"Let's Go Folks!": A K-12 Special Program Beyond Social Parameters

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Abstract

"Let's go Folks!" This is the appealing name of a project which main goal is to help students of K-12 to develop the necessary skills to choose careers like engineering that for many reasons is so necessary for the development of a country. São Vicente City Hall present administration has decided to implement a special program for K-12 in public schools of the city, which resulted in this project that so far has been showing good results. The project was designed and has been developed and implemented by Supportnet, a private enterprise in a joint venture with the education coordination of the town with the support of COPEC – Council of Researches in Education and Sciences. To increment the project there are what has been named as the "Fortress of knowledge" that is a special physical space created inside the schools where the students can spend some hours of the week learning in a complete new way, enjoying the art of building their own knowledge. The implementation started in February of 2002 and it has been dimensioned to serve ten thousand students per year and it predicts also the qualification of teachers and technical staff. It is based in an integrated educational method using computers as the tools to foster the learning process aiming the betterment of fundamental education system, the K-12. Top technologies, Internet access and a complete didactic material have been used with success. Engineers, pedagogues, social agents and others scientists and technicians involved with education have been working in the implementation of this new educational system. "Let's go Folks!" has been appointed as an example of serious education policy by and for the community and so it is going to be amplified to serve the poor communities citizens of the town that are out of school and out of work market. In the three years ahead it will serve more than forty thousand students.

1. Introduction

The project "Let's Go Folks!" is happening thanks to the initiative of São Vicente City Hall that has decided to implement special programs for K12 in public schools in the city. It has been conceived to help students to develop the necessary skills to follow carriers like engineer, which is so necessary for the development of a country, or computer science and others. The Fortress of knowledge is the special space created in the schools where the students can spend some hours of the week enjoying the good time of learning in a complete new way. It started in February of 2002; it has been dimensioned to serve 10 thousand students per year, including the qualification of teachers and technical staff. The project has been developed and applied by the City Hall education coordination in a joint venture with Supportnet, a private enterprise with the support of COPEC – Council of Researches in Education and Sciences. The success of the project has been

so good that it is going to be amplified to the qualification of poor communities citizens in the city [1].

A public University in the town is the last step of the project that also contains some innovations along the development of it. All these steps that will be accomplished in a medium to long period of time, which is the city demand due to the enlargement of population and the new mentality of the new politicians presently in charge. This new policy has raised due to the need of the population that hue and cry for the betterment of its society: Education of youth as priority [2].

2. A little of History

The history of Brazil's engineering is important in a way that it helps to understand how engineering colleges started. Some facts that took place in the past can explain why engineering schools are now this or that way. Huge engineering achievements plus the political and economical situations brought up the necessity of forming engineers that could understand the reality, the resources and needs of the country. Since the beginning until today fortunately Brazilian engineering schools have been forming very good engineers with strong knowledge of engineering basic sciences.

Brazil's engineering has its roots in the XVI Century beginning with the colonization. A Historical analysis shows visibly that it started with the military engineering, which military actions at that time in the country were basically the construction of fortifications and the seek for solutions of defense and attack evolving to what is today the civil engineer. With the colonization of the country and the insurance aspect of Portugal, the royal government recognized the necessity of forming the national engineer and so becoming it of crucial importance. It was made always attending the evolution of French Schools of Engineering and so in 1641 in Lisbon born the Artillery and Square Classes becoming in 1647 the Special Class of Fortification and Architecture. The Portuguese engineer Luiz Serrão Pimentel (1613- 1679) managed the school and it is considered the starting point of Lusitanian-Brazilian engineering. Portuguese style of construction can be seen everywhere and the engineering schools still keeps the European schools style obviously because of the great influence of its countries along the colonization process. The evolution of engineering in Brazil follows very close the world trends. From the construction of Fortifications through electrical engineer to what is called today Mechatronic engineering in the country has developed in according to the necessities of promoting its development always seeking for the best applications of sciences achievement to the local resources.

Since the Fortification Classes and Military Architecture founded in Bahia, in 1699 until the more than 200 engineering schools, engineering education has had a history of success full of many conquests and accomplishments [3]. Through the time many accomplishments of big proportions can be seen, not only public buildings and houses but also practical applications of electricity like telegraphy, telephony and lighting. Electrical energy conquests that were applied in Europe and USA shows that the insertion of electrical energy in Brazil happened in the same historical moment of industrial expansion and development of developed countries. So it is very important to have actions to keep the level of engineering quality and to increase the number of students in engineering careers.

3. The Engineering Status in the Country

World new order demands a new kind of life. It is more than keep up the status, it is a fight for surviving the environmental problems, the wild economic war between the big enterprises among others. Problems that will become worse for developing countries in a near future if they do not find a way to over come the inner problems and start to build a true nation for their citizens. Many discussions at national level during conferences, all communication medias like radio, TV, etc took place for many years and still take place may seem to be a lonely fight once economical speculations seems to be more powerful with more sharp actions world wide.
The creation of Public Universities in the many states of the country has been an important achievement and which have worked very well for many years. So far they have built a solid reputation even abroad also creating generations of Brazilian scientists and educators. These people fortunately have refused to accept the ominous and narrow-minded neo-liberal policies for education having started a fighting to keep up the achievements already gotten and actions that help to maintain and to enhance the researches in every field of science and technology. Professionals and educators of every field of science and technology have been discussing the destiny of education in the country taking into account the historical moment of the world. Certainly some of these discussions have generated some practical actions at governmental level as a response to the society that see itself as the most interested part in the issue.

Although the proliferation of private universities all over the country expanding the number of 3rd grade students it does not assure the increase of students in engineering and technology areas. Looking through this perspective the K12 appears as one way to help students to develop skills to follow carriers in these fields.

New political mentality of São Vicente City Hall has achieved some social conquests with the implementation of a special program for K12 in its public schools. Conscious of the importance of eradication of the so-called "technological illiterate" (that is now as important as the eradication of the "illiterate"), has been working hard to get the goal to enhance the number of students to choose the engineering and technology fields.

4. The Importance of Engineering Education

Supportnet a national private enterprise located in the city, which has been acting in the market for many years and that has a reputation of quality services and credibility, has been chosen to be the City Hall partner among many others of the state. Informatics education is very important to the development of students' cognitive potential. It is powerful educational instrument to turn them their own agents of learning process and in the building and acquisition of their knowledge; at last a student more autonomous in the solving of problems using their logical - deductive reasoning in an effective way becoming them more capable to interact with people and the reality that surrounds them [4]. The speed of technology advancement drives society to understand that the use of informatics in all human environments is essential. In order to help students to develop new skills the intelligent use of computers becomes effective when it is used in a way to make the student to explore her/his capabilities and to develop skills. It makes

possible to the student to explore, better saying to seek for new knowledge, to solve problems in more creative way and share information.

5. Some Strategic Aspects of the Project

As mentioned before this special program is based in an integrated educational method using computers as the tools to increment the learning process aiming the betterment of fundamental education system, the K12. Many scientists like Engineers, Pedagogues, Social Agents and technicians involved with education have been working in the implementation and development of this project.

It encompasses top technologies with access to Internet and complete didactic material designed for this kind of proposal. The choice of the name itself has been based in scientific research of marketing area so "Let's go folks!" is another strategic action to reach the young students. Other strategy of marketing to get the attention of them is the name of the labs, so called "Fortress of knowledge", so charming and at the same time so simple.

6. Educational Appealing Aspects of Fortress of Knowledge

This new K12 program has been conceived having as one of its main goals to generate the intellectual excitement among the students toward the acquisition of knowledge in subjects that are considered very difficult. The new approach with the computer as a powerful tool has showed to be effective to enhance the learning process.

The Fortress of Knowledge is the special space created in the schools where the students can spend some hours of the week enjoying the good time of learning in a complete new way. It looks like the ancient fortresses that were built in the city in the XVI Century to protect it from the pirates and invaders. Nothing more charming! It contains in its space the computers around 20 (in each school) connected in a network, with Internet access.

The implementation of the program started in February of 2002; it has been dimensioned to serve 10 thousand students per year, including the qualification of teachers and technical staff for the next four years.

7. Infra Structure of the Project

The project physical infra structure counts with 16 laboratories with 20 points of network each, in according to the international pattern EIA/TIA 568-A, where each lab contains one Rack with key and the local network active element (Switch 24 doors 10/100 MBITS).

The whole project is compounded by: 320 Celeron computers 800 MHZ/ Disk of 20GB and 128 MB RAM/ Colored monitor with 15"/ CDRom/ Stabilizer; Supply of 32 printers, 2 for each lab; Large b and Internet access.

The laboratories are large enough to attend the necessities of the schools presently and they can be enlarged with the time and in according to the new demands.

About Internet access infra structure it is: The chosen technology for Internet access is the frame-Relay and 512Kbps speed; All labs have local and remote connection equipment (Switch, rotator and modem); Very neatly elaborated the didactic Supportnet material has received special attention so that it provides the students all the necessary information for the correct use of computers;

8. Methodology

The proposal of teaching methodology in this program is based mostly in the interaction and real experience. The qualification is gotten by means of 25% of theory and 75% of practice. Using the computer in education has been showing as an important agent in the promotion of closer and so important between adviser/instructor and pupil [5].

Evaluation Methodology is based on some methods, some orthodox and some non-orthodox. It depends on the teacher and they can be: Presentation of works developed with the use of the computer developed during the course; Frequency of classes' presence, at least 75%; Lectures and practical exercises. At the end of the course the students have a test to evaluate the knowledge acquisition based in a minimum quantity required to be approved and get the certificate.

9. Proposed Schedule

The proposed schedule to all the students is: 60 hours of Office package (Windows, Word, Excel and Internet) to Professional certificate for 8th year of Fundamental School and 45 hours of basic Windows, Word, Excel and Internet form the 5th to the 7th years of Fundamental School. All distributed along the year.

To accomplish the task of help students to develop new skills it is important kind of teacher, more qualified and integrated to the new methodology [6]. The teachers as well as the students have a schedule in order to have the necessary courses to improve their knowledge and also to help the students that will be as well transformed by the use of this new technology. So the teachers have: 08 hours of typing; 80 hours of Office (Windows, Word, Excel, Power Point and Internet); 40 hours of informatics in Education. They also have full technical and pedagogical assistance and support of the staff for anything at all has been given to both students and teachers.

10. New Approach

With the goal to make the program more attractive to the students it should have a kind of content that is equally cultural and appealing [7]. Below there is some examples of extra available topics plus the programs content: Availability of Internet access; Virtual Bulletin; Web mail; Let's go folks! Journal; Best students of the month; Download areas (tutorials); Educational games; Chat; Know your City!; Test your knowledge; Virtual Library; Internet Challenges; News.

All the material that is available is constantly updated.

11. Next Steps

The objective number one of the project is to provide the public school students the possibility to develop the skills to choose carriers in engineering and technology fields [8]. It is followed by: Training and qualification of public schools teachers in technology education and pedagogic design to promote the betterment of its citizens qualifying them through the informatics specialization.

The experience has showed that the social dimension of this program far exceeds the school borders and its first goal. The planned project has developed to a step forward. It is an extension of the program. So a new step has started and it is called in Portuguese JEPOM that means Young Boys Being in the Municipal Orientation. It is a whole package that contains classes of English and Spanish besides informatics to the 18 years old boys that are dismissed of the Army service. They have classes and also some training to help tourists that come to the city with information or advising.

12. Conclusions

The point of departure of the project is the student-centered paradigm of education.

The project has got so good results that it has been amplified to the qualification of poor communities citizens of the city and also extended to the young boys that are dismissed of the Army service. It shows a change of education policy that has now a new face. It is an education more integrated with community aiming the betterment of future generations of youth.

All the strategies adopted have been dimensioned to capture the young students attention. It is not only the content and the site that are made with a special language but also the construction of the labs were specially chosen based on the fact that it evokes the first fortifications built in the São Vicente Village to protect it from the pirates and invaders that used to come to the coast. It is the spirit of conquest and freedom of a people building a life in their own peculiar way, like the young generations are part of the building of a new society. Although it aims the enhancement of students in engineering careers it can be said that it is a very ambitious project once all the local society has been benefited by the project.

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