

Artigo Original

Investigation of the causes of dropout in online degrees and possible solutions to improve the effectiveness of universities in Brazil through Project-Based Learning methodology with ICT mediation

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Abstract

The proposal of the work of this essay is to reflect on the causes of dropping out online degrees and identify possible solutions to improve the effectiveness of universities in Brazil. Observed the contribution of the e-learning educational model based on active methodologies mediated by ICT, as is the case of project-based learning (PBL), and possible impacts to improve student motivation and reduce the dropout rate. For the development of this investigation, a theoretical research was chosen to identify the investigations already carried out on the issue of abandonment, emphasizing Latin America and Brazil, deepening the interrelationships with the themes observed in this study and possible learning strategies that increase the effectiveness of learning, student motivation and drop-out reduction. Lastly, the trial was quite enriching, since it was possible to identify solutions to improve the effectiveness of universities in offering educational services.

Keywords: Project-based learning; Active methodologies; ICT; Motivation; Dropout; Online degrees; E-learning in Brazil

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I. Introduction and Approach to the Topic

In Brazil, Online Distance Education (EAD) is perceived as one of the best options to expand educational coverage at the higher level of education due to the great territorial extension of the country and the need that young people have to reconcile the university with the entry into the labor market.

According to the Ministry of Education (MEC) of Brazil (MEC, 2014) and Opinion No. 564/2015 of the National Council of Education² (MEC, 2016), 20 goals were established as a Brazilian public policy to guide educational priorities, and goal 12 is "to raise the gross enrollment rate in higher education to 50% and the net rate to 33% of the population aged 18 to 24". According to Hoper³ (2018), Brazil presented, in 2015, the gross graduation rate of 34.60% and the net rate of 18.10%, with an average growth of 4.0% and 5.0%, respectively, over the past five years (2011-2015). Attention to the expansion goals in undergraduate courses will require greater effort from educational institutions to make expansion viable, according to the CNE.

For that same time interval, from 2011 to 2015, the country has a growing increase of interested in this modality, with an average growth of 50.51% (HOPER, 2018) in graduations. In return, public and private universities are facing new challenges in the face of the rapid expansion of online courses and the need to maintain quality education. However, a factor of extreme concern for university management is the high dropout rate in online distance courses.

Through theoretical research, some investigative questions are intended to answer:

- What are the needs for change in the field of university management for online higher education courses in Brazil, in order to reduce dropout, improve students' learning and motivation?

² **National Council of Education** (translated by the National Council of Education) or CNE is the body responsible for educational policies in Brazil, with normative, deliberative and consultative powers from the Minister of Education.

³ **Hoper** is a Consulting, Market Studies, Education and Content Production company founded 20 years ago, headquartered in Foz do Iguaçu, Brazil. Publishes, annually, the Sectorial Analysis Hoper of Brazilian Private Higher Education, and in 2018, the 11th edition was published.

- How can pedagogical policies be implemented that increase quality and effectiveness?
- Does the use of the PBL methodology, mediated by ICTs, in online courses in Brazil, contribute to improving students' motivation?

In this essay, the antecedents are contextualized, the main theoretical concepts on the subject and their interrelations are presented. Then, a conclusion is presented on the theme and the line of research adopted in the Final Project of the Master in Education and ICT of the Open University of Catalonia⁴, defense held on June 4, 2019. In the end, with this research, we intend to contribute to the understanding of how to improve the effectiveness of universities that serve students in online undergraduate courses in Brazil.

2. Background and Theoretical Framework

2.1. Background

Today's society finds itself in a new paradigm, in the words of Castells (1999), a “new technological paradigm”, organized around information technologies that have been causing profound social, economic and cultural transformations.

According to Coll and Monereo (2008), the phenomenon of the internet and its impact on people's lives goes beyond the condition of a simple communication tool, but, at the same time, it constitutes a global space for social action and, by extension, learning and educational action.

Therefore, there is a need for a paradigm shift in education to accompany the transformations of society. Practices aimed only at the transmission of content and the figure of the teacher as the holder of knowledge are overcome in the face of this new reality.

⁴ The **Open University of Catalonia** (<http://www.uoc.edu/>), in Catalão, known as UOC, is an online university (not in person) that is organized through private management. Based in Barcelona, it was created in 1994. UOC's academic offer includes degrees, masters, postgraduate studies, specializations, seminars, subjects to study freely, language courses and doctoral programs.

Therefore, more interactive and student-focused practices are indispensable, based on challenging and meaningful learning situations, which can be exemplified through problem solving, case studies, cooperative work, Project Based Learning, among other pedagogical possibilities that allow the student an active role in the learning process.

Brazil is a country of great extensions, being the fifth largest in the world. In 2017, according to the last Census (INEP, 2018) published by MEC, through INEP⁵, the country had 8,290,911 students enrolled in undergraduate courses, 1,756,982 of which were in distance learning courses, which corresponds to 21.2% of enrolled students. In total, there are 257 institutions offering 2,108 distance learning courses, with the support of 7,050 centers spread across Brazil. One of the biggest problems of the Brazilian model is the high dropout rate, which, in 2017, was 1,073,497 students enrolled in undergraduate courses and only 252,163 graduates. It is noteworthy that the distance modality had an increase in tickets in 2017 in the order of 17.6%; however, only 13% of new entrants completed their distance learning courses.

The topic of abandonment is not new, the discussion on the subject has existed for decades, but it is still present worldwide (TUERO *et al.*, 2018). In Latin America, there are several studies in different countries on the continent that demonstrate the diversity and complexity of the subject. The increase in enrollments associated with the diversification of the student body and the massive incorporation of young people with less school preparation has resulted in the deterioration of the efficiency of higher education qualifications (FIEGEHEN, 2006).

In Brazil, there are studies on evasion carried out by MEC, through INEP, which annually conducts the Census with Brazilian universities. Distance education, in addition to INEP, also has important contributions

⁵ INEP, the National Institute for Educational Studies and Research Anísio Teixeira, is a federal autarchy linked to the Ministry of Education (MEC), whose mission is to subsidize the formulation of educational policies at different levels of government in order to contribute to economic and social development from the country. INEP works in the following areas: assessments, exams and indicators of basic and higher education, international actions and accreditation system in Brazil and Mercosur. Performs, annually, the Brazilian Educational Census and disseminates the statistics of the sector

from ABED⁶. The ABED Census (2013) points out abandonment as one of the biggest obstacles to distance education in Brazil, following an international trend. According to these data, the abandonment of students is indicated by the investigated institutions as the biggest obstacle faced in the execution of distance learning courses; being appointed by 15.4% of the total of institutions heard. The index, however, varies according to the type of distance education practiced. While institutions indicate that dropout among students taking only distance courses is the lowest (10.49%), among students from distance courses fully regulated, there is dropout pointed out by the institutions as the highest, 19.06%, in average. In the case of distance learning students, they are exposed to much more competitive stimuli at home, at work or in any other environment they choose to study (ABED, 2013, p. 34).

In addition to the personal obstacles pointed out, the ABED Census reports that evasion has a direct relationship “[...] with the implementation or adaptation to new technologies: the organizational challenges of face-to-face migration, the resistance of students and the resistance of teachers ” (ABED, 2013, p. 24).

According to Fainholc (2016), information and communication technologies not only exposed the failures of the educational and university systems, but, at the same time, showed that they are part of the alternative solution of a model proposal inscribed in digital culture with its positive characteristics of horizontality, transparency, collaboration, collective construction, among others.

Distance learning courses are a model with great challenges and opportunities. The opportunity to attend to a necessary educational expansion in Brazil stands out, a commitment assumed by the Brazilian government. However, as Duart (2006) points out, “studying using technologies does not mean that learning is quick or easy. Any learning process, including the virtual one, requires effort and time”. The author stresses that the use of the internet in online courses must include

⁶ ABED, the Brazilian Association of Distance Education, a non-profit scientific society with no ideological ties of any kind, has its Board elected in free and democratic elections. It was created for the development of open, flexible and distance education <<http://www.abed.org.br/site/pt/>>.

policies and plans that address the different key aspects in any educational process: what you learn, what facilitates learning, educational content and the context in which it occurs.

Some research points to evasion factors in online courses in Brazil, the main ones being: *dados gerais do setor* (ABED, 2013); *fatores de abandono e retenção* (AMBIEL, 2015; KAMPFF; CÁSSIA; MENTGES, 2018; SILVA; CABRAL; PACHECO, 2016); *estudos de caso de cursos on-line* (ALVES; GUIMARÃES; PIMENTA, 2018; MIRANDA, 2016; PACHECO; NAKAYAMA; RISSI, 2015); *desafios da expansão da educação a distância* (DIAS; COSTA, 2016; SANTOS, 2008).

Other research reinforces the importance of using learning strategies based on active methodologies to improve retention in higher education courses, contributing to the theme developed in this essay, the main ones being: prevenção do abandono (GUTIÉRREZ *et al.*, 2015); TIC e teorias de aprendizagem (ALMENARA; CEJUDO, 2015; COLL; MONEREO, 2008; ECOSOC, 2011; FAINHOLC, 2016; UNESCO, 2013); ABP (GONZÁLEZ, 2015); metodologias ativas (MORÁN, 2015; QUIROZ; CASTILLO, 2017).

Woodley and Simpson (2014, p. 459-483), two researchers at Open University, discuss dropout rates and low completion rates in distance learning courses, in which the Open University graduation rate, according to the authors, would be 22%, compared to 82% for full-time students at UK universities. Internationally, these distance education graduation rates would be close to 10%, and decreasing. "Clearly, we need a lot more research on what happens to students at a distance. But at the moment, it seems safe to say that the average graduation rate in distance learning is considerably lower than in regular education."

Abandonment is one of the main problems faced by ODL, and it is not possible to identify a single cause. In addition, although Woodley and Simpson (2014) present suggestions for intervention, they recognize that they have not been sufficient to raise the levels of completion of distance learning to the levels of classroom education. In this sense, the authors propose that the theme be incorporated into an international research agenda that seeks to measure the impact of different types of intervention on the completion rates of distance courses.

2.2. Students' expectations, causes and reduction of dropout

The educational model undergoes changes due to the different expectations of students in relation to the desirable higher education expected by the market (GONZÁLEZ; BELUZAN; ARANEDA, 2009). Universities need to adapt to new skills development needs and flexibility in training methodologies.

"When there is a congruence between university factors of space, time, facilities and economic investment and needs, interests, preferences and student satisfaction, student satisfaction is more easily achieved and professional success is more clearly achieved" (BOWMAN, 2014, apud ROSA; ANGULO, 2017, p. 2). According to the authors, professional success is understood as the acquisition of professional skills at the end of graduation, enabling new professionals to develop an economically better future before their family and community.

The problem is when the university does not understand and does not meet students' expectations. With frustration, it is common to drop out of higher education. According to Tuero *et al.* (2018), identifying the variables that cause abandonment is fundamental and has been studied by several authors who developed theoretical models: psychological, sociological, economic, organizational and interactionist models.

Several authors, such as Ambiel (2015) and Gutiérrez *et al.* (2015) highlight that high dropout tends to hinder the financial and academic planning of universities, as each student who does not complete the course represents a waste of investment. In other words, dropping out of courses is a problem because the costs are high for both the individual and society. Therefore, its prevention is fundamental and is related to the efficiency of university management.

As suggested by Gutiérrez *et al.* (2015), once the dropout problem has been studied, it is also necessary to propose preventive measures that minimize the risk that new students may choose to drop out. The authors focused the proposals on two aspects: the improvement of

the students' information registration systems and the accessibility of these data by the faculty; and the enhancement of the guidance and tutorial functions.

Regarding the first line, it is necessary to note that, thanks to technological development, the amount of computerized information recorded about students has been favored, enabling specific diagnoses and, thus, favoring the continuous improvement of dropout, change and permanence rates.

Regarding the second measure, future university students will need guidance for the design of their vital project, paying special attention to the choice of vocations and the exploration of formative itineraries in this area, but not limited to it. At the time of admission and during the first months, the student's welcoming actions are essential, as well as his familiarization with the study program and its requirements and with the training of study techniques especially suited to the course. And, during the development of studies, students will need help to develop their academic and professional skills. According to the authors, it is appropriate to state that the combination of strategies has been shown to be effective in improving university permanence rates.

When analyzing abandonment in distance education, there are some similarities with the concepts already exposed; however, we need to understand the specific variables of e-learning degrees. As highlighted by Martínez y Pérez (2007), EAD considers two dimensions: “transactional communication (distance from the actors in the process and development of their special conducts); and the one that refers to the student's autonomy, which depends, to a great extent, on the structure of the program”.

The e-learning courses need the responsibility and self-control of the students in the fulfillment of the tasks, as well as good ICT resources to facilitate the interaction between the participants and the relationship with the content and the activities at a distance. These variables can lead to unfavorable effects if the courses are not well planned, contributing to the increase in evasion in e-learning courses.

In general terms and, in particular, when applied to distance learning, Tinto (2000 apud KAMPPF; CÁSSIA; MENTGES, 2018) states that students are more likely to learn and persist when they are in environments that: have high expectations for their learning and the present clearly and consistently; provide academic and social support to your essential needs for promoting retention and learning; provide frequent feedback on their learning; that create opportunities for participation with other students and teachers in meaningful learning, in learning communities that foster a sense of belonging and commitment; promote relevant learning. In addition, to improve retention rates, it is important to note that teachers should not only monitor student progress, but also monitor and act with those at risk of dropping out.

2.3. Learning strategies that increase learning effectiveness, student motivation and reduce school dropout

As highlighted by Leiva, Castiglione and Infante (2008), as one of the five main causes of dropout, the way the student perceives the organization of the course and the training process, through the teaching methodology and the teacher-student interaction, directly influences the cause of abandonment.

As González, Beluzan and Aranedá (2009) suggest, it is essential to establish the relationship between the learning strategies used by students and academic performance, because, by understanding the ways of processing information, it is possible to improve academic performance and the consequent learning significant. According to the theories about learning strategies, people perceive information and develop knowledge in a different way, with personal preferences for certain strategies that facilitate learning and give meaning to the topic studied. The authors also highlight the importance of the student to feel self-competent through the use of complex learning strategies and with self-esteem, since this decisively affects their learning.

In order to understand learning applied to distance learning, the pedagogical paradigm proposed by Coomey and Stephenson (2001),

apud Stephenson and Sangrà (UOC, [s.d.]) was sought as a foundation. The authors developed a matrix to represent the different pedagogical paradigms applied to distance learning. The variables involved are as follows:

1. *Learning process*: is controlled by the teacher or student.
2. *Content and tasks*: are controlled by the teacher or the student.

The grid of pedagogical paradigms has four quadrants identified by cardinal points: Northwest (NW), Northeast (NE), Southwest (SW) and Southeast (SE).

According to the authors, e-learning courses will be more subject to a certain quadrant, which reflects who is in control of the learning process, as well as the content and tasks. Understanding the pedagogical paradigm of the course serves as an important diagnosis to understand the success or failure in learning a particular course. In this context, higher education institutions must promote an adequate process of change that allows them to adopt the best pedagogical strategies to meet student diversity and its stakeholders.

2.4. PBL methodology, mediated by ICT, in online courses

According to Rosa and Angulo (2017, p. 3), "an essential contribution of university education is the integration of curricular experiences that combine imaginative elements and realistic notes". This occurs in classroom courses, when students participate in various activities outside the campus. The challenge is to create strategies that can be implemented in e-learning courses.

The authors emphasize that "there is no doubt that good instructional design must incorporate interactivity, global quality and relevance and congruence with students' needs" (ROSA; ANGULO, 2017, p. 5). Thus, according to the research carried out by the authors, the most collaborative teaching strategies in the online modality tend to result in increased student satisfaction.

As highlighted by Quiroz and Castillo (2017, p. 118), “for students to acquire the essential knowledge and skills to act appropriately in the social and professional sphere in the 21st century, it is necessary to move from teacher-centered teaching to teaching student-centered”. Theories of student-centered learning have promoted the use of active methodologies, which place the student at the center of the process, in which teaching does not revolve around the teacher and the content, but rather the student and the activities he performs to achieve learning.

Among the active learning methodologies, Project Based Learning (PBL) has a unique place.

González (2015) highlights that “there are teaching practices that encourage greater student participation, leading to motivating work that stimulates creative and innovative thinking, which enhances their autonomy and facilitates the learning of transversal and professional skills”. Project Based Learning (PBL) plays an important role in achieving these expectations, as students learn by building new ideas or concepts, taking an active role in their own learning through projects that have applications in the real world.

The same author proposes the use of ICTs in the ABP methodology, using the tools: social and open platforms 2.0, Google Drive and YouTube as a digital portfolio, Trello to manage group projects, Twitter as a social network to share useful and interesting professional information and the Moodle as a virtual classroom, exemplifying in his essay how he proposed the educational experience.

According to Galeana do O (s.d.), PBL “helps students to: (1) acquire basic knowledge and skills, (2) learn how to solve complicated problems and (3) perform difficult tasks using that knowledge and skills”. With regard to the ICTs applied to PBL, the author emphasizes that use serves to build better working relationships and increase their learning community. ICTs can become tools to build networks between people, even if they are located in distant places.

ICTs offer opportunities to communicate more quickly and effectively and to better measure learning outcomes at a lower cost, in addition

to supporting the development of differentiated strategies based on the results obtained in the process. They also facilitate educational experiences, through platforms available and accessible on different devices, places and moments (UNESCO, 2013).

Quiroz and Castillo (2017) explain the idea that ICTs do not necessarily imply the creation of new methodologies, but that existing ones are strengthened by the possibilities offered by ICTs for searching and accessing information, interaction and collaboration, expanding, so, the class. The same authors cite a table, which contains a series of techniques that facilitate the implementation of active methodologies through the use of ICTs.

The Unesco Institute of Statistics (2009) also considers that technologies can improve the teaching / learning process, facilitating training aimed at developing the skills required by the information society and supporting lifelong learning. We understand that the PBL methodology strengthens this condition, as it is an innovative pedagogical practice that places the student as a central element of the process and promotes the development of the five dimensions of learning in the 21st century: collaboration; knowledge construction; use of ICT for learning; problem solving and innovation and self-regulation (ITL, 2010, apud ECOSOC, 2011).

3. Conclusion

The theoretical research carried out was quite enriching, since it was possible to verify the causes of dropout in online courses and to identify possible solutions to improve the effectiveness of universities in offering educational services.

In the search for these solutions, we sought to understand the role of the educational model based on planned activities using the active methodology. In this essay, we approach Project Based Learning (PBL) and mediated by ICTs, noting the contribution to improve student motivation in online courses.

Brazilian universities need to reverse this condition of high abandonment, and it is necessary to act on several causes. The policy of

expanding access to higher education in Brazil must be aligned with effective university management practices, making it possible not only to increase student enrollment, but also to remain there until the conclusion of the course. As described in this work, the student-centered methodology presents more effective results from a motivational point of view, involving him in the search for solutions to real problems, being a pedagogical policy recommended in online degrees.

However, the challenges for universities are very great for their implementation, which must be accompanied by studies on their effectiveness in reducing dropout in online courses in Brazil. It is also necessary to promote changes in the pedagogical projects of the courses and to qualify the teaching staff for active methodologies. A utilização das TICs também desempenha um papel importante na coleta de dados sobre o comportamento dos alunos em relação à participação em atividades, desempenho acadêmico e interação com colegas e professores, informações que servem de indicativo para prevenção de um possível abandono. A change in the management of student follow-up also seems to be important, organizing the team of the e-learning course in a more personalized service to the student.

Of the three initial questions, in the previous ones, in addition to all the theoretical research carried out throughout this work, we found important contributions to support and answer the three proposed objectives. The paper describes some desirable changes in university management to reduce dropout rates, defines effective pedagogical policies and quality strengthening, as well as supporting the contribution of the ABP methodology to improve students' motivation in online courses.

However, there are few studies in Brazil on the influence of active methodologies on the motivation of students in online courses and, mainly, on the use of this strategy to reduce dropout, which shows a great opportunity for future scientific work of great importance educational and social.

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