

THE ESTABLISHMENT OF A PART-TIME PRESENCIAL EDUCATIONAL SYSTEM
WITHIN A PROBLEM-SOLVING APPROACH: CASE STUDY IN A BRAZILIAN
PRIVATE COLLEGE CONTEXT.
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ABSTRACT

This study aimed to analyze and suggest patterns to show how the part-time long distance education can be a useful tool in the learning process for an academic environment, adopting a methodological project as a support to develop the activities. From specific theoretical references, methodological procedures were applied to a group of twenty-five graduating students from the faculty of Pedagogy from a Brazilian college; they joined the required database by filling a given form containing questions and brainstorming exercises. The students took part of the activities proposed in the subject of Medialogy and its program, offered as a part-time academic regular lecture. The project started from analyzing the knowledge empowerment process of the skills among graduating students who were using IT and communication associated with a subject named Methodology of Projects. Datum obtained showed the viability to adopt this teaching approach starting from a balanced use of the trio: Autonomy, Digital IT and Communication, linked to the part-time long distance teaching program – associated with brainstorming methodology, based on Maguerez's arch. Such results appear in form of numbers showing an increasing level of the students' capacity related to critical and prompt thoughts, and to the improvement of their learning skills during the study. After the research, students' autonomy showed improvement along the time, their repetitive gestures turned into motivated behavior and helpful attitude on the process of the assimilation of knowledge.

Keywords: Autonomy; Brainstorming Methodology, Cyberspace; IT; Long Distant Education; Part-time Long Distance Courses.

1- INTRODUCTION

This project proposal took place in a private college from São Paulo state countryside and made possible to run the decree number 4.059 issued by MEC (Minister of Education and Culture) in December 10, 2004, according to the precept of the clause 81 of the Law 9.394, in December 20, 1996, and in the clause 1st of the decree 5.622, from December 19, 2005, that defines long-distance education as an educational procedure in which pedagogical didactic mediation in the processes of education and learning must take place involving the use of tools, information technologies and students and professors developing educational activities in diverse sites and times.

The innovative point of this project consisted in the use of a student semi-presence model based on the principles of Brainstorming Methodology¹, making possible to plan interventions within the contextual problems observed along the program. Thus, the specific knowledge of this theme came up from watching it, when students and teachers started developing the hypotheses in brainstorming that could be effectively applied and debated.

Observing this pedagogical context, its worth emphasizing that the establishment of the project didn't only make use of the legal opening given by the decree "MEC 4059/04" to guide the use of the semi-present activities in the course, but mainly to consolidate this incentive making use of an innovative methodology of education and learning, using the technological resources already known by the students in some brainstorming modules, creating different possibilities of approaches where they could be transformed into active researchers and knowledge builders.

Through these procedures we focused on creating situations to empower the learning process involving all the above-mentioned tools and technologies.

2- THEORETICAL REFERENCES

It's known that in Distant Education the contact between teacher and student is also a new thing, bringing some features that can assure how communicable the agents will be in this process.

The technological resources are of utmost importance so that time and space are extremely helpful for students, and it's now possible to establish criteria within a virtual space that promotes interactivity and circumstances for the students to reach their knowledge under four basic pillars of the Education: learn how to learn; learn how to make things done; lean how to live together; and learn to be someone.

In this context, Behrens (2006, P. 71), states that the professional of the future

has to have ability to be independent in the production of knowledge and to be accessible to share it with groups. We realize that the pillars of the education converge on the formation of individuals when they learn how to create projects, to sell their ideas in an active and involving way.

Benjamim (apud Joly, 2002) shows that some teachers use the technological resources as assistant tools of education instead of the opposite: using them as an internal part of the educational process.

Here is worth pointing out that the school itself is also an environment, and a propitious one for learning. However when a search for historical vestiges of the schooling is carried through, we see in old photos some lined up desks where a teacher manages the classroom and assists his passive pupils, while a set of information is poured in that class.

From this given picture we start asking if there were deep changes on how to see and deal with this environment, or if we just changed the tools and some resources used to transmit information.

We follow the idea questioning not only the change related to the bricks and mortar structures of schools, but for a change that should occur with the use of information technologies and communication, in such a way they could, according to Almeida and Fonseca Júnior (2000, p.62) “contribute decisively for the work of those educators whose conjectures, in a close future, conceptualize a school with new responsibilities for a new society of the knowledge”.

Therefore, the reflection that follows will also focus on the use of IT and Communication, and specific methodologies, to try to explain how to establish connecting links between these digital possibilities of communication and transmission of data, to build up a place where can be possible to learn how to learn.

2.1- Semi-present teaching in focus

The technological resources are used more and more to establish the mediation between students and teachers when they meet, most of the time, in different places and times.

According to Moran (2007, p.125), the change in the education with the technology is influenced not by the necessity of the physical presence, emphasizing that the connectivity as an empowered agent of the learning. On the other hand, this fact is still restricted by the social inequality regarded to the access to the IT and communication, but at the same time, it makes possible an ubiquitous, integrated, personalized, and flexible learning. In any way, there is still a kind of preference for to the face-to-face system the traditional institutions.

However, the distrust of the use of the technologies in the current education has decreased, if we consider the increasing numbers of teacher meeting the requirements for flexibility and adaptability and students that already keeps some habits of communication outside classrooms by sending e-mails and keeping in touch through sites of relationship.

Moran (2007, P. 90), describes how this transition, that migrates from a simple technological domain to a pedagogical one, is slow and requires caution from the teachers, for it's not enough to have access to the technology to have the technological domain, it's necessary a time to master these procedures. It is clear that the process of conscious use of the technologies in the educational environment is something to be built up through practicing that can start in an isolated way, but they become consistent when applied collectively.

One possible example of this new pedagogical conception using educational technologies can be shown as a conversation started in classroom and continued in a forum where we can debate the opinions until reaching a conclusion that can be discussed later in a student-present class.

According to Kenski (2007, p.85), if we consider or not the extensive use of the media equipment in a classroom, the fact is that everyone has a daily contact to several media resources. This fact reinforces how the use of IT and communication is more and more present in the relationship established between the actors involved in the semi-present education process.

3- METHODOLOGICAL PROCEDURES

For this case study we adopted the methodology of brainstorming to understand how the triad Autonomy; Digital IT and Communication; and Semi-present Education could contribute for the process of learning of the students from one Institution of Education where the pilot project was applied.

To evaluate which would be the reaction of the students attending the subject Mediology in the third year of the course of Pedagogy in an institution named FIO (Faculdades Integradas de Ourinhos) during the change of education modality (from present to semi-present) was an important chance to identify how much this methodology contributed for the evolution of the autonomy of them in their learning process.

In general view, the use of IT and Communication has grown in the educational niche exactly because of the perception and recognition of its empowerment for exchanging knowledge by means of the telemetry.

However, in the chaotic cyber environment of information we had to focus on

the procedures related to the ways students organize their ideas, and give form to their thoughts in the cyberspace, specially in virtual environments of learning.

Kenski (2007, p.41), strengthens the importance to confide for new educations, it is the results of structural changes in the forms to teach and to learn possibilities for the technological present time and also emphasizes that this is a challenge to be assumed by all the society.

Thus, to balance the use of technological resources of information against communication (focus on virtual environments of learning) and the autonomy of the students it is necessary from the educator an ability to bind learning situations that are meaningful to what the students search as well as where they will use such knowledge.

In an effort to know further details about students' environment we could note that the group consisted of 25 women aged from 18 the 25 and 56,0% of them were single. One main feature notice is related to the time they were out of the formal education system, usually from 2 to 5 years separated them from the high-school graduation to the admission in a college.

About their walk of life we noticed that they belong to diverse economic levels, some, also, showed be attending the course with financial restrictions and were receiving some scholarship provided by the college or by a Brazilian government program named Educative Credit. Focusing on the type of background schooling they had we listed the majority of them coming from public schools and a small part from private schools

When observing this context, a difficulty immediately appeared: the strong change on the old adopted model for the education and learning process, therefore each student would start to be responsible for his or her acts in an independent way.

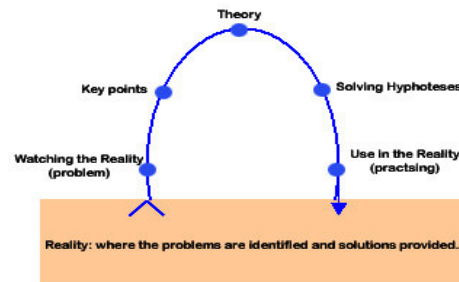
From this concern, and according to Freire (1996, p.107), nobody is a subject of somebody's autonomy, and moreover, considering the maturity of the human being for itself, the autonomy is a process, it's to come to be. We realized that the role of the advisor teacher was simply to awake students' attitude using stimulating experiences that could contributed for the growth of knowledge in a pleasant way.

To properly run this research we adopted a methodology based on brainstorming activities guided by "the Arc of Magueres, a method that assists the researcher on structuralizing his/her ideas and involves bringing solution hypotheses after watching the real experiment giving support to highlight the key points and the theoretical references of a given problem.

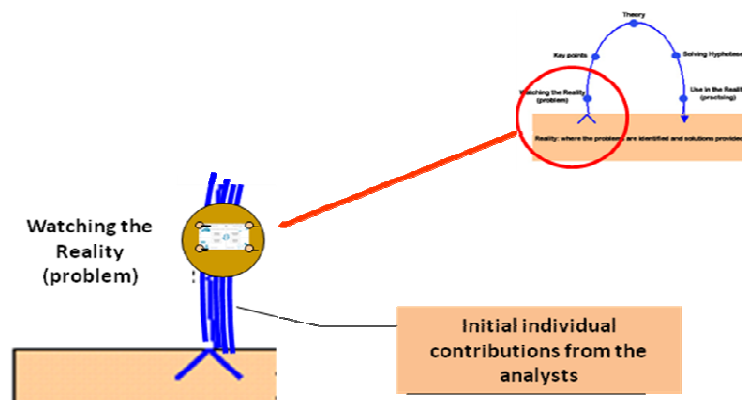
Authors such as Paulo Freire, Jose Carlos Libâneo, and Demerval Saviani have pointed out to the importance of a brainstorming education and pedagogy, highlighting theoretical principles and their justification, inspired by the historic-critical

conception of the Education, this is supported by Berbel (1999, P. 7) when analyzing brainstorming as an educational approach.

Understanding the steps followed in this approach, focused on the Arc of Maguerez, was one of the most important moments for the discovery of new possibilities on learning for the sample group here analyzed. To understand the methodological procedures in this research, it's helpful to take a look at pictures below.

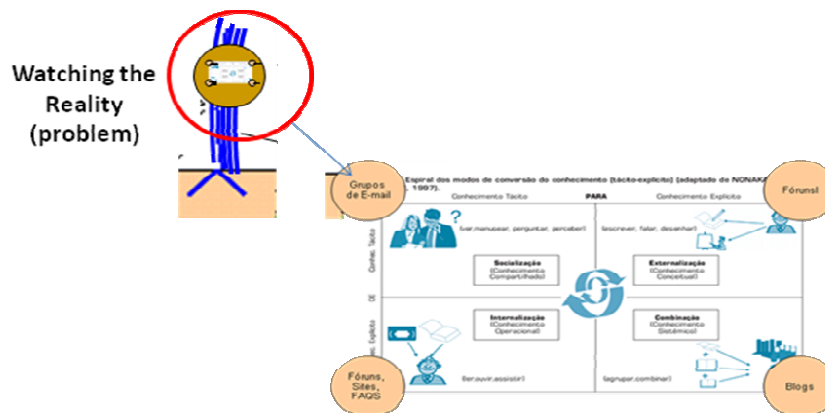


Picture 1: the Arco de Maguerez under perspective
Source: A metodologia dos desafios. Brasília, 2002. p. 35.



Picture 2: The Arc of Maguerez enlarged
Source: Picture from the cited author, here adapted.

Picture 2 shows how the brainstorming methodology was applied in the research from the individual contribution of each student, thus when they are given a problem, each participant could cooperate with each step of the arc, this allowed a collective and thoughtful advance on the discussed subject. Each comment is represented by a new arc drawn in parallel with what was drawn by another student in the group of Mediology.



Picture 3: The Arc of Maguerez empowered by Digital IT and Communication from the module of semi-present education, using the spiral of the knowledge proposed by Nonaka and Takeuchi - Source: Picture from the cited author, here adapted.

This is the cardinal point in the application of this study because it represents the set of knowledge generated and organized by means of the Digital IT and Communication. Beyond the connected-present classes that allowed to explain the theoretical proposal for the course of Mediologia, the meeting of the critical and reflective approaches also happened mediated by virtual environment of learning that made possible to organize the ideas and opinions of each student following all the steps of the brainstorming methodology.

Therefore, the knowledge empowerment among the members of the learning process was generated exactly at the moment the students transformed the tacit knowledge into explicit knowledge, this can be analyzed following the spiral of the knowledge by Nonaka and Takeuchi adapted by Gracious (2008), supported by digital tools guided by a methodology that orients the progress of the learning from a semi-present model of education.

4- REACHED RESULTS

Our report point out three important points of view so that the present research can definitely represent a significant contribution for the future readers. They are: Students' perception; teacher's perception; and the perception of the Institution.

4.1 Students' perception

To represent a wide overview of the subject named Mediologia and its meaning in student's lives we elaborated a final questionnaire trying point out students perception while they joined different situations of learning proposed along the course. Such activity resulted in the picture showed below:

SEQ	QUESTIONS ABOUT THE DEVELOPMENT OF THE SUBJECT	VERY BAD	BAD	REGULAR	GOOD	GREAT
1	MOTIVATION BROUGHT BY TEACHER	-	3,85%	7,69%	34,62%	53,85%
2	QUESTIONS MADE BY TEACHER, DID THEY FOCUS ON, ESTIMULATE, UNLINK NEW IDEAS?	-	-	12,50%	33,33%	54,17%
3	WERE THE MAIN IDEAS RECONSIDERED, SUMMARIZED, CLARIFIED OR FULLFILED, WHEN NECESSARY?	-	4,17%	12,50%	41,67%	41,67%
4	WERE THE EXAMPLES GIVEN ILLUSTRATED, SIMPLE, RELEVANTS AND FITTED T THE BASICAL CONCEPTS?	-	-	4,17%	58,33%	37,50%
5	WAS THE VOCABULARY USED IN LECTURES PRECISE, CORRECT, TRANSLATED OUT WHEN NECESSARY?	-	-	-	33,33%	66,67%
6	DID THE TEACHER SHOW BE FAMILIAR WITH THE SUBJECT?	-	-	-	12,50%	87,50%
7	WAS THERE A SEQUENCE IN THE DEVELOPMENTNO OF A SUBJECT IN A WAY IT MADE STUDENT TO UNDERSTAND IT EASIER?	-	-	8,33%	45,83%	45,83%
8	HOW DEEP THE SUBJECT WAS DEVELOPED?	-	-	-	50,00%	50,00%
9	WERE TEACHING METHODOLOGIES FITTED TO THE PROPOSED GOALS?	-	-	4,17%	41,67%	54,17%
	QUESTIONS ABOUT GENERAL FEATURESS	VERY BAD	BAD	REGULAR	GOOD	GREAT
10	WAS THE SUBJECT PROGRAM FINISHED?	-	-	-	38,46%	61,54%
11	WERE THE GIVEN TEXTS FITTED, PREPARED E USED?	-	-	-	42,31%	57,69%
12	WAS THE USE OF THE MATERIAL RELEVANT TO IMPROVE LEARNING?	-	-	7,69%	53,85%	38,46%
13	WERE AUDIOVISUAL RESOURCES FREQUENTLY USED?	-	-	3,85%	42,31%	53,85%
14	WERE THE FACILITIES FITTED TO A GOOD DEVELOPMENT OF THE SUBJECT?	-	15,38%	23,08%	53,85%	7,69%
15	WERE THE EVALUATIONS CARRIED OUT PERIODICALLY, FACILITATING UNDERSTANDING?	-	-	15,38%	42,31%	42,31%
16	WERE THE EVALUATIONS FITTED TO THE PROPOSED GOALS?	-	-	-	42,31%	57,69%
17	ARE THE GIVEN CONCEPTS USEFUL IN YOU PROFESSIONAL ACTIVITIES?	-	-	-	34,62%	65,38%
		VERY BAD	BAD	REGULAR	GOOD	GREAT
	Final rate of general satisfaction and self-improvement in the course of Mediology	-	1,41%	5,87%	41,31%	51,41%

Picture 01: Average evaluation of the Technical and Pedagogical Aspects showed by the students along the course of Mediology.

The picture above demonstrates a series of information that converge to what he was observed in an analytical way throughout the course. We highlight to the positive aspects reached such as: Enjoyment for learning when attending the course; perception of the organization of the activities; necessary survey of based information; extra support and support for doubts and further explanations; fair criteria in the evaluations.

Regarding on the weak points, we realize that the bricks-and-mortar facilities to be used in semi-present courses must upgrade as follow: A considerable investment must be carried through; therefore, at critical moments it is not possible to support learning situations. This feature is pointed out when talking about facilities involved.

Any possibility of an efficient application of a course in semi-present modality without an adequacy of the technological infrastructure for such procedure becomes impossible. This is clearly shown when we compare situations when students were attending a long-distance class and we had a failure in the communication system.

The panic brought when losing connection was bigger than the will of overcoming the problem, therefore we can say that the Institution must have perfect facilities in the technological area. Such situation creates moments of emotional instability that made it difficult to restart the lost guidelines of the topic.

But a positive point was the effective use of the brainstorming Methodology, based on the Arc of Maguerez, for the strategical decision-making in the passage of the tasks. This procedure made easier to get the solutions for the problems, drawing a

guideline that helped to reach the goals in each activity.

Finally, under students point of view, distance education offers opportunities to study and reach thoughts without the necessity of being present in a classroom.

Considering that, interactive tools as forums and chats make possible the virtual interaction between students and teachers, allowing some flexibility in the study time. In this context the long-distance education makes possible that each student takes some advantage of its own autonomy.

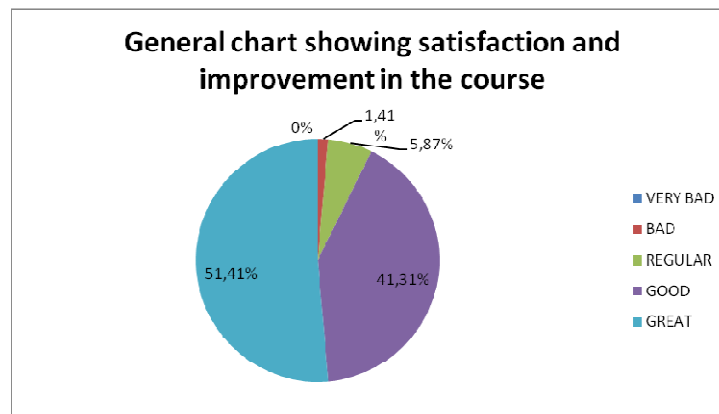


Chart 1: General positioning of Satisfaction and the level of students self-improvement in the Course.

The chart above shows, in general way, the level of satisfaction of the students regarding to the attended course and demonstrates that this acceptance of a deep change in attitudes happened thanks to the process of persistent learning assumed since the beginning of the activities. It was peculiar to note that students realized how much they had learned when they stopped to think of the change in their behavior and the ways they conduct research while studying for other subjects. It was exactly in this time that they had methodological, pedagogical and technical skills to face brainstorming activities proposed by other teachers.

4.2- Teachers' preception (Direct advisors and others in the project)

For the advisor teacher of the project the process of learning with real situations was essential to enlist subsidies to indicate the level of quality in the implantation of the module of a semi-present Education in this academic institution.

It was clear that a change of position on the part of the faculty staff was required to deal with a series of new generated situations from the adoption of a new kind of education

The set of abilities and skills that must be developed and worked in this

environment starts from an unconditional support of the coordination of the course and the board of directors of the educational institution.

All the teachers who had been invited to join the project, giving single lectures in the real meeting or being interviewed in radio and TV programs developed by the students, all of them felt a bigger responsibility in their performances, fact that indicates the convergence for their necessity to have a commitment to the general context of the course.

There had been a real tuning between the first project and the final result under our pedagogical approach. The participation and the incentive of the coordination make possible the accomplishment of the research in an open way, therefore, at many moments of doubt, the students looked for the coordination to get directions, the level of the dialogue was the same, based on total communicability and strategical tuning with the ideas between coordination and researchers.

4.3- The perception of the Institution

We listed Bellow a report containing interesting situations set as weak and strong points of the project, according to the institutional point of view.

4.3.1- Strong Points

Amongst the strongest points in this research we had some situations of high performance in the team of teachers, coordinators and technicians working for the institution. It's impossible to work with the education without the synchronized support of the team of TV production, technological support and coordination of the course.

In this context all the involved ones in the process were positively evaluated about their performances in a context involving a target audience experiencing a brand new pattern on education.

Another feature to be highlighted is the register of the diverse medias developed along the course, such as texts, radio and TV programs that became useful tools, attracting other courses attention and opening ways for developing experimental activities of communicability in the distance-education, including projects to be run in higher level courses such as after-graduation courses, where this project is being applied.

4.3.2- Weak points

Once again we talk about bricks and mortar facilities and infrastructure required to run a project like this and always mentioned by students involved.

As we had planned this as a pilot project, the institution tried to make balanced

investments in the required resources, leading the involved professionals to a creative ability and skills to exploit the tools, equipment and software.

Somehow, the idea was to show that with few resources it was possible to elaborate educational programs with a medium quality, consequently when the team started to access more advanced resources, the quality of the job reached a proportional positive effect in the course connectivity.

4.3.3 Establishment Viability

The direction of the Institution always supported in a positive way all the project, specially when they realized that the use of IT and communication is already part of the daily routine of the students and also of other institutions of education.

Its interesting to state that there was a flexibility demonstrated by the institution about technological changes and emerging pedagogy, therefore it was created a direct canal with the students generating possibilities of educational situations and learning that maximize new chances to work with educators and professionals interested in working in this new environment.

It was evidenced that potential profits, more specifically in economic terms, will only be possible if we really investment in the formation of the teachers and structures with a cutting-edge infrastructure able to broadcast their transmission of the educational programs throughout the most distant areas.

Thus, with the application of models based on the Economy of Scale, it would be possible to have a reasonable revenue if we maintain more and more groups and extend our geographic capacity to reach an almost limitless attendance that the distance-education can provide.

5- FINAL ACHIEVMENT

Our present research made use of the methodology itself described in here to be carried through under the supervision of the advisor teacher, who acted as researcher of the proposed situations and collected information throughout the development of the same.

When the pilot project was first proposed, reality observed by the teacher showed a picture with students of Mediology of the course of Pedagogy as individuals with a learning process completely inactive, only able to run small requested tasks and only to strictly fulfill a chronogram imposed on them, and showed a minimum level of theoretical support.

It's worth pointing out that the job done by the teachers of the institution in the previous modules was a very important help to build up students' knowledge within this

given context. Something new in the subject named Mediology was the creation of different possibilities of experiments, of situations involving learning with thoughts related to the real context of the classes, in other words, they learned for teaching and they taught while they were learning.

The guidelines of this research pointed out some ways regarding the use of the triad: Autonomy, Digital IT and Communication, and Semi-present Education – associated with the subject Brainstorming Methodology, one of them showed the significant contribution for the growth of the critical and reflective thought, as well as for the student's learning process within this project.

When analyzing the cultural and intellectual growth of the students in this period it was possible to realize how their autonomy got a potential gain, therefore, in fact, in each step there was an increase in their self-esteem. Each overcome obstacle represented much more than a simply fulfillment of an academic task, it represented a personal victory.

We have to remind that for every new proposed activity, a kind of the fear of the unknown appeared trying to dim the advance of the tasks. However, a new form to face it and to react invaded their minds and their hearts, leading them to a thoughtful moment when they examined the proposed situations and finally, to a return to the first steps inside the brainstorming methodology finding out a resolution for the task.

It was clear that the autonomy of the studies had been established, therefore what before was just a reproductive attitude became into motivation so that they left to only act as passive audiences in the learning process and finally started to such an active and cooperative behavior while building up their own knowledge.

This change was very significant because the teacher was not anymore had as the owner of knowledge and started to be seen as a collaborating agent in the process of knowledge. Another important fact was the students' perception on the new possibilities of learning out of the traditional education. In fact, the use of methods with simple transference of information, or the old style called "banking education", according to Freire (1996, P. 25), doesn't bring so strong impact in the way in the environment and this was realizes by our students in our methodological approach.

In this context, the students, who are educators, had understood the necessity of the formation of competent professionals in particular areas of knowledge, they must be able to communicate this content to the students, and they also have to know how to interact in a richer, deeper, more existential form, facilitating the understanding and practicing authentic forms of living, feeling, learning, and communicating themselves. (MORAN, 2000, p.62). That's such a result reached by the observing teacher.

Finally, we propose for future studies that they should firstly establish all the

evaluation criteria to be used along the research if they adopt the semi-present perspective of the brainstorming methodology. In this direction, the study as well its establishment of several forms of evaluation, Diagnostic, Formative, Summing, they all can generate theoretical subsidies to analyze the processes of the use of IT and communication in institutions interested in having and offering it.

Another point that can be explained the question of the internal change of culture regarding to the use of mediatic tools for the production of knowledge involving the students in this process. When we talk about change of cultural position, this focus must be enlarged to involve several organizational levels of the educational institution: direction, coordination, teachers and students. Somehow, it's a game that can be winning if all parts deeply know the rules that had been established.

Thus, the Education seen under a wider view works out as an integrative pivotal role of possibilities that includes the initiative of any person committed to the desire of getting knowledge. Moran (2000, p.63) reminds us that the power of the interaction is not basically in the technologies, but in our minds. Tools, technologies, methodologies are important and are part of this great educational context, but this requires committed professionals with open minds for innovations in technique and behavior to act in the Society of the Knowledge, and to build up new perspectives for the future.

Notes:

1- When if it talk about Brainstorming Methodology, one important reference that comes to our minds is Charles Maguerez, he developed the Method of the Arc, analyzed in depth by Bordenave and Pereira (1994). The given method is based on the clipping of a real situation of the daily routine observing five basic steps: Observation of the Reality, Key points, Theory formulation; Solution Hypotheses; and Application to the Reality (Practicing). Following these steps, this methodology can be applied to the case studies that permeate the reality of an opportune object of research, and also in situations that are related to the life in society. According to Vygotsky (1998), the contribution between pairs is an essential action for the learning process, because group interaction with different people makes possible the development of strategies and the abilities for solving the problems, thanks to the implicit the cognitive process inside the interaction and communication of the involved actors. Thus, the first stage of the proposed methodology is identified by the observation of the social reality. At this moment, the observers are guided by the teacher to analyze a subject or an unit of the course in order to register systematically what they realize from clipping of the given reality and how much that becomes representative inside of the context. It's possible, at this moment, to have an intervention on the part of the person who advisors by using general questions so that if they do not lose the focus of the analyzed situation. Berbel (1995) explains that this observing process will allow the students to identify difficulties, lacks, some order of discrepancies, that will be transformed into problems, or brainstorming. From this part one of the problems can be picked up for the group to study; or several of them could be chosen, distributing one for each small group. After the observation and of the short process of quarrelling on the identified problems is time to the second step that consists of listing the key points. Now the students start to think of the possible causes for the existence of the problems. A reflexive-critical analysis is made in this moment by the students, they to correlate which are the existing variations that can be the determinative ones for the problem. In a macro view, the sudden realize that he is in a

complex environment and he must start to also delimitate the problem using the study of the direct variables determine it and also variables that indirectly affect the identified situation. Using the survey of key points is possible to pass to the next step, which is the theory formulation. At this moment, the study and the inquiry come up, starting a technical search for the theoretical concept that will permeate the key-point showed in the previous stage. In this context, visits to the library, sites, several materials, lectures recorded are part of the set of information that will constitute the knowledge that we search during this phase of the process. In the fourth stage, the Solution Hypotheses are delineated. Based on all the study carried through until then for the students, the solutions are formulated in a reflexive-critic way, aiming to reach explanation for the given problems. Finally, in the fifth step we have the Application to the Reality, according to Berbel (1995), decisions must be executed or directed. With the application of this methodology we realize that it exceeds the simple intellectual exercise, especially because the students can feel the social and political components present in the process, exactly for the necessity to place it in a practical way and to have the chance to evaluate its results for the society in which the problem was identified.

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