SIGNIFICANT CHANGES IN THE ENVIRONMENT AND IN TEACHING METHODOLOGY OF AN E-LEARNING DISCIPLINE TO AVOID DROPOUTS IN A COURSE AT THE FEDERAL INSTITUTE

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ABSTRACT

The research is conducted in a public institute of education and technology to boost graduation especially with the help of an e-learning environment adopted. The Directory of E-learning Education from Federal Institute of Triangulo Mineiro coordinates all administrative and pedagogical aspects of 4000 students registered in 11 e-learning courses, including federal government programs like e-Tec and Open University from Brazil (UAB – Universidade Aberta do Brasil). Although, e-learning has helped to solve students' mobility problems, there are remarkable problems in dropout rates of the virtual courses. The solution of the study aims to attenuate the dropout rates by adopting different learning methodologies, re-designing the learning environment and utilizing tools to support this new methodology. According to the hypothesis, the novel learning environment adopting a learner-centred approach, will give a voice for the students and give them an active role in their own learning process. Therefore, students' needs, abilities, interests and learning styles are used to determine classroom activities, and consequently it will help to reduce the dropout rates.

KEYWORDS

Student-Center Learning, Project-Based Learning, e-learning, team work, web tools.

1. INTRODUCTION

The problem of dropout rates in vocational and higher education levels has been a challenge for several educational institutions, teacher and students worldwide, and nowadays also at e-learning courses. The "digital natives" term is used to describe students of the 21st century, includes also a claim for new kinds of skills such as digital literacies. To help them, learning methodologies need to be changed too. There are studies reported in the literature where teacher make their approach more learner-centered by giving students more responsibility for their own learning. It gives voice for the students and, therefore, their needs, abilities, interests and learning styles determine classroom activities, and consequently it will help to reduce dropout rates.

In learner-centered learning, students generally work in teams, defining their own roles and goals. Working with individual or group projects aiming to solve problems or, particular questions, make students more motivated, because they work with problems they have chosen. They learn with each other by looking for the best solutions for these problems. This type of learning is commonly called Project-Based learning.

This paper presents the research about how to adopt these methodologies described above using tools to support it, applying in the e-learning environment (starting with a discipline that will serve as an example) at the Federal Institute of Triangulo Mineiro - IFTM.

In an attempt to illustrate how the study will be utilized in this discipline, this paper is organized as follows. The literature review in the section 2 describes the factors that influence dropouts in e-learning courses and illustrates student-centered learning and project-based learning. Section 3 contextualizes the e-learning environment of IFTM and the statistical data about Brazilian scenario of dropout from e-learning courses. Section 4 describes the key changes to be applied at this discipline. Section 5 will discuss about the future works and the conclusion will finish this paper at Section 6.

2. LITERATURE REVIEW

Starting this section, it is necessary to evaluate the factors that influence dropouts in Brazilian e-learning and to explore the skills necessary for the 21st century students. After these it will be possible to describe the approach that can deal with these challenges.

2.1 Factors that Influence Dropout in Brazilian e-Learning

Students' dropouts is a complex phenomenon and it is common phenomenon in learning institutions around the world. It is a huge concern among directors, rector, researchers, parents and students. According to Silva Filho et.al. (2007) the dropout between undergraduate students is an international problem that achieve the learning system, and because this, it become study object around the world, including in 1st world countries.

There is a bigger concern about dropouts in e-learning, mainly because it is quite difficult for the students to deal with a possibility to study in a domestic, social or professional environment, and at same time let students to choose when they want to study. It occurs because there are concurrent stimulus (children, wife, television noise and neighborhood among others) at e-learning, and it depends more directly on students' skills such as, organizational skills and concentration for studies. (Statistical annual report AbraEAD - 2007)

According to AbraEAD (2007) and Lopes et al., the biggest reasons for dropouts in e-learning courses are related to time and financial conditions. Rossi (2008) shows in their researches that the dropout reason form the undergraduate students in courses at Open University of Brazil was time available and the disposal at the end of work day to conciliate the studies.

According to Abbad et. Al. (2010) the factors linked to design of e-learning and blended learning may include following problems: the lack of compliance of personal expectations; the lack of information about the importance of the course; the low frequency of the use of web tools; dissatisfaction with the tutor performance; absenteeism tutors; the lack of assistance from tutor to student; the delay in sending feedback or supply a few information to students; physical separation between teacher and students; the duration and difficulty of the course; the mode of delivery of the course (difficulty accessing the website); the amount of written work required; the level of the course; the lack of face to face activity; the lack of support from the student teaching unit; the poor quality of teaching materials and the lack of interaction with colleagues.

The fact is that more problems are related to the design of e-learning than in other characteristics presented above. Because of that, we intent to highlight some improvements to adopt e-learning courses at IFTM.

2.2 Methodology Approaches: Student-Centered and Project-Based Learning

According to Anderson (2010), adopting a student-centered learning in a classroom places a learner in a central position. The more learner-centered approach is applied by giving students more responsibility for their own learning. It gives a voice for students and, therefore, their needs, abilities, interests and learning styles determine classroom activities. Consequently it will help to reduce the dropout rates, because students are self-motivated.

In student centered learning, students choose projects with which they like to work. Possibly, they define their learning goals, work actively to achieve these goals, and consequently they assess their learning. In learner-centered approach, students often work together in small groups, and they decide by themselves each member's role in groups.

When students are working actively and they have freedom to choose the subjects, they usually work with projects that focus in solving personal or interesting problems. The motivation is based on their background and experience. The problem solving of a particular subject or discipline is not limited and it may be related to other subjects and resulted in additional skills too.

When project works are used as learning activities to seek for solutions to real-life problems, it's commonly called project-based learning. According to Anderson (2010), information communication technology (ICT) rises an increasing interest in PBL, particularly the research opportunity provided by the internet and the array of multimedia tools for assembling and presenting the result of projects.

The characteristics exposed before are convergent with the identified needs about factors that influence e-learning dropout in Brazil

3. IFTM E-LEARNING ENVIRONMENT AND HIGHLIGHTS

The highlights to improve virtual learning environment of IFTM comes up with effective ways in facilitating desirable ICT skills that will be applicable to the students' education. There are four major objectives: (1) improve quality of assessments, (2) enable students to work in teams, (3) improve feedback about learning materials and (4) facilitate feedback for the students. These objectives were found and coincide with the emerging concept of Web 2.0 an so on. Within e-Learning development, the technologies that are being employed in various platforms are also changing. Many agree that a major characteristic of Web 2.0 is the enhanced social connection function of various web applications (Alexander, 2006; Anderson, 2007; O"Reilly, 2007). It is a more dynamic way of both accessing web based contents and connecting web users against the traditionally static and one way information web pages. Many also argue that Web 2.0 applications provides simple to use and easy to maneuver social and networking tools. Therefore, it is more appropriate for creating community-driven and collaborative user experiences (Guzdial, Ludovice, Realff, Morley & Carroll, 2002; Chen, Cannon, Gabrio, Leifer, Toye & Bailey, 2005; Hampel, Selke & Vitt, 2005; Alexanda, 2006; Byron, 2006; Duffy & Bruns, 2006; Levi & Stone 2006; Chao, 2007; Parker & Chao, 2007).

In professor Wilton de Paula Filho's interview, he said that the main reasons to start modifications at IFTM learning environment was: (1) No pattern of virtual rooms in the subjects of the same course, (2) Feature incompatibility. E.g. A teacher offers chat and others not (3) Huge extension of sequential layouts (very large scroll bar) , (4) Constant complaint of students (due to the above mentioned points). The online tool to create the layout for virtual classrooms is free and it is available in www.personalizesuasalavirtual.com . Wilton is an e-learning teacher the developer of the e-learning tool at IFM.

The standardization realized at the e-learning environment was very helpful, but there are other suggestions to improve quality of e-learning courses.

The main existing problem is assessments and as an aim to solve it we decide to apply a formative assessment. Formative assessment is performed during the whole learning process, the opposite summative assessment shows the results at the end. There are several tools to be utilized in formative assessment. According to Vicki Davis, Socrative, Kahoot, Zaption, Backchannel Chat Tools and Plickers are favorite tools for formative assessment.

The main idea is collaborative working with PBL, asking students to bring problems from their real life and community and it will motivate them. Another intention is to apply a SCRUM approach that is a project development approach. According to Rico and Sayani, the use of contemporary software development approaches such as agile methods is growing in widespread use throughout the world. Teams who struck an optimum balance of customer collaboration, use of agile methods, and technical ability, had better productivity.

Feedback for students is usually given when they have finished activities, but we are planning to have a different approach. When the students have finished their mini lectures and watched the video tutorial about the subject, they will make the assessment. Of the psychological-sociological measurement methods that depend on human judgments, rating scale procedures exceed them all for popularity and use. Smith (2013). The purpose is that students can give feedback on all material that they used before and, ranking it to help the teacher to improve the material quality. In their conclusion, Smith (2013) currently suggests that the "best" scale for human voters should have 10 levels and consist entirely of nonnegative numbers ordered increasing from left to right.

In other way, when the students are assessed using Kahoot or other formative tool, the ranking will serve to help the teacher give different feedback for the students. Those students whose assessment has low quality, will receive tips to be sent via Whatsapp.

4. CONCLUSION AND FUTURE WORK

Analyzing the context explained above it is easy to determine that the e-learning environmental alone will not offer the characteristics to motivate the students continuing their course to the end.

The old-school model of passively learning facts and reciting them out of context is no longer sufficient to prepare students to survive in today's world. Solving highly complex problems requires that students to have both fundamental skills (reading, writing, and math) and 21st century skills (teamwork, problem solving, research gathering, time management, information synthesizing, utilizing high tech tools). With this combination of skills, students become directors and managers of their learning process, guided and mentored by a skilled teacher.

This short paper aims to explain how with some highlights on e-learning environment, we can improve the quality and to avoid dropout among undergraduate students.

The next step is to apply the methodology and tools cited before in an undergraduate e-learning course and compare the result with the same discipline last semester.

REFERENCES

ABRAEAD. Anuário Brasileiro Estatístico de Educação Aberta e a Distância. Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2007. São Paulo : Instituto Monitor, 2007. Available at <http://www.abraEaD.com.br/anuario/anuario2007.pdf>. accessed: 10 mar. 2009.

Alexander, B. (2006) "Web 2.0: A New Wave of Innovation for Teaching and Learning?", EDUCAUSE Review, Vol 41, No. 2, pp32–44

Anderson, P. (2007) "What is Web 2.0? Ideas, technologies and implications for education", JISC Technology and Standards Watch, February.

Byron, M. (2005) "Teaching with Tiki", Teaching Philosophy, Vol 28, No. 2, pp108-113.

Chao, J. (2007) "Student project collaboration using Wikis", Proceedings of the 20th Conference on Software Engineering Education and Training (CSEE&T 2007), Dublin, Ireland, July. Manuscript accepted for publication.

Chen, H.L., Cannon, D., Gabrio, J. Leifer, L. Toye, G. and Bailey, T. (2005) "Using wikis and weblogs to support reflective learning in an introductory engineering design course", Proceedings of the 2005American Society for Engineering Education Annual Conference & Exposition, Portland, Oregon, June

Davis, V., 5 Fantastic, Fast, Formative Assessment Toolshttp://www.edutopia.org/blog/5-fast-formative-assessment-tools-vicki-davis accessed em 29 apr 2015

De Paula Filho, W., Personalize sua sala virtual, available in http://www.personalizesuasalavirtual.com/ accessed on 29 apr 2015

Duffy, P. & Bruns, A. (2006) "The use of blogs, wikis and RSS in education: A conversation of possibilities", Proceedings of the Online Learning and Teaching Conference, Brisbane, September.

Guzdial, M., Ludovice, P., Realff, M., Morley, T., & Carroll, K. (2002) "When collaboration doesn‟t work", Proceedings of the International Conference of the Learning Sciences (pp. 125-130), Seattle, Washington, October.

Hampel, T., Selke, H., & Vitt, S. (2005) "Deployment of simple user-centered collaborative technologies in educational institutions – Experiences and requirements", Infrastructure for Collaborative Enterprise: Proceedings of the 14th IEEE International Workshops on Enabling Technologies (pp. 207-214), Linköping, Sweden, June.

Levy, S. & Stone, B. (2006) "Next Frontiers: the Internet‟s next wave begins, this time with you in mind", Newsweek, Vol. CXLVII, No. 14, pp46-56.

O‟Reilly, T. (2007) "What is Web 2.0:Design Patterns and Business Models for the Next Generation of Software", Communications & Strategies, No.1, p. 17, Available at SSRN: http://ssrn.com/abstract=1008839

Parker K. & Chao, J. (2007) "Wiki as a Teaching Tool", Interdisciplinary Journal of Knowledge and Learning Objects, Vol 3, pp57-72

Silva Filho, R. L. et al., 2007, A evasão no ensino superior brasileiro. Caderno de Pesquisa, Rio de Janeiro, v. 37, n. 132, p. 641-659.

Rossi, L., 2008, Causas da evasão em curso superior a distância do consórcio da universidade aberta do Brasil. . Available:<http://www.google.com.br/url?sa=t&source=web&ct=res&cd=5&ved=0CB8QFjAE&url=http%3A%2F%2Fwww.cEaD.unb.br%2Findex.php>. Accessed 25 Apr. 2015.

Rico, D.F.; Sayani, H.H.; (2009) Use of Agile Methods in Software Engineering Education, Agile Conference, pgs174-179,Chicago, IL

Smith, W.D., (2013) Rating Scale Research relevant to score voting, available: http://www.rangevoting.org/RateScaleResearch.html, accessed 15 may 2015