Continuing Education, University Cork began in 1991 with 25 students and recorded 72 students in 2008. In the past decade the age profile has widened, but two-thirds of the diploma participants remain female. A degree in art history was established in University Cork in 2001. In the first four years of being offered this degree accounted for 10% of the overall first year undergraduate intake to the Humanities in University Cork. The success of both programmes reflects deep interest in the visual arts by sections of the wider community: professionals seeking to enhance their careers and those in retirement seeking to fulfill a lifelong interest. The diploma in European Art History strives to engage with the cultural life of both the college and the wider community. Applicants decide to pursue the diploma for various reasons. For some it is for personal ambition, while for others it is to develop their chosen career or to embark on a career change. Most applicants have spent years engaged with the visual arts through reading art history and visiting galleries, but wish to engage more formally with the discipline. In Cork employment opportunities in the visual arts have increased dramatically in the past decade. This is reflected in the careers of adult learners on the part-time diploma. A decade ago the majority of students on the course were retired professionals and those in employment were mainly secondary school teachers. Now a myriad of careers feature: gallery administrators, artists, picture framers, medical professionals, art teachers, graphic designers, publishers, interior designers, and local architects. In turn, the diploma provides teaching and administrative opportunities to graduates from the degree. This gives them an opportunity to develop and refine their skills: vital for the competitive academic jobs market. Currently, six graduate tutors comprise the core teaching team. Two graduated from the diploma and then went on to read art history at degree level. Their example provides a tangible progression path for lifelong learners.

The initial cycles of the diploma in European Art History were taught over two nights a week. However, in 2004, due to a demand, the diploma was scaled back to one evening a week. While this model is extremely popular with the public, accounting for large application numbers, nevertheless, the disadvantage is that there is reduced contact time. The decision to adopt an online discussion forum in the second year of the diploma was a decision made jointly between students and course instructors. Because the class only met one night a week it was felt that there was a real need to carry on debate and reflection beyond the tutorial room, lecture theatre and gallery space.

TEACHING THE CRAFT OF THE ART HISTORIAN

The diploma in European Art History asks students to engage with the following fundamental questions: What is art history? How do art historians and critics engage with the visual arts?

Art history is commonly understood as the study of art objects within their historical and cultural context. However, this definition is too narrow to embrace the plurality of art histories currently studied in higher education. Art history, as an academic discipline, was initially introduced to universities on continental Europe during the mid-nineteenth century and so is relatively new. However, during the past twenty-five years, the nature and purpose of the discipline has been questioned. James Elkins, a leading art historian and art critic, currently teaching at the School of the Art Institute of Chicago, has classified art history according to the following broad category titles: normal art history, visual theory, serious art criticism, and commercial art writing (Corcoran, 2000). For Elkins, normal art history applies to studies in the history of certain canonical sequences mostly within the context of Western culture. Its journals include, broadly speaking, *Art Bulletin*, *Burlington Magazine* and *Zeitschrift für Kunstgeschichte*. Visual theory also called new art history is seen by Elkins as more experimental than the first category. It is interdisciplinary, drawing on such diverse areas as film theory, psychoanalysis, and semiotics. This group is represented by the journal *October*. Serious art criticism, says Elkins, is largely ignored by followers of the first two categories, but is read by curators and artists. Commercial art writing is vast in comparison to the tiny productions of art history and serious criticism and is a product of the mass media (Corcoran, 2000).

Donald Preziosi, formerly art history professor in California, argues that new art history is engaged in playing out multi-discourses (research, teaching, curatorial issues, criticism, and the art market). These discourses are, partially, focused on professional goals. Today, art history education (either at university or in art school) needs to acknowledge the plurality of discourses within the discipline many of which have begun as academic concerns, but have been shaped through professional practice (Preziosi, 1992).

What characterises an apprentice art historian? On the diploma in European Art History this is expressed through learning outcomes where students should be able to perform the following learning competencies:

1. Identify appropriate vocabulary for analysis and interpretation of works of art in their historical contexts.
2. Discriminate a variety of art historical methodologies that include the use of biography, stylistic analysis, iconography and social history.
3. Employ library and online resources to the preparation and presentation of short and long papers that critically examine and/or compare works of art, or exhibit knowledge in development of a theme.
4. Reflect upon the appreciation of art and architecture directly through visits to museums, churches, galleries, and historical sites.
5. Organise written and oral presentations in a critical and original manner.
6. Evaluate the values (social, political, religious, artistic, intellectual) of Western culture through their thematic study of the visual arts (painting, sculpture and architecture).

The course examines the changing intellectual traditions, institutions, social practices and issues of taste governing the canon: the body of works of art considered at any one time to represent great art. These learning competencies slot the diploma into Elkins' normal art history category.

SCAFFOLDING THE LEARNER THOUGH A "BLENDED" MODEL

A decision to adopt a "blended" teaching and learning model, comprising both direct in-class contact and remote online communication, was motivated by a desire to give the class an opportunity to post their comments on a topic of art history, covered either at a lecture or in a tutorial, over a longer time-period. It was hoped, in turn, that this process would consolidate in-class teaching and learning.

The potential of technology to enhance teaching and learning is now well established. That said, however, it is still worth briefly outlining some salient focuses of opinion in the scholarly literature as well as predicting a future concern.

Gerard Delanty, a British sociologist, has argued that a major cognitive shift is currently taking place in society brought about by information technology, resulting in a dissolving of the divisions between professional (in the sense of expertise) and lay knowledge (Delanty, 2003). The Internet has resulted in a cognitive revolution creating new forms of information literacy and online social networking activities now expressed by the term Web 2.0. As a concept it refers to a perceived second generation of web-based communities and hosted services — such as social networking sites popular in Ireland like Facebook and Bebo — which aim to facilitate creativity, collaboration, and sharing between users. Ease of access to information via the World Wide Web has changed the role of teachers from being information providers presenting in front of a class to becoming facilitators in guiding learners through information access and processing, problem-solving, and creative learning projects, using learning technologies in a learner-centric classroom. (Leu, et al, 1997; Reynolds, 1999). Focus is placed on assisting learners to construct knowledge both as independent self-directed enquiry and communally in peer groups in order to demonstrate their knowledge attainment through enactment and application (Tishman and Palmer 2005; Boettcher 2007). Rhizome theory, a term borrowed from Deleuze and Guattari (1980/1987), is gaining currency in educational research as a metaphor to articulate the fluid nature of unmediated knowledge construction especially through social networking sites (Cormier, 2008). Wikis are examples where online communities supply and regulate content. Here, authorship is collective, difficult to attribute, or authenticate. In principle, the collective regulates itself. What role does higher education now play in knowledge construction? Conversations concerning the authority of authorship will become pronounced as boundaries between professional and lay knowledge construction continue to blur in cyberspace. The increasing speed and greater availability of information technology means that students have more access to information than ever before, but, to paraphrase Paul Virilio (2000), is it also creating information fallout from the exploded "information bomb"? Can educators assume that students know how to pick their way through the mass of content in a discerning, critical, and ethical manner?

The application of technologies to teaching and learning has created a new term – cybergogy. One of the central elements of cybergogy is the intent to combine fundamentals of both pedagogy and andragogy (the methods of teaching adults) to arrive at a new approach to learning. Cybergogy focuses on helping adults and young people to learn by facilitating and technologically enabling learner-centric, autonomous and collaborative learning in a virtual environment (Carrier & Moulds, 2003). Current research stresses the centrality of the learner and the need to actively engage the learner so as to scaffold independent thinking. Studies by Goody and Malone (1999), Laurillard (2002), Carrier and Moulds (2003), Tishman and Palmer (2005), Boettcher (2007), and Wang (2007) broadly identify features of good practice for cybergogy: placing the learner at the centre of the teaching and learning experience; fostering an engaged learning environment; and

reflecting on practice. To accomplish these we need to consider building online Communities of Practice in the disciplines and across disciplines; cyber ethics (e.g., copyright issues, computer hacking, privacy and plagiarism) and an awareness of socio-economic barriers to technological inclusion – the so-called digital divide discussed by Carrier and Moulds (2003), Ó Fathaigh (2002, 2003), Gurstein (2003), and O'Brien and Ó Fathaigh (2007).

The ability to effectively use information technology is fast becoming a basic literacy skill. By incorporating **information literacy skills** into the learning process the curriculum designers were hoping to enhance student confidence and develop socially transferable skills. Encouraging the use of websites can give a student the background they need to gain a deeper understanding of a topic. The Internet offers many credible and expansive resources for students to do research. Jos Boys (2001) has engaged with models of creative learning to suggest that the Internet's form allows for juxtaposition of information via hyperlinks, thereby helping to foster the creative and independent learning process. Students should be shown how to effectively search the web on their own for resources in a structured way. Applications such as QuickTime image tools have allowed more architectural case studies to be included in the current diploma cycle. In the first year of the diploma, case studies on the sixth-century Ravenna churches and Renaissance Vatican complex have benefited from the inclusion of these web tools. Conveying the three-dimensional sense of a building or piece of sculpture is something which is extremely difficult to convey through the static slide format but can be achieved through an enhanced web tool.

The Internet facilitates student and teacher access to many inquiry-based learning experiences. Discussion boards and chat rooms allow for collaboration outside of the educational institution. As mentioned, Judith Boettcher (2007) argues that online tools are particularly valuable in this context because they provide a public forum in which the cumulative, step-by-step process of concept formation, refinement, application, and revision is fully visible to student peers as well as their mentors. Boettcher suggests that discussion forums, blogs, journals, and small group work are all excellent strategies for allowing learners to enlarge their mental models, to clarify concepts, and to establish meaningful links and relationships.

UNCOVERING UNDERSTANDING: TWO E-MODERATED CASE STUDIES

Just as Web 2.0 technologies are clearly reshaping the Web, innovations in instructional practice and academic technology are moving higher education in new directions. E-moderation of online discussion forums is a growing aspect of the Instruction 2.0 paradigm. The term "e-moderation" describes the process of managing the communication of others online (Coghlan, 2001). Michael Coghlan's critique of e-moderation shows that focus has moved from content to process in online courses, and that this shift of focus means that many online teachers will need to develop e-moderation skills. Coughlan argues that the skills of an e-moderator are the same as those of a good classroom teacher when managing face-to-face discussions: listen; ensure that all have their say; guard against dominators; encourage respect for different opinions while encouraging people to challenge their beliefs; resolve disputes; bring discussions to meaningful closure, etc. Coughlan (2001) reviews models of knowledge construction proposed by Guy Bensusan, Gilly Salmon and Edward DeBono. In his analysis, all three paradigms partially intersect as each is concerned with a staged theory of knowledge construction where the learner gradually appro-

priates and personalises acquired disciplinary knowledge. The stages of Salmon's five-stage model are as follows:

1. Access and Motivation: Exploring the technology and motivation building are key issues. The e-moderator helps learners navigate the environment.
2. Socialisation: Building on the first stage, this stage focuses on social processes and "community building".
3. Information Exchange: Information is exchanged and co-operative tasks can be achieved. Interaction occurs between content, other participants and the e-moderator who assists exploration activities.
4. Knowledge Construction: Knowledge development and discussion activities become important. Participants start to take control of knowledge construction.
5. Development: Participants become responsible for their own learning and that of their group. Ideas are applied to individual contexts. This stage is characterised by reflection and assessment.

Coughlan argues that Salmon's five-stage model of e-moderating is comprehensive in that it caters for all levels of CMC (Computer Mediated Communication), and affords the e-moderator with some clues about the type of discourse to be involved in at each level (Salmon, 2002). This model informed our forum design.

Initially, the objective for the Blackboard discussion in the diploma in European Art History evening diploma was to serve as a virtual learning environment to allow learners increase their limited contact hours beyond those provided by lectures and tutorials as the diploma cycle is currently only one night a week. It was anticipated that the discussion board would support and enhance discussion beyond face-to-face tutorial contact. The extent to which this was achieved in an academic year, from late September to early June, is what follows.

AD2803: *Art in the Age of Enlightenment Neoclassicism and Romanticism*

This second year module examines the re-interpretation of Antiquity during the eighteenth-century Enlightenment. Topics examined include: Rococo art and architecture in Italy and France, neo-Classical art and architecture, and 18th Century British portrait painting. This module includes visiting collections in the Crawford Art Gallery, Emmet Place, Cork. This city gallery boasts a fine collection of Irish 18th and 19th Century holdings.

According to Meyer and Land (2003, 2006), a threshold concept represents a transformed way of understanding, or interpreting, or viewing something, which must be understood before a learner can progress. This transformation may be sudden or it may be protracted over a considerable period of time. The transition to understanding may prove troublesome. One of the elements of troublesome knowledge for students taking art history is trying to understand the historical context of artistic production. AD2803*: Art in the Age of Enlightenment Neoclassicism and Romanticism*, is concerned with art produced during a period of great social and political upheaval in the wake of the Enlightenment. Jacques-Louis David (1748-1825) is one of the central artists discussed in the module, as he was a key exponent of Neoclassicism and his work is important in debates concerning the genesis of Modernism and the Modernist aesthetic in the 20th Century. David's career was intertwined with the events of the French Revolution (1789-92). In order to understand David's work one must understand the context in which he was working. The rapidly changing fortunes of the revolutionaries and counter-revolutionaries are complex. Therefore, the e-moderated forum for this module was thematically designed with

this difficulty in mind and expanded upon face-to-face tutorial discussion. Initially, hyperlinks were posted to relevant supplementary material aimed to enhance student understanding of the historical and cultural context. Links were provided to a documentary series on the French Revolution, produced for the History Channel (http://www.thehistorychannel.co.uk), and broadcast on YouTube (http://www.youtube.com) This resource demystified many of the complex historical details that directly impacted David's painting during this period.

Course statistics indicated that the forum received 895 views, but a mere 21 posts. Although 67% of the class logged on to view discussions on the forum it is interesting that less than one-third of the 40 students taking the diploma through assessment contributed to the online discussion. Lack of confidence accounted for this online silence. When discussions did take place they were concerned with topics and themes to be covered in the tutorials supporting the module. The forum, therefore, served mainly as a virtual message board between the tutor and the students. Six students contributed continuously to the discussions. These students were high achievers performing well in assessments and also contributing well to lectures, tutorials and field trips.

With the support and agreement of the class Michael Waldron, module tutor and moderator, conducted a feedback session in period one (September to December, 2007) of the second year of the diploma cycle. This session was very informative with regard to how the class (which is entirely comprised of mature students) approached, viewed, and used the online discussion board. The following four questions were put to them as a class during this session:

"Question: In what ways did the discussion forum promote 'deep learning'?" The class unanimously stated that had this resource been available from the beginning of the two-year diploma cycle then it would have made more of an impact on how they use it. They felt that the positive energy and good will that came hand-in-hand with beginning the course in year one could have translated into using Blackboard and the discussion forum more effectively. The notion of "deep learning" through the discussion forum therefore, in their eyes, was hampered by its introduction in year two. However, they were in agreement that, as an additional resource, it had considerable potential to promote better understanding and knowledge.

"Question: In what ways did it support students?" As an aid to the course the class agreed that Blackboard as a whole had definite merits with regard to course information being uploaded, such as timetable information, lecture guides and slide lists as well as announcements. In addition, they found that Waldron's tutorial summaries on the discussion board were a helpful support to their own notes and also for focusing and clarifying their own perception of the class discussion. The discussion forum also enabled them to keep up-to-date with topics being discussed, access useful online materials posted by tutors and to actively participate in the selection of each week's discussion topic.

"Question: What were the barriers to online participation?" It was discovered that many more students viewed the discussion forum than actually contributed to it. Initial feelings of inadequacy, lack of self-confidence, constraints of time, and issues of user-friendliness in site navigation were factors contributing to online silence. A number of students expressed a feeling of intimidation or embarrassment with regard to posting comments, even brief questions, for fear of not appearing to be profound or informed enough of the subject. When assured that any and all comments would be welcome there was still a sense of reticence among them. They felt that, as they were new to many of the topics that were being discussed from week-to-week, they lacked the confidence and knowledge to be able to give a valuable contribution to the discussion. Their own perceptions of the level of the discussion were unnecessarily high. Added to

these concerns was the fact that many members of the class worked full-time and had children and therefore time was a major issue regarding their availability to participate online. A number perceived that full-time students would use the resource much more frequently. This perception was unfounded. Cronin, who also moderated two undergraduate online discussion groups, found that undergraduate forum activity was less frequent than with the evening diploma class.

"Question: How could it be improved?" Ease of navigation and overall user-friendliness was a factor considered necessary for forum improvement. In the initial start up of each module's discussion forum some students expressed feelings that a single, more coherent and more easily accessed forum would be preferable to a number of sub-forums. The class felt anonymity in posting would be beneficial. The consensus was that if they could select usernames rather than use their real names then they would be more inclined to contribute to the discussion forum without fear of embarrassment. The idea of being named, and therefore accountable for a posting, even a superficial comment within a deeper discussion, was seen as a significant impediment to participation. Feedback revealed self-censorship as the class also requested an edit function to remove unwanted posts.

AD2805: *Birth of Contemporary Art*

AD2805: *Birth of Contemporary Art* examines the various diverse strands of the Modernism from 1900 to 1945 and the Modernist aesthetic during the early 20th Century. Topics examined include: Symbolism, Cubism, Expressionism, Dada, and Surrealism.

The questions asked at the end of the first term informed the forum design for the last module of the second term. John Paul McMahon, who taught this module, acted as forum moderator. Instead of allowing the discussion forum to stand alone as a tutorial support it was embedded in the module assessment.

An Andy Warhol retrospective happened to coincide with this module. Entitled, *The Eternal Now,* the exhibition showed pieces produced at the Factory studio in New York, between 1963-1968, at the zenith of Warhol's career. As a learning resource for the teaching programme, it engaged with four fundamental aspects of Modernism: authorship, originality, collaboration, and documentation. Students were invited to post on the online discussion forum, short, but critical statements, no longer than ten sentences, revealing connections between the themes of the exhibition and the module.

Although nearly 80% of the class logged on to view discussions on the forum, over a six-week period, interestingly, again, less than one-third of the 40 students taking the diploma through assessment contributed to the online discussion. This forum received 918 views, but merely 53 posts. Participation marginally increased from 6 to 10 students. Those who participated were enthusiastic and reflective.

Troublesome knowledge in this module coalesces on approaches to Modernism: How is it defined? When does it begin? How does it break with earlier artistic traditions? How is it made manifest? Does Modernism change our notions of the art historical canon? The forum was embedded in the lectures so as to assist students with tackling these issues. John Paul Mc Mahon, acting as both module teacher and forum moderator, urged the class to engage with Elkins' categories of art history. Broadly speaking, forum participants were less concerned with debate on definitions of the disciplinary canon more than on seeking out assistance on specific topics they were completing for terminal assessment. The general group response, as revealed through online postings, told us more about general learner behavior than it did about specific online enactments. Learners, no matter what age group, have a tendency to be strategically motivated, whereby, they focus on particular targets or goals, principally, assessments.

From his experience of teaching the group and moderating the forum, John Paul McMahon answered the original four survey questions at the end of the six-week module.

"Question: In what ways did the discussion forum promote 'deep learning'?" McMahon believed that if the resource had been available from the beginning of the two-year diploma cycle and had been better integrated into the course then it would have made more of an impact on how the class used it. Approximately half of the class (those who were being assessed) engaged with the discussion forum in a focused and thoughtful manner.

"Question: In what ways did it support students?" McMahon stated that the moderated forum had given the students a sense of real-time engagement through synchronous and asynchronous communication. McMahon's comments generated an on-line dialogue of question, response, and further questions being posed by the students. The forum empowered the students to begin to discuss ideas regarding art history outside the essay and exam context. It made the experience of writing about art history more authentic and empowered contributors to develop their individual critical voices.

"Question: What were the barriers to online participation?" Previously, a number of students had expressed a lack of confidence in posting online. Confidence grew in the second term because the class began to see the forum as a safe and supportive learning environment. This was achieved through enthusiastic moderation and encouraging postings in a supportive, open and non-judgmental manner.

"Question: How could it be improved?" Again, McMahon believed that if the resource had been available from the beginning of the two-year diploma cycle then it would have made more of an impact on overall participation. However, the forum suited some learning styles and did not suit others. McMahon suggested that mentoring on how to use the discussion forum should be encouraged.

BARRIERS TO FULL PARTICIPATION: IRELAND'S DIGITAL DIVIDE

A 21st Century learner is required to acquire diverse skills-sets: multi-tasking, critical thinking, problem solving, information discernment, ethical concern and global awareness. Learning technologies, when applied within an intentional pedagogical framework, have the potential to enhance disciplinary understanding. However, in Ireland a digital divide remains to be overcome. Digital divide, as a manifestation of digital inequality, is marked by the following structural barriers to full educational participation: equipment, location of access, autonomy of use, technical skills, social support, purpose for using information technology, gender divide, and age divide (O'Brien & Ó Fathaigh, 2007, pp. 59, 225). O'Brien and Ó Fathaigh have explained the digital divide using Pierre Bourdieu's knowledge capital conceptual lens. For Bourdieu, capital -- economic, social, cultural and symbolic -- operates as an instrument of cultural reproduction thereby helping to explain inequalities in educational achievement (O'Brien & Ó Fathaigh, 2007, p. 227). The majority of diploma students continue to be female, over 45 years of age. In this study, those with limited keyboard skills initially felt uneasy accessing and using information technology. This was a potential barrier to full participation. While confidence grew during the year, nevertheless, the class felt that they would have initially benefited from elementary information literacy skills.

At national level, network infrastructure needs to be fully integrated if learning technologies are to be fully exploited in assisting to widen educational participation. Despite Ireland's sustained economic progress there are still isolated pockets of the Republic, particularly in the countryside, where broadband access is limited or non-existent. In addition, domestic network speeds need to be upgraded to equate with European standards.

CONCLUSION

Lee S. Shulman (2005) hinted that embedding Web resources require an imaginative curriculum modification. For us, this study validated this assumption. In both case studies the e-moderated forum was integrated so as to remove any anxiety surrounding prior skill-sets for the group. 67% of the class regularly logged onto the Blackboard site to update themselves on course information. The site received 4,000 hits between November 2007 and April 2008. Course statistics show that access was most frequent on Tuesday evenings, when the weekly lectures took place, and on Wednesdays with traffic heaviest at 10am, 5pm and 10pm.

Attempts to encourage debate on the forum were initially slow to develop. Online silence, or lack of forum participation, resulted from lack of student confidence in publicly posting written responses. Although beyond the scope of this study, this silence poses questions about perceived power-dynamics between moderators and contributors in online discourse. Participation improved during the second term due to systematically embedding the forum within the module design and by encouraging the use of the forum as a "virtual sandbox" where disciplinary understanding could be played out prior to assessment submission. Gradually, student postings became more assured and reflective. Although more postings took place in the Modernism forum, surprisingly, this did not represent a wider distribution of forum participants. Generally, the students who posted from the beginning continued posting and these were the most enthusiastic in the class. Tutors reported that they had seen an overall improvement in the quality of assessments in the second year particularly regarding visual analysis and critical awareness. A student who had posted regularly on the forum improved by 10% during the year. Students began to confidently critique art historical discourse within their assignments in a manner that was encouraged and supported through e-moderation. Students valued synchronous and asynchronous modes of communication provided by the online forum thereby validating Boettcher's observations, the e-forum provided a public platform where the cumulative, step-by-step process of concept formation, refinement, application, and revision were fully visible to peers and mentors.

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