REDUCING ATTRITION AND DROPOUT IN E-LEARNING: THE DEVELOPMENT OF A COURSE DESIGN MODEL

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Abstract

Worldwide, the e-Learning market has been growing faster and faster [1], but not without some disappointments [2]. One of the biggest setbacks regarding e-Learning is that related to the high rates of attrition [3] that leads to frustration [4] [5] [6] and, eventually, to dropout. Student dropout rates for e-Learning are 15–20% higher than traditional face-to-face courses [7]. For all reasons that might have an influence in attrition and dropouts in e-Learning we argue that course design is the key. Therefore, the main question is how to design e-Learning courses with lower attrition and dropout rates?

The primary objective of this Erasmus+ Strategic Partnership for adult education research project, is to produce a model to assist e-Learning course developer's decisions based on scientific literature that will lead to the development of an implementation prototype. The specific objectives are: (i) to understand the relationship between course design in e-Learning with attrition and dropout; (ii) to identify dropout reasons in relations to course design in e-Learning; (iii) to validate course design as a problem affecting dropout in e-Learning; and (iv) to propose a decision-making course design model for a future prototype.

As a methodological approach, we will use Development Research [8]. This methodology involves an interrelationship between theory and practice to create an effective intervention to a specific problem, which requires not only its analysis but also the construction of a particular process or product. We see the Development Research as a cyclical process of designing, testing, and redesigning, always incorporating feedback provided by all the actors. This process leads to new theoretical and empirically founded products, whereby the researchers get new insights, ultimately bringing the state of the art a step forward. Outgoing from the creation of our e-Learning prototype, we will collect information in a participatory manner, justifying the choices that will be integrated into the development process/product, and creating the conditions for permanent feedback to improve the product as well as the educational process. Thus, the research process is less driven on obtaining a descriptive knowledge; instead, it is more focused on the need to get, from the feedback on the tasks and the product development, information about how different aspects of the problem can be solved. According to our research plan, we firstly review the state of the art, following a systematic review [9], which is "designed to locate, appraise and synthesize the best available evidence relating to a specific research question to provide informative and evidence-based answers" [10].

Secondly, and after accessing the relationship between course design in e-Learning with attrition and dropout in previous step, we propose a decision-making model for an implementation prototype.

Third, the prototype is tested and improved based on data collected, including attrition and dropout.

Fourth, a functional product is released, providing the necessary mechanics for improvement based on continuous data collection.

Keywords: e-Learning, dropout, attrition, course design model in e-Learning, development research, systematic review.

1 INTRODUCTION

In recent years e-Learning courses have grown exponentially all over the world, as they are a genuine alternative to traditional face-to-face training [11], especially to non-traditional learners with full-time

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jobs [12]. Although many institutions implement e-Learning to meet the learners' needs, according to literature there is a huge percentage of learners that do not complete e-Learning courses [13] [1]. Some authors report dropout rates in e-Learning around 50 percent [14], i.e., half of the learners enrolled in an online course do not complete it or leave it without reaching the goals of the course. Previous research [2] allows us to admit that the factors that influence non-performance could be classified into two broad categories: (i) factors related to the learner and his/her context, and (ii) factors related to the course design.

Mostly, the studies in the literature are devoted to investigating the students' factors [1] [13] [14] and less research is dedicated to linking attrition and dropout with course design, and explore the pedagogical dimension as a way to prevent students from withdrawing or not completing the course.

This paper presents an ongoing Erasmus+ Strategic Partnership for adult education project that is studying critical factors influencing the students' attrition and dropout with the course design through a systematic review [9], as a path to propose a decision-making course design model for a future prototype. Our ultimate aim is to support teachers and trainers in taking better decisions when designing online approaches. Thus, we will present the problem, the research question, the objectives, and the adopted methodology. Findings and results will be published later on.

1.1 Problem, research question and objectives

Worldwide, the e-Learning market has been growing faster and faster [1], but not without some disappointments [2]. One of the biggest setbacks regarding e-Learning is related to the high rates of attrition [3] that lead to frustration [4] [5] [6] and, eventually, to dropout. Student dropout rates for e-Learning are 15–20% higher than traditional face-to-face courses [7]. For all reasons that might have an influence in attrition and dropouts in e-Learning we argue that course design is the key. Therefore, the main question is "**how to design e-Learning courses with lower attrition and dropout rates**?".

The primary objective of this research is to produce, from a pedagogical point of view, a model to assist e-Learning course developer's decisions based on scientific literature about online dropout that will lead to the development of an implementation prototype. The specific objectives are:

- Understanding the relationship between course design in e-Learning with attrition and dropout;
- Identifying dropout reasons in relationship with course design in e-Learning;
- Validating course design as a problem affecting attrition and dropout in e-Learning;
- Proposing a decision-making course design model for a future prototype.

Our aim is to figure out a complete global picture of the issues at stake, in order to address the above raised research question and, consequently, to have a better understanding of the reasons for e-Learning dropout and how to design the proposed prototype.

1.2 Study relevance

As learner enrolment into e-Learning courses is expected to continue to grow, specially to non-traditional target groups in continuing education [15], finding the key factors that will promote learner engagement and retention is a goal we share as it has impacts on the learning institutions, and most importantly in the learners [16].

We know that e-Learning providers are devoting more time in the online course environment, yet the number of learners that do not progress is increasing [17]. Learners loose tuition money, delay graduation and experience feelings of inadequacy for not completing the course [18]. For some learners the frustration is so high that they stop their online learning after their initial experience [1], resulting in high rates of attrition, i.e., they may finish the course but they don't want to have more online experiences.

Previous research has suggested that e-Learning providers were more focused on the technological issues rather than in course design, minimizing the theories of learning and pedagogy. As stated by Lencastre et al. [11], technical decisions are not superfluous when it comes to online learning, but they

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do not occupy the central place when seeking appropriate didactic scenarios. Thus, it is necessary to take into consideration the theories that specifically relate to online learning, and use a pedagogy that places the responsibility of learning on the learner, with the trainer's key role being to create opportunities and environments that foster independent and collaborative student learning.

Improving full completion is a shared priority for many institutions and learners. This research may be helpful in more strategically directing those efforts to yield the greatest benefit for all stakeholders.

2   RELATED WORK

The systematic review process is it by itself the means to find related work and for literature review. It wouldn't be possible to have a related work chapter without actually starting the systematic review.

During our review the closest reference we found to our study was the research of Lee and Choi [19], a review from existing empirical studies on online course dropouts in post-secondary education published from 1999 to 2009, aiming to identify strategies that address those dropouts and to discuss and provide recommendations for future research.

From this research 35 studies were categorized. Over one third (37%) didn't provide a clear definition of dropout from online courses, while the remaining that did explicitly define weren't consistent with one another. Some stated that dropout was a voluntary action from students, others the non-completion of a course, indicated by the students' final assessment, either by incompletion or a failed grade. Lee and Choi [19] add that these definitions aren't what research on dropouts in open universities or distance education settings agree, where "students who simply did not register for classes for consecutive semesters were designated as dropouts" (p. 603).

Lee and Choi work focused on the same problem as our study but diverged in its research question and objectives. But by identifying several factors that influence student's decisions to dropout and the strategies proposed to overcome these factors, we were able to have a reference for the categorization during our content analysis. Listed the 3 main categories with their sub-categories with their percentage results for dropout reasons:

   (i) Student factors (55%)

       a) Academic background (9%)

       b) Relevant experiences (10%)

       c) Skills (16%)

       d) Psychological attributes (20%)

   (ii) Course/Program factors (20%)

       e) Course design (6%)

       f) Institutional supports (6%)

       g) Interactions (9%)

   (iii) Environmental factors (25%)

       h) Work commitments (10%)

       i) Supportive environments (14%)

Although we cannot compare studies, as research strategy and objectives were quite different, we can describe some of the results that are interesting to our research.

First, most of the suggested strategies to reduce dropout were concentrated on *Course/Program*, despite *Student* factors accounted for 55% of the total dropout factors analysed. This discrepancy is explained by the institutions difficulty of influencing *Student* and *Environmental* dropout factors compared with *Course/Program* as well to the diverse student's profile, reflex of most distance learning university "open entry policy", an unselective admission process with no entry requirements.

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Second, 4 factors (6% of the total) for dropout reasons were classified in *Course design* sub-category (which are more relevant to our study), while only 3 references were mentioned in Table 2, "Summary of dropout factors". They were:

- Team-building activities, "team-building activities contributed to high retention rates in a web-based MBA program by increasing interactions between teachers and students." [20];

- Program quality, "cases where students thought that courses were well-structured with relevant course content, students showed a higher persistence rate" [21];

- Relevance to students need, "the relevance of a course to a student's career aspirations and learning style was a significant predictor of a student's decision to drop out of or persist in online courses" [22].

Quoting Lee and Choi [19]: "Those studies suggested that a well-designed course could decrease students' dropout rate in online courses" (p. 609).

Third, *course design* was a "primary focus of many strategies proposed or assessed in the reviewed studies" (p. 612). Following, a list of those strategies:

- Limit the class size to 20 students [23]*;

- Offer a cohort-based and team-based learning experience with extensive faculty feedback and interaction [20]*;

- Provide content which is relevant to students' experiences and interests [20]*, [21];

- Make course content flexible and self-directive for students to access and explore [20]*, [21], [24], [25], and [22];

- Make curriculum more interesting and interactive to encourage student participation [24]*, [25], and [26];

- Reinforce a teacher's role as a facilitator of interactive learning [20]*, [27]*, [21], [25], and [28];

- Increase interaction in classroom using communication technology tools [29].

Several of the above mentioned references were evidenced by empirical research results, signalled by the asterisk symbol (*).

Lee and Choi [19] argue that the proposed strategies lack of "practical guidelines for their application", being quite general in nature. More specificity is required.

Forth, there was "rarely any adequate empirical evidence of the effectiveness of the suggested strategies to overcome online dropouts (11% of reviewed studies)" (p. 616). The authors' highlight the importance of further research in order to prove the effectiveness of specific strategies as well as the mechanics involved and their potential drawbacks. One study [27] is referred as an exception for evaluating the "improvement in retention rates of online courses due to the implementation of targeted advisement and orientation" (p. 616).

Lee and Choi review acknowledges the relationship between dropout with course design, and although it's not one of the most common reasons found for dropout, it is a primary focus for strategies used. Still, we question the quality of citations selected for this review as there are no mention if they are peer reviewed, if there was any quality assessment performed and the lack of empirical evidence to support findings in most strategies proposed. This validates the need for a systematic review.

3 METHOD

As a methodological approach we will use Development Research [8]. This methodology involves an interrelationship between theory and practice to create an effective intervention to a specific problem, which requires not only its analysis but also the construction of a particular process or product. We see the Development Research as a cyclical process of designing, testing, and redesigning, always incorporating the feedback provided by all the actors. This process leads to a new theoretical and

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empirically founded products, whereby the researchers get new insights, ultimately bringing state of the art a step forward.

Outgoing from the creation of our decision-making prototype, we will collect information in a participatory manner, justifying the choices that will be integrated into the development process/product, and creating the conditions for a permanent feedback to improve the product as well as the educational process.

Thus, the research process is less driven on obtaining a descriptive knowledge; instead, it is more focused on the need to get, from the feedback on the tasks and the product development, information about how different aspects of the problem can be solved.

3.1   Research Design

According to our development research plan, at the **first step** we do a state of the art research following a systematic review [9], which is "designed to locate, appraise and synthesize the best available evidence relating to a specific research question to provide informative and evidence-based answers" (p. 3) [10]. Systematic reviews are considered the best way to synthesize the findings of several studies investigating the same questions. Systematic reviews follow well-defined and transparent procedures and always require the following:

(i)   definition of the question or problem;

(ii)   identification and critical assessment of the available evidence;

(iii)   synthesis of the findings, and

(iv)   the drawing of relevant conclusions.

Systematic reviews aim to find as much as possible of the research relevant to the particular research questions, and use explicit methods to identify what can reliably be said on the basis of these studies [9]. Methods should not only be explicit but systematic with the aim of producing varied and reliable results. Systematic reviewing can be a difficult and time consuming activity [10]. Nevertheless, with the amount, and complexity, of available information, there has been a real need to develop and establish a process to provide, in a concise way, the results of research findings. Most notably, the dramatic increase in the amount of accessible research today makes it impossible for decision makers, policy makers and professionals to keep up to date with advances in their field. Systematic reviews allow concise synthesis of a large body of research and therefore address some of these issues.

Secondly, and after accessing the relationship between course design in e-Learning with attrition and dropout in previous step, we propose a decision-making model for an implementation prototype.

Third, the prototype is tested and improved based on data collected, including attrition and dropout.

Fourth, a functional product is released, providing the necessary mechanics for improvement based on continuous data collection.

3.2   Participants

Will contribute in this study a group of Portuguese and foreign university teachers (including the project partners), with experience in the design of e-Learning courses.

3.3   Data collection techniques

The study follows a qualitative methodology. To collect relevant data, we will consult all the major scientific databases to find articles which describe the design of e-Learning courses. Later, we will turn our data collection on focus groups interviews to know the opinion of experts about our findings. Powell and Single [30] define a focus group as "a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research" (p.

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499). The essential characteristic which distinguishes focus groups is the insight and data produced by the interaction between participants.

3.4 Data analysis techniques

For the analysis of qualitative data, we will privilege a content analysis [31]. Bardin [31] features content analysis as empirical and, therefore, cannot be developed based on an exact model. However, for its operation, some basic rules must be followed. First, the fundamental principles are explained: units of analysis, step models, working with categories, validity and reliability. Then, the central procedures of qualitative content analysis, inductive development of categories and deductive application of categories, are worked out.

4 EXPECTED RESULTS

This paper presents an ongoing study that aims to give a sustained contribution to the state of the art about the reasons for attrition and dropout in e-Learning courses through a credible and reliable systematic review on the theme.

After the review of literature is complete with rigour and established the relationship between dropout reasons and course design, we will propose a decision-making course design model focused on pedagogical issues to help teachers and trainers when developing courses in e-Learning.

This decision-making prototype will be tested and validated in a participatory manner by experts with proven experience in the design of e-Learning courses.

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ABSTRACT ACCEPTANCE LETTER

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