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THE INFLUENCE OF TEACHING PEDAGOGICAL PRACTICES ON STUDENT EVASION IN A TECHNICAL COURSE ¹

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ABSTRACT: In recent years, mainly from 2000 to 2016, Brazilian Professional and Technological Education has transformed due to public policies aiming to expand and restructure it. Therefore, vocational schools are challenged to rethink and resignify how they maintain a link with society. Several aspects need to be observed and questioned to contribute to students' permanence and success in professional schools. Student dropout is one of the problems faced in professional education, influenced by several factors that weigh on the student's decision to stay or not in the course. Among these elements, pedagogical practices and their relationship with students' learning and motivation stand out, providing greater involvement with the educational institution. This study aimed to analyze the influences of teaching pedagogical practices on students' evasion in the Electromechanics Technical Course of IFCE/*Campus* of Pecém. This qualitative, applied, and exploratory research was developed through bibliographic surveys, case studies, and experience reports. The results allowed a better understanding of evasion in this course, listing its possible motivations. We perceived the vital importance of pedagogical practices for students' permanence in the course, as they significantly contribute to the teaching and learning process.

Keywords: vocational education, evasion, pedagogical practices.

PRÁTICAS PEDAGÓGICAS E EVASÃO DISCENTE: UMA ANÁLISE NO CURSO TÉCNICO

RESUMO: A Educação Profissional e Tecnológica brasileira, nos últimos anos, principalmente de 2000 a 2016, vem passando por transformações oriundas de políticas públicas elaboradas visando a sua expansão e reestruturação. Frente a essas transformações, as escolas profissionalizantes são desafiadas a

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repensarem e ressignificarem a forma como mantêm um elo com a sociedade. Vários aspectos precisam ser observados e questionados no sentido de contribuir para a permanência e o sucesso dos discentes nas escolas profissionais. A evasão discente é um dos problemas enfrentados no ensino profissional, influenciada por diversos fatores que pesam na decisão do aluno em permanecer ou não no curso. Dentre esses elementos, destacam-se as práticas pedagógicas e sua relação com a aprendizagem e a motivação dos alunos, proporcionando um maior envolvimento com a instituição de ensino. Este trabalho teve como objetivo refletir sobre as práticas pedagógicas e a evasão discente no Curso Técnico de Eletromecânica do IFCE *Campus* Pecém. A referida pesquisa foi classificada, metodologicamente, como aplicada, com uma abordagem qualitativa, com características exploratórias e desenvolvida por meio de levantamento bibliográfico, estudos de casos e relatos de experiência. Os resultados obtidos possibilitaram uma melhor compreensão da ocorrência da evasão no referido curso, elencando as suas possíveis motivações. Foi verificada a grande importância das práticas pedagógicas para a permanência dos discentes no curso, pois que elas contribuem de forma significativa para o processo de ensino e aprendizagem.

Palavras-chave: educação profissional, evasão, práticas pedagógicas.

PRÁCTICAS PEDAGÓGICAS Y EVASIÓN DISCENTE: UM ANÁLISIS EN EL CURSO TÉCNICO

RESUMEN: En los últimos años, la educación profesional y tecnológica brasileña, principalmente de 2000 a 2016, ha sufrido transformaciones a partir de políticas públicas elaboradas con el fin de expandirse y reestructurarse. Frente a estas transformaciones, las escuelas profesionales tienen el reto de repensar y resignificar la forma en que mantienen un vínculo con la sociedad. Varios aspectos necesitan ser observados y cuestionados para contribuir a la permanencia y el éxito de los estudiantes en las escuelas profesionales. El abandono escolar es uno de los problemas a los que enfrenta la formación profesional, influenciado por varios factores que pesan en la decisión del estudiante de permanecer o no en el curso. Entre estos elementos, se destacan las prácticas pedagógicas y su relación con el aprendizaje y la motivación de los estudiantes, proporcionando una mayor implicación con la institución educativa. El objetivo de este trabajo fue analizar las influencias de las prácticas pedagógicas docentes en la evasión de los estudiantes en el Curso Técnico de Electromecánica del IFCE/*Campus* de Pecém. Esta investigación fue clasificada, metodológicamente, como aplicada, con un enfoque cualitativo, con características exploratorias y desarrollada a través de levantamiento bibliográfico, estudios de caso e informes de experiencia. Los resultados obtenidos permitieron una mejor comprensión de la ocurrencia de evasión en este curso, señalando sus posibles motivaciones. Se verificó la gran importancia de las prácticas pedagógicas para la permanencia de los estudiantes en el curso, ya que contribuyen significativamente al proceso de enseñanza y aprendizaje.

Palabras clave: enseñanza profesional, evasión, prácticas pedagógicas.

INTRODUCTION

The Brazilian professional education scenario has been in constant transformation since its beginning – focused on the desires of the labor market with a more welfare nature – until the present day (Mota; Araújo; Santos, 2018). Professional and Technological Education (EPT- *Educação Profissional e Tecnológica*), present in Brazil since 1906, brings in its genesis the provision of education aimed at “the less favored classes”, whose primary objective was to generate qualified labor for industry and for the agricultural sector. The EPT was then created to contribute to the acceleration of the industrialization process. At the beginning of the 2000s, significant increases were recorded both in terms of the increase in the number of institutions and the expansion of the number of places available. In 2002, there were 140 schools; this number increased to 356 in 2010, 578 in 2014, and reaching 644 schools in 2016 (Brasil, 2016).

However, in parallel with the increase in enrollment, an increase in student dropout from professional schools was also observed. This increase in the number of enrollments in the federal network has brought the emergence of barriers (socioeconomic vulnerability, poor basic education, poor learning, etc.) for students to remain until the end of the course, consequently leading to an increase in the enrollment evasion rate. Therefore, dropout rates are one of the major problems facing educational institutions and may also have an impact on the job market in terms of the unsatisfactory supply of new professionals. In addition to all the obvious negative consequences of dropping out of school on a person's life, dropping out is also related to a greater loss of resources for the institution and a greater cost to society.

The Federal Institute of Education, Science and Technology of Ceará (IFCE) Pecém Advanced Campus is characterized by having very heterogeneous classes, students with learning difficulties, mainly with disabilities in mathematics and Portuguese, in addition to a significant number of students who work after shifts. This survey was carried out by the Academic Control Coordination (CCA) and Course Coordination. High dropout rates were also observed in the last semesters of the Subsequent Technical Course in Electromechanics, causing great concern in the study and deepening of this topic. The IFCE campuses have very different realities, and at the Pecém Advanced Campus, there is no consolidated work that carries out surveys related to evasion in quantitative terms and detection of causes, despite systematic efforts to minimize this problem.

In this scenario, significant dissatisfaction is observed by the students due to the difficulty of reconciling work and studies, resulting in a reduction in learning. The campus is in an industrial complex, which often encourages students to enter the job market during the course, requiring pedagogical adaptation by teachers to prevent student dropout. Thus, pedagogical practices and the teaching-learning process are key factors in combating dropout rates, constituting a constant concern for teachers on the Pecém campus.

Many teachers have reported difficulties in adapting their methodologies due to the characteristics of the campus, something unusual in other previous experiences. Therefore, it is necessary to identify and understand the correlation between pedagogical practices and the factors that contribute to evasion and the enrichment of literature on the topic. Moreira, Lamber, and Castro (2018) found that individual factors, such as difficulty in reconciling work with studies and obstacles in the teaching-learning process, are triggers for student dropout, further emphasizing the concern in addressing these topics.

In recent years, IFCE's efforts to combat dropout rates in courses and their modalities have increased. One of the actions was the preparation of the Strategic Plan for Student Permanence and Success (PPE), which aims to strengthen the quality of teaching through actions to encourage retention and academic promotion. In compliance with the goals established in the PNE (National Education Plan- *Plano Nacional de Educação*), IFCE's institutional purpose is to gradually increase, until 2024, the average completion rate of secondary and undergraduate technical courses (IFCE, 2017).

Based on this assumption, the country's economic and social development process needs to carry out studies to gather information and indicators of professional education in Brazil. Carrying out this research is important to generate information about student dropout and contribute to the development of strategies to improve this indicator at IFCE. Therefore, it is important to carry out this

study to collaborate with results regarding evasion, helping IFCE in the development of plans and actions to combat evasion. There are several studies on this topic but further study is essential as there are peculiarities and specific policies for each situation, which can contribute to students' retention (Meira, 2015; Nascimento, 2019).

Dropout is a complex phenomenon with multiple interrelated causes that can lead to academic failure. This reveals the urgency of studies in the area to create effective strategies, including monitoring results. The research aims, therefore, to reflect on pedagogical practices and student dropout in the Subsequent Technical Course in Electromechanics at IFCE Pecém Advanced Campus.

THEORETICAL FOUNDATION

In this second section, the phenomenon of student dropout in technological professional education will be addressed, its diverse conceptualization, and some models developed by the most referenced authors in the area. The importance of teaching pedagogical practices and their influence on reducing student dropout will be reported, showing some important aspects and concepts in the teaching-learning relationship.

Student dropout

According to Santos (2013), one of the first studies carried out to examine issues related to student dropout was carried out in 1938 by John McNeely on behalf of the United States Home Office and the Department of Education. In several countries, such as France, the United Kingdom, and Sweden, the concern with the phenomenon of evasion was more significant, and studies in the area have since evolved. According to Adachi (2009), in the Brazilian case, 1995 was the year taken as a formal milestone for the study of student dropout, when the the Special Commission for the Study of Evasion was established by the Higher Education Secretary/Ministry of Education (SESu/MEC). However, despite recognizing the complexity of the dropout phenomenon, little was done to reduce it, and institutional efforts were insufficient, limited to simple monitoring of enrollment levels, rarely involving systematic attempts to assess student retention patterns (Cislaghi, 2008).

Only in the 1970s, the first theories about the dropout phenomenon emerged, developed by scholars who sought to identify students' motivation for deciding to abandon the course: Spady (1970), Tinto (1975), Bean (1980), Pascarella (1980) and Astin (1984). Spady was the first researcher to propose a causal model for school dropout based on the Suicide Theory, developed by sociologist Émile Durkheim, as a reference to develop his thoughts. The Abandonment Process Model, the name of the theory developed by Spady, takes into account, in addition to the family context, five other aspects that intervene in the school abandonment process: academic potential; normative congruence (how the student's goals, interests and personality interact with institutional norms); performance evaluations; intellectual development; and support in friendships (how the student's relationships occur with other people in the university system, be they colleagues, staff or professors). The higher the student's level of satisfaction, the more consolidated their commitment to the institution will be (Santos, 2013).

Vincent Tinto is considered one of the most active researchers in the area and has supported much of the research carried out about evasion. Tinto highlights that his Student Integration Model was the first to establish explicit connections between student abandonment (involuntary and voluntary) and the institution's environment. The student enters school taking with them their characteristics – family background, individual attributes, and previous education –, which will influence their initial commitment to the institution and their objective of obtaining a degree. In 1993, Tinto added components to his model such as adjustment, difficulty, incongruity, isolation, finances, learning, and external obligations or commitments. Cislaghi (2008) considers that these components were added because the author began to recognize the importance of factors external to the institution and the relevance of financial aspects for the occurrence of evasion.

The model proposed by John Bean in 1980 was created based on Price and Müller's behavioral model, aimed at explaining employee turnover in organizations. For Bean, student attrition is

analogous to turnover in work organizations; in other words, students leave institutions for reasons like those that lead employees to leave their jobs in organizations. Furthermore, the author focuses on determining the real reasons that lead a student to leave a particular institution. The experiences lived by the student, such as friendship relationships, the course subjects, and the qualitative aspects of the institution, can exert influence by modifying beliefs and ideologies (Almeida, 2009).

Ernest T. Pascarella, in partnership with Patrick T. Terenzini, developed the Student Wear Model in 1980. To develop this model, the authors took Tinto's Integration Model as a basis and especially considered the interactions that occurred within the academic environment. This model discusses the existence of individual factors that interact with each other, delineating the interrelationship between students and the educational institution. The first of these factors is experiences, which consider coexistence inside and outside the classroom; the second factor is educational, related to academic performance, grades, integration, and intellectual, and personal development (Pascarella, 1980).

After a series of studies carried out on the topic of student retention, Alexander Astin (1984) developed the Student Involvement Theory. Engagement is related to the amount of physical and psychological energy that the student dedicates to their academic experience. The author exemplifies that a highly involved student dedicates considerable energy to studying, spends a lot of time on campus, actively participates in student organizations, and interacts frequently with faculty members and other students. Conversely, a typically uninvolved student neglects studies, spends little time on campus, refrains from extracurricular activities, and has infrequent contact with professors and other students.

To understand how this problem occurs, the Special Commission for Studies on Evasion in Brazilian Public Universities distinguished evasion into course evasion, evasion from the institution, and evasion from the system. Course evasion is pertinent to students who withdraw from the course in different situations, such as abandonment (no longer enrolling), withdrawal (official), transfer or re-option (change of course), and exclusion by institutional rule. Dropping out of the institution refers to students who leave the institution in which they are enrolled; and, finally, evasion from the system is related to the student who abandons the course permanently or temporarily.

Bueno (1993) conceptualizes evasion as the active stance of the student who decides to withdraw from the course of their free will. The concept of school dropout, according to the National Institute of Educational Studies and Research Anísio Teixeira – INEP (1998), differs from the term abandonment. Abandonment is characterized by the student leaving school and subsequently returning; Dropout means the student's permanent departure from school. Ristoff (1999) points out that:

A significant portion of what we call evasion, however, is not exclusion but mobility, it is not escape but search, it is not waste but investment; It is not a failure – neither of the student, nor of the teacher, nor the course or the institution – but an attempt to seek success or happiness, taking advantage of the revelations that the natural process of individual growth makes about their true potential (Ristoff, 1999, p. 125).

Based on studies and discussions on this subject, IFCE chose to analyze evasion from the perspective of the course as it considers that granularity is what most leads to an approximation of the causes of this phenomenon, enabling a more complete analysis of all possibilities of the student leaving from the institution. According to guidance from the guiding document, the variables that corroborate retention and dropout per course are classified into three categories: individual factors, internal and external to the institution (IFCE, 2017).

Evasion in Technological Professional Education

In the context of the trajectory of professional education in Brazil, the marked existence of educational dualism becomes evident. A welfare aspect focused on the less privileged classes contrasted with another propaedeutic, with an academic bias, aimed at preparing the most privileged to continue their studies. Thus, at first, the concern with professional training was assistance-based, not formative. Subsequently, vocational schools sought to meet the needs of industry and agriculture, something still separate from basic education.

Following the document Brasil (2011), the signing of Decree 7,566/1909 is considered the initial milestone for professional, scientific, and technological education with federal coverage in Brazil, boosting the expansion of professional schools. Since the National Education Guidelines and Bases Law (1996), there have been beneficial changes, expansion of access and financing, teacher appreciation, with also reinforcement of the National Education Plan. EPT has gained relevance over the years, being historically aligned with different conceptions as well as the demands generated by the job market. In parallel with the expansion of the Education Network to meet local development needs by encouraging scientific production, EPT also experienced significant levels of student dropout.

The analysis of evasion is complex, from its conceptual understanding to the understanding of possible causes, so deepening this topic should contribute to combating high evasion rates. Its study is essential, as the occurrence of evasion can bring harm to the institution, society, and students.

In technological professional education, several works report the main causes of dropout and the study of public policies to reduce these rates. However, further investigation is necessary, as some causes, although known, are more significant than others, depending on several variables and factors. Furthermore, the context of each school is different, with differences also occurring between courses at the same educational institution. The student's entry into professional education is always a great challenge, as the approach is different. Therefore, there is a need for adaptation by the student body. This academic change often creates problems for the student, as it involves new curricular components, the existence of practical activities, problem solutions, and a new pace of learning, among other factors. Dropout rates in technological professional education are higher than those observed in secondary and elementary education (Brasil, 2020).

Sacramento, Albuquerque, and Cypriano (2021) developed an interesting work by mapping the studies carried out on dropout and retention in technical education from 2011 to 2020, showing a significant increase in studies in recent years, mainly in the Federal Network (IF/CEFET). The implementation and expansion of Federal Institutes, together with the decentralization of Professional and Technological Education in various spheres and formats, in a public and free manner, in municipalities in the interior of Brazil and regions with multiple socioeconomic challenges, even though they are considered one of the most significant public policies to democratize access to professional education and higher education, show worrying indicators related to the school dropout rate (Sacramento; Albuquerque; Cypriano, 2021). Despite several studies on evasion, a smaller amount of work is still observed in subsequent technical courses (Oliveira, 2016).

In recent years, several studies have been carried out to identify and measure the causes of evasion. Among them, the following stand out: difficulties in reconciling work with studies, deficiencies in the teaching and learning process, unprepared teachers, lack of motivation, identification with the course, failures, lack of job prospects, low academic performance, etc. (Araújo; Lima, 2021; Bastos; Gomes, 2016; Canali, 2009; Chagas; Oliveira, 2020; Feitosa, 2020; Figueiredo, 2014; Figueiredo; Salles, 2017; Meira, 2015; Moreira; Lambert; Castro, 2018; Oliveira, 2019; Queiroz; Brandão; Santos, 2015; Santos Neto et al., 2019; Silva Filho, 2018; Silva Filho; Araújo, 2017; Souza, 2014; Zanin, 2019). In the specific case of the Pecém Advanced Campus, among the factors mentioned above, the difficulty of reconciling work with studies and the deficiency in the teaching and learning process are characterized as the main obstacles faced by the institution. This deficiency comes from poor training in basic education, but it can be even more harmful due to problems in technical-pedagogical issues.

Teaching pedagogical practices

Teacher training and education, especially since the 1990s, were present in the educational reforms promoted by the federal government. The National Education Guidelines Law lays the foundations for new teacher training policies (Brasil, 1996). Often, graduates became technical professional education teachers without having specific training for teaching. EPT teachers face challenges related to organizational changes that affect professional interrelationships, the effects of technological innovations on work activities, the increased quality requirements, and the demand for greater attention to ethical and sustainability issues (Moura, 2008).

In recent years, research has been carried out to measure the factors that most impact student performance. These studies showed that the teacher was the main element affecting student learning. It was possible to verify that the “teacher effect” had a greater influence than factors such as school, family, and socioeconomic situations of the students (Gauthier; Bissonnette; Richard, 2014).

The relationship between teaching practice and different types of knowledge cannot be reduced to a simple transmission function; one must be concerned with the transposition process, with the transformation of scientific knowledge into school knowledge. The studies postulated by Pimenta (2012) classify teaching knowledge into three categories, which he calls experience knowledge, knowledge, and pedagogical knowledge, which are essential for conducting the teacher's work in their practice. The teacher must have a profile anchored, above all, in collective and interdisciplinary work. It is a basic assumption that these professionals have a critical and reflective perspective, assuming technology-oriented toward social responsibility, so that this allows the student to be a proactive worker, with the ability to solve problems (Tardif, 2014).

This new profile of educators is essential for student training in a broader, more comprehensive, and complete way. Without awareness of the teaching role, in this system, there will be no satisfactory results in the student's development. In this learning relationship, interdisciplinarity, a concept that has been widely discussed and introduced in recent years, is fundamental. Interdisciplinarity is associated with the connection between disciplines, with no hierarchy occurring between them. It has an articulated and integrated base, promoting in the individual a multidimensional understanding of the world, in which they cannot distinguish the natural from the cultural, but rather go beyond them (Nicolescu, 2001).

The importance of pedagogical practices in the learning process is well known, constituting a great challenge, as they need to be efficient actions that contribute to greater student motivation. The student must be placed as a central element in the learning process, not only for learning but also for teaching and participating effectively in the entire process; the teacher must act as another essential element in this process, being responsible for guiding. In building a truly inclusive school, many actions are important so that the school adapts to the student, and not the other way around. One should also not think about homogeneous teaching, as each region, each school, each class, and each student has their specificity (Afonso; Gonzalez, 2016).

Didactics refers to “knowing how to do” or “how to do it” during pedagogical mediation in the classroom, covering fundamental elements of the teaching and learning processes. Therefore, it is necessary to relate the set of theoretical and technical skills that make it possible to make connections between knowledge acquired at university and future teaching practice, in such a way that the objectives and purposes of the educational process of basic education are met (Gauthier; Bissonnette; Richard, 2014).

One of the most applied teaching and learning concepts is that of Ausubel, which consists of meaningful learning (Rodrigues, 2017). Ausubel was a representative of cognitivism and emerged when behaviorist theory predominated. In his theory, the teacher shares knowledge, resulting in the socialization of students' experiences on a given topic. Students organize the elements in a hierarchical manner, in which specific concepts are linked to general ones. Therefore, the teacher must make the material meaningful, otherwise, students will incorporate the information into the cognitive structure and experience mechanical learning (Rodrigues, 2013). This theory states that the construction of knowledge occurs when new information interacts with concepts already consolidated in the learner's cognitive structure, giving meaning to the content (Ausubel; Novak; Hanesian, 1968).

David Ausubel addresses, in addition to meaningful learning, mechanical or repetitive learning, or even memoristic or automatic learning. In this concept of learning, the author presents it “[...] as being one in which new information is learned practically without interacting with relevant concepts existing in the cognitive structure, without connecting specific underlying concepts” (Moreira, 2006, p. 16). Although he understands that there are two forms of learning – meaningful and mechanical –, Ausubel does not establish a separation between them. He emphasizes that they are continuous and that meaningful learning should be preferred over mechanical learning.

Technology is an essential tool in education, to provide a better learning process for students. Education has been suffering from a lack of interest among students for several reasons. Teachers often do not observe how the current generation is distinct, with its peculiarities, and that it is necessary to meet the needs of the present reality. To do so, it is first necessary to understand this new model of the student/teacher relationship. The use of active methodologies is relevant, as there is the possibility of transforming classes into more vivid and meaningful learning experiences for students, developing autonomy and protagonism. Therefore, teachers need to adapt to this new scenario, resulting in a change in the teaching profile (Bacich; Moran, 2017).

The use of technology does not represent a unique solution to minimize student dropout, but it is a dynamic and interactive possibility, requiring adequate use by teachers in the didactic pedagogical potential of digital resources (Almeida; Valente, 2011). Digital knowledge is complex and indispensable not only in its contribution to the learning process but also in the difficulties relating to mastering technologies for carrying out tasks related to teaching.

In pedagogical practice, teaching and learning require support from theories that support teaching practice. It is important to consider the relationship between the content presented in the classroom and its relevance to the student's real life and the specificities of their daily lives. Therefore, it is necessary to recognize the relationship between contexts (socioeconomic, cultural, political) and the different ways of perceiving man. Thus, the educational phenomenon, that is, the teacher's practice in the classroom, may be presented in different ways, if it is influenced by one conception or another. From this perspective, the role of the teacher in the teaching process and its relationship with student dropout is very important.

METHODOLOGY

Reports of experiences of pedagogical practices were made, in various aspects, in addition to the description of intervention actions carried out jointly to verify the contribution to reducing student dropout. As for the approach, the research is qualitative, as there is concern with aspects of reality, focusing on understanding and explaining phenomena to identify and analyze the data. Denzin and Lincoln (2011) state that qualitative analysis seeks to obtain descriptive data of people, places, and interactive processes that occur through the researcher's direct contact with what is being studied, with the understanding of the phenomena given from the perspective of the participating subjects.

As for the objectives, this research is exploratory, involving bibliographical research and practical experiences with the problem, in addition to the analysis of examples. The purpose is to collect information, not to obtain statistical conclusions. According to Gil (1991), exploratory research aims to facilitate the researcher's familiarity with the problem that is the subject of the research to allow the construction of hypotheses or make the issue clearer. For the literature review, the CAPES Periodicals library, Google Scholar, and the Scielo database were adopted as the basis for data collection, using the descriptors: "school dropout in Technological Professional Education".

Regarding the nature of the results, the research is aimed at generating knowledge for practical application to solve specific problems (Ganga, 2012). Its objective is to produce knowledge for application in practice, being directed towards the search for truth in a particular situation (Kauark; Manhães; Medeiros, 2010). As for the procedures, the present work can be classified as a case study, conceptualized by Gil (2002, p. 54) as the "[...] deep and exhaustive study of one or a few objects, in a way that allows their broad and detailed knowledge." It is a more appropriate technical procedure when one aims to know the reason for certain events, over which the researcher has no control (Yin, 2014).

Firstly, a bibliographic survey was carried out on the topics covered in the research. Subsequently, course dropout data was requested through the Academic Control Coordination (CCA-*Coordenação de Controle Acadêmico*) to analyze data from 2017.2 to 2020.1. The information provided by the Coordination was based on the following status of the students: completed, locked out, enrolled, institutional link, completed, and dropped out. Using this information, it was possible to measure student dropout rates. The object of study is the Subsequent Technical Course in Electromechanics at

IFCE/*Campus Avançado do Pecém*, as there was a high dropout rate among the course's members. In compliance with the goals established in the PNE, IFC's institutional goal is to gradually increase, by 2024, the average completion rate of secondary and undergraduate technical courses to 90% (ninety percent), offered in person and online. In this sense, aiming to meet the goal established in the PNE and based on the current course completion rate at IFCE (21.08%), the institution defined that the completion rate for each course offered on campus should increase by 7.15% per year, starting from 2017, until 2024 (IFCE, 2017).

The Institutional Strategic Plan for the Permanence and Success of IFCE Students, or simply the IFCE Strategic Plan, was created with the participation of the academic community and the use of some institutional documents as input for its preparation. The document was recommended by the Secretariat of Professional and Technological Education (SETEC), which suggested the elaboration of an Institutional Strategic Plan for the Permanence and Success of IFCE Students in Federal Network institutions, to strengthen the quality of teaching through actions to encourage retention and academic promotion.

The Technical Course in Electromechanics has, in its curricular matrix, propaedeutic disciplines applied to the professional market (organized based on areas of knowledge), in addition to technical and professional training disciplines, including laboratory practices and supervised internships carried out in companies/industries that develop activities in this sector. The preparation of the curricular matrix is based on the National Curricular Guidelines, the Institutional Guidelines, and the Quality Standards established by the Ministry of Education – MEC. The results will be reported through data analysis using content analysis (Moraes; Galiazzi, 2016).

The course curriculum aims to guarantee human, ethical, and professional training; aims to be an instrument that provides students with the opportunity to acquire the skills set out in the professional profile and develop ethical, moral, cultural, social, and political values that qualify them for professional activity that contributes to personal, social, and scientific development. In flexible working hours (300 h), the activities aim to consolidate the student's training, ensuring proximity to the job market and the local production process, such as practical activities in laboratories, participation in research and extension projects, collaboration in the organization of events aimed at professional training, technical visits, development of an integrative project, among other actions.

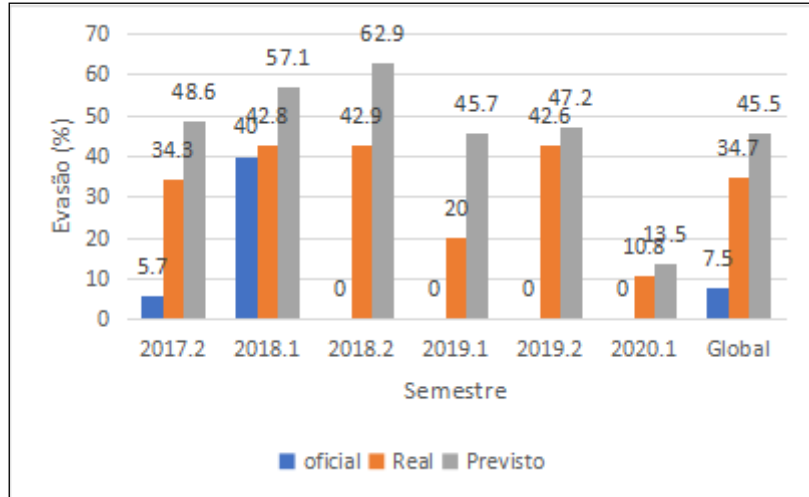
RESULTS AND DISCUSSIONS

A survey of dropouts from the Electromechanical Technical Course was carried out based on data provided by the Academic Control Coordination of the Pecém Advanced Campus (Graph 1). The total number of students enrolled in the course, in the period analyzed, was 213. The variation in dropout results was obtained officially and in real terms. Thus, the scenario in which students have an enrollment status as dropouts was considered *official*. On the other hand, the number of students who dropped out of the course or informally abandoned it and who have no prospect of returning to the institution was considered real. Finally, the *expected* term was considered for the situation of students who were suspended, but who would be willing to return, however, without prediction. Therefore, there is the possibility of dropout, as the percentage of students returning after closure is reduced.

According to Graph 1, there was a discrepancy between the official evasion numbers and the actual evasion numbers. The number of students who drop out but do not seek out the institution to officially register their departure is still relevant. Therefore, it is important to consider these aspects to check whether the indices are harmful/alarming or not. Analyzing only the official numbers, an average dropout rate of 7.5% was observed. Considering the students who left unofficially and the students who were withdrawn but had no intention of returning to the institution, it was observed that dropout rates could be around 34.7%, a very alarming number. In some periods, the class's dropout rate was close to 50%, such as the class that joined in 2018.1. Finally, there is a critical situation, in which students who have been locked out may not return to the institution. Thus, dropouts above 50% can occur in several classes. Lower dropouts were also observed in the last class analyzed (2020.1), which may have something to do with the interventionist actions carried out on campus.

Monitoring this phenomenon must be continuous, a usual campus policy. Therefore, it is suggested that the names of students who have their first absences in the subject be forwarded to the CTP. This diagnosis is important in combating evasion, giving satisfactory results in some cases. Often, a preliminary conversation is enough to keep the student at the institution. For example, in class 2019.2, ten students were absent in just one week, which resulted in instant actions based on reports from class council meetings and direct communication from teachers to the CTP/Coordination.

Graph 1 – Student dropout in the Subsequent Electromechanical Technician Course



Source: Created by the authors.

Evasão
Semester
Oficial
Real
Expected

Many teachers had no experience in teaching a subsequent technical course with a high percentage of students in the job market, something reported in meetings. Therefore, staff must be aware that many students work and often, due to scheduling, miss classes frequently. In this context, actions are necessary to promote changes in pedagogical practices. However, there is a certain degree of resistance by the teachers when applying new methods. Difficulties in teaching are common. Many teachers have little time in their academic career and others have no experience teaching subsequent technical education classes.

Solving the problems inherent to evasion depends on collaboration and an understanding of the importance of all employees. The openness given to teachers to contribute and build a good institution is an essential factor in this process. However, the view that servers should not just be executors of management tasks is a relatively new stance. Working together is essential, relative autonomy is not viable, but rather a space for dialogue, debates, and discussions. Relationships are built by respecting differences, valuing individuals, and reflecting on the collective (Beraldo; Pelozo, 2007). These relationships to grow the course are fundamental, with participatory, democratic management being important – something carried out at the Pecém Campus –, including the general management and coordinators.

This entire situation, present in the course's pedagogical project, must be applied forcefully, to provide greater motivation to students, reducing dropout problems. In this way, there needs to be greater awareness among teachers, contributing to a broader training of students, with critical sense, reflection, and problem-solving, with greater interaction/dialogue between teacher and student. These actions involve pedagogical practices that contribute to the best learning process and comprehensive training, with the application of active methodologies, interdisciplinarity, greater student autonomy,

greater concern with didactic transposition, understanding the specificities of each student and class, to achieve satisfactory results in the training of students.

Some joint actions were planned and carried out throughout the semesters to favor, within the scope of the teaching and learning process, the reduction of the phenomenon of student dropout, being based on proposals from the Strategic Plan for Permanence and Success of IFCE Students (2017–2024). At first, students drop out following the first obstacles observed during the course. Therefore, it is important to include an individual study plan for these specific cases. This work has not yet been carried out at the Pecém Campus, but satisfactory results were found at the Itapipoca Campus. Another important action was the holding of the 2020.1 pedagogical meeting with the theme “Pedagogical Practices: the Challenges and Processes of Possible Development and Innovation”, as well as the lecture entitled “Education for the 21st Century Active Methodologies and digital technologies in the Classroom class”, in addition to the presentation of the specialization topic of one of the authors of this article, with subsequent debate. These actions originated through dialogue between the campus's pedagogical coordination through the intervention of the author of this article. In meetings, topics were suggested that could share topics about pedagogical practices, to spread knowledge and provide a debate of ideas.

In the first week of classes, seminars covering topics such as time management and study subjects have been held on campus by CTP. However, no beneficial results were observed with the use of just one meeting, and therefore continuous monitoring was suggested to provide greater encouragement to students, especially those who work after school and who need good study management. Furthermore, due to the physical and mental fatigue of students, the availability of projects that contribute to health promotion is interesting. To this end, actions are being carried out by the Physical Education teacher, as well as the Quality-of-Life project for students, already aimed at civil servants, is being expanded.

The heterogeneity of classes, characteristic of IF, imposes many challenges, which make the transposition process even more complex, as it is not repeated, it is not something rigid with always consistent results. For example, in Jaguaribe, there were subsequent and concomitant courses that did not present many problems with dropouts; when this occurred, it was usually due to a lack of transportation. In Itapipoca, the course was integrated, and the main causes of dropouts were related to problems of socioeconomic vulnerability.

One of the challenges to be faced is the transformation of scientific knowledge into school knowledge, considering that there are students recently promoted from high school, others who have not studied for a long time, students who already have technical training, and many who have already are professionals in the metalworking sector. Thus, students are coming from high school and, at the other extreme, students who are already married and older. Therefore, this adaptation, in a different environment, with different disabilities, is quite challenging.

In the 2019.2 semester, for example, an adjustment was made to the Mechanical Technical Drawing discipline, in which it would be necessary to make some changes so as not to increase course dropout rates even in the first semester. One of the attitudes was to reduce activities to be carried out at home and increase activities in the classroom, which brought good results. Many students worked, and this would be a way for them to carry out activities without compromising their learning – many were unable to allocate extensive time to studying at home. However, isolated actions can be ineffective, and joint practices are essential for greater effectiveness in combating evasion.

The student profile also demands changes in the teaching role in the classroom. Understanding certain educational concepts is important in education at all levels, something complex, but essential in the learning process. Teachers need to understand the specificities and differences of the student body. As previously reported, there is a large age variation among students, and teachers must be prepared for such situations. Considering one of these educational concepts, andragogy, students have experience, relate usefulness to their personal or professional life, seek self-esteem, satisfaction, quality of life, and learning is facilitated and reflective. Students question what they are studying, what for, and how they can use this knowledge in the future (Rechliniski; Schwertner, 2017).

Heutagogy, a branch of andragogy, is related to self-learning, in which the student is responsible for knowledge, and choosing methods. Technology may contribute to the learning process,

to encourage creativity, autonomy, and freedom for self-management of learning. Finally, gerontagogy is related to the education of the elderly, which is based on the development of knowledge and creativity, with a specialized approach, interdisciplinary vision, and search for solutions arising from debates (Joye, 2013). It is emphasized, again here, that these adjustments require a very challenging attitude.

It is worth highlighting an interesting situation observed in the 2018.2 semester, in which one of the students was over 50 years old. Despite the challenges in learning, he overcame all the difficulties, in addition to being able to combine work and study. Individual differences grow with age, and, therefore, adult education must consider differences in style, time, place, and pace of learning (Frota, 2010).

In 2019, the student completed the course and was hired by an outsourced company, which carries out electrical maintenance services on the Pecém Campus itself – a very gratifying achievement for him, but also all employees. A student with this profile has another motivation to seek knowledge, requiring a more careful and specialized approach. Therefore, the performance must be shaped according to the characteristics of the class and the differences between the students. Teachers' lack of concern or lack of knowledge regarding this reality can contribute to dropout problems, intensifying them.

The application of digital technologies contributes to learning, as they arouse greater attention and interest from the students. Technology is an essential tool in education, as it provides a better learning process for students. Therefore, teachers need to adapt to this new scenario, with the change in the teaching profile. This constitutes a challenge for teachers and students, who must familiarize themselves with the existing tools. Increasingly, students distance themselves from the Cartesian model, of being a passive element in the learning process. These tools in question can promote student autonomy, stimulate curiosity, and increase interaction in the classroom. In this way, the construction of knowledge can happen with the support of technology.

In the pedagogical practices of the authors of this article, several tools have been used, and the results have been satisfactory as complements to the other activities carried out. This transition is a challenge, as there is a tendency to replicate the practices of teachers from other times when active methodologies were not yet used. Pair learning flipped classroom and problem-based study are also other methodologies that have been applied. Another action is the case study approach to a specific problem observed in some professional work. This activity aims to encourage decision-making, bringing the student closer to reality. These challenges greatly stimulate students – especially those who already have some experience in the area – as they contribute to creativity and curiosity, increasing their horizons in solving problems.

Encouraging students to teach their peers is practiced frequently, which helps to retain learning. For example, in the Mechanical Technology discipline, one of the members of a certain class was shown carrying out practical activities, such as cutting, and drilling, among other processes. Subsequently, this student carried out the practice and taught it to other classmates, who passed this knowledge on to the next class. This procedure provided good learning in carrying out the practices with good feedback from students.

Finally, after a greater understanding of active methodologies, auxiliary tools have been used, hybrid teaching with the insertion of technologies to facilitate student learning. Using Google Classroom and Kahoot! has provided excellent results, with many requesting the use of these tools, as they enable greater learning and greater motivation in the search for knowledge in each curricular component. Therefore, good results are observed, which indicates that this is a good way to improve student learning in professional and technological education, motivating teachers to learn more about the various existing techniques.

As previously reported, the application of Ausubel's conception has brought good results. One of the recent examples refers to the curricular component “Notions of Welding”, belonging to the FIC (Initial and Continuing Training- *Formação Inicial e Continuada*) Mechanical Assembler course, which can be applied in the technical course. This course is characterized by having students with experience in the metalworking industry, a very broad area. In the first class, questions are asked about the understanding of welding to verify the presence of any prior knowledge. Subsequently, concepts and

applications are tested. This way, those who already have prior knowledge obtain more satisfactory answers. From there, concepts are related to other definitions, applications, and problems.

Another action taken is the insertion of concepts from other areas of knowledge, for example, relating the effects of welding energy on the properties of steel, and associating preliminary knowledge of materials for mechanical construction. The application of interdisciplinarity is important in the application of Ausubel's theory, with the integration of different curricular components. The change of the teacher is not simple: there are some barriers in the interdisciplinary practice, such as insecurity about dealing with content that covers another discipline, the lack of time for personal study and with colleagues from other disciplines so that they can be interdisciplinary strategies were carried out, and the workload was exhaustive.

In the assessment, continuous monitoring of learning is important to detect possible problems resulting from a poorly used technique, as assessment cannot be rigid, as it can change according to the class. Occasionally, it is necessary to detect problems in the methodology resulting from the use of inappropriate texts, and the lack of preparation and/or planning. Therefore, the teacher must serve as a bridge between the apprentice and learning, having much broader functions, with a more complex activity that requires greater preparation.

Thus, the various difficulties in consolidating teacher training are evident, which has a direct impact on student training. Therefore, for the work to happen, it is also necessary that professionals linked to the educational institution are aware of the issue of dropout. Therefore, to be able to obtain the expected result, students must establish an open dialogue with teachers, so that all difficulties can be understood, with support from the teaching and technical-pedagogical coordination.

FINAL CONSIDERATIONS

The great importance of pedagogical practices for students' retention in the course is notable, as they contribute significantly to the teaching and learning process. It is also evident that more actions are needed to reduce course dropouts. Despite the concern with the issue and the implementation of various activities to minimize this phenomenon, this is still not enough to reduce the problem considerably.

There was a need to train teachers with pedagogical recycling programs, not only aiming to improve the methodologies used, but also the relationship between teachers and students; to develop and execute retention and success programs; to increase the offer of scholarships, such as training assistance, monitoring, PIBIC Jr.; to expand the holding of events to publicize the course; to intensify reorientation actions for students who are already inserted in the academic environment and who are uncertain about remaining in the course; and, finally, to constantly discuss the curriculum.

Initial and continuing training for teachers is a basis for teachers to be better able to deal with these and other situations, expanding their vision of their position in the classroom. Many teachers only had experience in the industry, others who only worked in higher education, and some who made the transition from graduation directly to the classroom. Furthermore, the turnover of teachers resulting from removal, competition, and redistribution, for example, emphasizes the importance of work that must be done continuously on each campus.

Evasion is silent and often only appears in the final act for many teachers who do not monitor their students closely and attentively. More studies are needed to evaluate the main dropout factors (failure, simultaneous work, lack of knowledge of the profession, teaching methodology, relationship with students, deficiency in basic education, etc.), which will contribute to drawing up guidelines that reduce dissatisfaction and students' difficulties, as teachers often do not know what actions to take because they do not have data to carry out more specific planning.

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Author 1 - Contribution to data collection, methodology, analysis, and interpretation of data and writing of the text.

Author 2 - Contribution to the writing of the article and critical review.

DECLARATION OF CONFLICT OF INTEREST

The authors declare that there is no conflict of interest with this article.