

FINAL REPORT



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Managing Connections: Using e-Learning
Tracking Information to Improve Retention
Rates in Higher Education

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Table of Contents

FINAL REPORT	3
ABSTRACT	3
EXECUTIVE SUMMARY	3
Introduction	3
Aims.....	4
Sample.....	4
Methods.....	4
Key findings.....	4
Quantitative findings	4
Qualitative findings.....	5
Recommendations	7
For institutions:	8
For academic staff:	8
For researchers:.....	9
For learning technologists:.....	9
FULL REPORT	10
Introduction	10
Background.....	10
Aims.....	12
Theoretical framework	12
Literature review	13
E-learning	14
Student retention.....	17
Identity.....	22
Methods.....	25
Research design	25
Sampling considerations – ‘withdrawn students’ and ‘current students’	28
Data collection	29
Data analysis.....	31
Results	33
Quantitative findings	33
Qualitative findings.....	38
Discussion and conclusions	44
Recommendations	47
For institutions:	47
For academic staff:	48
For researchers:.....	48
For learning technologists:.....	49
References.....	50

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FINAL REPORT

MANAGING CONNECTIONS: USING E-LEARNING TRACKING INFORMATION TO IMPROVE RETENTION RATES IN HIGHER EDUCATION

ABSTRACT

The Final Report provides an outline of the research design, the findings and the recommendations which arose from the 'Managing Connections: using e-learning tracking information to improve retention rates in higher education' project, which was funded by the Higher Education Academy and Middlesex University between 2007 and 2008.

EXECUTIVE SUMMARY

Introduction

This research was undertaken by Middlesex University as a part of the project funded by the Higher Education Academy, *Managing Connections: using e-learning tracking data to improve retention rates in higher education*. Bringing together the areas of e-learning and student retention, it provides the basis for practical recommendations to aid student progression, especially during the first year of study.

The project was informed by literature in three research domains:

- Retention and progression
- Learning and teaching through the use of technology
- Identity and behaviour

Aims

The aims of the project were to identify the ways in which students engage with their institutional virtual learning environment (VLE) and to explore what can be learnt from the behaviours of students who had withdrawn from their programme. This was then compared and contrasted with the behaviours of students who remained. By investigating the ways in which these two groups of students engaged with learning, the project aimed to provide recommendations on how to provide better support for all students to engage with learning through the use of technology. Specifically, the aims were:

- To assist educational institutions in improving the learning experience of first-year students
- To learn about factors which contribute to withdrawal and progression
- To identify how students at risk of withdrawing from their programmes manifest themselves online

Sample

The sample comprised two groups:

- All first-year undergraduates (totalling 92) in one HE institution who withdrew from or interrupted their studies during the academic year 2007-8
- A sample of 130 first-year undergraduate students at the same institution who persisted with their programme

Methods

Data collection methods included:

- Tracking data extracted from the server logs of the institutional VLE
- Telephone interviews with students who had withdrawn from their programmes
- Surveys among students who were persisting with their programme

Key findings

Quantitative findings

Descriptive analysis of the withdrawn participants and their actions are as follows:

- The majority of the withdrawn participants (57.2%) withdrew during the first four weeks of their course (mean = 4.69, median = 4, Standard deviation = 2.74)
- Exactly half the participants (50%) never logged onto the VLE
- For the participants who did log on at least once, a total of 473 logins was recorded, with a mean score of 10.28 and a median score of 5.5 (multiple modes exist) and a standard deviation score of 13.05. As the number of logons per participant varied from minimum = 1 to maximum = 65 times, the median score was used for comparative purposes as it is insensitive to extreme scores.
- Withdrawn participants who did not log on to the VLE at least once did not fall into any specific age bracket or sex (male = 50%, female = 50%)

When looking at access trends of individual students who withdrew from their programmes it was noted that students more often than not displayed the following two behaviours:

- VLE Behaviour A: to begin with, withdrawn students accessed the institutional VLE many more times than the average student on that programme and then their access dramatically dropped to zero as they approached the withdrawal date held by the student management system
- VLE Behaviour B: withdrawn students followed the same access trends as the average student on the programme they were studying, but logged on to the institutional VLE much less

Qualitative findings

Qualitative findings have been categorised and are presented here under seven themes.

THEME 1: PERCEPTIONS OF LEARNING

There were marked differences in the ways in which withdrawn and persisting students described their experiences and perceptions of learning.

Withdrawn students

When asked about their personal experiences of learning, withdrawn students tended to describe learning situations in which they were active participants and experiences which were of a more social constructivist nature; the experiences included their peers and required them to be active. However, when they were asked about how they perceived they learnt best they often defaulted to describing an information transmission

model of learning, thus highlighting a gap between their model of learning derived from their previous experience and their perceived model of effective learning.

Withdrawn students also made a clear distinction between passively learning from (being taught, watching demonstrations, etc), learning through (by sitting next to or in the vicinity of intelligent peers) and actively learning with (discussions, group work, etc) others. Occasionally they perceived their peers as obstacles in their learning experiences.

Persisting students

In contrast to the students who withdrew, students who remained showed an awareness of how they learn as individuals. Current students had a greater awareness of 'self' as a learner and expressed a richer description of how they learn, which included a range of methods. When asked about the skills needed in order to learn, they were able to identify many of them without any prompts. However, when responding to questions with regard to learning through the use of technology, persistent students held similar views to those held by withdrawn students. The research showed that they were equally as naïve in the way they used technology in their learning as those who withdrew, as demonstrated below.

THEME 2: TECHNOLOGY AS A MEANS FOR LEARNING

The experience of engaging with technology for learning was expressed in two main ways across both groups of students:

- e-learning was seen as a remedial. In this deficit model, e-learning was experienced as aimed at solving a problem, especially when this involved correcting or improving the student's performance
- technology was seen as a medium to which many attributes were assigned. Students saw technology as a medium holding certain features that served as aids, altered students and influenced their actions

THEME 3: THE INSTITUTIONAL VLE AND LEARNING

Persisting students' perceptions of the VLE were expressed with relatively strong opinions. Students frequently described this facility as a tool that helped in their learning or as a service requiring further improvement. In contrast, students who withdrew seemed to have a less specific engagement with the different resources within the VLE, presenting only their perception of it as a remedial tool, which was reinforced by their views on the use of technology.

THEME 4: DEFICIT APPROACH TO E-LEARNING

The evidence of a deficit approach to e-learning appeared to manifest itself in tutor actions as well as in the views of both groups of students of how technology can be used in learning. Specifically, the way in which the use of technology is introduced within particular learning situations and integrated into face-to-face practice influenced the way it was perceived and used by the students.

THEME 5: TECHNOLOGY AND NEW SKILLS

Participants acknowledged the need to engage with technology in order to develop new skills. The issue of whether they themselves actually pursued this engagement and, if so, the way in which they did this were not reported.

THEME 6: TECHNOLOGY IN (RE)SEARCH

Both withdrawn and persisting students referred to research as the search for information only. They made no reference to nor gave account of any further selection, analysis or critical engagement with the material collected.

THEME 7: RANGE OF TECHNOLOGIES USED

Persisting students appeared to engage with a wider range of technologies than students who withdrew (in both their social and academic lives). Although it is possible to make a link between the engagement with a broader range of technologies and the progression of students, the extent of this relationship, the reasons for it (ie socio-economic factors) and the way in which the technologies were used to access information and/or support, etc pose issues for further investigation.

Recommendations

Based on the literature review, the findings from this project and the difficulties encountered during data collection and analysis, the following suggestions are offered to institutions, academic staff, researchers and learning technologists:

For institutions:

- Make explicit in learning, teaching and assessment strategies and in e-learning policies the benefits of using technology with the curriculum.
- Student support for e-learning should focus on how to learn with technology and on transferring existing skills into the learning situation, not just on how to use the technology.
- Embrace technologies which students bring with them, rather than excluding them. For example, mobile phones could be used for in-class voting rather than requiring students to switch them off.
- The accuracy of personal information is key when integrating student management systems and learning and teaching systems. Build into your induction or enrolment processes a check of personal data. Also, promote ownership and communicate early on to students their responsibility to maintain the accuracy of their personal records.
- Institutions should look into enforcing penalties such as restricting access to IT systems and other resources as late in the academic year as is feasible.
- Discourage the sharing of account details between students.
- Ensure that links are made between the academic and social aspects of your students' lives in order that they see the student experience as a whole.

For academic staff:

- Facilitate the development of meta-cognitive learning skills at the beginning of or prior to the start of the academic year, through workshops.
- Clearly articulate to your students the reasons why you have chosen to use learning technologies in your module or programme.
- Not all students like working collaboratively. Carefully consider the balance of group work when designing your learning materials.
- Consider how your teaching acknowledges lurking as a valid way of learning.
- Engage students with their VLE from the start so that logging into the institutional VLE becomes part of their daily routine. Design learning experiences which closely integrate the physical and virtual components of your teaching.

For researchers:

- When attempting to map the levels of interaction of students, there is a definite need for including not only the institutional VLE and online instruction as part of e-learning, but also other ICT such as software, electronic deliverables (eg podcasts, electronic articles and electronic handouts) and electronic devices (eg mobile phones, mp3 and mp4 players, USB pen drives).
- Although a single definition of retention is not available, it would be useful to have clearly stated criteria for considering a student as withdrawer.
- A possible approach to tackling the issue of the different conceptions of the term 'e-learning' could be to use more dynamic perspectives in which varying degrees of interaction are included, instead of a fixed definition. This trend has already been initiated by the University of Glamorgan (Jones, Skinner & Blackey, 2007).
- When reporting research outcomes, clearly state how retention is defined and measured.
- Further work needs to be done to relate longitudinal statistical analysis of students who dropped out to local, context-specific quantitative and qualitative analyses.
- The issue of students' self-identity in relation to the social identity generated by the peer group and the HE institution deserves to be further explored by including technology usage, expertise and ownership of students as variables.
- The scarcity of information regarding the interaction of e-learning, student retention and identity points to the need for further exploration of the topic and to determine to what extent and under which circumstances each issue affects the other two, which might lead to a dynamic characterisation of their connection.
- Carefully consider the timing when you interrogate live databases as this only provides a snapshot of reality. Data are continuously updated.

For learning technologists:

- Staff development should focus not only on how to use technology but also on how to use it appropriately to enhance the student learning experience.
- Learn how technologies which promote social interaction are used and incorporate the lessons learnt into the design of e-learning experiences.

FULL REPORT

Introduction

The '*Managing Connections: using e-learning tracking information to improve retention rates in higher education*' project funded by the Higher Education Academy and Middlesex University aimed to explore how e-learning tools, specifically tracking data, can be used to inform institutions of trends and data concerning students' usage of e-learning materials during their university career. Situated within the theoretical domains of e-learning, student retention and identity, this work also explored the views about learning with technology which were held by students who withdrew from higher education and compared and contrasted them with the views held by those who persisted with their programmes. The intentions of this work were to inform and support practices in order to enhance the student learning experience. Based on the literature review, the findings from this project and the difficulties encountered during data collection and analysis, recommendations are offered to institutions, academic staff, researchers and learning technologists.

Background

Student retention has been highlighted as a significant issue in a number of government papers, including the Dearing Report (NCIHE, 1997) *Higher Education in the Learning Society* and the White Paper entitled *The Future of Higher Education* (DFES, 2003). However, 'education, not retention, should be the goal of institutional programmes' (Tinto, 1993). The need to 'bear down on student retention' (DFES, 2003) is coupled with the widening participation agenda to encourage greater access, particularly to under-represented groups, aspiring to have reached 50% of 18–30 year olds in HE by the end of the decade (HEFCE, 2001). This adds to the equation of delivering quality learning experiences to an increasingly diverse student body. The need to address retention issues within the UK HE sector, and at an institutional level, will clearly have benefits both for institutions (reputation, fee income, government grant income, etc) and for students (student-centred support, qualifications, future prospects, etc), but the primary factor leading this project is the need to enhance the *student learning experience*.

Institutional research at Middlesex (ISLER Project) has shown that students withdraw for a complex combination of reasons. These reasons are often masked by the HESA data under the categories of 'other' and 'unknown'. The ISLER research discovered that these categories are masking factors related to the student learning experience (student/staff interaction, cohort identity, use of formative assessments, timely feedback, etc). Literature also suggests that learning and teaching methods have a considerable impact on the retention of learners (Mortiboys, 2002; Yorke, 2003; Parmar and Trotter, 2004) and it is precisely these on which this project focused.

Acknowledging the current relevance of technology in learning, numerous studies have recently been conducted involving e-learning amongst HE students. The literature has mainly focused on the definition of e-learning and its relation to concepts such as blended and online learning (Garrison and Kanuka, 2004; Jones et al, 2007; Oliver and Trigwell, 2005); the students' practices, understanding and use of technology in relation to e-learning; and the institutional and organisational implications of the use of technology in learning (de Freitas and Oliver, 2005; Salmon, 2005; Bourlova and Bullen, 2005). For the purposes of this study the researchers adopted the HEFCE's (2005: 5) definition of e-learning as 'any learning that uses ICT'.

The use of virtual learning environments has been increasingly incorporated into UK universities, with post-92 HE institutions appearing to have the largest use by both students and staff (Browne et al, 2006). Conole et al (2007: 511) further recommended that 'students are immersed in a rich, technology-enhanced learning environment and that they select all appropriate technologies to their own personal learning needs'. However, as Sharpe and Benfield (2005: 2) pointed out in their review of literature on the student experience of e-learning in HE, 'collecting student experiences frequently produce[s] complex and contradictory findings'. Deepwell and Malik (2008) found that participants acknowledged the virtual learning environment (VLE) as the first reference point for e-learning and that it was in general appreciated by the students. In contrast, Conole et al (2006: 156) reported that 'students showed a marked lack of enthusiasm for VLEs'. However, all of the above studies agree with regard to the variety of activities for which students engage with ICT, these being, among others, retrieving information for various purposes (lecture notes, presentations, readings) and communicating with lecturers, friends and fellow students, as well as revision and self-assessment.

Several studies have been conducted which have as their main objective to map the activities that students undertake within institutional VLEs (eg Dutton et al, 2004; Beasley and Smyth, 2004; Aspden and Helm, 2004; Concannon et al, 2005). Such studies make it possible to discover how students engage with this technology, which is designed specifically to aid their learning. These studies illustrate the views, intentions and commitment of students in relation to the specific facility of the VLE. One point for further development is the relationship that the use of VLEs might have with students' engagement with other technologies, for a more holistic approach.

The relationship between e-learning and retention has been explored by analysing the persistence of students within online, open and distance learning courses (eg Simpson, 2004, 2006). However, the use of ICT in the learning experience of on-campus students and its relation to student retention has not been widely researched.

Literature contains many examples of work to investigate the use of ICT to improve retention and progression rates in distance education. However, very little has been done to leverage learning technologies to identify and support campus-based, blended-learning students who are considered at risk of leaving HE before completion. Therefore this research has focused upon comparisons between 'withdrawers' and 'persisters' and their engagement and

usage of the institution's virtual learning environment, as well as their understanding and experiences of their learning.

Aims

The primary aims of this project were to add to the understanding of the impact and experiences of online learning on student withdrawal and progression. The aims were:

- To assist educational institutions in improving the learning experience of first-year students
- To learn about factors which contribute to withdrawal and progression
- To learn how students at risk of withdrawing from their programmes manifest themselves online

Theoretical framework

In recent years, e-learning has been defined by taking into account certain qualities such as 'online', 'distance' and 'independence' in relation to learning (eg Williams et al, 2005; Neville et al, 2005). At present, the way in which e-learning is defined is moving towards a wider description that enables us to embrace the variety of characteristics associated with it. In the *Strategy for e-learning*, HEFCE (2005) acknowledged that a definition of e-learning 'should be sufficiently broad to encompass the many uses of ICT that individual universities and colleges decide to adopt in their learning and teaching missions' (p 5). In consequence, academic bodies are encouraged to consider e-learning as 'any learning that uses ICT' (p 5).

As a result of the movement towards a broader conceptualisation of e-learning, research in this area is no longer restricted to the student experience of fully online courses and/or resources. Instead, constructive research, as Bliuc et al (2007) argued, has the characteristic of focusing on the relationship between learning technologies and more traditional learning experiences and on the processes of their amalgamation. Thus, considering the overwhelming amount of technology that students use in their daily lives, it becomes evident that a more productive way of approaching the effects of technology on learning is to investigate how students make sense of technology in relation to the many ways in which they learn. Research following this perspective has been conducted involving virtual learning environments and other technological resources (Browne et al, 2006; Dutton et al, 2004; Beasley & Smyth, 2004).

At present, students in higher education seem to take 'for granted' (Haywood, 2004, p 15) information and communication technologies with different technological tools increasingly available to them (eg, USB pen drives, laptops, mobile phones). Numerous studies that take into account the student view of ICT in their learning have recently been conducted as part of the research on the student experience in higher education (eg Conole,

2008; Conole et al, 2006, 2007; Deepwell & Malik, 2008). This perspective examines not only the interactions with virtual learning environments (VLEs) but also the contact that students have with other technologies and how these are perceived by the students in relation to their knowledge, skills and satisfaction. These investigations use a wide variety of research techniques, focusing mainly on data gathered from surveys, interviews and VLE tracking logs.

Within student retention research, it has recently been acknowledged that ‘we need research that sheds light on the types of programme and institutional practices that lead to successful implementation of programmes’ (Tinto, 2006-2007, p 10). In attempting to tackle this research issue, many studies have recently approached the student learning experience of the programs within a HE institutional context and the question of how is it related to student retention (Parmar & Trotter, 2004; Bennet et al, 2007; Trotter & Roberts, 2006). However, little has been done to explore the views on information and communication technologies in relation to student retention and progression in the context of on-campus learning. This issue is central to the present study.

Literature review

A considerable amount of literature has been published on e-learning, retention and identity in higher education. To date, however, the relationship of each of these areas with the undergraduate experience has been analysed as a major issue in its own right. This literature review seeks to identify and examine recent literature on e-learning, student retention and identity and, while doing so, aims to identify any literature crossing over these areas as suggested in Figure 1.

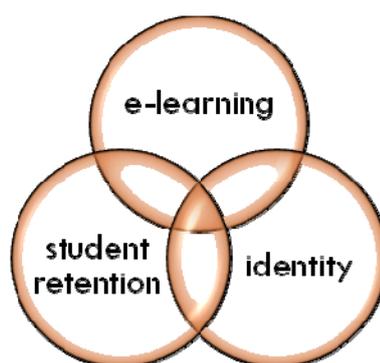


Figure 1: Overall focus of the review

E-learning

It has recently been argued that a new kind of learner in higher education is emerging: a 'nomadic, mobile learner who is dependent not on the teacher or formal educational systems, but on the network of knowledge and skills that can be accessed on an anytime, anywhere, e-learning basis' (Sims, 2008, p 153). Acknowledging this, a substantial amount of studies have recently been conducted involving e-learning among HE students. However, the generalisability of much published research on e-learning is problematic. This is mainly due to the diversity the term has had in relation to HE. Firstly, the definition of e-learning and its relation to concepts such as blended learning and online course constitutes a whole body of research. Secondly, the students' practices, understanding and use in relation to e-learning constitute another trend in scholarly activity in this area. Thirdly, a list of implications from an organisational point of view has been identified by researchers. Finally, there is a fourth stream of published works that attempt to link e-learning to retention.

E-learning: what is its current definition?¹

In recent years, e-learning has been defined by taking into account certain qualities such as 'online', 'distance' and 'independence' in relation to learning (eg Williams, Nicholas & Gunter, 2005; Neville, Heaving & Walsh, 2005). As a result, there have emerged different classifications of e-learning. Authors have distinguished between enhanced classroom learning activities, fully online courses and blended learning – a mixture of face-to-face and internet learning activities (Garrison & Kanuka, 2004). However, these categories have failed to fully capture the diversity of the term. For instance, Oliver and Trigwell (2005) demonstrated that, although the term 'blended learning' is extensively used, it has not been properly conceptualised and remains nebulous. Taking this into account, further initiatives have been put in place to add clarity to the classification. One example is the University of Glamorgan's continuum of blended learning, which indicates the blend as the use of online media increases from basic ICT usage to intensive ICT usage (Jones, Skinner & Blackey, 2007).

At present, the way in which e-learning is defined is moving towards a wider description that enables us to embrace the variety of characteristics associated with this word. For instance, e-learning has been considered as 'a family of approaches to education which range from enhancing face-to-face teaching through to independent resource-based learning and which are mediated and supported via ICT' (Shurville & Browne, 2006, p 246). Moreover, in the *Strategy for e-learning*, HEFCE, JISC and HEA (2005) acknowledged that a definition of e-learning 'should be sufficiently broad to encompass the many uses of ICT that individual universities and colleges decide to adopt in their learning and teaching missions' (p 5). In consequence, these academic bodies consider e-learning as 'any learning that uses ICT' (p 5).

¹ For a current compilation of literature on e-learning in HE, see Gauntlett (2007).

How are HE students experiencing e-learning?

As a result of the movement towards a broader conceptualisation of e-learning, research on e-learning is no longer restricted to the student experience of fully online courses and/or resources². Instead, a large and growing body of literature is currently investigating how students are using and experiencing technology in their daily lives and their learning. Furthermore, as Bliuc, Goodyear & Ellis (2007) argued, constructive research focuses on the relationship between learning technologies and more traditional learning experiences and on the processes of their amalgamation.

In the enterprise of researching the effects of the 'enhancement' of learning by technology, studies have been conducted looking at the differences between 'hybrid' courses and traditional face-to-face instruction. There has been a debate in which it is discussed whether the use of technologies makes any difference in the student experience and, if so, the nature of this difference. Two main streams can be found within this approach. On the one hand, researchers claim to have found no significant differences in outcomes (for example, grades, knowledge retention and satisfaction) between students who took technology-aided courses and traditional courses (eg Delialioglu & Yildirim, 2008). Yet on the other hand, some other studies provide evidence that shows students' preference for 'mixed' instruction and positive learning outcomes from 'hybrid' courses. The contribution of these studies is related to the diversity of variables they are able to associate to different learning contexts, thus identifying which variable (high student satisfaction, for example) seems to be related to a certain learning approach. However, if we consider the overwhelming amount of technology that students have in their daily lives, it becomes evident that a more productive way of approaching the effects of technology on learning is to investigate how students make sense of technology in relation to the many ways in which they learn, instead of measuring or comparing the different degrees of technology usage in learning with lectures or 'conventional' approaches. Research with the former perspective has been conducted involving virtual learning environments and other technological resources.

The usage of virtual learning environments (VLEs) has been increasingly incorporated into UK universities. Post-92 HE institutions appear to have the largest volume of use by both students and staff (Browne, Jenkins & Walker, 2006). Several studies have been conducted with the main objective of mapping the activities that students undertake within institutional VLEs. By doing so, it is possible to discover how students engage with this specific technology aimed at aiding their learning. The research on VLEs varies in great degree, depending on the methodology used. The methodological approaches include the description of percentages of use, the classification of use of tracking data and the gathering of users' opinions with regard to the VLE. These studies make a remarkable contribution because they illustrate the views, intentions and commitment of the students in

² The analysis of literature regarding various areas in the development and delivery of purely online courses is beyond the scope of this literature review. For further reference, remarkable contributions in this area are Daly, Pachler, Pickering & Bezemer (2007); Sun, Tsai, Finger, Chen & Yeh (2008); Tham & Werner (2005). For comparisons of outcomes from online courses with results derived from 'traditional' instruction, see Koskela, Kiltti, Vilpola & Tervonen (2005); McDonald, Dorn & McDonald (2004); Zhang, Zhao, Zhou & Nunamaker (2004).

relation to the specific facility of the VLE. This approach, however, misses the relationship that the use of the VLE might have with the students' engagement with other technologies, in a more holistic approach.

Dutton, Cheong & Park (2004) examined a case study which revealed that 60% of students used the institutional VLE for no more than two hours per week. 71% of VLE users reported that it was 'very helpful' or 'helpful' and almost 70% of respondents acknowledged that they would definitely use the VLE. Beasley & Smyth (2004), in turn, offered a richer description of students' interaction with the VLE. They found that, when using a VLE, students requested an additional paper version of the online materials. Users engaged extensively with self-assessment activities and worked examples, but no use was made of the discussion forum for either peer or tutor interaction. Similarly, Urquhart, Spink, Thomas, Yeoman, Turner, Durbin et al (2007) found that some students who participated in their study perceived the benefits of the VLE in terms of a learning structure that offered a safety net and support. Other participants viewed the VLE as a way of presenting and redescribing the information in the lectures. Moreover, a number of participants seemed to recognise their engagement with the VLE as an extension of the classroom situation. Thus, overall, these results are in line with the findings of Aspden & Helm (2004), whose findings suggest that the VLE allows students to maintain connections with their learning experience according to their particular needs. They showed how the virtual environment provides flexibility, with opportunities for self-study and time and workload management. In addition, it must be acknowledged that factors pertaining to the individual and the organisation, as well as varying degrees of social support, might influence students' engagement with the learning environment (Concannon, Flynn & Campbell, 2005).

At present, HE students seem to take information and communication technologies (ICT) for granted (Haywood, Macleod, Haywood, Moge & Alexander, 2004), with different technological tools increasingly available to them (USB pen drives, laptops and mobile phones, to name just a few). Numerous studies that take into account the students' views of ICT in their learning have recently been conducted as part of the research on the student experience in HE. This perspective examines not only the interactions with VLEs but also the contact that students have with other technologies and how all this is perceived by the students in relation to their knowledge, skills and satisfaction. These investigations use a wide variety of research techniques, focusing mainly on data gathered from surveys, interviews and tracking VLE logs.

Within the area of research of technology in relation to learning, it has recently been suggested that 'students are immersed in a rich, technology-enhanced learning environment and that they select all appropriate technologies to their own personal learning needs' (Conole, de Laat, Dillon & Darby, 2008, p 511). However, as Sharpe and Benfield (2005) pointed out in their review of literature on the student experience of e-learning in HE, 'collecting student experiences frequently produce[s] complex and contradictory findings' (p 2). For instance, in the study by Deepwell & Malik (2008), it was found that participants acknowledged the VLE as the first reference point for e-learning and it was in general appreciated by the students. Conole, de Laat, Dillon &

Darby (2006, 2008), in contrast, reported that 'students showed a marked lack of enthusiasm for VLEs' (2006, p 156). However, findings in all studies reviewed coincide with regard to the variety of activities in which students engage with ICT, these being, among others, retrieving information for various purposes (lecture notes, presentations, readings) and discussing/communicating with lecturers, friends and fellow students, as well as revision and self-assessment.

How are HE institutions changing due to the developments in e-learning?

At the level of the organisation, e-learning policies are producing institutional changes in terms of organisational redevelopment and of pedagogic practices (de Freitas & Oliver, 2005). For example, when a new VLE is introduced to the institutional practices, there is a need 'to surface knowledge embedded in existing practice to preserve and translate essential elements of that practice into a new technical context' (Jones & Conole, 2006, p 397). The costs of these shifts driven by e-learning include not only the direct costs of technology but also the development of competent human resources such as technicians and academic staff (Salmon, 2005). Moreover, e-learning has had effects on the use of the instructional space on campus, as it provides flexibility in programming courses and helps to maximise the use of limited resources, such as classrooms and laboratories (Bourlova & Bullen, 2005).

How has e-learning been related to student retention so far?

Another major area of research within e-learning has been concerned with the persistence of students following online courses. As stated before, e-learning comprises more than just instruction delivered in an online environment. However, when it comes to the study of retention in relation to e-learning, studies have examined online, open and distance learning courses, but the influence of ICT in the learning experience and in its relation to retention has been ignored. In the following section, a more extensive picture of retention is introduced in order to inform a more detailed description of its relation to e-learning and 'traditional' learning in current research.

Student retention

It has been suggested that, as 'good practice', the gathering and management of information in relation to retention should be an important aspect for institutions to consider, and this monitoring should be conducted at student, faculty and course level (NAO, 2007). However, it has also been acknowledged that 'information on why students withdraw from their courses is not reliable' (Committee of Public Accounts, 2008, p 6). This can be avoided if institutions commit to a strategy in order to raise a single central source of data and to develop

pertinent tools to enable the data to be examined in a form that converges the needs of different groups within the institution (Quality Assurance Agency for Higher Education, 2008).

Yorke (2004) explained that student retention is fundamental at both institutional and social levels. Thus it is crucial 'for institutional managers (not least of the implications for income streams) and for government and its agencies (which are concerned with matters relating to the return on the investment of public monies in higher education)' (p 19). Moreover, as Simpson (2006) pointed out, student retention is important 'for social justice and the long term value of a country, the more accurate the forecast, the fewer the potential students who could have succeeded had they been admitted' (p 125). Acknowledging these issues, research has been conducted to generate evidence regarding the reasons for students to leave their HE courses. In the following subsections, a brief outline of how the term 'retention' is currently treated serves as the opening for the current research tendencies on the topic.

How is student retention measured and defined?

It is certainly difficult to state a single measure or definition of 'retention', as it is determined in a variety of ways. For example, for the 'Staying in the course' report, the National Audit Office (NAO, 2007) used two main measures of retention:

'The first is the 'completion rate' – the proportion of starters in a year who continue their studies until they obtain their qualification, with no more than one consecutive year out of higher education... A more immediate measure of retention is the proportion of an institution's intake which is enrolled in higher education in the year following their first entry to higher education. This is the 'continuation rate'.' (p 5).

E-learning and student retention: what is the relationship?

As stated in the previous section, when involving ICT in the examination of retention, the research has been focused fully on online, distance and open learning. In the outcomes of these investigations it has been argued that 'student retention in open and distance learning (ODL) is comparatively poor to traditional education and, in some contexts, embarrassingly low' (Fozdar & Kumar, 2007). In consequence, several studies have tackled the issue of identifying the factors that are related to the persistence of students in online programmes (Berge & Huang, 2004; Hayashi, Chen, Ryan & Wu, 2004; Fisher & Baird, 2005; Levy, 2007; Simpson, 2006; Tyler-Smith, 2006; Willging & Johnson, 2004; Wojciechowski & Palmer, 2005). Moreover, attempts have been made to identify the impact on retention of intervention to support distance learners (Simpson, 2004). However, there is a lack of research attempting to identify how on-campus students can benefit from e-learning practices and resources and how this, in turn, relates to the possible

enhancement of their experience which might result in a specific outcome when it comes to deciding whether or not to drop out.

What are the current research trends on retention?

When it comes to the retention of students undertaking on-campus courses, there have been two main trends in research. First, a number of investigators have examined the effects of different variables on student withdrawal, aiming to identify their statistical relation to attrition levels and thus predict which students are more susceptible to dropping out. The second approach to the study of retention and progression has been the explanation of the phenomenon via the student experience.

Although it has been argued that research under the predictive perspective has, over time, failed to succeed, there have been achievements. For example, it is widely acknowledged that students' prior academic achievement is determinant of their drop-out probabilities (Harrison 2006). In addition, there is certain agreement that mature students, those joining a second choice course and those taking part in their course late are also more susceptible to withdrawal (Harrison 2006, p 378). Below are examples of how studies have attempted to identify and analyse the variables associated with the student decision to withdraw.

Johnes & McNabb (2004) identified the principal reason for attrition as the match between the student and the institution. The data set used in this study was a census of all university students studying at the 'old' universities in 1993. Variables regarding the students were determined from information collected at the time of application to the university and from follow-up information about the progress of each student. In addition, variables associated with 'institution quality', teaching quality and quality of research were used in the model. The results suggest that the probability of withdrawal from university is higher for students whose prior performance is superior to that of fellow students. In addition, it was found that universities with high quality standards in learning and teaching have lower withdrawal rates than others that do not achieve these standards. In the same way, students have a higher probability of completion at universities that have high standards in research quality. These results, as the authors acknowledge, imply the importance of context in the phenomenon of attrition: while US research has suggested that factors associated specifically with the institution have only a small effect on the likelihood of non-completion, this seems not to be the case in the UK.

The findings in Johnes & McNabb (2004) are in line with results recently reported by the National Audit Office (2008) which suggest that there are variations in average continuation rates between the different types of higher education institutions: while The Russell Group universities hold the highest average continuation rate, the universities created since 1992 have the lowest average rate overall. This, in turn, clearly links to the conclusions that Tinto (2005) drew in relation to the role of the institution in student progression:

'students are more likely to succeed when they find themselves in settings that are committed to their success, hold high expectations for their learning, provide needed academic and social support, give frequent feedback and actively involve them...in learning' (p 94).

Similarly, Arulampalam et al (2005) analysed nine cohorts of undergraduate students in UK universities (1984–85 to 1992–93) and calculated the probability that a student will withdraw from university during the first year. Gender, age, student fees status, type of accommodation, student enrolment status, degree programme length, social class, schooling and whether the student has 'A' level mathematics were the variables included in the model. The analysis was mainly focused on the impact of prior performance and on differences by gender. In order to estimate performance, each participant was ranked in each university and on each degree course, based on his or her performance at A-level in relation to fellow students. The results confirmed the proposition that dropout is related to levels of prior attainment. Interestingly, the results also revealed significant differences in the probability of withdrawal in relation to the student's rank only in the 'top' universities. This might mean, as the researchers suggest, that students with stronger prior performance are unlikely to leave highly ranked universities while students with weaker achievements at those universities face pressures to do so (p 261). This later finding is consistent with the results reported by Johnes & McNabb (2004): factors associated with the institution have a significant effect on withdrawal.

At an institutional level, Charlton et al (2006) attempted to predict attrition using data obtained at the beginning of undergraduate courses, but most of the variables failed to significantly predict withdrawal. Through a correlational design, differences between continuing and withdrawing students by the start of the second year were examined. The authors analysed the relationship between withdrawal and psychological health, motivation and student preparedness, education, gender and age. Withdrawal was higher for males. After statistical analysis, the researchers concluded that *'there were reliable differences between continuing and withdrawing students with respect to independent study expectations and intrinsic motivation, with withdrawing students having lower independent study expectations and lower intrinsic motivation'* (p 21, emphasis added). In fact, however, only the variable named as *'independent study expectations'* (extrinsic motivation) significantly predicted withdrawal in the model used. All the other variables failed to significantly predict withdrawal. In addition, this model missed a variable accounting for financial situation, a factor that, among others, may have negative effects on student completion (Taylor & Bedford, 2004), and thus could provide more reliability to the model.

Also at an institutional level, but using data from three cohorts of students, Bailey & Borooah (2007) analysed the characteristics associated with student attrition after the first year of HE. Through a logit model, the authors estimated how the probability of a first-year student progressing towards the second year of study was influenced by *'personal characteristics and circumstances'* (p 19). The independent variables of the model were

programme of study (allocated across ten course types), sex, socio-economic class, religion, ethnicity, disability (if any), domicile, marital status, year of entry and basis for acceptance to the university (A-levels, HND, etc). Key findings suggested that survival rates had a significant difference depending on gender, usual domicile and course type. Thus, the authors concluded that '[f]emale, Protestant students, from a professional background, taking Social Work and (non-nursing) health related courses had a survival rate of 96.1% while male, Catholic students from an unskilled/semiskilled background, studying Engineering had a survival rate of 65.2%' (p.21).

These two studies at the level of the institution are an example of the inconsistencies that can be found in comparison to nationwide, overall, more comprehensive data. These investigations, however, are valuable since they highlight the importance of context-related factors that might affect student attrition. Studies that aim to characterise the phenomenon of withdrawal in specific degree courses are also attempts to take context into account. Hassell et al (2007), for example, explored attrition trends among pharmacy students in the UK. Moseley & Mead (2007), in turn, examined the suitability of the statistical method of rule induction for predicting withdrawals from nursing courses. These efforts have faced limitations, such as the need for larger amounts of data and difficulties in obtaining information that allows tracking cohorts of students with accuracy. Consequently they have drawn very conservative conclusions due to the lack of statistical significance in the methods used.

The predictive model, as can be inferred from the literature previously discussed, provides an insight into the variables associated with student withdrawal. However, there is also the inconvenience of waiting until several cohorts of students have withdrawn from university in order to search for the patterns within their characteristics. Moreover, by the time these kinds of studies are conducted, the social, economic and technological circumstances within HE might have changed. (One may ask, for example, what is the relevance of looking at cohorts of students from the decades of 1980 and 1990 if the technological conditions for learners are significantly different today?) Predictive models in general have been criticised for a number of ethical issues such as the limited accuracy of the data, the arbitrary limits of the resources available and the inconsistent levels of student support due to targeting certain groups (Simpson, 2006). Furthermore, the findings of the research are different at national, institutional and specific area levels, granting only consistency regarding prior academic performance as determinant of progression. This might be explained if it were to be acknowledged that student retention is 'complicated, confusing and *context dependent*' (Hagedorn, 2005, p 89, emphasis added), and thus the particularities found at an institutional level might not be related to the national figures.

Within the research on student retention, it has recently been acknowledged that 'we need research that sheds light on the types of program and institutional practices that lead to successful implementation of programs' (Tinto, 2006–2007, p 10). In attempting to tackle this research issue, many studies have recently approached the student learning experience of the programmes within a HE institutional context and the question of how it is

related to student retention. There is evidence that suggests that students tend to withdraw from their courses within a few weeks of entering university (Parmar & Trotter, 2004; Bennett, Kottasz & Nocciolino, 2007). This implies that the most productive research may be conducted when involving these kinds of students as participants.

Similarly, Trotter & Roberts (2006) conducted qualitative research aimed at characterising an enhanced student experience that contributed to the improvement of retention and achievement. Using a mixed methods approach, the researchers identified high- and low-retention course programmes at institutional level at a university in the UK. Programme managers of courses with high and low retention rates were interviewed in order to identify activities associated with good retention rates. Programmes with high retention rates seemed to offer consistency in the activities that could be related to the student experience. These activities were, among others, specific actions for targeting and attracting prospective students, highly monitored attendance on the courses and academic and personal tutor support. While these activities were also undertaken within programmes with low retention rates, they were more inconsistently implemented. It is unclear, however, to what extent these activities are directly related to retention and to what extent they are only part of the characteristics of each type of programme.

Identity

It has recently been argued that the ICT we use changes the way we think and shape our social relations (Turkle, 2004a; 2004b). This in turn is related to how we make sense of our social roles and how we attempt to present ourselves to others. Thus, at present,

'we respond to humans and to objects that represent them: answering machines, websites, and personal pages on social networking sites. Sometimes we engage with avatars and anonymously 'stand in' for others, enabling us to express ourselves in intimate ways to strangers, in part because we and they are able to veil who we 'really are'.' (Turkle, 2008, p 132).

Current research on identity, social networks and online communications, has argued that online activities provide the opportunity to sustain narratives of identity and explore a number of different stories about the self (Merchant, 2006). When learning is added into the equation formed by online environments and identity performance and transformation, the topic gets more complicated. Many studies have investigated the issue of self-identity in the context of technology. However, the research on retention has helped to acknowledge that 'the ability of an institution to increase its rate of retention results from its capacity to construct conditions within the institution that promote persistence among individuals' (Tinto, 2005, p 90). This last point has been missed by

the research on 'e-identities'. As it will be demonstrated in the following section, research on identity in relation to learning with ICT has been conducted under the direction of two main perspectives. First, the role of student identity has been examined within the institutional VLEs. Second, self-identity has been related to social identity, attempting to characterise how students try to present themselves within online contexts. It must be acknowledged that these two research streams are not mutually exclusive and thus the two sections presented below must be understood as intertwined.

VLE: where is student self-identity?

This complexity has been shown in a recent case study that links a VLE with the identity of university students, by Lambeir & Ramaekers (2006). They argued that 'it is far from self-evident to accept an electronic learning environment as effectively supporting a student's self-tuition, or as stimulating learning as a critical and sustained activity' (p 544). By exploring and analysing the pragmatic conventions that a student should follow in a particular VLE, the authors found several weak points in relation to the changing conception of the student's identity. For instance, the degree of engagement of the student with the VLE is not determined by the student – to have a personalised virtual learning environment according to the student's study programme – but is institutionally acknowledged as essential for the status of 'being-a-student' (p 545). With all the information that is posted online to the students, the social component of learning seems to be vanishing, allowing for an ongoing individualisation of the learning process. According to the analysis, the self-presentation of the student in front of peers and teachers is, to a great extent, fixed and determined by logging on to the online learning environment. Moreover, the use of the VLE, instead of stimulating students to take a critical perspective, seems to be presenting the student as a 'manager of his/her own portfolio' (p 546).

Interestingly, in an ethnographic study by Al-Mahmood (2006), the controversial issues pointed out by Lambeir & Ramaekers (2006) were not mirrored. On the contrary, the former author found that identity seemed to be a complex and unfinished construct for which the online space opened possibilities and combinations of pedagogies. By examining the experiences of students and staff of four fully online postgraduate subject modules, this research explored the convergences of spatiality, identity and online learning. Through the three vignettes it was explained how, while for one of the participants his appropriation of the online learning space was that the web space was perceived as physical space (p 47), for another participant the online space never became a learning 'place', as it might be associated with feelings of isolation and loneliness (p.49). Thus, the perception of the online environment in relation to the self is complex and diverse, as another participant manifested:

'...In some ways it's a bit like this neutral mask in my study, I could be no one in particular or take on any of my identities from learner to professional to expert and so on... or a multiple of them... blurring in and out... if you like... or blending them... morphing them so to speak... I tend to feel quite comfortable with hybrid moves if you like...don't really like singularity... it eliminates possibilities for me' (p 50).

In addition, Al-Mahmood (2006) provided some important points for further consideration in relation to a student's identity. For instance, there is a need to take into account the possibility of developing online environments that allow for public and private spaces. In the same way, educators and educational designers should be required to examine the feasibility of providing more creative, inspiring and exploratory spaces for online learners.

In exploring the viability of an electronic environment that stimulates learners to overcome difficulties in presenting themselves to others in e-learning contexts, Hughes & Scott (2005) tested an identity game that implied collaborative learning. Assuming that developing a common group identity is key for learners when interacting online, the researchers explored the potential of this electronic game to promote greater understanding of identity and to encourage deeper levels of online communication. The researchers invited participants to collaborate and discover how easy it is to establish and sustain a fictional identity online: 'participants were told to introduce themselves to their group and to ask and answer questions to determine which presentations by the other members were deliberately contrived as false' (p 393). The online interactions of the participants in self-moderating, closed-discussion forums were examined through discourse analysis techniques. Findings revealed that participants were over-concerned with their self-presentation and were very competent at paying attention to the content of what other participants wrote. However, very few displayed what the researchers termed as 'online listening skills': the ability to interpret not only the content but also the behaviours, the language use and style within online communication. This research supports the position that online identity can be generated through text, but brings to the fore the need to develop online communication and listening skills as an imperative condition to achieving a sense of group-belonging.

Self-identity and social identity: the importance of belonging to a group

In a paper that attempted to map learners' online identities and group interaction, Wheeler et al (2004), discussed the extent to which students change their identity within online learning environments. The participants were students who used a VLE in a hybrid blend of online learning, videoconferencing and face-to-face teaching. Through analysis of interviews, the researchers found that for almost all of the students in the sample, online identity was disclosed as similar or identical to real-life identity. The extent to which self-reporting might be consistent with evidence from text in specific online settings, however, is not considered. As the authors acknowledged, in order to support these results, there would be a need to further evaluate student tracking records and analyse the dialogue generated within the online discussion groups. In addition, it would be fruitful to consider the role of group interaction and sense of community in shaping self-identity in e-learning environments. For instance, recent research has shown that in online environments it is not only self-identity or the individual student who is involved: social isolation seems to be inversely related to both the social community and the learning community in the virtual classroom (Rovai & Wighting, 2005).

Moreover, when taking into account textual online communications between e-learning groups, the results discovered by Wheeler et al (2004) were not so straightforward. As evidence from research reported by McConnell (2005) has suggested, it is not only self-identity *per se*, but also in relation to a broader group with which to build connections and partnerships that might be at stake in online learning. The participants of this study were students on an online course. They were arranged into three groups of between seven and ten members with a tutor. The analysis of the social discourse was done through an examination of online interactions in the form of transcripts of textual communication. The analysis revealed that two of the groups examined worked cordially and were able to successfully produce a collective outcome. The other group displayed extreme anxiety and division and needed extra assets from its members to generate the collective outcome. The findings also relate to the connection between group identity and self-identity: 'when participants are willing to give time to cooperative learning processes and negotiations, the outcomes are extremely favourable, and the time involved seems to provide them with a real sense of engagement and collective identity' (p 39). These findings have been supported by the results of a study on the experiences of e-learning by Krüger (2006), who showed that, in order for participants to experience success in e-learning environments, they 'must develop a strong sense of identity within the group and a strong need to participate as a strong member' (p 4).

The notion of belonging to a group and its connection to e-learning has been further explored by Rovai & Jordan (2004), who suggested that blended learning seems to emphasise active learning through collaboration and socially constructed knowledge. Following a cause comparative design, the relationship of 'sense of community' between traditional, blended and fully online higher education learning environments was examined. A community scale was used as the instrument to measure connectedness and learning. After statistical analysis, the researchers found that the blended course had a significantly higher connectedness score than either the traditional or the online courses. The blended course also had a significantly higher learning score.

Methods

Research design

This project was set in the context of existing work and was informed by literature in three main domains: research on retention and progression, e-learning and social behaviour and identity.

Acknowledging that withdrawal is the result of a complex process concerning the interaction between individuals and the educational institution (Tinto, 1993), the research focused on students from a single UK post-92 higher education institution. The institution has a diverse student body with the majority from non-white backgrounds, and a high number of international students (15.9% of a total student population of over 25,000). It is important to acknowledge this diversity when looking at social behaviour and identity attached to students' decision-making processes.

The project was designed as a two-case study of particular individuals within a specific institutional context. The first group of participants were students who withdrew from their first year of higher education; the second group included students of the same cohort who continued with their studies. The study did not include students who failed to progress successfully academically, as the timescale for carrying out this study was such that final grades were not known. Although students who progress to the next academic year with a credit deficit are at greater risk of withdrawing from their studies, this project did not focus on them as it only sought to analyse online behaviours related to first-year and first-semester interactions.

As this research was interested in the online behaviour of students who withdraw and students who persist, the study involved a mixed method approach to data collection which resulted in the collection of:

- quantitative tracking data extracted from the server logs of the institutional VLE
- qualitative data via telephone interviews with students who had withdrawn from their programmes and surveys with students who were persisting with their programmes

Using tracking data immediately brought into question how the researchers viewed the VLE and how they approached the research. As all interactions are date- and time-stamped, the use of tracking tools can be likened to systematic classroom observations, albeit online, which are closely linked to ethnographic approaches to research. The VLE becomes the 'complete observer' (LeCompte & Preissle, 1993 cited in Cohen, Manion & Morrison, 2000, p 310) which records all interactions as and when they happen (event-driven rather than time-driven), allowing researchers to tap into many of the advantages that systematic classroom observation affords. These include the gathering of large data sets which afford generalisable findings, high validity for observable behaviours (although mental activities are not accounted for) which are precisely recorded and the ability to reduce and filter highly complex phenomena into manageable data. A level of participant bias may be introduced in this type of observation by computer-savvy students who are aware of how their tracking information might be used. There may also be cases where students are given extra credit/marks for participating online on a regular basis.

However, as the information being collected by the system was not done for the purposes of this research, it was possible for the researcher to treat this information as secondary data. The VLE could not tell researchers from where students were accessing their online course, what environmental conditions were present, if they were alone or whether they had others assisting them in their online tasks, whether they were interacting with their online course as a primary task or whether they were using it in the background for referencing purposes. This method did not allow the researcher to be fully immersed in the day-to-day lives of the participants as is necessary in an ethnographic approach (Robson, 2002). It was felt that this information was crucial in understanding the data if they were to be examined as systematic observational data and, as such, it was decided that the information collected by the VLE would be treated as secondary data due to the lack of information with regard to context. The level of observation afforded by the VLE was not enough to make generalisations about this particular group of students. It was envisaged that the methodological triangulation, through the additional use of in-depth interviews and questionnaires, would be able to shed light on the context and the reasons why interactions occurred in this particular manner, would lead to the understanding of the level of participant bias and would substantiate any findings.

The VLE software and its developers in this instance were acting as the standardised research instrument. By using the VLE tracking data, a level of observer bias was unavoidably introduced by the software manufacturers rather than the researcher. Tracking tools are influenced in their design by the programmers' personal constructs, theories of education and experiences of achievement and attendance monitoring. Software programmers choose to record 'behavioural by-products' – the physical effects of interactions which remain after the events have taken place (Barlow et al, 1984 cited in Cohen, Manion and Morrison, 2000, p 347) known as 'trace measures' based on layers of theoretical underpinnings which are not evident. Hakim (1987, cited in Cohen, Manion and Morrison, 2000, p 362) discussed the design of research projects based on secondary data and claimed that they are studies which are designed 'back to front'. Instead of purposely deciding what information needs to be collected in the research design stage, the researcher found out what was already being collected and then designed the research around it. In the data analysis phase of the project the variables to be analysed are a priori known, thus making the coding frame much simpler to design than in other research projects.

Beaudoin (2002), however, cautioned against relying solely on this type of tracking facility offered by VLEs when he noted that many students who fail to actively participate in a face-to-face or online class still achieve the intended learning outcomes and do well academically despite their apparent lack of interaction. 'Lurking' – defined as logging in and observing but not contributing to online forums – although not a highly visible form of learning, is still a legitimate method of learning. Pappas, Lederman & Broadbent (2001) stated that tutors need to rethink the way they monitor student performance due to the lack of visual and aural feedback

in an online environment. However, in their study, 'lurking' was not recognised as a preferred method of learning in any of the three cases they reported on. The limitation of tracking tools was also highlighted by Hewling (2004) who examined the effectiveness of these tools with regard to students who lurk as well as those with limited access to the internet, who prefer to log in once, download materials and engage with them offline, even though they are formally enrolled on an online course. Consideration of this point is important for the construct validity and reliability of the study.

Methodological triangulation was employed in order to gain access to characteristics exhibited by 'at risk' students in a valid and reliable manner. This research built upon Sharpe et al's (2005) recommendations by illuminating the students' voice in the evaluation and their experiences of blended learning through semi-structured interviews of withdrawn students. As the participants were no longer physically on campus, interviews were carried out telephonically, were audio recorded and transcribed verbatim. The data from the interviews assisted in the examination of the phenomena through the eyes of the participants rather than through the eyes of the researcher; the observed actions became meaningful only when the students' intentions to share their experiences were ascertained and understood (Berger & Luckmann, 1996).

The usefulness of the mixed method approach employed provided the much needed triangulation, leading to multiple inferences which confirmed and complemented each other and provided the basis for designing the latter phases of research (Green et al, 1989, cited in Teddlie & Tashakkori, 2003). The outcomes of this research were descriptive and hopefully provide the basis for designing further research.

Sampling considerations – 'withdrawn students' and 'current students'

This study was concerned with aggregates of properties and tendencies relating to first-year undergraduate students who commenced their studies at Middlesex University in September 2007 but who decided to temporarily interrupt or completely withdraw from their courses. The study specifically looked at students who had taken the decision and had informed the university of their intention by the end of November 2007. This was done for practical reasons, although it was consistent with the literature which states that students tend to withdraw from their courses within 6–8 weeks of commencement (Parmar & Trotter, 2004).

Secondary data were retrieved from the institution's student management system, MISIS, with regard to students' age, sex, programme and date of withdrawal. By the end of November 2007 only 98 students had a withdrawn or interrupted status code in MISIS who fully met the specified criteria. This made it possible to look at the full number of possible participants, thus avoiding complex sampling designs and making

allowances for differing probabilities in the selection.

Once a full list of research participants was established, letters were sent to both term-time and home addresses informing them of the research project and offering them the opportunity to opt out. Of these, four withdrawn students chose to opt out and one letter was returned as undeliverable. Also excluded from the research was one student who appeared to have dropped out during the academic year concerned but had been attempting to start a course for a number of years and had postponed it twice in the past. Such a case could provide an interesting life history approach to HE studies which could form the basis for undertaking subsequent research on HE entrants, but not one which would have helped answer the research questions at hand. Thus the number of participants was reduced to a manageable 92 withdrawn students who made up the 'withdrawn students' group. Participants were located in different disciplines, although it was anticipated that discipline-independent similarities in student performance might be identifiable with regard to academic perseverance.

Students who persisted in their studies were selected using their programme of study as a sampling criterion. The 92 withdrawn students were aligned into 12 specific subject areas, depending on their programme of study. One module per subject area was randomly selected. In order to have consistency with the group of students who withdrew, students from the same cohort who persisted with their studies and were registered for those 12 modules were invited to participate in the study. In total, 130 participants were included in the 'current students' group.

Data collection

All data collection took place between January and April 2008.

The first part of the research dealt with 'reality' in a quantitative manner. It dealt with the properties of individuals' interactions online, on the institutional VLE, and their values which varied and could be compared, essentially translating these into variables. The project relied on the use of the built-in tracking tools of VLEs and specifically those of the Blackboard Learning System (Vista). The VLE recorded the interactions of individual users and stamped them with the date and time. These records were accessible to both staff and students and provided an accurate record of online interactions which was meant to be used as a monitoring tool by staff and as a study management tool by students (where they've been, how much time they spent online, etc). The level of detail recorded by such systems is significant and can be accessed per module, per student, per session, etc. The online profiles of students who had withdrawn/temporarily interrupted their studies were retrospectively collected through the tracking tools

available in the VLE and analysed in order to frame particular behaviours and actions characteristic of this group. It was envisaged that both quantitative data (ie number of discussion postings) and qualitative data (ie nature of posting and language used) would be collected and analysed. However, it was only possible to extract quantitative data from the system.

Once the analysis of the secondary data was completed, a short description of each participant's interactions was posted to them as a means of members checking prior to collecting any qualitative data.

The design of the interview schedule was based on the limitations and difficulties encountered during the first phase of data collection and subsequent analysis and on the need to confirm any assumptions held. The questions fell broadly into five main categories:

- Self-identity – which included requests for accounts of previous personal experiences of learning, perceptions of learning and the use of technology
- Level of participant bias – which aimed to collect information with regard to external factors and influences (ie incentivised use of the VLE)
- Clarification of participants' intentions when interacting with the institutional VLE
- Contextual information
- Other – which allowed for participants to make any statements or ask questions.

A pilot to test the telephone interviews was conducted with seven participants from the group of students who had withdrawn. This allowed the researcher to refine the interview guide so as to engage better with the participants. Following the pilot, 35 interviews were conducted with withdrawn students. All interviews were recorded and transcribed fully verbatim.

Of the participants who took part in the first phase of the research, two were ineligible to participate in the interview phase because the university held insufficient data for them to be contacted by phone. For the rest of the participants, at least one telephone number was known, providing them with equal chances of participation. Consistent with good practice with regard to telephone interviews (Frey & Oishi, 1995) it was decided that a maximum of five attempts would be made to contact each participant. For consistency purposes the phone was allowed to ring for a minimum of five times before ending an attempt.

For current students who had commenced their studies in the same subject areas at the same time as the sample of withdrawn students, a questionnaire was designed based on the same topics as the interview schedule. Open-ended and multiple choice questions were included (see Appendix 3). Approximately 1,700 questionnaires were sent out to be administered by the module leaders to students registered for the 12 modules identified. A total of 130 questionnaires were responded to and returned, which comprised the sample of current students.

Problems encountered with quantitative data collection

There were two particular issues in the quantitative phase of the data collection which significantly slowed down the process, questioned the reliability of the data and limited the research which could be carried out. Specifically, these related to the integrity of the administrative records and to the additional work, which had not originally been envisaged, required to extract the data from the VLE.

An institution's administrative records are generally of high quality (Robson, 2002) as they provide the basis for reporting to the funding council. However, for research purposes, the quality of secondary data is questionable because the purpose of those who collect and record the data is different to that of the research focus. It was brought to our attention by AR that the sample may possibly be skewed due to university administrative procedures. For example, if a student has not paid their fees they may appear as withdrawn; once they have paid, they become fully enrolled again. This is uncommon at the start of the academic year and would hopefully be picked up during the interview phase for cross-referencing purposes. The MISIS database is a live system which provides a snapshot of reality based on data considered accurate at the time of the enquiry.

Acquiring the data from the VLE was particularly problematic and more complex than envisaged due to the integration of the university's two main systems – MISIS and OASISplus. The integration allows much of the administration to be automated. For example, a student registers for a module in MISIS, within hours the change is reflected in OASISplus and the relevant module is added to their online learning list. Likewise, as soon as a student drops a module they are removed from the online space and all their tracking data are removed from the users' interface. Liaison with the technical department allowed scripts to be written which would interrogate the server logs and produce a list of all interactions recorded for each of the participants. However, contributions to online discussion topics could not be retrieved, thus not allowing for qualitative data to be collected. The gatekeepers of the data in this instance were not the owners of the information but those in possession of the technical expertise necessary to extract the data.

Data analysis

Differences between students who withdrew and students who persisted were explored by a two-case study research design – that is, through comparisons between two groups: 'withdrawn students' and 'current students'.

For the quantitative part of the study, a coding frame was developed based on the information provided by the VLE which dictated the number of variables to be considered. Each piece of datum gathered from the VLE was ascribed a code (coding book in Appendix 4) and entered into SPSS for analysis. The variables concerned specifically looked at whether students logged on, how often, what time of day, what type of materials and tools

they accessed as well as personal details concerning age, sex and the subject to which they were aligned whilst studying at Middlesex University. With regard to the type of materials and tools accessed, the coding frame considered the structure of VLEs as specified by Anagnostopoulou, Haynes, Bakry & Jackson (2003). VLEs consist of four main categories of tools: content delivery tools, assessment tools, communication and collaboration tools and management tools and, as such, all items accessed by students were coded appropriately.

Through 'progressive focusing' which, according to Pralett and Hamilton (1976, cited in Cohen, Manion & Morrison, 2000, pp 147–148), means moving from the wide angle view to the more specific salient points of the emergent picture, a number of interesting observations were made which are discussed in the relevant section of this report. The collected quantitative data provided by the VLE were then transformed into qualitatively describable profiles of each student's online interactions (Appendix 1) which also formed part of the next phase of data collection. Speculative explanations for the emerging picture's key elements and possibly their causes were then documented, thus commencing the process of hypothesis generation.

For the qualitative part of the study (interviews and questionnaires), data gathered from both research methods were combined and analysed using thematic analysis: a systematic process for organising and describing the data in detail (Braun & Clarke, 2006). The main reason for selecting this technique was its flexibility as it allowed the development of a coding frame that fitted the explorative approach of this study. A combination of literature resources (Boyatzis, 1998; Attride-Stirling, 2001; Braun & Clarke, 2006) was used as a guide to develop the coding frame. The construction of the coding frame was 'data driven' (Boyatzis, 1998): it sought codes that followed a pattern and each pattern was encompassed in a category. Categories that were interrelated were then labelled in global themes. The coding frame was organised and each global theme, category and code was summarised and defined. Finally, representative quotes were added to the coding frame.

The generation of the codes was undertaken individually by three researchers and the *inter-reliability* of the coding was assessed. The final coding frame comprised categories agreed by the three researchers. After specifying the inclusion and exclusion criteria, they coded the data accordingly, verifying consistency across the cases.

The researchers were aware of the potential pitfalls of combining and comparing data which had been collected in different ways. Of particular concern was the influence of the methods used in the reliability and accuracy of the information obtained. Therefore, actions were taken to mitigate this risk. For example, during the interviews the researcher was able to probe the withdrawn students, which is not possible when administering questionnaires. Instead, the probes used during the interviews were included as part of the questionnaire design. However, the combining and comparing of data in this way is acknowledged here as a limitation of the research.

Ethical considerations

The project's use of surveillance tools allowed the researchers to tap into information regarding every interaction learners made online. Joinson (2006) drew attention to the fact that VLE tracking tools are virtually undressing learners, yet often the learners are unaware. Having taken on the extreme role of the 'complete observer' in the online environment, appropriate actions were taken in order to safeguard the identity of the individuals involved in the research. In addition to this, announcements were delivered to all staff using VLE pop-up messages and remained on the system until the project was completed.

The only deviation from the BERA guidelines was that the letter sent to withdrawn students informing them of the study gave a deadline by which they could return their opt-out slip, which is against the agreed ethics procedure. This was done for practical reasons in order to commence the project. Participants were offered the opportunity to opt out again during the interview phase and at subsequent milestones.

Within the context of this research, two larger political and ethical questions arose to make this research of interest, but also of serious concern. These were:

- If 'at risk' students are identifiable, what is the moral responsibility of the university as a professional institution which ultimately serves society?
- What is the responsibility of the individual academic staff member, as a caring professional, who is facilitating the students' learning?

The project team felt it was out of scope of this research project to attempt to address the above questions.

Results

Quantitative findings

Descriptive analysis of the withdrawn participants and their actions are as follows:

- A total of 92 withdrawn students participated who were studying programmes aligned to a total of 13 different subject areas.
- The majority of withdrawn students were female, accounting for 71.7% (female = 66, male = 25, unknown = 1). More than three-quarters of them (75.8%) were under 25 years of age, with an average age of 23 years (minimum = 18, maximum = 59).
- The majority of these withdrawn participants (57.2%) withdrew during the first four weeks of their course (mean = 4.69, median = 4, Standard deviation = 2.74).

- Exactly half the participants (50%) never logged onto OASISplus.
- For the participants who did log on at least once, a total of 473 logins was recorded, with a mean score of 10.28 and a median score of 5.5 (multiple modes exist) and a standard deviation score of 13.05. As the number of logons per participant varied from minimum = 1 to maximum = 65 times, the median score was used for comparative purposes as it is insensitive to extreme scores.
- Withdrawn participants who did not log on to OASISplus at least once did not fall into any specific age bracket or sex (male = 50%, female = 50%).

A number of relationships between variables were explored with regard to their online interactions. No significant difference was found when exploring the age and sex of the participants with regard to logging on to OASISplus, accessing support materials on the English language, the number of times they logged on and the types of materials/tools they accessed (chi-square results in Appendix 8-9). However, it was significant that

- It was participants at either ends of the age range who chose to access support materials on dyslexia ($\chi^2 (10) = 23.6, p = .009$). Of those 46 withdrawn students who logged onto the VLE, only five accessed support materials with regard to dyslexia. However, only one of them had declared it as a disability to the university.
- Accessing the management tools offered by the VLE seemed to be influenced by the discipline to which participants were aligned ($\chi^2 (22) = 45.57, p = .002$). In two cases (Figure 2) there appeared to be a difference depending on the subject to which they were aligned. Of those studying a health-related programme who chose to withdraw/interrupt, 76.47% logged on at least once compared to an average of 41% across all subject areas. The opposite was true for those studying a programme aligned to education, where the majority (75%) never logged on.

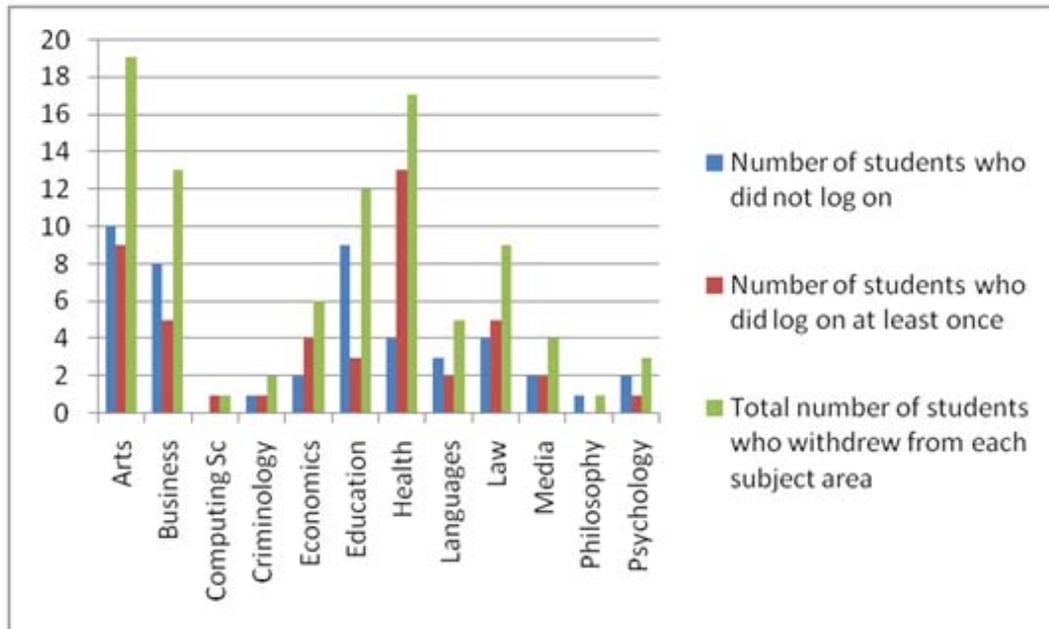


Figure 2: Logons per subject area

The time of day during which these students logged on is representative of VLE usage patterns (internal document) and did not highlight any key areas for further investigation, even though some were accessing the VLE in the middle of the night which has implications for support (Figure 3).

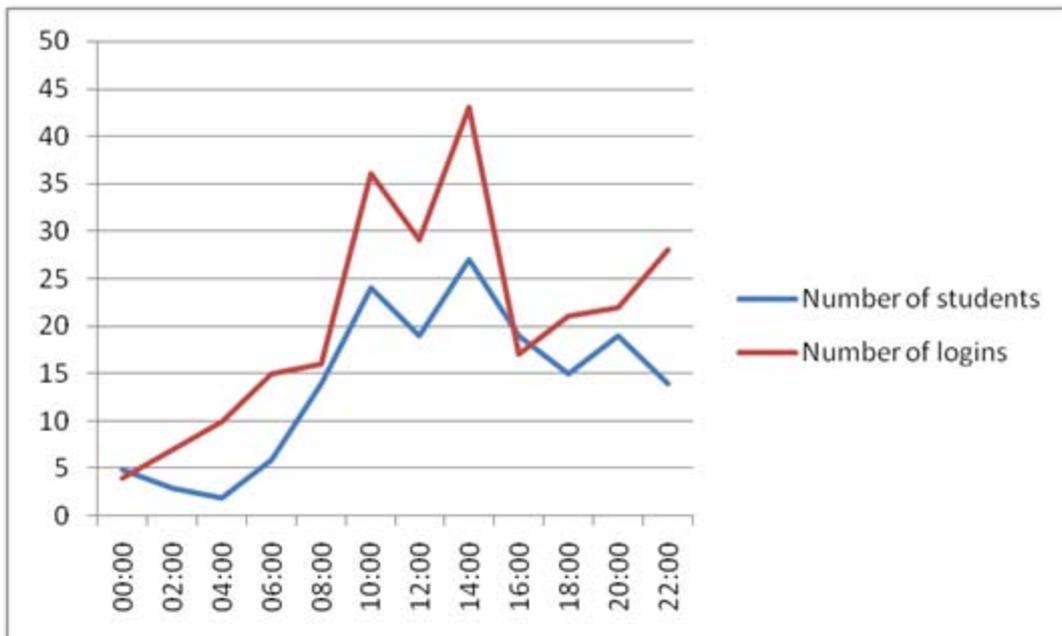


Figure 3: Withdrawn student logons per hour

Of those who did log on, there appeared to be a peak of activity during week 3 (Figure 4) in all four categories of tools/materials offered on the VLE, possibly due to academic staff promoting the use of the VLE at this time or because formative assessments were taking place. It is not surprising that assessment-related activities were the least accessed, as most modules had not incorporated any on their online component. With regard to the other three areas of activity within a collaborative constructivist view of learning, it was not unexpected that communication-related activities appeared to be important to users of the system. However, content delivery continued to be the dominant paradigm of education in this online environment. Management tools were also explored, although it is thought that learners at this early stage in their studies would not fully realised the relevance of these tools or would not yet demonstrate the ability to take control of their own learning.

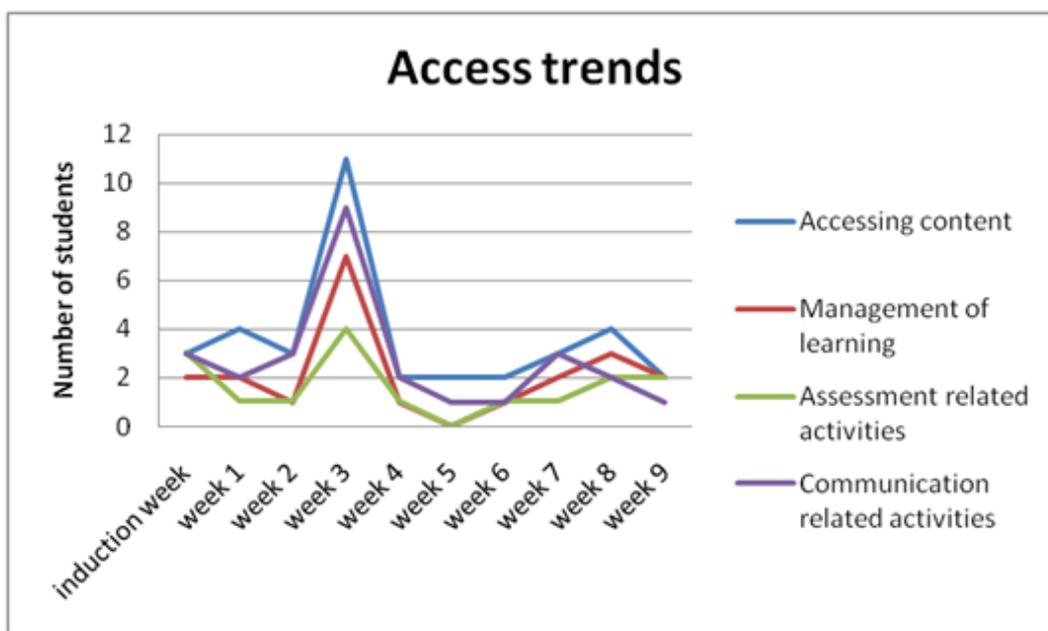


Figure 4: Access trends per category of tools

When looking at access trends of individual students who withdrew from their programmes, it was noted that students more often than not displayed the following two behaviours. In both cases the red line shows the engagement of individual students who withdrew. The blue line demonstrates the average level of engagement of students who persisted.

VLE Behaviour A: To begin with, withdrawn students accessed the institutional VLE many more times than the average student on that programme and then their access dramatically dropped to zero as they approached the withdrawal date held by the student management system.

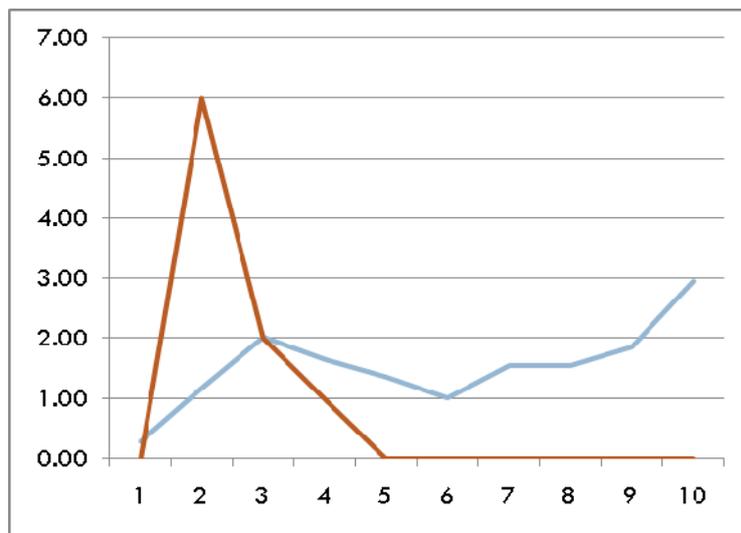


Figure 5: VLE Behaviour A

VLE Behaviour B: Withdrawn students followed the same access trends as the average student on the programme they were studying, but were logging on to the institutional VLE much less.

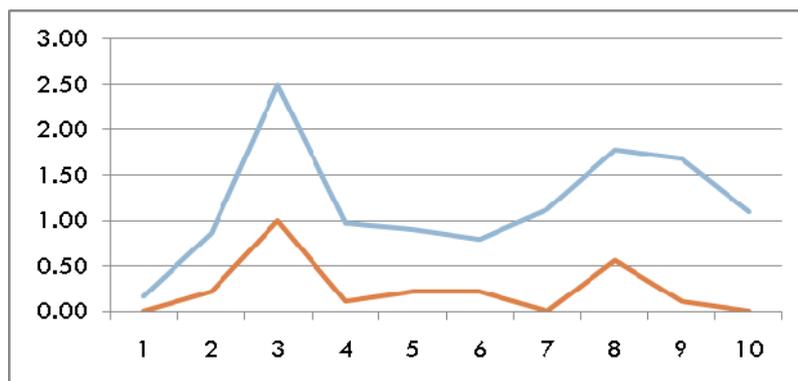


Figure 6: VLE Behaviour B

Qualitative findings

During the interview phase of the project, reasons for withdrawal were collected and classified into two major themes: those pertaining to and apportioning blame to the institution and those not relating to or blaming the institution. Succinctly, the reasons for withdrawal from the participant population were:

Related to the institution	Not related to the institution
<ul style="list-style-type: none"> • Expectations not being met • Lack of trust • Misguidance • Workload • Admin problems • External funding not coming through • Lack of available: <ul style="list-style-type: none"> ○ Choice ○ Flexibility ○ Resources ○ Academic support ○ Stimulus ○ Personalisation ○ Challenge offered by the institution 	<ul style="list-style-type: none"> • Instant gratification • Lack of: <ul style="list-style-type: none"> ○ Investment ○ Engagement ○ Flexibility • Program selection • Economy of: <ul style="list-style-type: none"> ○ Time ○ Money • Pursuing original career • Personal reasons, such as: <ul style="list-style-type: none"> ○ Travel ○ Life balance ○ Not ready ○ Homesickness ○ Dependency ○ Becoming a carer ○ Family tragedy ○ Distraction ○ Self-beliefs ○ Needing more time ○ Personal problems

Table 1: Reasons for withdrawal

All further qualitative findings were categorised and presented here under seven themes. All names presented in this report are pseudonyms and are used for illustrative purposes only.

THEME 1: PERCEPTIONS OF LEARNING

There were marked differences in the ways in which withdrawn and persisting students described their experiences and perceptions of learning.

Withdrawn students

When asked about their personal experiences of learning, withdrawn students tended to describe learning situations in which they were active participants and experiences which were of a more social constructivist nature; the experiences included their peers and required them to be active. However, when they were asked about how they perceived they learnt best they often defaulted to describing an information transmission model of learning, thus highlighting a gap between their model of learning derived from previous experience and their perceived model of effective learning.

In the interviews, withdrawn students often reverted to discussing the physical setting and environment rather than describing how they learn. When asked about what skills they felt were needed in order to be effective learners, surface level tasks such as listening, memorising and note-taking were often mentioned, in particular the need to do them quickly

Withdrawn students also made a clear distinction between passively learning from (being taught, watching demonstrations, etc), learning through (by sitting next to or in the vicinity of intelligent peers) and actively learning with (discussions, group work, etc) others. Occasionally they perceived their peers as obstacles in their learning experiences.

Persisting students

The results obtained from the analysis of the interviews with withdrawn students were compared with the findings from the questionnaires completed by the students who persisted with their studies. In contrast to the students who withdrew, students who remained showed an awareness of how they learn as individuals. Current students had a greater awareness of 'self' as a learner and expressed a richer description of how they learn, which included a range of methods (videos, blogs, slides, practice, lectures, discussion, etc). When asked about the skills needed in order to learn, they were able to identify many of them without any prompts. However, when responding to questions with regard to learning through the use of technology, persistent students held similar views to those held by withdrawn students. The research showed that they were equally as naïve in the way they used technology in their learning as those who withdrew, as demonstrated below.

THEME 2: TECHNOLOGY AS A MEANS FOR LEARNING

When asked about their engagement with technology, students mainly referred to internet and computer applications. These experiences were expressed in two main ways across both groups of students. This was an unexpected finding within the broad research project, as it was the aspect in which current students and withdrawn students were most consistent.

The first way was concerned with e-learning being seen as remedial. In this deficit model, e-learning was experienced as aimed at solving a problem, especially when this involved correcting or improving the student's performance:

'I guess like the easiest way out really...because if you haven't got books and stuff, I suppose the internet has... yes, it really is the best tool' (Hannah, withdrawn student).

'To catch up with any missed lessons, do any research for assignments...' (Ian, persisting student).

'...it's a shortcut to learning...and it also gives me time to do other things' (Mike, withdrawn student).

The second way in which the students engaged with e-learning was to perceive technology as a medium to which many attributes are assigned. Thus, instead of relating themselves as social agents who engage with technology in order to learn, students saw technology as a medium holding certain features that served as aids. As exemplified by the following quotes, participants in both groups expressed how 'it' (technology) or 'the internet' altered students and influenced their actions:

'...it makes you produce a good work, neat work, nice, clear and precise' (Jorge, withdrawn student).

'It enhances your work, no need for large reference book' (Caroline, persisting student).

'...the internet opens you up... you have this infinite amount of information' (Aisha, withdrawn student).

'It makes one learn fast' (Jamie, persisting student).

'...it opens your mind up... the internet can help you in all ways for studying' (Paris, withdrawn student).

'It makes learning easy and fun' (Pooja, persisting student).

'...it cuts the time in half' (Maria, withdrawn student).

THEME 3: THE INSTITUTIONAL VLE AND LEARNING

While most of the participants displayed awareness of the institutional VLE, accounts about the experiences they had with it were different across the two groups.

For current students, their perceptions of the VLE were expressed with relatively strong opinions. Students frequently described this facility as a tool that helped in their learning or as a service requiring further improvement.

'Useful and able to get student email and important information about lectures, module notes, email lectures and other students...' (Laura, persisting student)

'Sometimes it becomes tricky to use' (Deepak, persisting student).

These statements reveal the engagement that students have had with the VLE, their progress and difficulties when incorporating this tool into their learning. Students who withdrew, in contrast, seemed to have a less specific engagement with the different resources within the VLE, presenting only their perception of it as a remedial tool, which was reinforced by their views on the use of technology (see section below).

'I'm sure [the VLE] is there for students that actually need help with their work, and I didn't really need it at the specific moment...' (Ben, withdrawn student)

'...if you really miss going to the lectures you get more notes about...' (Hawa, withdrawn student).

THEME 4: DEFICIT APPROACH TO E-LEARNING

The evidence of a deficit approach to e-learning appeared to manifest itself in tutor actions and as well as in the views of both groups of students of how technology can be used in learning. Specifically, the way in which the use of technology is introduced within particular learning situations and integrated into face-to-face practice influences the way it is perceived and used by the students.

Tutor actions:

'Um, we were told to use it by our tutors ... just to check up on any extra information ...' (Martin, withdrawn student).

'[The lecturer] just said go onto that and you'll see, if you miss your lectures or something, go onto that and that ... I'll have all my lectures there' (Freddie, withdrawn student).

Student views:

'I'm sure [the VLE] is there for students that actually need help with their work, and I didn't really need it at the specific moment ...' (Ritu, withdrawn student).

'Um, just sort of looking up things that I don't understand, or finding additional information on things' (Jake, withdrawn student).

THEME 5: TECHNOLOGY AND NEW SKILLS

Participants across both groups gave accounts in the interviews and questionnaires about the possibility of acquiring new skills due to their engagement with technology. Within this theme, it was observed that the students were enthusiastic about technology and, while attributes continued to be assigned to it, the participants acknowledged the need to engage with the technology in order to develop new skills. The issue of whether they themselves actually pursued this engagement and, if so, the way in which they did this were not reported by the participants:

'You will learn new skills, discover new things and enlarge your scope and learning skills' (Mohammad, persisting student).

'...Um, and obviously typing as well. Typing skill is obviously for life, isn't it, so I think if you're using, for example, Microsoft Word etc it's a good skill to have to carry through your life. If you're going to work, obviously, on a daily basis with it, so... yes...' (Evelyn, withdrawn student).

THEME 6: TECHNOLOGY IN (RE)SEARCH

This was an unexpected finding, as no questions were asked regarding the specific application of technology in research. Still, many participants across both groups referred to the relationship between technology and research when dealing with their assignments. It is interesting to note, however, that what students referred to as research

was actually the search for information, without giving an account of any further selection, analysis or critical engagement with the material collected:

'When researching it becomes easier. [One is] able to visit different websites' (Melissa, persisting student).

'... obviously a computer can display research information that is effective to your learning' (Farouk, withdrawn student).

'The benefits [of using technology in learning] are in searching and researching' (Paul, persisting student).

'... search engines, if I'm looking up a topic to get information' (Uwe, withdrawn student).

THEME 7: RANGE OF TECHNOLOGIES USED

Finally, the way in which participants expressed their engagement with technology was related to the variety of technological devices used in order to enhance their learning. Differences were found regarding the range of technology/tools used by withdrawn and persisting students. Persisting students appeared to engage with a wider range of technologies than students who withdrew (in both their social and academic lives). Although it is possible to make a link between the engagement with a broader range of technologies and the progression of students, the extent of this relationship, the reasons for it (eg socio-economic factors) and the way in which the technologies were used to access information and/or support, etc pose issues for further investigation.

'[S]ometimes watching something on the recorded video tend to stick in my memory, and also listening to the recorder over again does help' (Anjoula, persisting student).

'It is quicker and it enables others to read your writing. Very good for recording incidence and storing evidence and good source for playback for people with learning difficulties' (Alex, persisting student).

'Well, only computers, to be honest with you.' (Jasbir, withdrawn student).

'Apart from the computer nothing else.' (Paula, withdrawn student).

The next section of this report will explore the implications of these results.

Discussion and conclusions

Online VLE interactions illustrated by Behaviour B (Figure 6) show the interactions of a withdrawn student following the same access trends as the average student on the programme they were studying but logging on to the institutional VLE much less. Initially this may appear as a motivational issue, as we are aware that motivation plays a key role in retention (Dweck, 2000), but it is possible that this behaviour is partly intentional. As previously mentioned, it is institutionally acknowledged that logging on to the VLE is essential for the status of 'being-a-student' (Lambeir & Ramaekers, 2006) and demonstrates a commitment on behalf of the students. However, during the interview phase, some students confided that they wanted to '*... opt out quite early on because obviously... [they] didn't want to be tied down to tuition fees and stuff like that...*' (Annabella, withdrawn student). Some students may feel under pressure to decide very early in the term whether they will persist with their studies. This may be due to administrative policies, such as a full or partial refund of fees only being available until a particular date. This forces students to make decisions prior to fully engaging with their chosen subject area and forming relationships with their peers, both of which are key to their student experience and persistence in higher education (Tinto, 1993).

Following on from this, as many institutions use administrative systems as a way of enforcing penalties, not logging on during induction week when most students are introduced to the VLE may partly be a sign of exclusion on the part of the institution. Institutions have invested time and effort in linking learning technologies such as VLEs to institutional administrative systems on the basis of efficiency, reduction of administrative workloads, security, data protection and also to enforce penalties. The importance of this work cannot be underestimated. However, this research project has shown that the integration of administrative systems with learning and teaching systems can become a barrier to student persistence in higher education and can increase upheaval during the early stages of the student life cycle and transition period. For example, if a student has not paid their fees, access to certain systems may be withdrawn. In the early weeks, payment of fees, verification of qualifications or criminal record checks (in particular for health-related subjects) may be problematic and thus, through no fault of their own, students may be excluded from valuable institutional resources and IT systems which are crucial to their learning experience and sense of belonging (Thomas, 2002). Often in these situations students may be given temporary accounts and be requested to log on as guests rather than as fully subscribed members, which introduces an 'us and them' culture which promotes weak ties with the institution and their peer group.

VLE Behaviour A illustrates that to begin with, some withdrawn students accessed the institutional VLE many more times than the average student on the same programme and then their access dramatically dropped to zero as they approached the withdrawal date held by the student management system. According to McGrath & Kelly's (1986) model, interacting dyads and groups will match one another in terms of the rate and quality of their task performance. On the other hand, failure to match these cues, such as a long delay in responding to an e-mail message during a critical phase of relationship development, can convey a powerful message about the status of

the relationship (Lea & Spears, 1995). A student exhibiting VLE Behaviour A may have felt let down by their online peers and tutors as their level of activity and/or contribution was not matched online during the initial relationship development phase. Thus, an opportunity to establish a sense of belonging was missed and may have implicitly led to withdrawal.

Both of the above cases confirm the view that '[Technologies can be] *socially connecting device[s] that are socially isolating at the same time*' (Greenfield, cited in DeAngelis, 2000). A fine balance of the use of technology needs to be established in the first few weeks after enrolment.

Literature states that students may benefit from understanding how they learn most effectively by reflecting on their previous learning experiences, understanding learning styles and developing meta-cognitive learning skills (Keeton et al, 2002; Kolb & Kolb, 2005). The existence of a better match between experiential and perceptual models of effective learning in the group of participants who persisted with their studies supports this view. The development of meta-cognitive learning skills is a personal developmental process and will occur at a different pace for each student. Gaining a personal understanding within the early weeks of the academic year of how one learns would be beneficial and can be further enhanced by promoting an understanding of the links between research and teaching, and therefore with learning.

Consistent with recent research (Creanor et al, 2006), the authors found that students neither had a great understanding nor were entirely convinced of the potential benefits of using technology in their learning. A deficit model approach to student support was evident in students' perceptions of e-learning. This traditional deficit approach, borrowed from the health sector, conceptualises problems within the individual which need to be treated in order to restore their health and wellbeing. Students who withdrew and those who persisted both held views about learning through the use of technology based on this interventionist paradigm. This was reinforced by the tutors' actions and the lack of integration of the technology into face-to-face practice, both of which were highlighted in student responses. This research reiterated Beasley & Smyth's (2004) work which stated that little or no use was made of the discussion areas in the institutional VLE. Considering the amount that students reportedly used a range of technologies in their lives (Haywood et al, 2004), it was interesting to note that it was predominantly in their personal lives where they actively engaged with social networking sites and therefore discussion forums. However, the deficit approach to e-learning found in this research contradicts Beasley & Smyth's study which found students to engage actively with self-assessment exercises and examples, whilst many students in this research used the VLE as a retrieval tool and shortcut to learning, suggesting perceptions of 'easy learning'.

Institutional scepticism with regard to e-learning is also highlighted by the QAA (2008) in their analysis of institutional audit reports. Their report states that several institutions were looking to keep a check on the balance between 'orthodox' learning and teaching practices and e-learning. Thus, the uncertainty surrounding the potential

benefits of e-learning appears to be spread across a number of stakeholders, from students to tutors to institutional management teams. Therefore, any action would need to be multi-dimensional and would require buy-in at many levels.

Behaviours displayed in one environment cannot always be transferred directly to a different information environment (Franklin & van Harmelen, 2007). In this research, it was unclear whether this was due to inability or unwillingness to transfer existing skills into learning situations, although there were distinct differences in the types of technology used in the two aspects of the students' lives. When asked what technologies students used in their personal lives on a day-to-day basis, responses more often than not included synchronous technologies which permitted immediate access to family and friends. However, when asked what technologies they used in their learning, the responses focused on asynchronous use of the internet and the use of computers as production tools (word processing, imaging, etc). It appeared that technologies which promote social interaction were primarily reserved for use on a personal level rather than within an institutional context. This is consistent with Franklin & van Harmelen's (2007) findings which suggested that student motivation for using social technologies appeared to be linked to their perception of fun and consumption – two concepts not necessarily associated with learning in higher education.

Peer learning is reported to have a positive effect on the achievement of outcomes for the participating learners, irrespective of theoretical orientation and the mechanisms by which such outcomes are achieved (O'Donnell and O'Kelly, 1994). Similarly, information processing theory claims that performing tasks in the presence of peers promotes greater engagement with the task at hand and can result in deeper processing (Cohen & Lotan, 1995). However, students who fail to participate actively in face-to-face or online classes may still achieve the intended learning outcomes and can do well academically despite their apparent lack of interaction (Beaudoin, 2002).

In this research, students made a clear distinction between passively learning *from*, learning *through* and actively learning *with/without* others. Far from preferring learning within a social constructivist framework, in which the learner is an active participant and emphasis is placed on social participation, independent study was favoured by many participants. Online, lack of participation is known as 'lurking'. Students log on and observe but do not contribute to online forums and are therefore almost invisible to the online tutor. However, as students' perceptions and the learning strategies they employ in face-to-face learning situations have been validated as applicable to their experience in online environments (Dewart & Whittington, 2000), it is important to acknowledge lurking as both a personal preference and a legitimate method for learning.

Although both groups of participants portrayed differences in their understanding of how they learn, it is interesting to note that they both had similar naive views with regard to learning through the use of technology. Contrary to Conole (2008) in the recent LXP study, the researchers found that technology did not appear to be

integral to the student learning experience for anything other than ease of access to resources. Although almost all the participants – both withdrawn students and those who persisted – were technically aware and used technology as part of their day-to-day lives without much thought, few actually used the technology in their learning in order to engage in collaborative learning tasks. Although technology appeared to be an integral part of the students' lives, it did not seem to be an integral part of their *learning* lives.

Recommendations

Based on the literature review, the findings from this project and the difficulties encountered during data collection and analysis, the following suggestions are offered to institutions, academic staff, researchers and learning technologists:

For institutions:

- Make explicit in learning, teaching and assessment strategies and in e-learning policies the benefits of using technology with the curriculum.
- Student support for e-learning should focus on how to learn with technology and on transferring existing skills into the learning situation, not just on how to use the technology.
- Embrace technologies which students bring with them, rather than excluding them. For example, mobile phones could be used for in-class voting rather than requiring students to switch them off.
- The accuracy of personal information is key when integrating student management systems and learning and teaching systems. Build into your induction or enrolment processes a check of personal data. Also, promote ownership and communicate early on to students their responsibility to maintain the accuracy of their personal records.
- Institutions should look into enforcing penalties such as restricting access to IT systems and other resources as late in the academic year as is feasible.
- Discourage the sharing of account details between students.
- Ensure that links are made between the academic and social aspects of your students' lives in order that they see the student experience as a whole.

For academic staff:

- Facilitate the development of meta-cognitive learning skills at the beginning of or prior to the start of the academic year, through workshops.
- Clearly articulate to your students the reasons why you have chosen to use learning technologies in your module or programme.
- Not all students like working collaboratively. Carefully consider the balance of group work when designing your learning materials.
- Consider how your teaching acknowledges lurking as a valid way of learning.
- Engage students with their VLE from the start so that logging into the institutional VLE becomes part of their daily routine. Design learning experiences which closely integrate the physical and virtual components of your teaching.

For researchers:

- When attempting to map the levels of interaction of students, there is a definite need for including not only the institutional VLE and online instruction as part of e-learning, but also other ICT such as software, electronic deliverables (eg podcasts, electronic articles and electronic handouts) and electronic devices (eg mobile phones, mp3 and mp4 players, USB pen drives).
- Although a single definition of retention is not available, it would be useful to have clearly stated criteria for considering a student as withdrawer.
- A possible approach to tackling the issue of the different conceptions of the term 'e-learning' could be to use more dynamic perspectives in which varying degrees of interaction are included, instead of a fixed definition. This trend has already been initiated by the University of Glamorgan (Jones, Skinner & Blackey, 2007).
- When reporting research outcomes, clearly state how retention is defined and measured.
- Further work needs to be done to relate longitudinal statistical analysis of students who dropped out to local, context-specific quantitative and qualitative analyses.
- The issue of students' self-identity in relation to the social identity generated by the peer group and the HE institution deserves to be further explored by including technology usage, expertise and ownership of students as variables.
- The scarcity of information regarding the interaction of e-learning, student retention and identity points to the need for further exploration of the topic and to determine to what extent and under which circumstances each issue affects the other two, which might lead to a dynamic characterisation of their connection.

- Carefully consider the timing when you interrogate live databases as this only provides a snapshot of reality. Data are continuously updated.

For learning technologists:

- Staff development should focus not only on how to use technology but also on how to use it appropriately to enhance the student learning experience.
- Learn how technologies which promote social interaction are used and incorporate the lessons learnt into the design of e-learning experiences.

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