

# Student's Perception of the Teaching-Learning Process at an Institution of Higher Education and Technology in Tocantins

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**Abstract**—This research aims to analyze the student's perception of the teaching-learning process through the Self-Evaluation Committee (SEC) of a Higher Education Institution (IES) and to identify the facilitating aspects and difficulties presented, allowing the institution to promote changes based on this feedback. We conducted the study with 399 anonymous students, using a questionnaire with objective questions created by the SEC. Thus, we found that the students consider as positive the Teaching Methodology (MET) and the Faculty Qualification and Update (QAD). On the other hand, some weaknesses were highlighted like the ratio between Available Books in the Library and the Courses Curriculum Content (RLD-CP). The present study brought, through the perception of the students, a situational diagnosis of the institution's reality that is well evaluated with the concepts Good and Excellent for most of the dimensions analyzed, demonstrating the degree of satisfaction of the research's target audience.

**Index Terms**—institutional evaluation, teaching-learning process, higher education, quality of higher education

## I. INTRODUCTION

Higher education in Brazil has evolved over the years, certainly having as a contribution factor the evaluation instruments created by the institutions which are essential for diagnosing, planning, evaluating and therefore, guiding the decision-making process.

In this evaluative context, we use formative evaluation that can take the form of practices such as written feedback about a task, essay or project; tests and questionnaires and thus, help the development of innovative programs that incorporate quality in teaching and learning [1].

The Formative Evaluation also seeks to provide feedback to the students in order to improve and regulate their learning, so they can collect information that can be used to guide learning according to the effective needs of

the students. That is, we have all the activities carried out by the teachers and/or the students that lead to information to be used as feedback for the teaching and learning activities in which they are involved [1], [2].

Formative Assessment is part of the internal institutional evaluation process and it is part of the National System of Higher Education Evaluation. Higher education institutions should assess the quality of their services and establish methods to improve quality [3].

The participation of the student in this process of institutional evaluation is fundamental, as he/she responds to questions formulated in a constructive critical spirit, in order to obtain a precise diagnosis of the activities developed in the Higher Education Institution (IES) and, in this way, direct an assertive decision-making process regarding education.

Within the legal and institutional contexts, an evaluation is a constitutional precept that aims at the education quality [3]. Hence, what is perceived is that the evaluation of higher education is not something contemporaneous, but rather constitutional and comes since the need to create these institutions.

The evaluation of Higher Education Institutions in Brazil is carried out in accordance with the National System of Higher Education Evaluation (SINAES) instituted by ref. [5] and aimed at "ensuring the national process of evaluation of higher education institutions, undergraduate courses and the academic performance of its students" [6].

Under this Law, all Higher Education Institutions should have a Self-Evaluation Committee (CPA) that is part of the SINAES instruments, together with others complementary instruments: Undergraduate Course Evaluation (ACG); Higher Education Institutions Evaluation (AVALIES): Self-Assessment and External Evaluation; and Assessment of Student Performance (ENADE). In addition, SINAES has information tools such as Census and Registration data, Preliminary Concept of the Program (CPC), General Program Index (IGC) [7].

According to ref. [6], the integration between the SINAES instruments allows concepts to be assigned and ordered in a scale with five (5) levels for each of the dimensions and for the set of dimensions evaluated.

The Census of Higher Education 2010, whose results subsidized SINAES in that year, indicates that there were at the undergraduate level 2,377 (two thousand, three hundred and seventy-seven) Higher Education Institutions (IES) in Brazil, between private and public (state, municipal and Federal), of which 99 (ninety-nine) comprise the Federal Institutions [8].

The IES chosen for this research was inaugurated in April 2003, with capacity to attend more than 4,000 (four thousand) students and it is a reference in educational quality in the capital of Tocantins and region. In the period from 2015 to 2016, the IES attended 1,750 (one thousand seven hundred and fifty) students in undergraduate courses, including Technology and Bachelor's degree [8].

The purpose of the IES target of this research is to train and qualify professionals in the various levels and modalities of education for the various sectors of the economy, to conduct research and development of new processes, products and services, in close coordination with the productive sectors and society, providing mechanisms for the continuing education [8].

It offers courses in different modalities such as postgraduate, bachelor, technician integrated to High School, Technician subsequent to High School, Correspondence and Online courses (EAD), Youth and Adult Education Program (PROEJA), Initial and Continuing Education. Besides these, it also develops research and extension, contributing to the development of society.

This research takes an approach towards the evaluation of the teaching and learning process carried out through a SEC in a IES in Tocantins from 2015 to 2016.

## II. RESEARCH METHODOLOGY

The research consists of an exploratory descriptive study with a qualitative-quantitative approach, and the target population of the study is the students of an IES who were studying from the 2nd to the penultimate module of each undergraduate course, in the period from 2015 to 2016, corresponding to 399 students.

The nature of this research will be quantitative-qualitative, considering the possibility of using the qualitative research to explain the data obtained in the quantitative research and that can be used complementary without offering competition to one another [9], [10].

The data were collected through the analysis of an electronically applied questionnaire, in the period of 2015 and 2016, in which the study participants were chosen by simple random sampling [11].

The research was performed in a IES, in execution of Law no. 10.861/2004, where the SEC must, periodically, carry out the institutional self-evaluation, as one of the ways to evaluate the process of the educational quality of higher education.

The SEC is an evaluation instrument of the Ministry of Education and Culture (MEC) that has the attributions of conducting internal evaluation processes of the IES, systematization and information release requested by the National Institute of Studies and Educational Research Anísio Teixeira (INEP). The SEC is autonomous regarding the Councils and other bodies of the IES, which allows the work to be carried out impartially [12].

The student segment was evaluated by 12 multiple-choice questions, which included different questions about the dimension teaching in higher education. Thus, this dimension was selected due to its direct relevance to the academy and to the students.

As a questionnaire assistance tool, Google Docs was used maintaining the format of the printed instrument created by MEC for the application in the SEC.

The SEC research and evaluation model used has a multiple choice questionnaire in a restricted place and with a specific period to answer the questions that could influence negatively in the responses and in the acceptance to participate in the research.

In this research, the questionnaire was composed of closed questions that contemplated the Teaching dimension, base for the analysis of the teaching-learning process.

The self-assessment of the students was based on the following questions:

1. The Construction of the Program Pedagogical Project (PPC);
2. The Relationship Between Teachers and Students (RDD);
3. The Curriculum Reformulations / Updates / Adjustments Process (PRC);
4. The Curricular Internship Activities of the Program (AEC);
5. The Final Research Project Activities of the Program (TCC);
6. The Scientific and Cultural Contents of the Program (CCC);
7. The Practical Activities of the Program (PAC);
8. The Teaching Methodology in Classes (MET);
9. The use of New Technologies in Teaching (NTE);
10. The Ratio of Available Books in the Library and the Courses Curriculum Content (RLD-CP);
11. The Faculty Commitment to the Program (CCD);
12. The Faculty Qualification and Update (QAD).

Thus, the following parameters were stipulated as possible: Excellent; Good; Regular; Bad; Too bad; Do not know; Not applicable.

Following the questionnaires applied to the students, three graphs were constructed with the descriptive percentage analysis of the data, named Fig. 1, Fig. 2 and Fig. 3. We organized the questions, which we will identify as dimensions from now on, in groups according to their pedagogical content for the construction of the graphs and from then on, we used these parameters as a representation of the degree of satisfaction of the interviewed students.

### III. RESULTS' ANALYSIS AND DISCUSSION

The Graph 1 presents the PPC, PRC, CCC e CCD dimensions, including the political-pedagogical nature observed by the students.

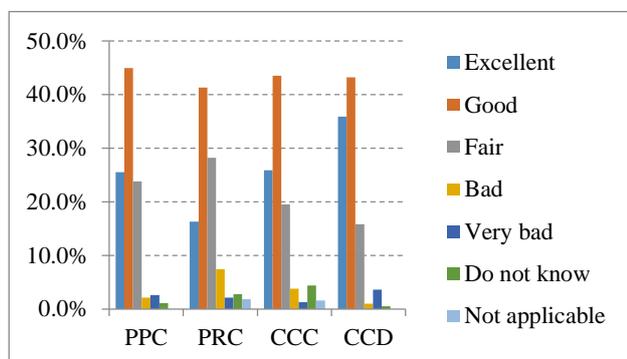


Figure 1. Percentages of student responses to the political-pedagogical dimensions.

The Program Pedagogical Project - PPC was approved in the students' perception, with 44.9% of the responses as Good, as shown in chart 1, being considered as a potentiality of the Institution.

The PPC is a process and a product, implying a planning that guides the schools' organization and operation in a way that the desired education can be set according to the existing context. [13]

In spite of the fact that the academic community has signaled positively about the PPC, in contrast, the difficulty of implementing the political-pedagogical project in schools reveals the need to review the existing relationships between the system and school units and the relationships between the different educational systems. One of the main causes of our educational backwardness. [14]

Regarding the Curriculum Reformulations / Updates / Adjustments Process of the Course – PRC we also identified a good evaluation by students, as can be observed in graph 1, with 41.3% of the answers as Good.

Although there is a long tradition of evaluating learning outcomes within institutions, exams and programs, an alternative for changes in the work process was to focus on the results of the teaching-learning process. [15]

We also observed that PRC was evaluated as Bad by 7.4% of the interviewed students. We consider it important to emphasize that, according to Ref. [16], the schools' actions should be guided by the curriculum, and result in improvements in the quality of education, translating the meaning of the educational project. [21]

The students' perception on the dimension Scientific and Cultural Contents of the Program - CCC, as shown in Fig. 1, symbolizes their satisfaction, scored as Good, by the majority of students with 43.5% of the answers. On the other hand, 22.1% stated that they did not know the pedagogical projects of their respective programs, demonstrating a dissonance between the concepts proposed by the teachers and the wishes and needs of the students.

Thus, among the possibilities of changes, we suggest an education more inclusive for the students, less directive and involving them in the development of their learning. [17]

Regarding the Faculty Commitment to the Program - CCD, the students considered a potential of the institution, with 43% of respondents evaluating this dimension as Good, as shown in figure 1.

We understand that the CCD dimension is part of a personal and professional context and the teacher's satisfaction is a positive emotional response associated with this context perceived by the students. [18]

We also emphasize Ref. [18] about the forms of rewards: intrinsic (subjective evaluations related to professional engagement and only teachers perceive), extrinsic (usually associated with professional benefits provided by the institution) and complementary (objective and subjective, available to any person but perceived as rewards by some).

Ref. [18] also states that teachers are more motivated by intrinsic rewards, and may be a reflection that this motivation comes from the activity itself, teaching, and positive results unlike other motivations that have conditions controlled by other people.

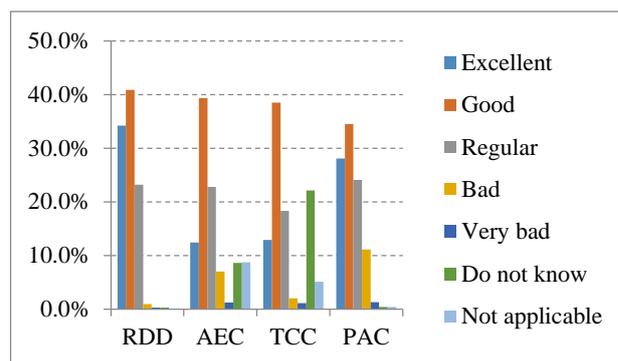


Figure 2. Percentages of student responses to the dimensions of pedagogical practice.

We can notice, on Fig. 2, that The Relationship Between Teachers and Students (RDD) got the highest percentage scored as Good, corresponding to 40.9%.

RDD is a dimension of great importance in the teaching and learning process, considering the role of the teacher who is traditionally the knowledge holder and the passive student ready to receive this knowledge or considering the new methodological approaches, that promote learning in a constructive way and gives the student autonomy over his/her learning. In this case, when analyzing the teacher/student relationship in the students' conception, we identify a possible relationship of trust and free from authoritarianism.

The teacher believes that the student is always capable to learn. This capacity, however, needs to be seen in two complementary dimensions. One refers to the structure, or pre-condition of all learning, which indicates the student's logical capacity; the second: the content to be learned [19].

In this way, the teacher needs to be the mediator in the learning process by choosing and making available

pathways to be explored by the students. In addition, organize the construction of meanings with freedom, without losing sight of his/her role stimulating the intelligence for the construction of criticism, open to enlargements, to modifications, coming from the students feedbacks [20].

Another dimension evaluated, the Curricular Internship Activities of the Program (AEC), represents 39.3% of approval according to Fig. 2, scored as Good.

However, 22.8% of the interviewed students answered as Regular so we evaluated as a representation of fragility to be compensated by the IES, considering the importance of the internship to the program and personal enrichment. This moment is a possibility to develop skills and professional knowledge validating the integration between theory and practice, a complement of teaching and learning [21].

The study design was not able to evaluate with the data obtained the reasons why the students classify AEC as Regular. However, we emphasize that it is necessary to look at this dimension in order to transform the practice of the internship into a satisfactory activity, highlighting that the curricular internship, under the educational point of view has a formative nature and should be linked to the Program Pedagogical Project [21], [22].

With the analysis of the dimension The Practical Activities of the Program - PAC, it was possible to observe through the analysis of graph 2 that 34.5% of students responded as a positive factor in the Institution. However, 11.1% of the interviewed students responded as Bad and 24% responded as Regular.

We recall [17] affirming that the possibilities of learning through practical activities, will depend on how the teacher proposes them and how the students develop them. Practical activities can favor conceptual changes in the student, contributing to the construction of new concepts.

In this sense, the assessed dimensions imply to offer a transformation of the theory from practical process, where only through it the theoretical elements of teaching and learning can be analyzed [21].

We observe in graph 2, about the dimension Final Research Project Activities of the Program – TCC that the interviewed students consider themselves satisfied with this dimension, with 38.5% of the responses as Good.

However, we are aware of the number of students who answered I do not know, implying 22.1% of the answers.

The final research project activities (TCC) represent one of the last steps of the student in his / her academic formation, considering its curricular importance in the construction of the investigative spirit and ability of the student to work with research projects, essential for the formation of professional quality.

We emphasize that the students participating in the research are in the final stages of completing their courses, and knowledge about this dimension is an important part of a satisfactory final trajectory within the IES.

The interviewed students answered for the dimension The Faculty Qualification and Update (QAD) as Good in 41.6% of the answers, demonstrating the satisfaction, as we can see in graph 3.

The process of training university teachers, legally protected by Ref. [26] in its article 66 make a very small mention, stating that the teacher will be prepared not trained, through masters and doctorates programs.

We corroborate with Ref. [23] affirming that the permanent formation and professional development should not happen in a fragmented and discontinuous way. In addition, IES's need to support *stricto sensu* graduate programs and still offer continuing education programs to its teachers, ensuring the link between qualification and professional performance with quality.

Regarding Teaching Methodology in Classes (MET), most of the students considered Good, corresponding to 49.4% of the answers, as described in Fig. 3.

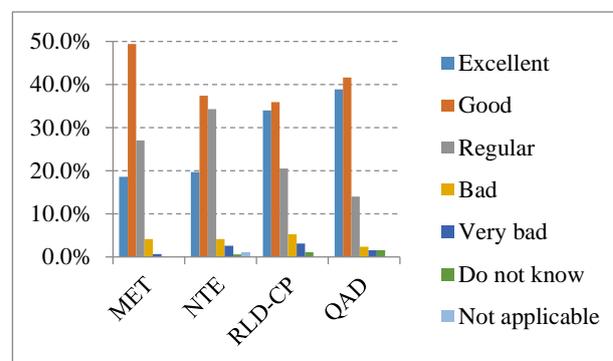


Figure 3. Percentages of student responses to the dimensions of the didactic-pedagogical process

We emphasize that the classroom methodology is a teacher's choice, guided by its Course Syllabus and the Program Pedagogical Project, influencing directly on the teaching and learning process.

It is up to the teacher to make a self-evaluation, which would be an ongoing process of evaluating and having a critical look at one's performance, implying also to verify the possibilities of pedagogical innovations, and thus, modify one's practices.

In this way, it will be possible to increase the teaching capacity to manage his/her progress and overcome obstacles that may block the improvement of the pedagogical practice and which causes student dissatisfaction and disruption to the teaching-learning process [24].

For the Use of New Technologies in Teaching (NTE), the students of the Institution, according to the analysis of graph 3, considered this dimension Good, with 37.4% of the answers demonstrating that they feel satisfied with the practice of using new technologies education.

We add Ref. [25] to clarify that the incorporation of new technologies provide greater access of students to self-learning and they allow the teacher more space to act as facilitators of learning. The information innovation and the Internet have diminished the value of information, and however, they valued the ability to think with information and in diverse situations.

In view of the above, we verify the importance of using digital technologies in the teaching-learning process of searching for information that the student needs. They present one of the most efficient resources for both search and access to information, making it possible to use sophisticated search engines that allow the rapid finding of information in databases on the web [25].

In this context, in an educational process mediated by Digital Information and Communication Technologies, the role of the teacher is still very restricted to the provision of content, although several sources can fulfill this role effectively [20].

We also observed in the analysis of Graph 3 the Ratio of Available Books in the Library and the Courses Curriculum Content (RLD-CP), that the interviewed students feel satisfied with 35.9% of the responses as Good.

Ref. [26] emphasizes that for a great library, it is imperative that the library and the pedagogical sector, undergraduate courses and teachers work in an integrated manner, allowing access to the sources of information suggested in the Courses Syllabi defined in the Program Pedagogical Project (PPC).

The Library becomes a dimension of relevance in the academic formation, with mediator performance in the teaching-learning process and it is an indispensable resource for this process and for the training of both teachers and students [26], [27].

#### IV. CONCLUSION

In view of the above, it is verified that the students answered mostly with Good and Excellent score for the dimensions of the research.

Using the parameters listed here as degrees of satisfaction of the interviewed students in the IES, the institution can carry out an institutional planning, using the data analyzed, especially in the parameters Good, Excellent, Fair, Bad and Very Bad. Identifying those that can demonstrate greater satisfaction, as strengths points to be maintained and improved until reaching the parameter Excellent for all dimensions, and weak points or weaknesses that need to be corrected to reach a higher degree of satisfaction and quality.

We emphasize that the fragile aspects presented in this research, although they do not add significant data in isolation, lead to a possibility of transformation for the elevation of the teaching and learning quality of the IES.

We also suggest a feedback and follow-up of the next evaluation carried out by the SEC for possible researches, demonstrating the previous results and modifications that occurred after SEC evaluation, and to demonstrate the importance and effectiveness of the evaluation process for the participants.

Our results affirm that the SEC intends to be a tool for the IES to improve the quality of teaching and learning, and its application, with appropriate participation of the academic community, is necessary.

However, one of the challenging aspects during this research was to find data that correspond to the modifications suggested in years prior to the year of

application of the SEC studied here. In addition, the dimensions of the research could be clearer to the students understanding and linked to what the institutions want to do with the results. On the other hand, the electronic questionnaire is useful and facilitates the efficient management and processing of responses.

We identified that the SEC is an instrument of great importance for the analysis of the students' perception about the quality of teaching offered by the IES and that it provides a relevant feedback mechanism for the IES to offer on each evaluative cycle a response to the process, with improvements to the students and the general academic community.

Therefore, we conclude that this research demonstrated the knowledge of the degree of satisfaction of the IES students and that the quality of teaching and learning process requires a continuous process of quality evaluation, either through the SEC or through other surveys that can be created to give voice to the students and the community in order to direct the planning of interventions necessary for improvement in the teaching-learning process.

#### REFERENCES

- [1] F. M. R. Araújo, "Formative Evaluation and its impact on improving learning," M.S. thesis. Faculty of Human Motricity. Education Sciences in Specialization in Curricular Theory and Assessment, University of Lisbon, 2015.
- [2] F. M. R. D. Araújo. (2015). A Avaliação formativa e o seu impacto na melhoria da aprendizagem. [Online]. Available: <http://hdl.handle.net/10400.5/8344>
- [3] P. Black and D. Wiliam, "Assessment and classroom learning," *Assessment in Education: Principles, Policy & Practice*, vol. 5, no. 1, pp. 7-74, 1998.
- [4] K. Tremblay, D. Lalancette, and D. Roseveare, "Assessment of higher education learning outcomes: Feasibility study report," Volume 1 Design and Implementation, Ed. OECD 2012, ch. 6, pp. 181-192.
- [5] R. M. Tenório and M. A. B. De Andrade, "The evaluation of higher education in Brazil: Challenges and perspectives," in *Educational Assessment: Unleashing the Knots*, J. A. C. Lordão and M. V. Dazzanis, Eds. Salvador: Edufba, 2009.
- [6] LAW NO. 10.861, OF APRIL 14, 2004. System of Evaluation of Higher Education (SEHE). Presidency of the Republic, Civil House, Legal Sub-Office. [Online]. 2004. Available: [http://www.planalto.gov.br/ccivil\\_03/\\_ato2004-2006/2004/lei/110.861.htm](http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2004/lei/110.861.htm)
- [7] Self Evaluation Committee (SEC). Concept of Self Evaluation Committee (CPA). Ministry of Education and Culture, Brasil. [Online]. Available: <http://portal.mec.gov.br>
- [8] The 2010 Higher Education Census. National Institute of Education and Research Anísio Teixeira, Brasil. [Online]. Available: [http://download.inep.gov.br/educacao\\_superior/censo\\_superior/documentos/2010/divulgacao\\_censo\\_2010.pdf](http://download.inep.gov.br/educacao_superior/censo_superior/documentos/2010/divulgacao_censo_2010.pdf)
- [9] Federal Institute of Tocantins. Secretariat of Professional and Technological Education. [Online]. Available: <http://portal.ifto.edu.br/aceso-a-informacao/institucional>
- [10] M. F. de Oliveira, *Scientific Methodology: A Manual for Conducting Research in Administration*. Catalão: UFG, 2011.
- [11] T. E Gerhardt and D. T. Silveira, "Search methods," in *Planning and Management for Rural Development of SEAD / UFRGS*. Open University of Brazil - UAB / UFRGS, Porto Alegre: Publisher of UFRGS, 2009.
- [12] N. Malhotra, *Marketing Research*, 3.ed. Porto Alegre: Bookman, 2001.
- [13] C. Laville and J. Dionne, *The Construction of Knowledge: Methodology Manual of Research in Human Sciences*, Belo Horizonte: UFMG, 1999.

- [14] M. A. Marconi and E. M. Lakatos, *Scientific Methodology*, São Paulo: Atlas, 2008.
- [15] CPA automática pag 3. [Online]. Available: <http://www.ifto.edu.br/iftocms/docs/arquivos/210220141722RegimentoCPA.pdf>
- [16] A. P. Castilho, N. R. M. Borges, and V. T. Pereira. Manual of Scientific Methodology. Itumbiara, 2011. [Online]. Available: [www.ulbratumbiara.com.br/OLD/manumeto.pdf](http://www.ulbratumbiara.com.br/OLD/manumeto.pdf)
- [17] T. A. Guedes, M. A. B. T. Martins, L. R. C. Arcosi, and V. Janeiro. 2005. Descriptive Statistics Project. [Online]. Available: [http://www.each.usp.br/rvicente/Guedes\\_et\\_al\\_Estatistica\\_Descriptiva.pdf](http://www.each.usp.br/rvicente/Guedes_et_al_Estatistica_Descriptiva.pdf)
- [18] F. N. Mattar, *Marketing Research*, 3.ed. São Paulo: Atlas, 2001.
- [19] J. R. Hair, R. E. Anderson, R. L. Tatham, and W. C. Black. *Multivariate Data Analysis*, 5.ed. Porto Alegre: Bookman, 2005
- [20] A. C. Kasseboehmer and L. H. Ferreira, "The place of teaching practice and internship in the chemistry courses leading to teaching credentials at the State Universities of São Paulo," *Universidade Federal de São Carlos, Química Nova*, São Carlos – SP, Brasil, vol. 31, no. 3, p. 694-699, 2008.
- [21] M. L. F. de Andrade and V. G. Massabni, "Practical activities development: A challenge to science teachers," *Ciência & Educação*, Bauru, vol. 17, no. 4, pp. 835-854, 2011.
- [22] I. G. A. Prado. "The ministry of education and culture and the curricular reorganization," *São Paulo em Perspectiva*, vol. 14, no. 1, pp. 94-97, 2000.
- [23] S. G. Pimenta and M. S. L. Lima, "Internship and teaching: Different conceptions," *Revista Poésis*, vol. 3, no. 3, pp. 5-24, 2005.
- [24] Law of Guidelines and Bases of Education. LDB 9.394/1996. Ministry of Education and Culture, Brasil. [Online]. Available: [http://www.planalto.gov.br/ccivil\\_03/leis/L9394.htm](http://www.planalto.gov.br/ccivil_03/leis/L9394.htm)
- [25] S. G. Pimenta and M. S. L. Lima, "Internship and teaching: Different conceptions," *Revista Poésis*, vol. 3, no. 3, pp. 5-24, 2005.
- [26] C. D. T. Girard and C. M. T. Girard, "The importance of the university library as a mediator of the teaching-learning process in higher education: A case study of the UEPA's Paulo Freire Library," *Múltiplos Olhares em Ciência da Informação-ISS.*, vol. 3, no. 2, pp. 2237-6658, 2012.
- [27] Girard and M. Machado, "The University Library and its relation with the pedagogical project of an undergraduate course," M. S. thesis. MSc in Information Science. Federal University of Santa Catarina, Florianópolis, Brasil, 2009.



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