The Challenges of Pedagogical Mediation in BA in Physics (Pro- Licenciatura)

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Abstract: This paper shows two stages of institutional assessment on offer Degree in Physics, linked to the Teacher Education Network Program of Public Basic Education - Pro – Licenciatura (Phase II) in 2009. The analyzed aspects are related to pedagogical mediation and dialogic process in teaching. In the first stage a closed- question questionnaire was used, it was available electronically and answered by 115 students. In the second one, with qualitative characteristic, a class council was held. The analysis of the crossing information from the two stages points out to the need of transformation in teaching practice still imbued by the traditional model of education, therefore opposing to the reality of best practices recommended by scholars to the contemporaneity, as well as the pedagogical project of the course.

Keywords: pedagogical mediation, distance education.

INTRODUCTION

This paper presents an evaluation performed by students of Degree in Physics in the distance mode linked to the Teacher Training Network Program of Public Basic Education (Pro-licenciatura - Phase II). The offering of this course is the result of a partnership between the Catholic University of Goias (PUC Goiás), University of Goiás (UFG) and the State University of Goiás (UEG) signed by the scientific-technical cooperation, under the overall coordination of UFG.

THE OFFER COURSE FOR DEGREE IN PHYSICS

In the pedagogical project of the Degree in Physics a single entrance exam was defined as the only way to have access to the offering course. It began in March 2008 with 330 students enrolled distributed in nine centers of support to the traditional class teaching.

The curriculum of the course was structured in 8 semesters. Each semester was divided in two modules and each module with the

offer of three disciplines. That structuring aimed to help in the organization and guidance of the studies.
The academic and administrative staff consists of three Course Coordinators, representing each of the partner institutions, a Pedagogical Coordinator, a General Secretary, a Professor - Author, a Teacher Trainer; an Academic Advisor, a Mentor of the Pole and the person in charge of the course at the Pole.

PROFILE OF STUDENT

In the first half of the course, an electronic questionnaire was set available in a Moodle platform with the outcome of 144 (44%) students participating. The data reveals a great majority of students, (65%), between the age of 30 and 49 years old. The other 35% are ranged between 18 and 29 years old. A high schooling level was found among them, 76% already have an undergraduate course, and among them, 48% hold a post graduate certificate (47% latu sensu and 1% stricto sensu). Only 24% come from high school.

Another interesting feature is that 48% of them have already taken courses in the distance mode. It is even more interesting to identify that most of these courses are the result of public policies in the teacher training area, for example, courses offered by the Educational Technology Center / State Board of Education and Multicourse in Mathematics (Roberto Marinho Foundation).

EVALUATION OF THE EDUCATIONAL PROCESS

The institutions responsible for offering the course sought from the outset, implementing a joint management in order to monitor systematically the teaching-learning process, aiming to guide the actions concerning the implementation of the course as well as intervene whenever necessary, using information from an evaluation process.

Accordingly, efforts have been made to integrate the assessment of distance learning course in the process of institutional evaluation. In the year 2009, the first student evaluation was employed using the institutional procedures, provided in two stages. In the first one, an online questionnaire and in the second one, a Class Council. The instruments, however, have undergone necessary changes to characterize the distance learning course.

In this article, only the data regarding student evaluation will be presented. It is understood that the perception of students on the course constitutes an essential factor in the guidance and re-orientation of the educational process.

The first stage of evaluation was applied on the first date of attendance in 2009 with the participation of 115 students (55%), covering aspects from intrapersonal relation to self-assessment, going through teaching methodology, content and professional training, the learning process, the satisfaction with the course, the printed materials and virtual environment.

In the last presence meeting this year, the process of institutional evaluation was continued by means of a Class Council with the participation of the Class Representative, Mentor and Head of the Course at the pole. The issues addressed during the discussion have had the same emphasis of the questionnaire mentioned above. The representative was responsible for preparing and referring the report.

THEORETICAL ASSUMPTIONS FOR DATA ANALYSIS

In the project's Degree in Physics, the distance education mode is understood as an educational process in which learning occurs at different times and places, assuming the pedagogical techniques and specific management in creating and implementing the course, as well as teaching practice that makes use of multiple technological resources in the communication process. (Moore, 2007)

In this mode of education, the separation in space and communication not simultaneous in time, constitute themselves into challenges in implementing a course that seeks academic excellence. Especially in the process of teaching and learning the issue of pedagogical mediation of the interaction between teacher/student, student/student, student / knowledge, which occurs indirectly, by the use of technology becoming a double mediation.

The pedagogical Mediation assumes to put in evidence the role of the student as the subject of his own learning process with the professor´s pedagogical assistance. According to Libâneo (1998) it is there, hard-coded built "the professor's assistance to develop skills of thinking in terms of what settles problems, questions, dialogues, listens to the students, teaches them to argue, creates room to express their thoughts, feelings, desires, in order to bring to class a reality which had been part of their lives. Therein lies a teaching aid or pedagogical mediation "(p. 29)

Mediatizing with the use of technology the professor/ student relationship requires technical knowledge of these resources, but also the know-how to use it pedagogically. For Toschi (2007) Information technology and communication are on "means of learning, ie. as a mediation in the learner´s relationship with information, also mediated by the professor." (P.6).

From this perspective, the concept of distance education that permeates the implementation of the physics course has as principles: communication, dialogue and interaction mediated by technological resources. The dialogicality between the educator and educandee constitutes the essence of the educational process. For Freire (2005) the dialogue between these actors has its beginning with the search for the programmatic content. The elaboration of this content must consist of joint actions of the educator and educandee from the awareness of the structural conditions in which they graduate from, dialectically, the educandee´s thoughts and own language.

Freire (2005) says that for the educator, the dialogue, the programmatic content "it is not a donation or a mandatory process - a set of reports to be deposited in the students, but the organized, systematic return and added to the people of those elements that gave him in a dysfunctional way." (P. 97) This author stands up that authentic education is not made form A to B, or A over B, but as A and B as being mediatized by the world.

Therefore, to take a dialogal attitude is to overcome a

> paradigm in which communication is understood and practiced in a unilateral way. The trouble to come over this paradigm not only lies in the simple technical learning of the procedures, but in creating a new attitude: the dialogue. That is understood as a relationship between two subjects: “you and me”.

To this principle, the pedagogical innovation one is added, which requires changes in the teaching practices and the learning process. About what has been just said, Arroyo (1999) cautions that in order to innovate the traditional pedagogy it is necessary to focus on “where the education takes place, ie. on the daily life, and notice its wealth, nuances, value in the procedures, in the lived culture and curriculum. (p.163)

Therefore, the indicatives that guide the offering of such a course reassure the idea of a structured educational

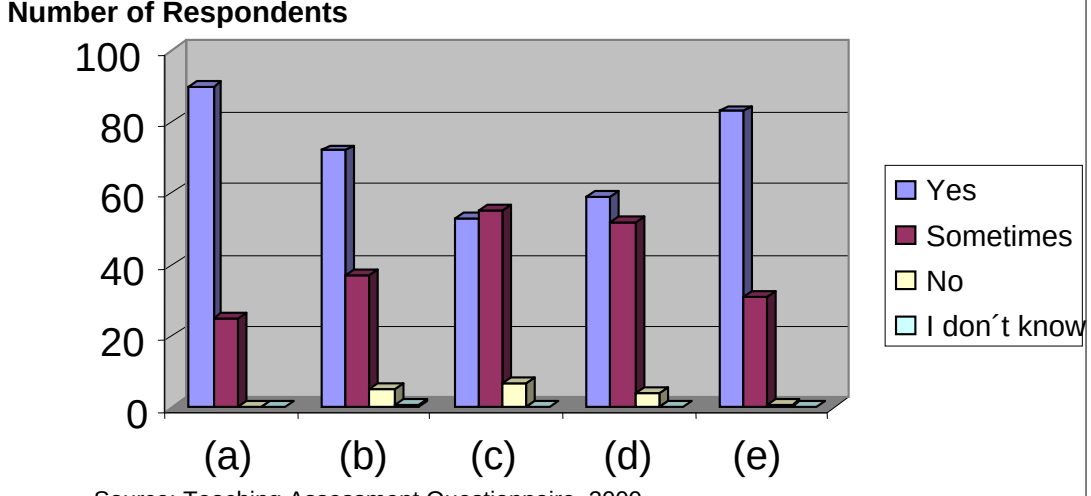
process based on interdisciplinarity, contextualization, autonomy, identity and diversity.

It is interesting to notice that, in partner institutions, distance education is integrated into the institutional educational project as an alternative way of implementing the curriculum. In this sense, it is bound to the set of institutional policies, with regard to their conceptions, policies and actions, expressed by institutional documents, such as the Institutional Development Plan (IDP).

ANALYSIS OF THE FIRST DATA

In the quantitative assessment of the institutional process, for being considered of key importance in the implementation of the course the observation and analysis of the questions related to the dialogicity aspects present in pedagogical mediation were considered highly important. The prominence of this principle consists of the fact that it is underlying to all the others.
In graph 1,it is possible to observe the data related to the questions that assessed the relationship between the academic advisor and the student focusing on (a) the dialogue as a frequent practice (b) room for taking out doubts,(c)retake of the contents already explained, (d)attention to the students´doubts; (e) incorporation of the students´contribuitions.

Graph 1: Academic Advisor and his Teaching Practice



Source: Teaching Assessment Questionnaire, 2009.

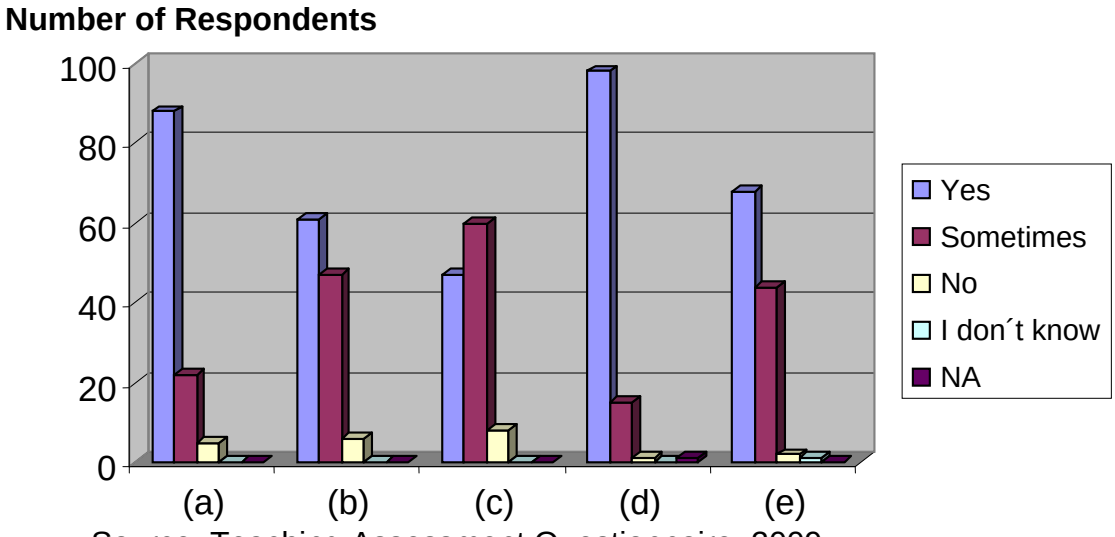
A first reading of Graph 1 reveals that 90 students (78%) reported that the Academic Advisor presented the contents of the course to be ministered (the item). Regarding item b, 72 students (63%) felt that the discussion was made about the importance of that content in their general and professional training. In this section, it is important to notice that
37 respondents (32%) considered that discussion sporadic. In addition to the practice of the Academic Advisor to retake the discussion on the importance of content as an incentive to study (item c) was evaluated positively by 53 students (46%), almost equaling to the 55 students who consider it to happen occasionally. This perception was confirmed in the subsequent item (item d) in which 59 students (51%) reported that the Academic Advisor explained the content and related it to the professional field and other course subjects. In this item, it is important to highlight that 52 students (45%) considered that this to happen occasionally. Finally, in the item and 83 students (72%) reported that the Academic Advisor indicated additional sources to complement the content studied aiming at personal and professional qualification.
Analysis of these data highlights pedagogical issues underlying the course design as interdisciplinary practice not clearly identified by students in teaching practice. The discrepancy between the percentage of students who reported the existence of an interdisciplinary teaching practice and those who considered that this sporadic practice strengthens the understanding of a behavior still guided by the contents of the Academic Advisor, including performance data related to the concern of teacher in displaying numerous sources focused on the content of the

course (item e).

A content practice is evidenced, not favoring the interconnection of content in the subject, let alone with other subjects. It should be noticed that the problems for professors to overcome this practice is marked by the course design which presents a theoretical progressive line organization and a fairly traditional curriculum which reflects itself on the teaching practice. The professors in their practice can not overcome this dichotomy: theory - practice.

We also analyzed the relationship between the Academic Advisor and Student presented in Graph 2, focusing mainly on: (a) dialogue as a frequent practice, (b) room for clarification of doubts, (c) the resumption of the already explained contents, (d) attention to the doubts of students, (e) the incorporation of the students´ contributions.

Graph 2: Student/ Academic Advisor Relationship



Source: Teaching Assessment Questionnaire, 2009.

The data presented in Chart 2 indicate that 88 respondents (77%) acknowledged the dialogue as the frequent practice of Academic Advisor (item a). However, 47 respondents (41%) felt that the clarification of doubts (item b) was an occasional practice to the detriment of 61 respondents (53%) who considered that frequent practice. The situation is reversed in the evaluation of the question on the resumption of the contents explained above (item c), i.e., 60 students (52%) answered that as sporadically and 47 students (41%), affirmatively.

Contradicting the position taken by more than half of the respondents o sporadic resumption of contents (item d), 98 students (85%) felt that the Academic Advisor listened to their concerns. Regarding the incorporation of the students´contributions (item d), 68 students (59%) confirmed this practice and 44 students (38%) regarded it as possible.

It is important to stress that dialogicity is one of the principles underlying the pedagogical training project. A significant group of students admitted the existence of frequent dialogue with the Academic Advisor. However, in assessing the existence of space for inquiries presents contradictory results: the indices of affirmative and possible answers are very close. This positioning was also present in the practice of the content resumption already explained, in this case, depicting higher index in the sporadical frequency. The identification of this situation leads to questions about what students understand by dialogue. Would dialogue be reduced to mere social interaction, the cordial and respectful relationship between students and academic advisor? One can understand this scenario as a restricted interaction, timid, not considering an academic discussion with effective exchanges of information between the actors, even without taking advantage of the moments of doubt to energize and enrich the teaching-learning process. This perception is confirmed by the high

percentage of students who fell that their questions are taken into account by the Academic Advisor, but they do not perceive, in the same proportion that their contributions are incorporated in the conduct of classes.

The analysis of these results has been enriched by cross-checking information contained in the reports of the class councils of each pole. In reading this information, we observed the same aspects of the quantitative assessment: the mediation and dialogic process of teaching.

Students, in discussing the coherence between content and objectives of the subjects showed strong dissatisfaction with some of the specific areas, leading to the misunderstanding on the necessary verticalization proposed by an undergraduate course visible. Perhaps this is justified by the expectation closely related to the everyday life at school where they work for, which can be found by clipping the report on this question: "[...] they are important to the academic life [...] but we don´t see it as useful to work with high school."

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The information presented in this evaluation also highlights weaknesses in the methodological procedures. The first one portrays the difficulty in transposing the traditional way of teaching to the virtual one, crystallized in the teaching-learning process, constituting a barrier to be overcome by students and teachers. It appears that the pedagogical strategies for mediation need to be incorporated and in fact intensified in teachers' actions. The doubts voiced by students must be transformed into moments of learning, interaction between student, professor and knowledge. The dialogue between student / professor, student / student, student / knowledge must be transformed into a continuous process, making the study less hard and lonely.

For its part, the student needs to position themselves as the subject of his learning process and develop skills and attitudes consistent with the pro-active posture. For example, some clippings to show the lack of this perception:

"[...] they charge of us, students of distance education, the same as the ones from regular course, however, we have no teacher to help us. In one (traditional) class only, it is impossible to learn all the content. [...] there are important contents for the resolution of physics activities, but we feel completely abandoned in this subject."

The evaluation of the professor-student relationship, imbued by the traditional model of education, points out that the mediation undertaken by the virtual and presence meetings throughout the course, is insufficient. The existence of this gap is attributed solely to the lack of the professor´s physical presence.
It is important to remember that the relationship between professor and student in a distance course mode is mediatizated by technologies. If the teacher has an entrenched traditional pedagogical practice it becomes even more complex to develop a practice from the perspective of dialogue and communication with the use of technologies. Therefore, it is necessary that professors, when reflecting on their practice, find ways to transform the communicative process by leveraging the potential of interaction and interactivity offered by technology in an interdisciplinary perspective.

Final Considerations

This first institutional assessment points out to the need to strengthen teacher training strategies for the distance learning process, despite the actions already carried out accordingly. It is also worth highlighting that these actions were planned in a continuous approach and its implementation was prior to the implementation of the course. In every semester there are lectures and workshops, providing time for reflection, interaction between professors and their practices. In addition, the Academic Advisors have taken part in a weekly pedagogical planning

in conjunction with the Teacher Trainers and the Pedagogical Coordinator, also considered as training.

It is also necessary to take into account the need to revise in the course design the possibilities to reduce the dichotomy between the theoretical line and its implementation with the objective of providing a teaching practice focused on interdisciplinary teaching mediation.

In the quest for elements to readjust the course implementation actions, it is noticeable that the division of pedagogical work in Academic Teacher Trainer, Academic Advisor, Pole Mentor hinders the interaction and dialogue among students, professors and knowledge, sectioning the teaching practice and turning it into a hierarchical process where some think of the subject, others plan, others run planning and others attempt to support the student at the pole. And the student without the necessary intellectual autonomy is not perceived in the context settled.

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