

Student Dropout in Distance Education in Higher Education: literature review in Portuguese

Evasão no Ensino Superior a Distância: Revisão da Literatura em Língua Portuguesa

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Abstract

This article presents and discusses the results of a review of the literature in Portuguese on the phenomenon of student dropout in distance education. The review included only empirical research, which collected qualitative or quantitative data. Its objectives were to identify the causes for dropout in distance education and recommendations for models or tools that allow higher education institutions to anticipate their students' dropout. The results pointed out that the main causes of dropout described by the literature are positioned before the beginning of the courses: lack of guidance for students entering the modality and inadequate training of tutors. The article concludes that institutions that offer distance education should be concerned with proposing welcoming modules to their students and the continuing education of their tutors, not only trying to anticipate and avoid dropouts during the course.

Keywords: School dropout. DE. Teacher training. Tutor. Student dropout.



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Resumo

Este artigo apresenta e discute os resultados de uma revisão da literatura em língua portuguesa sobre o fenômeno da evasão na educação a distância. A revisão incluiu apenas pesquisas empíricas que tiveram algum tipo de coleta de dados qualitativos ou quantitativos. Seus objetivos foram identificar as causas para a evasão em educação a distância e recomendações para modelos ou ferramentas que permitam às instituições de ensino superior anteciparem-se à evasão dos seus alunos. Os resultados apontaram que as principais causas da evasão descritas pela literatura se posicionam antes do início dos cursos: falta de orientação aos alunos que entram na modalidade e formação inadequada dos tutores. O artigo conclui que as instituições que oferecem educação a distância devem preocupar-se em propor módulos de acolhimento a seus alunos e com a formação continuada de seus tutores, e não apenas em prever e evitar a evasão quando os cursos já estão em andamento.

Palavras-chave: *Abandono escolar. EaD. Formação de professores. Tutor. Desistência do aluno.*

1. Introduction

This article presents and discusses the results of a review of the Literature in Portuguese on the phenomenon of dropout in distance education (Distance Education). Woodley and Simpson (2015) develop a dialogue about the phenomenon, which they call “elephant in the room”: as long as they don't bother and stay hidden, no one notices. However, as Zawacki-Richter and Anderson (2015, p. 33) claim:

In an era of increasing institutional accountability, both the ease of hiding it and the acceptance of the personal and instructional cost of high friction are running out. Governments and students, as consumers, are becoming more demanding in relation to policies and record keeping that allow us to measure the effectiveness of educational programs.

Dropout rates in distance undergraduate courses are significantly higher than in face-to-face courses. In face-to-face undergraduate courses in Brazil, for example, from 2011 to 2015, they remained on average 21%, with a trend of stability, while in distance undergraduate courses they reached 39%, with a growth trend (SILVA FILHO, 2017). According to the Map of Higher Education, prepared by SEMESP - Union of Entities Maintaining Higher Education Institutions in the State of São Paulo, the dropout in face-to-face courses in 2015 was 28.6% in the private network and 18.4% in the public network, while in distance courses it was 34.2% in the private network and 28.7% in the public network (BOCCHINI, 2018). From the 2017 Census of Higher Education data, published by the National Institute of Educational Studies and Research Anísio Teixeira (Inep), it was possible to calculate that:

The average annual dropout rate of students attending face-to-face graduation, 22.1%, in addition to remaining virtually unchanged over

the years, was much lower than the rate of students attending distance learning, which reached the mark of 45.9%. (HIPÓLITO; SANTOS, 2019).

The Census EAD.BR, organized by ABED - Brazilian Association of Distance Education, pointed out that, in 2018, the highest percentage of institutions (22.2%) between 26% and 50% in the dropout rates, while in 2017 this figure was 6% (ABED, 2019, p. 65).

Therefore, even with different methodologies for data collection, calculation and analysis, it is perceived that there is always a significant difference between dropout in face-to-face education and distance. From this scenario, the problem that this article poses is whether higher education institutions are able to understand the causes of evasion in DE, predict it and thus act in advance to minimize it. In this sense, the objectives of this article are to identify, through a literature review, the main causes for dropout in distance education in higher education and recommendations for models or tools that allow educational institutions to anticipate the dropout of their students.

The following section sets out the methodology used in the literature review. The third section presents and discusses the results of the review, categorizing the causes of dropout in distance education courses. The last section of the article highlights his contributions to the area, reflects on its limitations and points to future work.

2. Methodology

The methodology of this article followed the guidelines of Okoli (2019), which proposes seven steps to conduct a systematic literature review: identify the objective, plan the protocol and train the team, apply a practical selection (or selection for inclusion), seek the bibliography, extract the data, evaluate the quality (or selection for exclusion), synthesize the studies and write the review.

The review sought to identify articles that reflected on the issue of dropout in distance education in Portuguese. The aim of the review was to identify the main causes for dropout in distance education, as well as proposals for tools or models to predict dropout in higher DE courses.

The texts that contained proposals to deal with the evasion or presented data (those that did not meet these criteria were privileged) were privileged.

The search involved five researchers, who were properly trained based on a protocol elaborated by the research coordinator and one of the researchers.

The searches were performed on Google Scholar on May 18, 2018, without date delimitation, with the following words in the title: evasion "distance education" OR "EaD", excluding from the results patents and citations. In Google Scholar search, you don't need to use AND; then, the search carried out in the titles of the texts effectively was "evasion" AND "distance education" OR "EaD".

The option for Google Scholar is justified by searches such as those of Harzing and Alakangas (2016), which compared with two other databases of international reputation: Scopus and Web of Science, concluding that the three offer sufficient coverage stability for searches, but Google Scholar exceeds the other two in criteria such as number and growth of publications and amount of citations, thus providing more comprehensive coverage. In addition, as results were sought in Portuguese, the search in Google Scholar allows the return, for example, of master's dissertations and doctoral theses, in addition to articles presented in academic events, chapters and books published in Portuguese, which does not always occur with searches in Scopus and the Web of Science, which also do not include several journals in Portuguese.

The search returned 86 articles. The following inclusion and exclusion criteria were then applied:

- a. the text should focus on the issue of dropout in distance education in higher education courses;
- b. the text would need to deal with data (qualitative, numerical, statistical, etc.);
- c. the text was written in Portuguese;
- d. the text should be available for reading (those that were not available either in Google Scholar, nor in the version of content signed in the Capes Periodic Portal, nor in other internet searches, were discarded).

In an initial reading of the titles and abstracts, 31 articles that did not meet these criteria were excluded. The remaining texts were then distributed for reading and registration by the research participants, using a form with specific fields, elaborated by the group. At this stage, eight more articles that also did not meet the established criteria and/or did not use a consistent methodology were eliminated (the quality assessment phase proposed by OKOLI, 2019). A master's thesis, from one of the authors of one of the selected articles, was added to the corpus of reading, thus totaling 48 articles (Chart 3, Appendix).

The causes for evasion were then codified and categorized, using the model developed in one of the articles analyzed (BITTENCOURT; MARKET, 2014, based partially on BIAZUS, 2004), which excludes endogenous causes (which can be avoided by institutions) from exogenous causes (over which institutions have no control). In addition, only eight texts were identified that presented contributions to the elaboration of models or tools to predict the evasion in distance education, which will be presented and discussed in the following section.

3. Results and Discussion

This section initially presents the results of the codification and categorization of the causes of dropout in distance education identified in the literature review and, in a second moment, summarizes and discusses the texts that propose some kind of predictive model for the phenomenon.

3.1 Causes of Dropout in Distance Education

Most empirical studies analyzed in the literature review listed and discussed the causes identified for dropout, which were then codified and categorized. This work used a table of categories and subcategories previously defined by Bittencourt and Mercado (2014), which divide the causes of dropout in distance education into exogenous (or extrinsic to the courses, before the student enters the educational institution) and endogenous (or intrinsic to the courses, when the student is already in the educational institution). Tables 1 and 2 present the categories and subcategories of the model proposed by the authors.

Table 1: Exogenous causes of DL evasion

Socio-political-economic	
Support from the institution that works	Related to the socio-political-economic conditions of the student.
Appreciation of the diploma in the market	
Time to study	
Weekly workload	
Displacement to teaching center	
Difficulties in accessing the Internet	
Understanding of the matters	
Adequacy of content with work	
Personal Vocation	
Aptitude for the profession	Related to the student directly, that is, aptitude for the course and profession you have chosen, personal and prior interests of the course.
Have another college degree	
Adaptation to the university system	
Change of personal or professional interest	
Being in parallel with another course	
Prior ignorance about the distance management course	
Individual Characteristics	
Health problems	Related to characteristics that go beyond the student's condition in continuing the course.
Attendance of the course to previous expectations	
Difficulty in assimilation of THE culture	
Lack of ability to use ICT	
Conjunctures	
Financial problems	As well as individual characteristics, these go beyond the student's condition. Like family and financial problems, which affects most.
Family influence	
Change of residence or city	
Change of marital status	
Economic responsibility for the support of the Family	

Source: Bittencourt e Mercado (2014, p. 477)

Table 2: Endogenous causes of DE evasion

Behavioral attitude	
Didactics of teachers	It assumes that the distance education student is different from the face-to-face, and the contact and didactics of teachers and tutors have to be focused and focused on the student.
Orientation of the Course Coordination	
Motivation and encouragement on the part of the tutor	
Dissatisfaction with the tutor	
Contact with teachers	
Institutional reasons	
Absence of tutors in the poles	Provides the student with conditions for study. With a structure so that the student can have access to libraries, laboratories.
Access to libraries	
Structure of teaching centers	
Computer lab in the teaching centers	
Interactivity in ava (virtual learning environment)	
Media offered for contact	
Inadequate technology used	
Didactic-pedagogical requirements	
Course curriculum workload	It stimulates cooperation and relationship between students of the course, stimulating a collaborative creation that provides subsidies for the learning of students. It should provide immediate feedback to the student of their activities and actions in the course. With due return, tutors and teachers can identify possible causes of errors in the activities.
Relationship of the curriculum with the market	
Student evaluation criteria	
Association between theory and practice	
Relationship between contents of disciplines	
Face-to-face meetings	
Complexity of activities	
Contact between course colleagues	
Disapproval in more than two disciplines in the semester	
Deadlines for delivery of activities	
Evaluation of exercises	
Tests evaluations	
Didactic material offered	
Course quality	
Course design failure	

Source: Bittencourt e Mercado (2014, p. 475)

Table 1 shows the frequency (F) with which each exogenous subcategory appeared in the 48 texts analyzed in the literature review. It was always considered only one occurrence per text. Bittencourt and Mercado's model (2014) was also expanded to include causes identified in the revised texts that could not be classified in the subcategories proposed by the authors. The presentation of the data takes place visually distinct from the table previously exposed, to facilitate reading.

Table 1: Exogenous causes of evasion

Socio-political-economic (49)	F	Personal Vocation (17)	F	Individual Characteristics (63)	F	Conjunctures (23)	F
Support from the institution in which you work	4	Aptitude for the profession	1	Health problems	6	Financial problems	13
Appreciation of the diploma in the market	1	Have another college degree	5	Attendance of the course to previous expectations	3	Family influence	1
Time to study	19	Adaptation at the university level	2	Difficulty in assimilation of THE culture	19	Change of residence or city	1
Weekly workload	1	Change of personal or professional interest	1	Lack of ability to use ICT	7	Change of marital status	1
Displacement to teaching center	10	Being in parallel with another course	1	Personal problems	12	Economic responsibility in the sustenance of the family	1
Difficulties in accessing the Internet	5	Prior ignorance of the	4	Disinterest or expectations for the course	10	Lack of socialization	3
Understanding of disciplines	4	distance travel	1	Difficulties with reading and writing	1	Multiple distastes in disciplines	1
Adequacy of content with work	4	Join another higher education course	1	Lack of personal organization	2	Reconciling activities with the family	1
Being away from school too long	1	Lack of motivation and frustration	1	Professional problems	3	Believing that DE is easier	1
Total	49	Total	17	Total	63	Total	23

Source: the authors

It is clearly perceived that, among the exogenous causes of evasion, the individual and socio-political-economic characteristics outweigh the conjunctures and related to the personal vocation. Therefore, personal aspects (and little related to the courses) and sociodemographic characteristics of the students seem to play an important role in the evasion in DE.

Table 2 presents, likewise, the frequency with which the endogenous causes of evasion were identified in the 48 texts analyzed, also adding subcategories to the model proposed by Bittencourt and Mercado (2014).

Table 2: Endogenous causes of evasion

Behavioral attitude	F	Institutional reasons	F	Didactic-pedagogical requirements	F
Didactics of teachers	2	Absence of tutors in the poles	1	Course curriculum workload	1
Orientation of the Course Coordination	1	Access to libraries	1	Relationship of the curriculum with the market	1
Motivation and encouragement on the part of the tutor	4	Structure of teaching centers	5	Student assessment criteria	1
Dissatisfaction with the tutor	11	Computer lab in the poles	1	Association between theory and practice	1
Contact with teachers	4	Interactivity in AVA	5	Relationship between content of disciplines	1
Lack of support or teacher interaction	14	Media offered for contact	1	Few face-to-face meetings	6
Delay in feedback	1	Inadequate technology used	6	Complexidade das atividades	9
Total	37	Administrative management issues	1	Contact between course colleagues	1
		Poorly prepared tutor or teacher	2	Failure in more than two disciplines in the semester	1
		VLE access problem	1	Deadlines for delivery of activities	5
		Disorganization in the institution	1	Evaluation of tests and exercises	5
		Inability to lock the course	1	Teaching/learning process	3
		Student assistance	2	Inappropriate offered teaching material	6
		A host module is missing	1	Inappropriate lyoffered teaching material	4
		Dissatisfaction with the structure of the HEI	3	Course design failure	4
		Total	32	Lack of interactive lessons	2
				Total	51

Source: the authors

Unlike exogenous causes, there is a greater balance between the categories of endogenous causes, with a predominance of didactic-pedagogical requirements.

Table 3 presents the same data in Table 1, but now without grouping by categories, i.e., indicating only the frequency and percentage over the total for each subcategory of the exogenous causes of evasion, in descending order.

Tabela 3: Subcategories of exogenous causes of evasion

Subcategory	F	%
Time to study	19	12.50%
Difficulty assimilating the EaD culture	19	12.50%
Financial problems	13	8.55%
Personal problems	12	7.89%
Displacement to teaching center	10	6.58%
Disinterest or expectations for the course	10	6.58%
Lack of ability to use ICT	7	4.61%
Health problems	6	3.95%
Difficulties in accessing the Internet	5	3.29%
Have another college degree	5	3.29%
Support from the institution in which you work	4	2.63%
Understanding of disciplines	4	2.63%
Adequacy of content with work	4	2.63%
Previous ignorance about the DE course	4	2.63%
Attendance of the course to previous expectations	3	1.97%
Professional problems	3	1.97%
Lack of socialization	3	1.97%
Adaptation at the university level	2	1.32%
Lack of personal organization	2	1.32%
Appreciation of the diploma in the market	1	0.66%
Weekly workload	1	0.66%
Being away from school too long	1	0.66%
Aptitude for the profession	1	0.66%
Change of personal or professional interest	1	0.66%
Being in parallel with another course	1	0.66%
Join another higher education course	1	0.66%
Lack of motivation and frustration	1	0.66%
Already evaded from another course	1	0.66%
Difficulties with reading and writing	1	0.66%
Family influence	1	0.66%
Change of residence or city	1	0.66%
Change of marital status	1	0.66%
Economic responsibility in the sustenance of the family	1	0.66%
Multiple distastes in disciplines	1	0.66%
Reconciling activities with the family	1	0.66%
Believing that DE is easier	1	0.66%
Total	152	100,00%

Source: the authors, based on results of literature review

As it can be seen, there is a predominance of two subcategories: the lack of time to study and the difficulty of adapting to the culture of distance education. Financial and personal problems, which come soon after, seem to be even less under the control of educational institutions. Some of the following subcategories could be grouped into one of these two broader ones: lack of ability to use ICT, difficulties in internet access, previous lack of knowledge about the DE course and meeting previous expectations, which are, after all, aspects of the difficulty of adapting to the culture of distance education.

According to Brindley (2015, p. 295), distance learning students are expected to plan, establish their study schedules and maintain a balance between their studies and their other responsibilities, such as work and family. However, what the literature review showed is that THE students actually have difficulty reconciling their study schedules with other activities, especially work and family, thus leaving little time to devote themselves to the tasks of the courses.

On the other hand, the literature review made it clear that one of the main (exogenous) causes of evasion is the difficulty of adapting the student to the culture of THE. First, in many cases, there is a misperception about what it means to study distance by students - which ends up leading to frustration and the feeling that the course did not meet their expectations. In addition, there are several difficulties to be faced in adapting to the METHODOLOGY of THE, such as the physical distance of colleagues, tutors and teachers, which can generate a feeling of isolation; different forms of interaction and communication, compared to the classroom; and the use of the virtual learning environment and other tools.

In addition, it is possible to identify that these exogenous causes are interconnected. The research by Oliveira, Cavalcante and Gonçalves (2012, p. 1), for example, showed that "some students did not have clarity about distance education, interpreting it as an easy way of study and without a long need for time". Bittencourt (2011, p. 58), in turn, further expands the relationship:

The main motivators would be closely related. The three main three would be the lack of adaptation, the lack of time and the lack of organization. Those who can't adapt end up not organizing and wouldn't have time for tasks. Likewise, those who do not organize will not have time for tasks and, consequently, would not adapt. And finally, who does not have time is because it would not be properly adapted or would lack organization.

This relationship is detected in a contradictory way by Mattar, Ramos and Loureiro (2019), when analyzing the perceptions of students of a hybrid master's course in Portugal. When asked about the main difficulty to study, 75% of the students pointed out the lack of time; when answering the question "What I like most about the course because it is blended", they highlighted the temporal flexibility. However, when asked about "What I like least in the course because it is blended", the demand for more face-to-face meetings was highlighted, which ends up showing that students cannot adequately manage their study time at a distance and, thus, take advantage of the temporal flexibility of THE, thus needing to resort to the characteristic organization of the face-to-face, which will take more time and end up canceling the temporal flexibility.

In line with the exogenous causes of evasion pointed out by the literature review, Colpani (2018) argues that it is up to managers to devote more attention to planning and social support to the study and to the difficulties of adapting to distance study. In this sense, several texts analyzed identify as a relevant strategy, on the part of educational institutions, the offer of a reception module for distance education students. Mattos (2017, vii), for example, concludes that "the virtual student needs to be previously welcomed by the IES, in the understanding of their individual characteristics, being prepared and set to the distance learning model, in order to achieve success in reducing the great rate of evasion that permeates the modality". The module can guide students on how to manage their time, the requirements and methodology of distance learning, tools, the learning environment and teaching material.

Table 4 presents the same data in Table 2, but again without grouping by categories, indicating only the frequency and percentage over the total for each subcategory of endogenous causes of evasion, in descending order.

Table 4: Subcategories of endogenous causes of evasion

Subcategory	F	%
Lack of support or teacher interaction	14	11.67%
Dissatisfaction with the tutor	11	9.17%
Complexity of activities	9	7.50%
Inadequate technology used	6	5.00%
Few face-to-face meetings	6	5.00%
Inappropriate offered teaching material	6	5.00%
Structure of teaching centers	5	4.17%
Interactivity in VLE	5	4.17%
Deadlines for delivery of activities	5	4.17%
Evaluation of tests and exercises	5	4.17%
Motivation and encouragement on the part of the tutor	4	3.33%
Contact with teachers	4	3.33%
Quality of the chosen course	4	3.33%
Course design failure	4	3.33%
Dissatisfaction with the structure of the HEI	3	2,50%
Teaching/learning process	3	2.50%
Didactics of teachers	2	1.67%
Poorly prepared tutor or teacher	2	1.67%
Student assistance	2	1.67%
Lack of interactive lessons	2	1.67%
Orientation of the Course Coordination	1	0.83%
<i>Delay in feedback</i>	1	0.83%
Absence of tutors in the poles	1	0.83%
Access to libraries	1	0,83%
Computer lab in the poles	1	0.83%
Media offered for contact	1	0,83%
Administrative management issues	1	0.83%
VLE access problem	1	0.83%
Disorganization in the institution	1	0.83%
Inability to lock the course	1	0.83%
A host module is missing	1	0.83%
Course curriculum workload	1	0.83%
Relationship of the curriculum with the market	1	0.83%
Student assessment criteria	1	0.83%

Association between theory and practice	1	0.83%
Relationship between content of disciplines	1	0.83%
Contact between course colleagues	1	0.83%
Failure in more than two disciplines in the semester	1	0.83%
Total	120	100.00%

Source: the authors, based on results of literature review

In the case of endogenous causes, more than 20% refer to students' dissatisfaction with teachers and tutors (the first two in the list), and it is also possible to group other subcategories in this same problem: interactivity in the AMI, motivation and encouragement on the part of the tutor, contact with teachers, teaching/learning process, didactics of teachers, tutor or teacher poorly prepared, lack of interactive classes and absence of tutors in the centers, which thus reach more than 40% of the total causes pointed out. It is noteworthy that one of the three categories in the garrison, Anderson and archer research community model (1999) is the presence of teaching, precisely the element pointed out by the literature review as the main, among the endogenous causes, for dropout in distance education. The presence of teaching involves the design of the educational experience and the facilitation of learning. Garrison, Anderson and Archer (2001) conclude that higher-order learning in computer-mediated environments requires the proper presence of the teacher. Similarly, this category points to the lack of dialogue, one of the three elements of Michael Moore's transactional distance theory (2002): the greater the interaction between teachers and students, the lower the transactional distance.

In parallel with the proposal of a reception module to address the exogenous causes of evasion (time management and adaptation to the culture of distance education), tutor training courses can be proposed to address the identified endogenous causes. In this sense, Czeszak et al. (2019) differentiate tutor preparation courses (who are starting to work in EaD) from continuing training courses, for those who are already working. Taking into account the results of the literature review, the following topics could be addressed in training courses for tutors:

- a) presentation and discussion of the theories of the research community (GARRISON; ANDERSON, ANDERSON, 2010 ARCHER, 1999, 2001) and transactional distance (MOORE, 2002), with emphasis on the presence of teaching and dialogue;
- b) presentation and practice of types and strategies to boost interaction in distance education (HIRUMI, 2013);
- c) development of communication competence; for Tenório, Gama and Tenório (2015) and Tenório, Pires and Tenório (2017), for example, communication was pointed out as one of the main characteristics for the performance of online tutors, essential to encourage student participation;
- d) development of the tutors' socioaffective skills, which involve the creation of affective and social bonds with students, conflict management and cordiality, which enables students to feel welcome in the course, considered by more than 50% of the tutors surveyed by Tenório, Souto and Tenório (2014) as the main social-affective competence necessary for a distance tutor.

3.2 Models and Tools for Evasion Prediction

Of the 48 articles included for analysis in the literature review, eight presented a predictive model of dropout in distance education.

Silva (2017) tests predictive statistical models for the management of dropout in undergraduate courses, obtaining positive results. Initially, the variables that influence the evasion in each course were identified and, based on these variables, the models were developed. Descriptive research with a qualitative approach used the binary logistic regression method. The author concludes that:

the use of predictive models can provide university managers with the necessary direction to become aware of the main aspects that impact the dropout of the courses offered, as well as to point out, with a high level of confidence, students with greater risks of leaving the course. (SILVA, 2017, p. 121).

Sales et al. (2012), in turn, present an automated academic control with the aid of a formative evaluation tool and continuous measurement of students' performance, called Learning Vectors (LV), or Learning Vector, developed from the extension and reuse of codes of the tools of Moodle's own virtual learning environment. The model is based on iconographic mediation and interventions generated by the teacher-tutor as a way to communicate with their students in the virtual environment. LV also stores notes for face-to-face activities and manages student attendance in tools such as forums, tasks, wikis, and chats. The model was tested with a control group and an experimental group, which used Learning Vectors. The study detected significant differences between mean dropout rates in both groups, with a lower rate in the experimental group.

Ramos et al. (2017) elaborated a logistic regression model based on the constructs of transactional distance developed by Michael Moore, which function as predictors of student dropout in THE. The study used two types of quantitative analyses: multivariate data analysis and educational data mining. The model presented success rates higher than 89%, indicating that the constructs of transactional distance can establish a relationship with the students' evasion: "The perception of the levels of each of these variables for each student, from the defined prediction model, can assist the instructor or tutor in their preventive action and thus seek the reversal of possible students with dropout tendencies." (RAMOS et al., 2017, p. 1,235).

Sepúlveda (2016) generates and validates a KDD (Knowledge Discovery in Database) based evasion prediction model, which involved, among other areas, statistics, artificial intelligence, and databases. The results of its application to a virtual learning environment demonstrated that the model can predict evasion with significant accuracy. In addition to the evasion prediction model, a decision-making model and actions to combat evasion were also generated. The study concludes that by applying KDD to predicting evasion, data stored in databases can turn into useful and consistent information about students likely to evade.

Kampff et al. (2014) propose an alert system for virtual learning environments (AVA), configurable by the teacher himself from AVA indicators and information generated from the mining of educational data. The system seeks to identify dropout profiles and poor performance of students in distance education. The results, involving 1,780 students, allowed us to conclude that the system can contribute to the increase in approval rates and the reduction of the rates of evasion in EaD.

Portal and Schlemmer (2015) also use data mining and learning analytics to design and create a web system, called GCWise, to predict and minimize evasion in distance education. The system allows to identify in advance trends and behaviors of students who are prone to dropout.

Wilges et al. (2010) propose a predictive conceptual model of dropout in distance education modeled by a multiagent system architecture (SMA) in a virtual learning environment. The model can predict behaviors by constant and dynamic monitoring of learning and information collection, thus calculating the risk of evasion.

Finally, Lira et al. (2016) develop a module for a multi-agent system, whose purpose is to monitor the behavior of students and identify early when they tend to dropout. SMA interacts with data from the Moodle virtual learning environment by accessing your database. By mining educational data, it was possible to identify patterns of behavior that reflect the tendency of evasion.

In the eight studies presented, it was possible to notice that all the models and tools proposed, based on different techniques and theoretical references, were successful in predicting the dropout of students in distance education. Information derived from its applications to virtual learning environments can then be used by tutors, teachers and educational institutions for actions aimed at minimizing dropout. The literature review has therefore shown that DE dropout prediction systems are efficient and can be useful for educational institutions.

However, the main causes of dropout in distance education identified by the literature review are positioned before the beginning of the courses: the lack of preparation of students and the training of tutors. Thus, the models of evasion prediction are not worth it if these causes are not faced a priori — they end up constituting only palliative strategies. As Wilges et al. (2010):

To combat school dropout, therefore, it is necessary to work with two fronts: one of immediate action that seeks to rescue the student “evaded”, and another of internal restructuring, which implies the discussion and evaluation not only of combating dropout, but of school failure as a whole.

In this sense, strategies should be differentiated to stimulate the retention of models used to predict evasion. Espíndola and Lacerda (2013), in turn, observe a trend of decreased dropout in an educational institution, which they consider to be related to academic support actions to students of DE that have been developed.

4. Conclusion

This article presented the results of a review of the Literature in Portuguese on the phenomenon of dropout in distance education in higher education. In addition to identifying models and tools to predict student dropout, the review identified exogenous (lack of time and difficulty adapting to students’ DE culture) and endogenous (generally related to lack of adequate tutor preparation) for dropout. To address these causes, educational institutions can offer reception modules for students and initial and continued training for tutors, for which suggestions were made of topics to be addressed, depending on the causes of the evasion identified.

One of the contributions of this article was to point out that the main causes of dropout in distance education, identified by the literature review, should be combated before the beginning of the courses, with the modules of reception to students and the training of tutors, and not only with predictive models of the avoider during the course. In addition, 48 empirical studies were evaluated and the statistical frequency of occurrences of the causes of evasion was mapped, with the expansion of the categories of a model previously elaborated for this purpose.

The reproduction of the methodology used in this article in new searches can validate, update or change the results presented here, looking, for example, at current trends, such as the greater use of technological support with artificial intelligence in distance education, use of virtual tutors, support for student performance, analytical methods and so on, which may characterize a decrease or alteration of the tutor’s

role in Distance Education, use of virtual tutors, support for student performance, analytical methods and so on, which may characterize a decrease or alteration of the tutor's role in Distance Education. Searches in the literature in other languages, and even with combinations of other expressions, can be performed to validate, enlarge or even discuss the results presented here. The perspective of other languages and cultures on the phenomenon of evasion can undoubtedly bring contributions to the discussion.

It is important to note that, although an exclusion criterion was not used for research conducted outside Brazil, none of the 48 articles included studied higher education in Portugal or other Portuguese-speaking countries. This may be explained by the fact that distance education has developed much more in Brazilian higher education than in Portugal and other Portuguese-speaking countries, which also have a much smaller population than the Brazilian one and, consequently, a population of higher education students at a distance also significantly lower than that of Brazil. In this sense, the evasion in the DE, in these other Portuguese-speaking countries, may not be characterized as a social problem as significant as it is in Brazil.

It is also worth mentioning that the COVID-19 pandemic has caused a broad use of distance education, not only in Brazil, including basic education. Especially in higher education, which was the object of this article, new literature reviews, or even empirical research, using the methodology of this article, may propose to map changes in the causes for evasion, but not only in distance education courses. Due to the prolonged effects of the pandemic, including economic ones, it is possible to imagine a migration of students from face-to-face education to DE, and the study of the causes of these movements of dropout of face-to-face education can be studied using some categories presented in this article, in addition to the elaboration of other categories. Grounded theory may be an appropriate methodology for these works, given the unprecedented aspect of the situation we experience with the pandemic.

Finally, future work, starting from this article, may propose to develop reception modules for distance education students and training courses for tutors.

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APPENDIX

Table 3: Research included in the literature review

Nº	Citation in the format of ABNT	Type of Document	Link
1	BITTENCOURT, I. M.; MERCADO, L. P. L. Evasão nos cursos na modalidade de educação a distância: estudo de caso do Curso Piloto de Administração da UFAL/UAB. Ensaio: Avaliação e políticas públicas em educação , v. 22, n. 83, p. 465-504, 2014.	Article published in a journal	http://revistas.cesgranrio.org.br/index.php/ensaio/article/view/296
2	LAGUARDIA, J.; PORTELA, M. Evasão na educação a distância. ETD - Educação Temática Digital , v. 11, n. 1, p. 349-379, 2009. DOI: https://doi.org/10.20396/etd.v11i1.929 .	Article published in a journal	https://periodicos.sbu.unicamp.br/ojs/index.php/etd/article/view/929
3	JORGE, B. G.; MARTINS, C. Z.; CARNIEL, F.; LAZILHA, F. R.; VIEIRA, M. C.; GOI, V. M. Evasão na educação a distância: um estudo sobre a evasão em uma instituição de ensino superior. In: CIAED — Congresso Internacional ABED de Educação a Distância, 16., 2010, Foz do Iguaçu, PR. p. 1-10.	Article presented at an event	http://www.abed.org.br/congresso2010/cd/252010220450.pdf
4	FERREIRA, V. S.; ELIA, M. F. Uma modelagem conceitual para apoiar a identificação das causas da evasão escolar em EAD. In: CBIE — Congresso Brasileiro de Informática na Educação, 2.; WIE — Workshop de Informática na Escola, 19., 2013, Campinas, SP. Anais [...] . 2013. p. 399-408. DOI: http://dx.doi.org/10.5753/cbie.wie.2013.399 .	Work presented at an event	https://br-ie.org/pub/index.php/wie/article/view/2627
5	WILGES, B.; RIBAS, J. C. C.; CATAPAN, A. H.; BASTOS, R. C. Sistemas multiagentes: mapeando a evasão na educação a distância. RENOTE – Revista Novas Tecnologias na Educação , v. 8, n. 1, p. 1-10, 2010. DOI: https://doi.org/10.22456/1679-1916.15193 .	Article published in a journal	https://www.seer.ufrgs.br/renote/article/view/15193
6	EMANUELLI, G. B. Atração e refração na educação a distância: constatações sobre o isolamento e a evasão do aluno. Revista Gestão Universitária na América Latina-GUAL , v. 4, n. 2, p. 205-218, 2011. DOI: https://doi.org/10.5007/1983-4535.2011v4n2p205 .	Article published in a journal	https://periodicos.ufsc.br/index.php/gual/article/view/1983-4535.2011v4n2p205
7	ESPÍNDOLA, R. M.; LACERDA, F. K. D. Evasão na Educação a Distância: um estudo de caso. EaD em Foco , v. 3, n. 1, p. 96-108, 2013. DOI: https://doi.org/10.18264/eadf.v3i1.174 .	Article published in a journal	https://eademfoco.cecierj.edu.br/index.php/Revista/article/view/174
8	KAMPFF, A. J. C.; FERREIRA, V. H.; REATEGUI, E.; LIMA, J. V. Identificação de perfis de evasão e mau desempenho para geração de alertas num contexto de educação a distância. Relatec – Revista Latinoamericana de Tecnología Educativa , v. 13, n. 2, p. 61-76, 2014. DOI https://doi.org/10.17398/1695-288X.13.2.61 .	Article published in a journal	https://relatec.unex.es/article/view/1295

9	OLIVEIRA, A. P.; CAVALCANTE, I. F.; GONÇALVES, R. S. O processo de evasão (ou desistência) no curso de Licenciatura em Letras espanhol ofertado pelo campus EaD-IFRN: causas possíveis. In: SIED: EnPED — Simpósio Internacional de Educação a Distância e Encontro de Pesquisadores em Educação a Distância, 1., 2012, São Carlos, SP. Anais [...] . 2012. p. 1-17.	Work presented at an event	http://sistemas3.sead.ufscar.br/ojs/index.php/sied/article/view/236
10	BITTENCOURT, G. P. Evasão na educação a distância do ensino superior : estudo de caso no 1º curso de administração EAD da UFRGS. 2011. Trabalho de Conclusão de Curso (Graduação em Administração) – Universidade Federal do Rio Grande do Sul, Porto Alegre, 2011.	Graduation Course Work	https://lume.ufrgs.br/handle/10183/36710
11	BENTES, M. C. B.; KATO, O. M. Fatores que afetam a evasão na educação a distância: curso de administração. Psicologia da Educação , n. 39, p. 31-45, 2014.	Article published in a journal	https://revistas.pucsp.br/psicoeduca/article/view/26703
12	PORTAL, C.; SCHLEMMER, E. Estratégias para minimizar a evasão na educação a distância: o uso de um sistema de mineração de dados educacionais e learning analytics. In: CIAED — Congresso Internacional ABED de Educação a Distância, 21., 2015, Bento Gonçalves, RS. p. 1-10.	Article published in a journal	http://www.abed.org.br/congresso2015/anais/pdf/BD_317.pdf
13	SOUZA, C. A. N. Um estudo sobre as principais causas da evasão na educação a distância - EaD . 2009. Dissertação (Mestrado em Administração Pública) – Fundação Getúlio Vargas, São Paulo, 2009.	Master's Thesis	https://bibliotecadigital.fgv.br/dspace/handle/10438/6978
14	MARTINS, C. Z.; GEHRAN, R. A. As causas da evasão discentes na educação a distância na perspectiva dos tutores. In: CONGRESSO INTERNACIONAL SOBRE DESENVOLVIMENTO SOCIAL, 2., 2013, Iturama, MG. p. 1-11.	Work presented at an event	http://www.sisgeenco.com.br/sistema/fama/anais/ARQUIVOS/GT5-773-65-20131013212223.pdf
15	PEDROSO, C. B.; MARACCI, F. V.; KUNZE, W. L.; RIZO, C. M. Hipermídia adaptativa e a evasão na educação a distância. Colloquium Exactarum , v. 5, n. 2, p.1-11, 2013. DOI: 10.5747/ce.2013.v05.n2.e056 .	Article published in a journal	http://journal.unoeste.br/index.php/ce/article/view/852
16	TAMARIZ, A. R.; SOUZA, M. Educação a Distância no Brasil: perspectivas para redução na evasão de alunos matriculados. Revista Científica Linkania Master , v. 5, n. 1, p. 227-253, 2015.	Article published in a journal	http://linkania.org/master/article/view/330
17	SALES, G. L.; LEITE, E. A. M.; JOYE, C. R. Gerenciamento da aprendizagem, evasão em Ead Online e possíveis soluções: um estudo de caso no IFCE. RENOTE – Revista Novas Tecnologias na Educação , v. 10, n. 3, p. 1-11, 2012. DOI: https://doi.org/10.22456/1679-1916.36382 .	Article published in a journal	https://www.seer.ufrgs.br/renote/article/view/36382
18	PARO, E. M. F. M. Evasão de alunos na educação superior a distância: uma proposta de enfrentamento . 2011. Dissertação (Mestrado em Educação) – Universidade Estácio de Sá, Rio de Janeiro, 2011.	Master's Thesis	http://estacio.br/mestrado-edoutorado/docs/dissertacao-mestrado/EMILIA-completa.pdf

19	REINO, L. R. A. C.; HERNÁNDEZ-DOMÍNGUEZ, A.; FREITAS JÚNIOR, O. G.; CARVALHO, V.; BARROS, P. A. M.; BRAGA, M. Análise das Causas da Evasão na Educação a Distância em uma Instituição Federal de Ensino Superior. <i>In: SBIE — Simpósio Brasileiro de Informática na Educação</i> , 26., Maceió, AL. Anais [...] . 2015. p. 91-100. DOI: 10.5753/cbie.sbie.2015.9191 .	Work presented at an event	https://www.br-ie.org/pub/index.php/sbie/article/view/5121
20	PAVANELLI, G. Gestão em educação a distância e fatores determinantes de evasão . 2009. Dissertação (Mestrado em Educação) – Universidade Nove de Julho, São Paulo, 2009.	Master's Thesis	http://repositorio.uninove.br/xmlui/handle/123456789/148
21	VILARINHO, L. R. G.; PARO, E. M. Evasão de alunos na educação superior a distância: a experiência do módulo de acolhimento. Voces y Silencios: Revista Latinoamericana de Educación , v. 2, n. 2, p. 139-155, 2011. DOI: https://doi.org/10.18175/vys2.2.2011.04 .	Article published in a journal	https://revistas.uniandes.edu.co/doi/abs/10.18175/vys2.2.2011.04
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