Early Attrition among First Time eLearners: A Review of Factors that Contribute to Drop-out, Withdrawal and Non-completion Rates of Adult Learners undertaking eLearning Programmes

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Abstract

The problem of dropout rates in eLearning programmes has been argued over at length without any consistent conclusions about the degree of the problem, or a clear understanding of what factors contribute to learners dropping out, withdrawing or not completing eLearning courses.

In examining the factors that affect attrition among distance online learners this paper focuses on the distinctive characteristics of mature adult learners undertaking part-time education by distance eLearning course for the first time. The available research suggests that attrition among mature adult online learners is affected by sociological, psychological, technical and cognitive factors, critical features of which are the notions of cognitive load and locus of control.

This paper argues that first time eLearners often experience cognitive overload, (as described in Cognitive Load Theory), in the early stages of an online course and it is suggested that this is a likely contributor to high drop out rates, particularly in terms of those withdrawing within the first few weeks of the course start

Keywords: Attrition in eLearning, eLearning drop rates, Cognitive overload, eLearning with adult learners, eLearning orientation

Introduction

The issue of student retention and completion rates in distance education have been investigated and vigorously argued over for at least the last seven decades (Berge & Huang, 2004). This discussion has intensified since the introduction of eLearning and its progression from the periphery of mainstream and earlier modes of distance education and training to a more central role, (Berge & Huang, 2004).

Some have reported attrition from eLearning as high as 70 - 80% (Flood 2002, Forrester 2000, in Dagger & Wade, 2004). Parker (1999) argues that "With the growth of distance education has come the problem of exceedingly high attrition rates". Citing Carter (1996), she suggests that eLearning student attrition in some institutions is exceeds 40%, while others (Frankola, 2001). Diaz (2002), put it at between 20 - 50%, and Carr (2000), estimate it to be 10% - 20% higher than for traditional on-campus education.

Questions about the validity of much of this reporting have been raised as it is argued that statistics on retention and drop outs are, at best, fragmented, do not compare like with like, and are either unreliable and / or misleading (Hall, 2001, Wang, Foucar-Szocki, Griffin, O'Connor and Sceiford, 2003). However, it is interesting to note that in traditional classroom-based teaching, the overall drop out rates for undergraduates in US higher education is reported at between 40 and 45%. This has been fairly consistent for most of the last century (Tinto, 1982 in Berge & Huang, 2004).

The issue of attrition in eLearning courses is important for two reasons: First, it is important in assessing the relative effectiveness of the cost of online learning compared to traditional classroom-based teaching as this affects educational planning and the value of investment in distance online learning by learners, educational institutions, corporations and government agencies. Secondly, it is also important in determining what approaches might increase the student engagement with and learning effectiveness of online distance learning itself, as this affects opportunities for access, learning outcomes and the perceived value and credibility of eLearning programmes and qualifications.

Researchers acknowledge that the reasons for attrition are many and complex and that there are no simple solutions. (Berge and Huang, 2004). While a growing body of research is seeking to address the issue (Parker 1999, Frankola, 2001, Diaz, 2002, McEwen and Gueldenzoph, 2003, Martinez, 2003, Wang, et al 2003, Rossett and Schafer, 2003, Berge and Huang, 2004, Simpson, 2004), little of this research considers the learner's experiences or point of view (Rossett and Schafer, 2003). The research is particularly scant on the direct experience of 'first-time eLearners' or how the first impression of eLearning might impact on a learner's decisions to persist, or to abandon online study.

Models of attrition for distance education

Kember (1989), revisiting Tinto's (1975, 1987), influential *"Longitudinal Model of Individual Departure",* proposed a conceptual model of attrition for distance education. It indicated a complex interaction of family context and background, personal motivation, abilities and depth of commitment to completion; previous educational experiences and achievement; and institutional support.

Tinto's model has been used to inform institutional retention strategies and predict attrition rates. It suggests that institutions should focus on the degree to which the learner is able to be socially and academically integrated with peers and the institution, as a way of ensuring retention. While Tinto's model is significant, Sweet (1986) and Kember(1989) point out that his studies were carried out with campus-based students under the age of 25. Tinto suggested that student social interaction and successful integration into the institution's academic culture were features of the learner's experience that contributed significantly to a student's likely persistence in their studies. Being on campus, of course, makes this much more likely to happen than in a distance delivered course.

Kember's model suggests that learners engaged in distance education are more likely to be mature adults with families than are students attending college. The situation of these mature learners introduces other factors, such as the learner's ability to "..integrate the demands of part-time off-campus study with family, work and social commitments." (Kember, 1989, p. 294), circumstances that are far less common among college undergraduates. According to Kember, family circumstances such as the number and age of dependents, housing conditions and the pressures of responsibilities such as earning an income to support the family, can all have a significant impact on a distance learner's decision to quit his/her course. Kember also identifies levels of income, gender and geographic distance from the institution as contributing to attrition.

Boyles (2000, cited in Dagger & Wade, 2004) took this analysis a step further by developing a model that specifically addressed retention in eLearning. He identified three sets of variables related to perseverance or withdrawal. These variables are identified as (1) Defining variables related to the learner's background, which include the learner's maturity, personal circumstances and previous experience, (2) Environmental variables, such as family, social and work commitments and (3) Academic variables, which include the learner's previous academic track record and the fit between the learner and the subject being studied. These sets of variables are allied to other individual variables such as academic self-confidence, academic outcomes and ease of integration with the institution, along with institutional size, social integration abilities and the learner's psychological make-up.

Berge and Huang (2004), recognising the complexity of the attrition issue, claim that previous models of attrition and retention are rarely effective and tend to be too difficult and/or complex to apply. They propose a refinement of Boyles' model in which they cluster the range of variables into three primary groups;(1) Personal Variables such as age, ethnicity, gender, income, previous academic experience and personal attributes like self-efficacy for learning, personal organisation and motivation; (2) Institutional Variables such as institutional attitude, values and beliefs, academic characteristics like structural systems and processes, learner support and degree of congruence between the needs of individual students and the philosophical stance of the institution; (3) Circumstantial Variables which include the nature and quality of the institution's interaction with the student; academic interactions, course design and facilitation, as well as the interactions that are specific to the learner's life, work, family, responsibility and satisfaction. While these studies are no doubt important, how one might use them to deal with drop outs from eLearning courses and programmes is hard to fathom.

Motivation and persistence

Bandura's (1986) theory of "self-efficacy" and where an individual perceives their "locus of control" to reside, is proposed by Martinez (2003) as an important factor with regards to attrition in eLearning. In her research on adults employed in corporate settings and undertaking eLearning, Martinez suggests that learners with a strong internal locus of control show greater motivation and persistence in their eLearning endeavours than believe their lives are controlled by external events.

Those who perceive that generally they are less influenced by external events are more likely to stay the course than those who perceive their participation and performance is somehow dictated by forces and events outside their control. These external events may include such things as technical problems with their computer or web connection, pressure of work, family needs and competition for time from other activities.

Bernard, Brauer, Abrami and Sturkes (2004) consider "readiness for online learning" as being critical in determining a learner's persistence. They identify four dimensions of readiness:

1. online skills, such as computing, Internet and online communication via email or discussion forums;
2. self-management of learning and learning initiative, which includes time-management, personal organisation and effective cognitive strategies;
3. beliefs about online learning, which suggest that a learner's attitude about the relative efficacy of online learning as compared to classroom based teaching has an effect on their overall performance in an online course;
4. the degree of interaction with the tutor[1] and other students in an online course, and a high expectation of timely feedback on performance and support and involvement from tutors and fellow students. (p.33)

Learner perspectives on their own attrition

Any discussion of learner attrition in online courses needs to consider the factors that learners themselves cite as reasons for dropping out or not completing. The learner's perception of what constitutes a barrier to continuation or factors contributing to withdrawal provide valuable insights in designing distance courses and the processes, support mechanisms and strategies that can enhance retention.

Three large sample surveys have sought to identify students' own understanding of the causes for their attrition. Wang, (et al 2003), in a widely distributed online survey reported that the learners identified four primary factors affecting their decision to drop the course: (1) personal motivation; (2) instructional design of the course/programme; (3) conflicts between study, and work and family, and (4) the feeling they had learned what they needed or wanted (p.9).

This self-reporting sample was deployed between May and August of 2003 on the [Masie Centre](#) website, which styles itself as a "learning and technology eLab and think tank dedicated to exploring the intersection of learning and technology". Emails were sent to major online communities to solicit participation. It attracted 375 valid responses of which 56% were female and 44% male (p. 12). Survey respondents were recent eLearning participants who had begun at least one eLearning course within three years of the survey being conducted. About a third were from the finance, insurance and real estate sectors; 22% reported from technology industry and manufacturing; while the rest were from education, government and non-profit organisations, (p. 11). Just over 71% were over the age of 35 and a little more than 75% had a Bachelor degree or its equivalent, or a Masters (p.13)[2]. Non-US residents were apparently not included. This study concluded that; *".. eLearning drop out rate (about 26 %) is lower than previously claimed in popular press and trade journals."* (p. 37). Wang (et al 2003), also suggests that drop rates alone are not necessarily an effective method of evaluating effectiveness or success of eLearning courses, since a learner may withdraw once they have achieved what they needed to. This would be particularly the case where there was no qualification, reward or interest in a qualification tied to the course.

A web-based survey of student perceptions of barriers to online learning conducted by Muilenberg and Berge (2005) harvested over one thousand valid responses, (p. 33).The survey released on the World Wide Web between July and November of 2003, was announced by email using a wide range of mailing lists from conferences, participation lists of distance organisations, educational institutions and online subscription sites.

The respondents reported that the following 8 factors, out of a total of 43, were considered the most significant barriers to eLearning and affected attrition:

1. Technical problems
2. Cost of and access to the Internet
3. Time and support for studies
4. Personal motivation
5. Technical skills
6. Academic skills
7. Social interactions
8. Administrative/instructor issues

Frankola (2001), in her widely cited article concerning dropout rates in corporate eLearning courses, states that learners most frequently reported lack of time, lack of motivation, poorly designed courses and incompetent instructors as the reasons for their attrition.

However, Morgan and Tam (1999) suggest that often the reasons given by learners for dropping out may be superficial as learners "seek to protect their self-esteem..." (p.97); as in reality the reasons

for early withdrawal are likely to be deeper and far more complex (Berge and Huang, 2004). It may also be the result of a learner's inability to identify issues underlying increased levels of anxiety about engaging with eLearning and a sense of becoming overwhelmed by unfamiliar modes of learning.

Mature adults as distance eLearners

The profiles of adult learners who are employed are often quite different to learners enrolled in a full time programme of study and attending an institution. To begin with, learners in employment bring a different set of needs, strategies and motivations to the learning process. They tend to be older than their classroom-based counterparts (Diaz 2002), and are frequently geographically removed from the learning resources, information sources, learner peers and Tutors compared to their on-campus peers. (Whittington & McLean, 2001)

Adult learners can be self-directed, experiential learners and have "life experience that becomes an increasing resource for learning". Knowles (1984, p.12). They are often able to successfully generate internal motivation for their learning, frequently based on notions of self-development, career advancement and achievement. They are intent on directly applying their learning and approach learning as primarily a problem-solving activity. While full-time college or polytechnic learners are usually seeking qualifications that will grant them entry to employment, workplace-based learners do not. As they are already in the workforce, they tend to be most often concerned with promotion or a change in career direction.

Researchers have addressed issues for employed adults engaged in eLearning. While these do not apply in all cases, they are noted here. Employed adults tend to complete eLearning in their personal time due to workload pressures in the workplace and/or Internet access issues at work. Studying in personal time can have a harmful effect on an employee's home life and family and may contribute to attrition statistics. (Thalheimer, 2004). It is also not uncommon for employees to feel stressed and conflicted in trying to balance work and study priorities. They can experience feelings of isolation through lack of collegial or organisational support and a perceived lack of control and frustration. This is particularly so if feedback and institutional support is slow or inadequate. (Takiya, Archbold & Berge, 2005). These sorts of circumstances can force mature learners into non-completion even though they may be performing well in their distance studies, (Ozga and Sukhnandan, 1998).

Diaz, (2002) sees the rate of attrition among online learners, particularly those in employment, as less of an indication of "academic non-success" by the learner, or a failure on the part of the education or training provider, but perhaps more of an informed adult decision or choice based on a realistic assessment of competing personal or work related priorities. He bases this view on the fact that online learners tend to be more mature, better educated and, in the case of those in the workforce, better able to make a decision to continue or drop the course based on "significant academic and life experience".

Early attrition in eLearning

The issue of drop outs and retention in eLearning courses are a concern, particularly for institutional managers and for government and their agencies who are acutely focused on return on investment of public monies and the rules and metrics around funding higher education (Yorke, 2004), While many of the issues related to attrition over the life of a programme have been widely researched, what has not been is the rate of and reasons for withdrawal in the very early stages of an online programme. Simpson (2004), reports that the experience of the UK Open University is that 35% or more of eLearners withdraw before submitting their first assignment (p. 83), which suggests that a

learner's initial experience with eLearning may well have a significant impact on a decision to drop out.

Why should this be so? It is this author's contention that a significant contributor to learners dropping out early from an eLearning course is related to the complexity of the learning tasks that confronts a learner engaging with eLearning, especially for the first time, and the degree to which he/she experiences cognitive overload brought about by the multiple learning curves that confront a learner at the start of any course of online study..

Cognitive Load Theory and the impact of cognitive overload on early drop outs

Cognitive Load Theory (Sweller and Chandler 1994, Sweller 1999 and Sweller, Paas & Renkl 2003), states that learning is initially processed in working memory. Working memory is short term, low in storage capacity and can only process a very limited amount of new information at a time. Learning complex or technically demanding material requires building mental models or cognitive schemas about the subject being studied or the skill being developed over time,. New material processed in working memory is progressively added or incorporated into these schemas. The schemas or mental models provide a knowledge structure into which the new learning can be fitted and integrated. This cognitive architecture is built through a lifetime of learning and experience and serves to free up resources in working memory.

Learning new material or a skill, for which a schema in long term memory is undeveloped or non-existent, can cause working memory to quickly overload its limited capacity. This overloading can result in a learner becoming highly anxious and losing confidence, which in turn can lead to the learning process, in effect, freezing and the learner being unable to continue.

A learner undertaking eLearning for the first time is confronted with multiple challenges and learning curves that can impact significantly on his/her confidence and ability to succeed as an eLearner. These challenges include but are not exclusively *"... technical access, asynchronicity, text-based discussions, multiple conversations, information overload and isolation." (Whipp & Chiarelli, 2004, p.6). This conclusion is reinforced by Eshet-Alkalai (2004), who points out that:

> "Digital literacy involves more than the ability to use software or operate a digital device; it includes a large variety of complex cognitive, motor, sociological and emotional skills, which users need in order to function effectively in digital environments." (p.93)

Many mature adults have limited digital literacy experience and are generally far less adept at decoding the multi-media interfaces involved with eLearning than their younger counterparts. Studying online presents mature adults with:

> ..problems arising from the need to construct knowledge from large quantities of independent pieces of information, reached in a non-linear "unordered" manner." (quote marks in original) (Eshet-Alkalai, 2004, p. 97).

Whipp and Chiarelli also report that those new to online learning experience apprehension about their ability to handle the technical, organisational and social challenges that learning in an online environment presents and that this may represent an aggravated instance of what Barnett (1999) calls "..the existential anxiety of learning.", (p.38), which is often experienced with adults embarking on a course of study for which they have little background. .

While Cognitive Load Theory has mostly been concerned with how instructional design of learning materials, assessment activities and teaching approaches can ameliorate or mitigate cognitive overload in the learning of new and complex material, it is argued here that it applies equally to the

multiple learning tasks that form the early part of the learning journey of a first time eLearner. It stands to reason that the scale and scope of the new learning required can easily overload a learner's working memory.

The multi-dimensional learning tasks of the first time eLearner

This author proposes a conceptual model which identifies the multiple learning tasks that a first-time eLearner must deal with immediately and simultaneously on embarking on an eLearning course. These are: (1) negotiating the technology; (2) negotiating the course website; (3) negotiating the course content (4) becoming an eLearner (5) negotiating CMC interaction.

1. **Negotiating the technology:** This is where an eLearner is required to come to terms with the computing technologies involved. Osika and Sharp, (2002) comment that not only does a learner have to master the course material presented in course, but they must also become competent in using the range of technologies involved in online learning. Many overestimate their own skills in computing and underestimate the broader range of skills required by an eLearner. It also brings learners face to face with the vagaries of computing technology and their feelings of helplessness when technical support is not immediately available or easily accessed.

2. **Negotiating the Learner Management System (LMS) interface**: In this the leaner has to develop a mental model of the content structure and navigation system in order to find his/her way around. Many learners do not have the experience of 'drilling down' through a deep website, preferring instead to "Google" many websites (Personal communication with information literacy tutor, CPIT).They tend only to peruse one or two pages until they find what they want. The site and content structure of an eLearning course is often multi-levelled and deep, requiring familiarity and understanding of the functionality of the LMS.

3. **Negotiating the learning content**: In this the learner has to engage with the learning materials, readings, activities and assessments that make up a programme of study. It should be noted that this anxiety of negotiating the content may have two component parts: Confronting the actual content and of becoming a learner again. Many learners experience some apprehension when learning something for the first time. Negotiating the content relates more to the ability to master the material covered in the course. Levels of experience, pre-knowledge and aptitude would be factors in determining the level of confidence or anxiety experienced.

   Anxiety on becoming a learner again is more likely to relate to thoughts of whether one is capable of learning anything again after a long period without formal learning experience. This is especially so if the potential learner had poor experiences in the secondary school system or earlier. Thoughts like "Am I up to it? Am I clever/disciplined or literate enough? Will the others be smarter or more knowledgeable than me? Will I make a fool of myself?" All would contribute to levels of learner anxiety.

4. **Becoming an eLearner**: In this a learner is required to effectively abandon his/her existing mental model of what it is to be a learner in a formal learning situation. For most learners, this is likely to be the model of a teacher led classroom. eLearners need to embrace a model based on a self-directed and motivated learner who is physically isolated from fellow learners and the tutor; and communicating primarily by electronic text.

5. **Negotiating CMC interaction:** In this a learner has to undertake the learning tasks involved in interacting with peers via synchronous and asynchronous Computer Mediated Communication (CMC). For those unused to the format and conventions of Discussion

Forums and Bulletin Boards, communication via text, and with others a learner doesn't know, can be quite intimidating. Klem (1998, p. 1 cited in Smith, 1999, p.3) puts it this way: "…some are afraid they will embarrass themselves with postings that are not clever, erudite or interesting to others."

In addition, learners can become quickly overloaded if they are unable to get online for a period of time and the quantity of discussion forum contributions has grown to such an extent that trying to work through the backlog can be overwhelming and daunting. (Fox, 2002)

It is clear that these complex and multiple learning tasks could significantly contribute to a learner's cognitive load at the start of an eLearning course, which may lead to rapid rises in anxiety for the learner; feelings of being overwhelmed and of despair coupled with a sense that eLearning is just too hard, the result of which is the virtual shutting down of the learning process. At this point, the decision to drop out may seem the only option. Successfully negotiating this early experience depends very much on the relevant skills, circumstances, motivations and personal attributes of the learner. It follows then, that paying particular attention to how an eLearning course is structured and introduced and the manner in which the learner is inducted can make a very important difference in a learner deciding whether or not to engage and persist or to drop out.

Strategies to reduce early drop outs

Salmon (2004), a noted expert in online moderation and facilitation, makes a number of useful and practical suggestions about inducting online learners. In particular, she identifies the need to limit the amount of content specific information and activity in the early stages, and to focus on activities (E-tivities) that promote the formation of an individual's identity online, the development of learning group cohesion and the setting of group norms, expectations and the rules around online discussions. (p.197)

She also advocates the simplification/ limitation of navigation options early on and releasing the content as learners gain mastery with some of the basic skills. This would have the effect of reducing some of the cognitive overloading that learners experience at this stage.

It is this author's experience in designing, developing and delivering several eLearning programmes to public sector employees in New Zealand, that a face to face workshop prior the start of the online distance course can make a significant difference to a first time eLearner's perception and experience of eLearning. The value of having the learners meet face to face and be introduced to the technology as well as using simple online ice-breaking activities that scaffold later more complex tasks cannot be overstated. This circumvents much of the angst some learners initially experience. In addition some introductory and meaningful discussion board activities can be structured to break down the isolation, inhibitions and reluctance of some learners to engage with online conversations.

This type of pre-course face-to-face induction workshop can also be used to foster the group's sense of itself, and to identify the individual participants and their backgrounds, along with their expectations and concerns. It is also helpful to have the course design, structure and philosophy explained and to discuss anxieties associated with beginning an online course.

Telling learners of the complex and sometimes challenging learning tasks involved in the start of an online course lets them know that this is not something only they are experiencing. Working on the basis that being forewarned is forearmed, it is this author's contention that actually apprising learners of the issues of cognitive overload and how it is commonly experienced would go some way towards inoculating learners against its more pernicious effects.

Actively supporting, encouraging, gently cajoling and following up on learners who seem to be struggling will help to keep wavering learners in the course. Supporting learners till they are over the initial "eLearning learning-curve hump", may involve a seemingly high level of resource and effort on the part of the course facilitator and associated programme administration staff, but the payoff is that fewer learners will drop out at the early stage. As they gain mastery over the system and develop confidence are more likely to stay the distance.

Despite the complication and cost of bringing together geographically distributed learners, even to the extent of running such workshops in multiple centres, there are major rewards to be gained in terms of increased learner satisfaction, fewer technical issues in starting up, less time lost in getting the course underway and a significant reduction in learner isolation.

Where it is not possible to bring learners together, then the use of paper-based "How to get started" instruction booklets with screen shots and instructions in simple jargon free language will help get learners up to speed with the technology and web interfaces. This is particularly true for older learners as their comfort level and familiarity with paper documentation is high and readily fits their mental model of instructional texts. Similarly giving learners access to an orientation module on the eLearning LMS several weeks before the course begins can also help alleviate the pressure on learners. This module may provide an overview of both the course site navigation architecture as well as the structure of the online programme itself, along with some simple exercises to give the novice eLearner practice and a chance to resolve technical issues and develop an internal schema of how the course site works, before the pressure of the course schedule kicks in.

In terms of the actual course design and the structure of the materials and learning activities, then it is a useful practice to aim to start slowly and build the course tempo over time. In recognising the cognitive load issues of the early part of an eLearning course, it is reasonable to allow more time for the learners to engage with the content and with each other than might be thought appropriate in other circumstances. Similarly, it makes sense to design the course in such a way that the early tasks are relatively simple so that early success can be achieved by learners. In longer programmes that may involve a number of component courses, it is recommended that the first course in a programme be short, interesting but relatively undemanding. This allows confidence, capability and technical fluency to be developed by the learners. The scheduling tempo of the programme's content can be speeded up once learners have established the necessary competencies.

Conclusion

The problem of dropout rates in eLearning programmes has been argued over at length without any consistent conclusions about the magnitude of the problem, or a clear understanding of what can be done about it. In examining the factors that affect attrition among distance online learners this paper has focused on the distinctive characteristics of mature adult learners undertaking part-time education by distance eLearning course for the first time.

While the available research offers a constellation of causes of attrition among online learners, there is little on offer that can readily ameliorate the situation. The complexity and quanta of variables identified as to the potential or actual causes of drop rates and attrition in eLearning allow for few practical or readily applied solutions. In some respects this may be an evolutionary issue that may, in time, be resolved through improvements in technology, more effective course design, better understanding of online pedagogy and teaching skills, more learner centred design and support and the growth in a learner population for whom the whole notion of learning online is as fundamental as the classroom has been for earlier generations of learners for the last one hundred and fifty years.

The one area where something may be done to reduce attrition is in the early stages of an online course. Cognitive overload is a likely contributor to high drop out rates, particularly where those withdrawing do so within the first few weeks of the start of a course. Greater levels of persistence and completions may be achieved if learners are supported to anticipate, prepare for, recognise and recover from the cognitive burden they may experience as first time eLearners.

The issue of early drop out rates in eLearning needs further research, but it is believed that attending to and explaining how some learners may be affected by cognitive overload and the development of strategies to deal with it will reduce early attrition, improve retention and enhance learning outcomes among mature adult learners engaged in eLearning programmes.

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[1] Tutor in New Zealand would equate to an "Instructor, or "Professor" in America and a "Lecturer" in the UK
[2] Statistics quoted in this paragraph are compiled from the original

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