

e-Learning: The student experience

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Abstract

The paper draws on in-depth qualitative comments from student evaluation of an e-learning module on an MSc in Information Technologies and Management, to develop a picture of their perspective on the experience. Questionnaires that yielded some basic quantitative data and a rich seam of qualitative data were administered. General questions on satisfaction and dissatisfaction identified the criteria that student used in evaluation, while specific questions of aspects of the module generated some insights into the student learning process. The criteria used by students when expressing satisfaction are: synergy between theory and practice; specific subject themes; discussion forums and other student interaction; and, other learning support. The themes that are associated with dissatisfaction include: robustness and usability of platform; access to resources (such as articles and books); currency of study materials; and, student work scheduling. Aspects of the student learning experience that should inform the development of e-learning include: each student engages differently; printing means that students use the integrated learning environment as a menu; discussion threads and interaction are appreciated, but students are unsure in making contributions; and, expectations about the tutor's role in e-learning are unformed.

Introduction

There has been considerable interest in the potential for the development of e-learning in universities, schools (eg, Crook, 1998; DiES, 2003; Roussos, 1997), further education and the workplace (eg, Hughes & Attwell, 2003; Morgan, 2001; Sambrook, 2001). The development of e-learning products and the provision of e-learning opportunities is one of the most rapidly expanding areas of education and training, in both education and industry (Imel, 2002). Education and training is poised to become one of the largest sectors in the world economy. e-Learning is being recognised as having the power to transform the performance, knowledge and skills landscape (Gunasekaran, McNeil & Shaul, 2002). e-Learning is viewed variously as

having the potential to: improve the quality of learning; improve access to education and training; reduce the cost of education; and, improve the cost-effectiveness of education (Alexander, 2001).

The research project reported in this paper is a contribution to the extension of understanding of the student experience of e-learning. Qualitative data was collected from learners to offer insights into their perceptions and expectations of the e-learning experience. The students chosen for this analysis are students on a module: Successful Information Systems on an MSc in Information Technologies and Management that was delivered in e-learning mode. These students are, by disciplinary background, IT (Information Technology) literate, are unlikely to be phased by the platform, and are mature students in work, who are studying part-time. They are typical of the students for whom it is widely proposed that e-learning is the most convenient and appropriate mode of delivery. Nevertheless, despite some very positive reports on the outcomes of the course in terms of its impact to working practice and within students' organisations, there are a number of aspects of the student engagement with and experience of the course that offer insights into students' practices that are worthy of further analysis and comment and may be of value to others delivering e-learning to international learning groups or communities.

This paper starts with a literature review focussing on earlier work on e-learning practice and evaluation. The methodology is described, followed by an analysis of the results. Conclusions and recommendations for future research focus on the development of our understanding the criteria applied by students in evaluating an e-learning experience, and key aspects of the way in which students engage with an e-learning course.

Literature review

Much of the literature on e-learning is merely a description of what the teacher could do or has done online, while the student experience of those activities goes largely undocumented (Alexander, 2001, pp. 241–242).

e-Learning has attracted considerable research and development funding and commercial interest. This has fuelled the creation of a significant body of books, refereed and professional journal articles and reports, and commercial and other Web resources that provide reports of practice, and guidance for the development of e-learning experiences. At the generic level there are a number of implicit and explicit frameworks designed to inform e-learning practice. Founded on earlier theoretical frameworks, or on empirical studies, they identify the factors that need to be considered in pursuit of the creation of good quality e-learning experiences. Several of these frameworks suggest key components that influence the quality of the e-learning experience. For example, Garrison and Anderson (2003) and Jochems, Van Merriënboer and Koper (2003), identify the key components of such a framework to be technology, pedagogy and organisational context, and Steeples and Jones (2001) suggest attention to pedagogy, technology and creativity. Other authors such as Britain and Liber (2000) and

Pang and Hung (2001) use concepts such as cybernetics or activity theory as the basis for the analysis and evaluation of e-learning environments. Blass and Davis (2003) in pursuit of evaluation criteria for e-learning propose a framework with four 'higher order criteria', viz, appropriateness, design, interaction and evaluation. Within these guiding principles, their framework covers: appropriateness of staff and content, appropriateness for market and students, learning aspirations, cognitive ergonomics, faculty–student interaction, student–student interaction, reinforcement strategy and achievement of purpose.

In addition to work on generic frameworks to support the design of good e-learning environments, other researchers have focused on specific aspects of e-learning. The following list gives a flavour of some of the wide variety of topics that have been explored: online communities (Ng & Hung, 2003), e-assessment (McLoughlin, 2001), judging text on screen (Hartley, 2004), factors that influence learners' use of online learning (Collis & Moonen, 2001), the nature of e-learning as asynchronous collaborative learning (Garrison & Anderson, 2003), e-learning dialogues (Webb, Jones, Barker & Van Schaik, 2004), and the social dimensions of online learning (Nicol, Minty & Sinclair, 2003).

Nevertheless, there are concerns that our knowledge concerning e-learning is limited by the shortage of scientifically credible evaluation (Hughes & Attwell, 2003) and a lack of understanding of quality standards for a good e-learning resource (Blass & Davis, 2003). Others remind us that it is not yet clear how learners perceive e-learning environments, and in what ways they assist or hinder learners in their learning (eg, Chen & Macredie, 2002; Moore & Aspden, 2004). Most importantly, Imel (2002) reports that much e-learning fails to live up to learner expectations. It would therefore seem appropriate to focus attention on the student experience of e-learning, and to listen to student's voices in seeking to extend our knowledge of e-learning.

Methodology

The objectives of this research are to:

- contribute to the literature on the student experience of e-learning;
- surface the criteria used by students in their evaluation of e-learning; and
- provide perspectives on student learning processes and habits in e-learning.

The data collected and analysed in this paper derives from a student module evaluation process associated with the delivery of the module: Successful Information Systems, a module delivered in e-learning mode to students on the MSc Information Technologies and Management (e-Learning). This was the first module that they studied on this e-learning programme, and so for many it will have been their first experience of learning in this mode. Nineteen students located across the globe where enrolled on the module. All students were graduates, but most of their prior learning experiences had been in standard face-to-face delivery mode. All students had work, and many had challenging jobs that required them to travel. All students were supported in their study,

at least in principle, by their employers. This group of students has a profile that aligns well with the groups of students for which e-learning is perceived to be particularly appropriate (see also Smith & Rupp, 2004). The students are mature, experienced, have the potential to develop as independent learners and are well-motivated to complete their studies, through both personal and organisational agendas that promote their achievement. It is therefore interesting to analyse how they evaluated their experience, and what they report about the learning process.

The questionnaire was delivered to students towards the close of the module as a student evaluation questionnaire designed to inform the future development of the module, and as an input into the quality management process. All students studying the module completed the questionnaire. The questionnaire follows good practice in the evaluation of student module questionnaires (Rowley, 2003), and includes two categories of questions:

- those that invite overall comments; and
- those that invite comments on specific aspects of the module.

Two questions asked for overall comments:

- Detail up to three aspects of the module that you found most useful.
- Detail up to three aspects of the module that we could improve upon.

These questions generated a good range of qualitative comments, which were collated for analysis. They not only offered insights into the strengths and weaknesses of the module from the student's perspective, but they also provided insights into the criteria that students apply in evaluating modules. It is this level of analysis that is of most interest for the purposes of this research.

The second group of questions generated both quantitative data, and qualitative comments on specific aspects of the module. These aspects include: module content, module learning objects, core document, discussion forums and threads, tutor performance and module activities. The responses to these questions offer various insights into student engagement with the module, and specifically their learning processes. Quantitative data was generated by closed questions, some of which used 5-point Likert scales, and others of which offered a range of responses from which respondents could select. These were analysed and the outcomes tabulated for each question. Qualitative comments were collated for analysis.

Qualitative data or comments were analysed using an iterative process informed by the grounded theory approach (Miles & Huberman, 1994; Strauss & Corbin, 1990). The three researchers first conducted an independent analysis of the comments. On a pairwise basis, these analyses were compared with each other by the third member of the team. Subsequent to this process, each researcher amended their analysis. The three researchers then evolved a consensus analysis; this consensus analysis is the basis for the reporting of the qualitative elements in the results section that follows.

Results

Results are reported under headings that align with the questions in the questionnaire. Illustrative quotations from the student comments on the feedback questionnaires are selectively included.

Three aspects of the module that students found most useful

The responses here reveal both the key successes for the module, but also the critical success factors for a module as perceived by students. Some comments relate to subject-based themes and the students' learning about topics such as information systems methodologies, while others relate to process, such as relating theory to practice, discussions groups and access to other resources.

There is one overarching theme that recurs in many of the comments and that is the relationship between theory as embedded in the module learning materials and the students' practice in the workplace:

- *The SIS module has helped in analyzing not only IT Projects but also discussion with colleagues, management and friends. I am now better equipped for IT project planning and design. I am getting the opportunity to manage an implementation at the Bank soon (an application for fraud detection) and I will use all the stuff I learnt in the SIS module. The module contents were immediately relevant to an actual real world system implementation issue in my company*

Other students commented specifically on aspects of subject content of the module. Some appreciated the insights from the focus on failure:

- *Understanding what is information system failure and why information systems fail. Concept of using failure as a learning process.*

Other students felt that they had benefited from learning about methodologies:

- *Methodologies—insight into the benefits and limitations of methodologies allowed me to assess the shortcomings and benefits of my own approaches at a critical time in a development project.*

Discussion forums and support from other students were the most frequently cited aspects of the learning process. Seven students mentioned these as being useful.

Three aspects of the module that could be improved upon

The comments on aspects of the module that could be improved tended to focus on the 'mechanics' of course delivery, including:

- the usability and robustness of the delivery platform:
 - *I have broadband access to the Internet but sometimes accessing the UKeU site can be very slow—could mean that the server size is not adequate;*
 - *Possibility of having module content available as PDF format for download. It would be helpful to provide a fully indexed PDF of the module;*

- the availability of papers online, or access to core texts:
 - *All papers should be available online as the module starts;*
 - *Easy access to prescribed books for a module. I feel the university should supply the prescribed books to students until the end of a course—may be an e-book or something similar. Or even have a university bookstore where students can buy the prescribed/recommended books;*
- the currency of study materials:
 - *I felt that the focus was somewhat biased towards traditional information systems (classic 'business applications'). Perhaps a brief introduction to Enterprise Architecture and framework based approaches could add additional value to the module;*
- the support for students in scheduling of their work:
 - *I would find a recommended study schedule very useful particularly as this was my first module. That way people could progress at a similar rate and interact more in the online forums. I expected there to be more guided activities; during the induction period there were weekly activities which I found very useful. Perhaps that could be done in the modules too.*

Module content

Students were asked to rate module content on the basis of: content organisation, flow and style, and up to date content (currency). They were generally satisfied with both of these aspects of the module. The more interesting data emerges from their comments on the order in which they studied the module. Fourteen students:

- *studied the Learning Objects in the listed numeric order that they were presented to me on the menu—working sequentially from the first Learning Object from the first Unit to the last Learning Object on the last unit.*

While five students:

- *read the Core Document as the main guiding tool and used it to decide the order in which I chose to view the Learning Objects.*

Students then often followed the learning order suggested by the tutor, via the menu. Many also commented that the assessment brief and core document influenced their approach:

- *I went through the learning objectives from beginning to end but then started again from the beginning to make notes on useful points to use for my assignment, once I had decided on that topic.*
- *Both the assessment brief and core document influenced the way I ordered my studies. I typically worked with the listed numeric order but sometimes found it useful to skip and come back later to certain sessions and units depending on the relationship that I identified. Finding additional information outside of the learning objects also influenced my decisions to work 'out of order' in some cases.*

Module learning objects

The module included a number of learning objects, or chunks of learning resources. Students were asked to indicate the proportion of the learning objects that they studied

Table 1: Use of learning objects

Statement	Number of students choosing this option					Nearly all
	None	Very few ($<1/4$)	Some	About $1/2$	Most ($3/4$)	
As an estimate, what proportion of the module learning objects did you study in depth (ie, more than a quick skim)?			2	5	8	4
As an estimate, what percentage of the module learning objects did you print out?	1	3	2	3	3	7

in depth. The results shown in Table 1 show a considerable spread in 'diligence'. Only four students studied all of the learning objects, 12 studied most learning objects, but seven studied half or less. The response to the question on the printing of learning objects suggested that most students preferred to read longer documents off-line, although some read short learning objects on-screen.

Five students indicated that they appreciated the mobility of printed or downloaded objects, and there is a sense that their study time is often leisure or work travel time:

- *There were key periods when I was away from a computer during the summer, therefore I tended to print and take them with me on my travels.*
- *Because of limited Internet access at home, I printed off a lot of material.*
- *I printed them all so that I could read them on the train.*

Core document

Students were asked about their use of the core document. The core document is a road map to the modules, and it outlines the contents of each session, refers to learning outcomes and offers advice on reading and using module material. Students used the core document in different ways to support their learning; 12 students read it in full before starting to study any learning objects. Some of them never read it again:

- *I printed out the document, read it in full to gain an understanding of what to expect, filed it in my file and never referred to it again.*

Other students revisited the core document at various times during the module:

- *I referred to the Core Documents whenever I lost track of what I was supposed to study and what the module was supposed to provide me.*

Table 2: Student comments on frequency of use of discussion forums and threads

Activity	Daily	Two to three times a week	Weekly	Every 2 weeks	Monthly
Log on to the learning platform	5	9	3	2	
Make use of the discussion threads (posting/reading)	3	7	6	1	2

Table 3: Student comments on 'comfortableness' in using discussion forums and threads

	Very comfortable	Quite comfortable	Not sure	Uneasy	Very uneasy
No. of students	5	8	5	1	

Discussion forums and threads

Tables 2 and 3 summarise student responses to the questions in this category. Students tended to log onto the learning platform slightly more frequently than they made use of the discussion threads, but nevertheless, virtually all students made use of the discussion threads at least weekly. Most were very or quite comfortable about posting contributions to the discussion threads, although there should be some concern that some students were not confident to make contributions.

The next question under this section explored the use of any other means of communication with other students on the course, such as email, chat, telephone or face to face. Eight students indicated that they had no other interaction with other students, outside of discussion forums and threads. On the other hand, some students had used other means of interaction to great effect:

- *I have made some telephone calls with my colleagues in Sudan.*
- *I have four fellow students in Khartoum and we met many times through SIS to discuss the module material with each other.*

Despite, or perhaps because of the value attached to discussion and interaction evidenced by responses to the first question, there were some individual criticisms of the discussion forums:

- *I would value much more interaction with other students and I think [the university] need[s] to think about how to encourage/facilitate this ... there was little evidence of developing threads based on each other's work.*

The next question invited comment on the content of the discussions forums and threads, and their role in supporting student understanding of the module subject matter. Generally, students did feel that they learnt from other students:

- *Discussion threads were very useful in knowing other students' opinions.*
- *It was useful to gauge other points of view and was beneficial to "jump start" some learning modules which were more difficult to deal with without a summarised insight into the content.*
- *Posting to the forums is a very good way to focus the mind on the questions in hand, to realise an individual's current level of understanding and receiving other viewpoints on the same subjects.*
- *Some of the postings were useful in clarifying further the subject matter with real world examples.*
- *The most beneficial were the work experiences from the participants.*

Many comments actually focussed on the process (not the content) of the threads. Some students expressed reluctance to be the first contributor:

- *I usually waited until at least one other person posted to a forum particularly when I wasn't sure how to structure my response. Seeing other contributions also spurred me on to contribute myself.*

Several students were seeking a greater level of contribution from tutors:

- *Maybe with the first module I was expecting the tutors to be more interactive in the discussion threads. I was hoping that the tutors would open discussions so that we could discuss more on the topic. But at MSc level, maybe we students should be opening discussions. I will try to open more discussions in the next module.*
- *but I wished instructors contributed in these discussions too.*
- *I was expecting more tutor feedback in them.*

Tutor evaluation

Respondents were asked to rate the level of support that they received, and the response time to queries. All students agreed that tutors were at least *average* on this scale, most scored them as *good* or *excellent*. On the other hand, comments were not entirely consistent with ratings. Comments suggest some concerns:

- *Response times to queries could have been better if tutors checked the forums more often (daily).*
- *I think response times should be better towards the end of the course, when an answer can help to make key decisions about the assignments.*

But some other comments start to provide the answer. Students indicated that their expectations are influenced by their previous experience of more traditional learning contexts. Students who have been out of study for several years, and who are arguably members of prime audiences for e-learning programmes, expressed the greatest concern around the issue of tutor interaction.

- *I have scored based on my expectations. Maybe my expectations are inappropriate. I had expected some personal real-time interaction with my tutors by I.M. or phone. Part of my expectations is probably based on being out of academic study for 25 years and being new to Masters level study. Some of the tutor postings to forums were very helpful but most of the time I felt that I just had to figure it out myself. I would anticipate*

Table 4: Proportion of activities completed by students

Very few (<1/4)	Some	About 1/2	Most (3/4)	Nearly all of them
1	4	3	3	7

high attrition rates from courses unless there is better alignment of expectations and actual support.

- *To be fair the level of support I am used to is the traditional 'live' feedback; getting used to online study where there is effectively no real-time interaction with fellow students or tutors is quite difficult for me, particularly as I have been out of formal education for some time.*

Perhaps this comment nicely summarises the dilemma:

- *Mainly invisible but there when I needed help. I am not sure how tutors could become more visible or indeed whether they should.*

Module activities

The module included a number of activities that asked the student to do something to help them to engage in their learning, and to apply theory to practice. Table 4 reveals a good spread in the number of module activities completed. Specifically, less than half of the students completed all of the module activities.

Generally students selected their extent of engagement with activities:

- *I approached the activities by skimming quickly through them but found them useful in explaining the concepts to myself.*
- *I would first attempt the activity using the information I already knew from previous experience or earlier readings and would then review my ideas "open book" style changing details where appropriate.*
- *Mostly skimmed through the activities and completed the ones I found interesting. Time and access speeds were also issues that influenced my behaviour.*

Nevertheless, most were positive about the role of the activities in promoting the understanding of concepts:

- *The activities were very helpful. The critical analysis is a challenging task, but very interesting, because there are so many different ways some things can be interpreted and understood. These sparked a lot of interesting discussions which were very resourceful and informative.*
- *The activities in the modules when coupled with the discussion forums provided a good kick start to determining the direction of a particular theme. This helped to gain the right level of understanding for a particular subject.*

Discussion and conclusions

Responses to the general questions on those aspects of the module that were useful, and those that would benefit from further attention bring to the surface the success criteria that students apply in module evaluation. When expressing satisfaction students discuss:

1. success in promoting synergy between theory and practice;
2. specific themes in the module that widen their horizons and experience;
3. discussion forums and interaction with other students; and
4. other learning support with a focus on access to documents and other resources.

When expressing dissatisfaction, students discuss:

1. robustness and usability of delivery platform;
2. access to resources, such as articles and books;
3. currency (and implicitly relevance) of study materials; and
4. student work scheduling.

These can variously be aligned with some of the dimensions in existing frameworks. Some relate to pedagogy (Garrison & Anderson, 2003; Jochems *et al.*, 2003; Khan, 2000). Others relate to technology (Garrison & Anderson, 2003; Jochems *et al.*, 2003). Khan (2000) specifically mentions resources, and resources might be seen as an element of Garrison and Anderson's organisational context. Only Blass and Davis (2003) cite student-to-student interaction, achievement of purpose, and appropriateness of staff and context, which could match student comments on themes that widen their horizons and experience. However, this research confirms the value of investigation into the social aspects of e-learning (Garrison & Anderson, 2003; Ng & Hung, 2003; Nicol *et al.*, 2003). Most interestingly, none of the frameworks, probably because they take a 'supplier' perspective on quality, mention student work scheduling or any other aspects of the experience that are under the student's control. These students quite rightly acknowledge they have some responsibility in learning, and our pedagogy and evaluation frameworks need to reflect this as well.

Analysis of students' comments on aspects of the module surfaces a number of aspects of the student learning process that have received little attention elsewhere:

1. Each student engages with the material in different sequences, and to different extents. This is consistent with the findings of other authors (Alexander, 2001; Baldwin & Sabry, 2003). The best designed e-learning materials and environments accommodate these different approaches.
2. Because students typically download or print documents from the e-learning environment, this means that they do not engage with an integrated environment, but select items from it, using it as a menu. Such an approach to the use of e-learning packages does not invalidate the potential of e-learning, but this style of working needs to be considered in the design of the e-learning environment and its component materials and learning objects.
3. Students appreciate discussion forums or threads, and many use them as their primary mode of interaction with other students, but they were reluctant to be the first contributor, and some are not confident with their interaction through this mechanism. Students need more support in learning how to contribute to a virtual learning community.
4. Students are very unsure about the tutor's role in e-learning. Their expectations are unformed, but are shaped by previous experience of face-to-face teaching. Many are

seeking greater input from and interaction with the tutor. Students who have not studied for a long time face a particular challenge in adapting not only to new ways of learning, but new conceptions of the nature of learning processes. Module pedagogy needs to address these issues, by acknowledging students' prior learning experiences, and therefore expectations, and actively to engage in the redefinition of these expectations.

The previously mentioned issues emerge from a study of a group of well-motivated, mature, part-time students who appreciate the direct relevance of study to their working life. Further research is needed to investigate whether similar issues apply to other cohorts of students, such as the 'widening participation' groups for whom governments see e-learning as a means of bridging digital and social divides.

In summary, the two key outcomes from this project relate to the student approach to e-learning, and their perceptions of the tutor's role:

1. *The student approach to e-learning*—students do not learn in the systematic way that is implicit in the careful design and structuring of a learning package. Instead they interact in discussion groups to varying extents they engage with material in different sequences, and are selective in their reading and interactions, and they print out significant comments of the material to read off-line.
2. *Student perceptions of the tutors role*—students are unsure about the tutor's role in e-learning; they do not know what tutors are supposed to do, and can not judge the level of interaction that they can reasonably expect with the tutor.

Accordingly further research might fruitfully be conducted to explore the following questions:

1. How do students engage with e-learning materials and activities, and what impact do different learning strategies and tactics have on learning success?
2. Are e-learning processes dependent on individual differences, as represented by learning styles and preferences, or can they be explored at a group level, with a focus on groups profession, and study discipline?
3. How can students be supported in the development of their notions of their own and their tutor's roles in e-learning environments?
4. How can our understanding of learner-to-learner interaction in the learning process be enhanced in order that it can be facilitated more effectively in multichannel learning environments?

While the qualitative comments in feedback questionnaires generate these questions, more in-depth qualitative interviews and case studies could provide richer insights into student e-learning behaviour, and answers to 'why' and 'how' questions. This would enhance understanding of how the e-learning experience is and can contribute to improving the quality of learning, in a variety of learning contexts.

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