

## AN ANALYSIS OF SCHOOL EVASION IN THE PHYSICS DEGREE COURSE IN IFAC - CAMPUS SENA MADUREIRA

---

*Maria Emanuely D'Avila da Silva de Souza*  
Discente de Física -IFAC/CampusSena  
Madureira

*Magali dos Santos Monteiro*  
Discente de Física -IFAC/CampusSena  
Madureira

*Marliane de Souza Tamburini*  
Mestra em Ciências pela Universidade  
Federal Rural do Rio de Janeiro (2014). E  
docente lotada no Instituto de Federal de  
Educação, Ciência e Tecnologia do Acre  
desde 2011. E atualmente exerço as atividades  
no Ifac Campus Rio Branco

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



**Abstract:** School dropout has been a prominent topic in the Brazilian educational scenario, occupying relevant space in relation to public educational policies. Through this study, we sought to investigate this problem in the Physics Degree Course at IFAC, in the Municipality of Sena Madureira, seeking to understand the following study concern: **What are the factors that triggered the phenomenon of evasion of Physics Degree students at IFAC? / Sena Madureira Campus?** Through this research, we sought to investigate the reasons for the genesis of this problem as a way of minimizing this problem in this educational institution, also contributing to the improvement of local educational quality. To this end, a qualitative research was carried out, whose data collection was carried out through a semi-structured questionnaire, involving 7 students from the Physics Course who dropped out. The study proved that the students' lack of affinity with this degree and the difficulties in the subjects offered in the aforementioned degree were the primary factors in the students' academic failure.

**Keywords:** School dropout- Physics- problem

## INTRODUCTION

The problem of evasion is something that must be the subject of great attention, as it means a loss not only for the student who abandoned school, but also represents a threat to the family and society, since in relation to the future of these students does not demonstrate their intellectual growth and also their good performance in the globalized and competitive job market. In addition to these disadvantages, this impasse leads to a low level of literacy among students. Regarding the latter, Costa (2005) argued that evasion not only keeps people away from social life, but also restricts the opportunity for growth, leaving them in complete ignorance. In this

sense, she expressed:

[...] Whatever the reasons, students lose the opportunity to interact with other people in a literate environment, failing to build their own knowledge and being prevented from seeking and acquiring reading and writing skills, thus remaining under the oppression of ignorance (Idem, p.18).

Situating this problem in the form of Professional Education, it becomes worrying, as according to data issued by the Report of the Federal Audit Court (2013, p.11). "Evasion represents a problem that affects different teaching modalities to a greater or lesser extent".

In Brazil, professional education is no exception to this rule [...]. Also according to this Report, analyzing the rate of students completing undergraduate courses in 2013, only 16.67% of students were found, with the completion rate of students enrolled in Bachelor's courses being higher, which registered 42. 8% students. This problem was also analyzed at IFAC, and the analysis covered the Physics degree course. Given this, the question arises? What factors triggered the phenomenon of dropout among Physics Degree students at IFAC/Campus Sena Madureira?

This study sought to investigate the reasons for the genesis of this problem. To this end, qualitative research was carried out with semi-structured questionnaires involving students from the first class of the Physics Degree Course at IFAC/Campus Sena Madureira.

We sought to understand the reasons for dropouts in the Physics degree course based on the contributions of different authors, such as: Costa (2005), Queiroz (2004), Araújo; Abib (2003, p.190) taking into consideration, mainly, the field research carried out at the institution under study. The research proved that evasion occurred due to the lack of identification of students in relation to the Physics Course, as mentioned by the interviewees. This study

was of great relevance to local literature, as this topic is quite scarce when the analysis is restricted to Courses offered by Federal Institutes of Education, and this work is quite rich in deepening the concept of evasion and the causes of this problem in Education Higher. In this work, suggestions were also offered to mitigate dropout rates in Physics degree courses, reflecting mainly on the role of the teacher in alleviating this problem, which proposes a new approach to teaching Physics based on the National Curricular Parameters.

### **CONSIDERATIONS ABOUT EVASION OF STUDENTS IN HIGHER EDUCATION**

School dropout is an international problem that affects Brazilian Education and is characterized by student abandonment of school activities. When we think about school dropout, Basic Education comes to mind, but this is also a major problem experienced in Higher Education Institutions.

According to Souza and Júnior (2008), dropout is one of the biggest obstacles in the training of educators. Research reveals that the dropout rate in undergraduate courses has reached rates greater than 50% (GAIOSO, 2005).

Even today, due to the lack of better direct conditions, or the absence of coordination in education that can carry out joint work, acting in the three spheres of government, together with organized civil society and the community itself, school dropout continues to challenge everyone and causing incalculable losses to society in general. Education is an investment, the return of which is learning, and the student must be promoted until the completion of the degree of study in which he or she is enrolled, with emphasis here, on the Physics Degree Course (GATTI; QUEIROZ; et al., 2009).

In the last five years, as the report showed,

the average annual dropout rate in Brazil corresponded to 22%. In the public sector, evasion means public resources invested without due return. In the private sector, it is an important loss of revenue. In both cases, dropout is a source of idleness of teachers, staff, equipment and physical space (BARROSO, 2004).

Therefore, for the country, student withdrawal represents important social and economic losses. From the institution's point of view, there is no greater failure in fulfilling its mission than the student who drops out. While, in the private sector, 2 to 6% of revenues are spent on marketing to attract new students, nothing similar is invested to retain students who are already enrolled. However, international studies indicate that the cost of retaining a student is around four times lower than that required to attract a new student (BARROSO, 2004).

It is known to many that dropout rates are largely associated with the difficulties that students face while offering the curricular component taught. Regarding this issue, Bonadiman and Nonenmacher (2007) identified the teaching of Physics as alien to reality and, furthermore, the fragmentation of content when the analysis involves this taught curricular component. Another aggravating factor is the devaluation of teachers who teach Physics and also the precarious conditions of this professional, which will undoubtedly reflect negatively on the teaching and learning process. Regarding this, they expressed:

The causes that are usually cited to explain difficulties in learning Physics are multiple and varied. Regarding them, they highlighted the low appreciation of the teaching professional, the pre-classical and the almost total forgetfulness of modern Physics, the focus too much on the so-called mathematical Physics to the detriment of a more conceptual Physics, the distance between school formalism and the students'

daily lives, the lack of contextualization of the content developed with technological issues, the fragmentation of content and the linear way in which it is developed in the classroom without the necessary openness to interdisciplinary issues, the little appreciation of experimental activity and the student's knowledge, the vision itself of science and Physics in particular, generally understood and passed on to the student as the finished product. Precarious working conditions for teachers, the quality of content developed in the classroom, excessive emphasis on Physics (Idem, p. 196).

In the daily practice of Physics degree teachers, during Supervised Internship IV, in 2014, great difficulties were observed in learning the physical and mathematical concepts involved in this discipline, without which it was impossible to equate physical phenomena. Among them, the following can be mentioned: difficulties in interpreting the statements of the questions, little command of physical and mathematical formulas that little by little their delay increased, reaching a moment when it was noticeable from a distance with the average pace of the class that became if insurmountable. The student with specific learning difficulties did not initially present motivation problems, although progressively he could feel incapable of carrying out the proposed tasks and would abandon any attempt to overcome them.

It is believed that the use of attractive methodologies for teaching and learning in Physics classes contributes to minimizing the problem of dropout. Regarding them, Araújo and Abib (2003) highlighted: "the appropriate use of different experimental methodologies, whether they are of the nature of demonstration, verification or investigation, can enable the formation of an environment conducive to learning different scientific concepts [...]. Also, emphasis is placed on "activities of a demonstrative nature that aim mainly at illustrating various aspects

of the phenomena studied [...]" (Idem, p.190).

Regarding methodologies with experiments, Araújo and Abib (2003) observed their importance for understanding scientific concepts. However, they did not ignore the relevance of students' prior knowledge in the learning process. In this sense, they expressed that to streamline the teaching and learning process, it is recommended to work with experiments, games, practical classes in a way that motivates students. In relation to teaching methodologies in the rural school, there was not only the use of games. However, despite all efforts, it was not possible to avoid dropouts, and the research proved that one of the factors was the difficulty in reconciling professional and academic life and, mainly, due to the fact that many students did not identify with the Course offered at this institution. education.

When the dropout students were asked why they had chosen the Physics Course, the answers were very diverse, with some expressing: lack of options for other Degree Courses, need to obtain a certification and to enter the job market. This can be seen in the statements below from the students. Who expressed:

"I chose the Physics course because there was no other option in the city and because it was free" (Student E).

"I chose the course just to obtain a graduation certificate" (Student F).

It was noticed that the reasons listed were not enough for students to break barriers related to learning scientific concepts and, the demand to work itself triggered the huge dropout rate from the Course on the analyzed Campus.

However, in the field school, through interviews with students, only teaching methodologies were verified, such as: expository classes based on the use of textbooks and lists of fixation exercises that

did not motivate nor had any connection with the students' reality. Regarding this reality, Bonadiman; Nonenmacher (2007, p. 194) expressed that "the teaching of Physics has often been carried out through the presentation of concepts, laws and formulas, in a disjointed way, distanced from the world experienced by students and teachers and beyond, but also because of this empty of meanings."

However, in the teaching and learning process there must be teacher/student/content interaction, with learning as the pedagogical core, and the teacher must be attentive to the doubts and impasses of their students, who must be open to different learning possibilities. However, the learning advocated in this article is that proposed by David Ausubel (apud ARAÚJO, 2014, p.1) according to which "it involves the interaction of new information with a specific knowledge structure, which he defines as a subsuming concept".

Seeking to analyze the reasons for evasion in the Physics degree course, it was observed that it occurred due to the difficulties on the part of students in reconciling professional activity and academic life simultaneously and, mainly, due to the lack of affinity on the part of the majority of students with the aforementioned Course. However, in addition to these factors, difficulties in understanding teaching content were mentioned.

Regarding the first aspect mentioned, Patrícia Pereira (2015, p.1) had also identified it in Higher Education Courses, which she expressed: "The need to work and the difficulty of reconciling employment and studies are the main causes of the high dropout rates in the modality [...]". Analyzing this reality at the Federal Institute on the Sena Madureira Campus, in 2015 in the Physics Degree Course, the research proved that of the 33 students enrolled, only 23 students completed it, the percentage of which was 69.70% of the

class. It is worth noting that of the 10 students who dropped out, 7 were interviewed, which corresponds to 70% of the students who dropped out.

It is suggested through this research that the investigated Campus and educational institutions offer alternative times in the Physics Course, working with the external community on the profile of graduates, focusing on the objectives of the course and the performance of professionals in the market. work mainly promoting meaningful learning, a central concept of Ausubel's theory, according to which it involves the interaction of new information with a specific knowledge structure, known as subsumer (AUSUBEL apud ARAÚJO, 2014).

## **DATA ANALYSIS AND DISCUSSION**

Seeking to situate the problem of evasion in rural schools, the definition of evasion according to Queiroz (2004) is initially relevant. For this author, this concept designates:

Leaving school before completing a series or a certain level. The phenomenon of school dropout, conceptualized as the student leaving school during the school year, before completing a series and, consequently, a course (Idem, page: 1).

The problem of evasion is a real threat to the educational reality of many countries around the world, with Brazil being one of the champions of this negative and shameful situation (Ibidem).

The phenomenon of evasion is something that deserves special attention due to the economic and social losses it causes. Analyzing this problem at the Institute under study, it became known through interviews that the difficulties in students learning physical concepts contributed, in part, to this impasse, the reason for which was justified by

the fact that the act of teaching is based only in formulas.

This study analyzes dropout rates in rural schools, based on a sampling of the results of research carried out with students who dropped out of the Physics Degree Course, offered by IFAC Campus Sena Madureira, in 2015. The first graph showed the number of students who started their degree in that year, totaling 33 students, according to data provided by the School Registry, whose dropout percentage was 30.30% of students throughout the course and 69.70% of the number of students who completed their degree in that Course, as seen below:

The Physics Course, like others in the exact and technological areas, requires the student to have a good foundation of scientific concepts. However, at the rural school, a good part of the students brought with them the consequences of fragmented teaching, and the teachers contributed to fueling this problem, as the majority, despite having great knowledge, had difficulty in transposing teaching, and this was confirmed during the aforementioned course in the Physics Degree Course, which was also confirmed during the interview for the preparation of this article. And, because of this, learning was not consolidated, resulting, therefore, in a learning gap for students who entered Higher Education, meaning that a good part of the students did not have an affinity with the Physics Course, which fact later would cause significant student dropout from the aforementioned Degree.

The research showed that the students who attended this degree were generally over 18 years old, the majority of whom belonged to low-income families. This fact ended up requiring this group to enter the job market to contribute to the family budget. The concern is that the difficulties in reconciling college and work would lead them to abandon the course, as they prioritized the need to work.

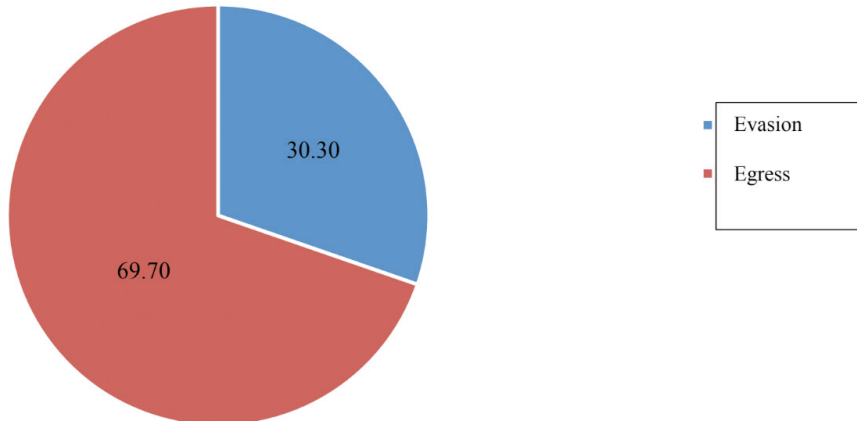
Analyzing the reason for evasion, the data made available by the School Registry pointed out as preponderant factors the lack of affinity with the Course and the difficulties in the subjects offered in the aforementioned degree. This can be noticeable in the statements and in graph 2 represented below, when the interviewed students who had dropped out were asked the reason for dropping out of the said Course, and of the 7, only 1 dropped out due to lack of reconciliation between academic and professional life, the other 4 dropped out for not having an affinity with the Course and for experiencing many difficulties with the content of the subjects of the Physics Degree Course. However, 1 of them omitted the answer. And, of these students interviewed, 1 of them requested a transfer from the Physics Course to the Biology Degree because they did not identify with that Course.

I gave up because I didn't identify with the course, and I had a lot of difficulties with the course subjects (STUDENT C).

The reason for my withdrawal was the lack of balance, as I worked during the day and at night it became very tiring to balance the course with my professional life (Student D).

Some authors seek possible solutions to this high dropout rate in Brazilian universities, mainly in Bachelor's Degree Courses, as is the case of the work reported by Barroso, (2004) at ``Universidade Federal do Rio de Janeiro``. A methodological proposal was applied to the Physics I discipline by these scholars in a face-to-face course, with the aim of trying to reduce the high rate of student dropout, with this work being carried out in the first year of the Degree. According to these authors, the difficulties presented were classified into three groups: difficulties in understanding the specific language of science, difficulties in understanding the existence of a scientific method and the inadequacy of study habits and methods. This first aspect mentioned

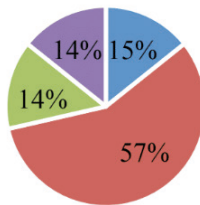
**PERCENTAGE OF THE NUMBER OF STUDENTS DROPPED AND GRADUATED FROM THE PHYSICS COURSE AT IFAC - 2015**



GRAPHIC 1

Source: Authors, 2015

**PERCENTAGES OF REASONS FOR STUDENT DROPOUT FROM THE PHYSICS COURSE**



- Lack of reconciliation with professional academic life
- Students who did not identify with the course and had many difficulties with the content of the subjects of the physics degree course
- Students who did not want to respond it
- Students who changed courses

GRAPH 2

Source: Authors, 2015

was similar in the rural school, which was caused by the deficiency of elementary education, whose teaching was fragmented and decontextualized. This diagnosis allowed the discipline to be taught with characteristics that explained and allowed the overcoming of these deficiencies in terms of physical concepts.

These authors suggested demonstration classes (with the intense use of videos, experiments and simulations) in addition to the operationalization of concepts that began to be made using mechanisms that favor the active and cooperative work of students. Furthermore, teaching material was developed in several specific formats to address the content covered (BARROSO, 2004).

It is true that some students will always drop out during their academic life, whether due to a mistake in choosing the Course, the requirement of studying beyond what is expected for those looking only for a diploma and transfer to universities, and these reasons will always exist. However, the important thing in the fight against dropout is that students do not abandon their courses for reasons that could be avoided. Therefore, based on active work involving the student, they would try if they perceived that the learning contents were attractive, useful, connected with their daily life, attractive enough for the effort to be rewarded.

## **METHODOLOGY**

The study was carried out in the State of Acre, which is located in the northern region of Brazil and has a population of 830,026 inhabitants, according to the latest IBGE census, carried out in 2022 (IBGE,2022). The qualitative research was developed at the Federal Institute of Education, Science and Technology of Acre on the Sena Madureira Campus, in the city of the same name. Documentary research was also used,

which in Gil's (2002) view, is very close to bibliographical research, with both being different in terms of the nature of the sources. This means that while bibliographical research is essentially supported by the contributions of various scholars regarding a given subject, documentary research is based on materials that have not had analytical treatment, or that can still be re-elaborated based on the object of study (GIL, 2002). Regarding this type of research, Lakatos and Marconi (2001) defined it as one that uses data collection through primary sources (through written or unwritten documents, whether public or private; from institutions and, also, of households and statistical sources). And, in this study, physical documents (spreadsheets containing statistical data regarding the number of students enrolled and dropped out at the institution researched in the Physics Course in 2015) and digital documents that were made available by the Ifac Campus Sena Madureira school registry were used as primary sources.

To carry out the field research, a semi-structured questionnaire was also used to collect data, involving 7 students out of a total of 10 students who did not complete the Physics Degree Course, representing more than 50% of the universe investigated.

Initially, bibliographical research was carried out using books from the personal collection, made available by the library of the Campus under study and on websites that contained articles and scientific journals involving the topic in question, which were necessary to support the in-depth topic.

Continuing the work, a visit to the School Registry was made to request authorization for documentary research through primary sources (physical and digital spreadsheets), which were necessary for the analysis of the topic under study. After this stage, documentary research was carried out



followed by an interview involving students who had dropped out of the researched institution. Continuing the study, the data made available in the documentary and field research that gave rise to the aforementioned scientific article was tabulated and analyzed.

## **FINAL CONSIDERATIONS**

This research is the result of the conclusion work of the Physics Degree Course, as a requirement for obtaining the conclusion of the said Course, which addressed school dropout in the Physics Degree at Ifac – Campus Sena Madureira, justifying this impasse, mainly due to the lack affinity of students with this degree and the difficulties in the subjects offered in the aforementioned degree. In addition to these factors, the need for students to work to help with their family income was observed, which resulted in difficulty in reconciling academic life with professional life.

The results reveal the need for improvements in Education with the aim of contributing to alleviating the high dropout rate, the need for investment in public policies aimed at keeping students in school in any modality and level of education and, above all, in high school, as students from low-income family groups and with various social and economic problems are the most susceptible to dropping out of

school. Improvements in the teaching career are also recommended, which can attract young people to take up this profession.

It is also necessary to take into consideration, the issues that involve students within a school context, such as the relationship with teachers, which in some way helps or hinders good performance in the learning process.

During Supervised Internship IV, carried out at this educational institution, it was observed great difficulties on the part of students in learning the physical and mathematical concepts that involve the discipline of Physics, without which it is impossible to equate physical phenomena. Among them are: difficulties in interpreting the statements of evaluation questions and poor knowledge of physical and mathematical formulas.

What was analyzed in this study is that there is a list of social and economic problems that need to be rethought, planned with more intelligent strategies, so that Brazilian society does not continue to pay such a high price for the lack of better use of educational investments. that they are insufficient and that a significant portion is wasted through school dropout.

To streamline the teaching process, it is recommended to work with experiments, games, practical classes in a way that motivates students.

## REFERENCES

- ARAÚJO, Liércio Pinheiro de. **Aprendizagem significativa**, 2014. Disponível em: [www.UNITIDS.Edu.br/dissertação-Liergio-Pinheiro-de-Araújo.pdf](http://www.UNITIDS.Edu.br/dissertação-Liergio-Pinheiro-de-Araújo.pdf). Acesso em: 20 Dez. 2015.
- ARAÚJO, Mauro Sérgio Teixeira de; ABIB, Maria Lúcia Vital dos Santos. **Atividades experimentais no ensino de Física: diferentes enfoques, diferentes finalidades**. São Paulo, 2003. Disponível em: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1806-11172003000200007](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1806-11172003000200007). Acesso em: 25 Nov. 2015.
- BARROSO, Falcão. **Evasão universitária: o caso do Instituto de Física da UFRJ**: [s.ed.], 2004.
- BONADIMAN, Hélio; NONENMACHER, Sandra. **O gostar e o aprender no ensino de física: uma proposta metodológica**. Ijuí, 2007. Disponível em: <file:///D:/Downloads/Dialnet-OGostarEOAprenderNoEnsinoDeFisica-5165466.pdf>. Acesso em: 25 Nov. 2015.
- BRASIL. Plano de **Desenvolvimento** da Educação (PDE). 2008. Disponível em: <http://portal.mec.gov.br/arquivos/livr>. Acesso em: 20 set. 2015.
- BRUINI, Eliane da Costa. **Aprendizagem significativa**, 2013. Disponível em: <http://educador.brasilecola.com/trabalho-docente/aprendizagem-significativa.htm>. Acesso em: 22 set. 2015.
- COSTA, Rainer Marinho da. **Evasão no ensino superior privado – como podemos evitá-la?**. 2012. Disponível em: <http://blog.abmes.org.br/?p=3411>. Acesso em: 20 Nov. 2015.
- FURASTÉ, Pedro Augusto. **Normas técnicas para o trabalho científico: Explicitação das Normas da ABNT**. 15. ed. Porto Alegre: s.n., 2011.
- GAIOSO, **O fenômeno da evasão escolar na Educação Superior no Brasil: Relatório técnico**. Pró-reitora de Pós-graduação e Pesquisa, Universidade Católica de Brasília, [ s.ed] 2005.
- IBGE. Sena Madureira: **população**. Disponível em : <https://cidades.ibge.gov.br/brasil/ac/sena-madureira/panorama>. Acesso em: 30 Ago. 2023.
- GATTI, BARRETTO. **Professores: aspectos de sua profissionalização, formação e valorização social: Relatório de Pesquisa**, DF: UNESCO, 2009.
- Gil, A. C. (2002). **Como elaborar projetos de pesquisa**. 4. ed. - São Paulo: Atlas.
- JABOTICATUBAS: SBF, 2004. Disponível em: <http://www.sbf1.sbfisica.org.br/eventos/epef/ix/atas/comunicacoes/co12-2.pdf>. Acesso em: 18 jul. 2015.
- Lakatos, E. M. &, Marconi, M. A. (2021). **Fundamentos Metodologia Científica**. 4. ed. São Paulo: Atlas.
- PEREIRA, Patrícia. **Combate à evasão. Escola pública**, [s.l], n.47, Out. 2015. Disponível em: <http://revistaescolapublica.com.br/textos/34/combate-a-evasio-293865-1.asp>. Acesso em: 22 set. 2015.
- QUEIROZ, Lucileide Domingos (2004) **Um estudo sobre a evasão escolar: para se pensar na inclusão escola**. Disponível em: [www.anped.org.br](http://www.anped.org.br). Acesso em: 22 set. 2015.
- SOUZA, JÚNIOR,. **Estudo da evasão no curso de licenciatura em física do CEFET-GO**. Disponível em: [www.fae.ufmg.br/abrapec/viempec/viempec/cr2/p133.pdf](http://www.fae.ufmg.br/abrapec/viempec/viempec/cr2/p133.pdf). Acesso: 30 out. 2015.
- WAGNER, Pina Stoffel. **Evasão escolar em cursos superiores: Estudo comparativo entre os pedidos de trancamento e o aproveitamento escolar** 2014. Disponível em <http://www.aedb.br/wp-content/uploads/2015/05/46321536.pdf>. Acesso em: 22 set.