ISSUE OF INTEGRATING INFORMATION AND COMMUNICATION TECHNOLOGIES IN SECONDARY EDUCATION IN BENIN: CASE OF CEG1-COVE

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Abstract: *The transformations that the use of computers and the internet are causing in school are disrupting perceptions, representations, as well as usual practices and logics. This research aims to take stock of the challenges to be met in relation to the integration of ICT at CEG1-COVE. It involved 100 teachers in all subjects able to provide us with information and 262 students chosen at random. The results show that the integration of ICT in secondary education at CEG1-Covè is still limited, and teachers and learners remain on the margins of the opportunities to learn these tools. They are not ready for the integration process and initial and continuing training which includes the pedagogical use of technologies is almost non-existent.*

Key Words:: *Integration, ICT, Education, Teacher training, ICT infrastructure.*

1. INTRODUCTION:

According to Karsenti (2006), it is only relatively recently that we have come to view change as something positive, preferable, perhaps, continuity. Even today, in many quarters, the change in Information and Communication Technology (ICT) remains suspect, as unfounded, unusual, and even downright dangerous. Thus, the educational institution is not on the sidelines of the explosion of Information and Communication Technologies (ICT). The integration of ICT is all the more inevitable in the field of education as it allows to promote access to information as well as the success of learners, to enhance the professionalism of teaching staff, to encourage leadership of managers, to promote South-South and North-South collaborations, and, that it offers multiple solutions to counter several current problems of education in Africa (Karsenti, 2006). ICTs appear, in fact, as learning and teaching tools that broaden the scope of educational options and means of optimizing the capacity of the different actors in the education system. To enable students to effectively harness the potential of ICT in education, computer literacy is essential.

The teaching of computers in secondary schools therefore appears to be a means of introducing students to the main functions of the computer, with a view to "technological literacy", while at the same time developing their skills. critical spirit, their capacities in terms of ethics, behavior in society, and their aptitudes to act and to create both at the personal level and in collaboration with others or within a team (Kalogiannakis, 2014). However, it must be recognized that the current discourse on the integration of ICT in a global way or more specifically on the introduction of the teaching of computer science in an African educational context seems much more ideological than empirical (Karsenti & Collin, 2010). The uses of IT tools in education are not yet anchored in professional culture and practices and it would be unrealistic to believe that they will be so only through the diffusion of technical skills among learners and teachers (Beziat, 2012).

Indeed, ICTs arouse immense hope in Benin in particular and are gradually integrated into the different aspects of social and scientific life while constituting a working tool, a prolific organizational resource and could become a showcase of the cultural model and the knowledge of our country. However, although the process of insertion and forms of use of ICT are underway in universities and professionals, it has unfortunately not fully integrated secondary education where, however, approximately 92% of high school students, and academics (students and teachers) have e-mail addresses and frequent Internet cafes for various reasons. As Kofi Annan indicated at the

World Summit on the Information Society which took place in Tunis in November 2005, "we are living in a time of rapid change where technologies are playing an increasingly central role in all areas of development ''activities of our lives''.

ICTs have an important influence on the development of all societies on the planet and significantly affect all economic, social and cultural dimensions. With ICT, everything changes: the way we teach, live, learn, work, and even earn our living. These societal metamorphoses, many have said, individuals of all peoples should in no way watch them pass, or even undergo them indifferently. On the contrary, the citizens of all countries and in particular those of Africa who are already lagging far behind in several areas must be the architects of their destiny, and, therefore, actively participate in this technological world. If technology has accelerated the birth of the information age, it is therefore the duty of all peoples to actively participate in building this information society so as not to prevent anyone from having access to the knowledge now available on the Internet and thus benefit from a better future, from the globalization of markets and globalization. As far as we are concerned here, we wish to determine the steps that could allow the successful integration of ICT into public secondary education at CEG1-Covè. This horizon, much broader, is that of the basic common culture of our country.

1.1. Problem:

Faced with any innovation, there is resistance. While learners, generally younger than teachers, have earlier and earlier contact with ICTs to the point of easily introducing them into their learning, the process of ICT integration is, it seems, more complex with teachers. Teachers get a sense of the new, embrace it at different speeds, and decide how to use technology to improve their teaching (Dakpo, Akouété-Hounsinou, & Azonhè, 2008). To this end, Rogers (1995) distinguished in his theory of the diffusion of innovations, the initiated and the uninitiated. He called them the "neo-illiterates". ICT play a role of catalyst for new relationships between trainer and learner in the educational space.

They promote the improvement of the art of teaching and the deepening of learning. Notwithstanding the confirmed impacts of ICT on the educational success of learners, the pedagogical use of ICT in school or academic contexts still remains a huge challenge (Karsenti, Raby and Villeneuve, 2008). Indeed, the scientific literature abounds in writings (Bauer and Kenton, 2005; Becta, 2006; Cox, 2003; European Schoolnet, 2004; Van Kessel et al., 2005; Wallace, 2004 and OECD, 2004) showing that ICTs are seldom used in the classroom. This observation is confirmed by the conclusions of an OECD study (2004), which reveal that the low techno pedagogical competence of teachers prevents a real integration of ICT in pedagogy. This report speaks of a "disappointing" use of ICT in schools. For Zhao and Frank (2003), the introduction of ICTs in education is not having the hoped-for success. It appears from the scientific literature (e.g. Bauer and Kenton (2005) and the OECD (2004)) that ICT is still not present in the classroom, and that this is a significant problem in a society facing the maelstrom of ICT. In Benin, it seems obvious the amalgamation between the equipment of schools, colleges and universities with computer equipment and the integration of ICT in practices. Everything suggests that instead of being tools, instruments, support or even support for teaching / learning / assessment, ICTs are used as objects of teaching. This is why for most education players and, it is true, enrolling computer courses in the curriculum would be tantamount to integrating technologies into education. We can therefore, without risk of being mistaken, affirm that there is, among the actors of the education system in Benin, a poor understanding of the pedagogical integration of ICT, so much so that the government, through the various ministries in responsible for education, does not hesitate to distribute boxes of computers in schools, high schools and colleges without forgetting the universities. The question that arises is therefore to know whether the pedagogical integration of ICT can be achieved without prior training of the actors. However, the training of actors in the education system in the pedagogical integration of ICT is, for the moment, far from being on the agenda of priorities.

In addition, the CEG1-Covè on which our research is based has already moved on to the Approach Based on Competency in educational system. The main objective of this system is to improve the quality and relevance of the lessons delivered and which, according to those responsible for its implementation, will bring greater flexibility both in teaching and greater autonomy for students. The implementation of such a device therefore requires adequate infrastructure in terms of documentation centers with available reference books, educational materials, etc. As it stands at CEG1-Covè, the implementation of the APC will suffer from shortcomings due to obsolescence and the unavailability of appropriate materials. The integration of ICT is an option that those in charge of CEG1-Covè should not neglect for a better applicability of the APC. The Internet in particular combines all other technologies. It is a focal point for audio (radio), and video (television) and telephony (interactivity). The famous "Google Earth" interface for example, thanks to advanced tools, allows its user to see a specific place on the globe at a given moment and in real time. This suggests multiple possibilities for schools in terms of access to educational resources, especially in the field of geography. While ICTs are often considered as teaching tools and are, to varying degrees, present in almost all

schools, the problem now is how to integrate them successfully into education in general. Thus, well thought out ICT in education can help and facilitate the work of the learner in the progressive construction of his knowledge, know-how, interpersonal skills and know-how. Moreover, it seems judicious in view of an attempt to integrate ICT at CEG1-Covè to ask the following research question: "Is successful integration of ICT in teaching due to the availability of computer equipment?" and an adequate technological infrastructure? "This question leads us to formulate the following objectives and to postulate the following hypotheses:

1.2 Objectives:
This research aims to take stock of the challenges to be met in relation to the integration of ICT at CEG1-COVE. However, the integration of ICT presupposes the availability of computer equipment and an adequate technological infrastructure (Internet network, efficient structures for managing this network, effective expertise in the management of such an infrastructure). This is why the two specific objectives below have been formulated to serve as common threads in the conduct of this research. Thus, we aim to:
- determine the reasons that plague the integration of ICT at CEG1-Covè;
- suggest approaches and solutions that will allow the development of ICT at CEG1-Covè.

1.3 Hypothesis:
As part of this study, we postulate that:
- the CEG-1 Covè lacks equipment and infrastructure allowing it to implement ICT;
- teachers have a low level of knowledge and a low level of professional development of ICT.

2. METHODOLOGICAL APPROACH:
Our methodological approach consisted in specifying the nature of the research, targeting the population concerned, choosing effective tools for a good investigation, processing the data collected and presenting the difficulties encountered.

2.1 Nature of the study:
This is a cross-sectional study that is both quantitative because of the questionnaire that was administered to students and teachers and qualitative given the nature of the interviews with the head of CEG1-COVE and the teachers. It intends to determine the important factors that contribute to the sustainability of the integration of ICT at CEG1-COVE in order to suggest approaches and solutions that will allow the development of ICT at CEG1-Covè.

2.2 Survey population:
These are all the subjects concerned by the investigations that the research requires. In the context of this research, the actors concerned are:
- the students are the people who receive lessons at CEG1-COVE. With them, we will look for problems relating to the non-use of computer tools relating to education;
- teachers are the people responsible for teaching students, who are the actors in the changes taking place in the school environment;
- the head of the establishment is the actor whose mission is to manage, direct and coordinate educational activities within CEG1-COVE.

2.3 Sampling:
We used the non-probability sampling method. The non-probabilistic method is based on the principle of reasoned choice. Thus, we have chosen 100 teachers of all subjects able to provide us with information for our work. For students, given the absence of an exhaustive list of students with three (3) years of seniority, the sample was drawn up on the basis of non-probability sampling. A sample of 262 students was made. These students were selected on the basis of their seniority and their availability to answer our questions.

2.4 Data collection tools:
The analysis of data on the integration of ICT in secondary education to the implementation of PCA in secondary education deserves special and sustained attention. For this it is very essential, in order to diversify the sources of information, to submit certain subjects to the interview and others to the questionnaire.

3. RESULTS:
From the analysis of data collected from students and teachers, the data is as follows:

3.1 General characteristics of the Pupils and Teachers surveyed

Table 1 : Distribution of pupils and teachers by gender

		STUDENTS		TEACHERS	
Sex	Effective	%	Effective	%	
Male	153	59%	70	77%	
Female	106	41%	21	23%	
TOTAL	259	100	91	100	

Pupils constitute the most important target group with 59% and 41%. Among teachers, men are the most numerous with 77% for 23% of women.
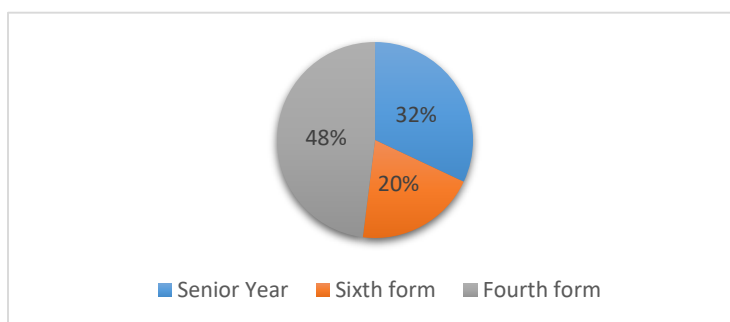

Graph 1: Distribution of students by level of study

From graph 1, we have in terms of percentage: 32% of students in Senior Class; 20% in Sixth form; 48% in fourth form.

3.2 Equipment and general knowledge of actors: ICT at CEG1-Covè

The following graphs show us that 63% of the students and 77% of the teachers questioned during our survey affirmed that the CEG1-Covè had a computer room, but which serves as a secretariat, access to which is strictly reserved for the member of the administration of said college.
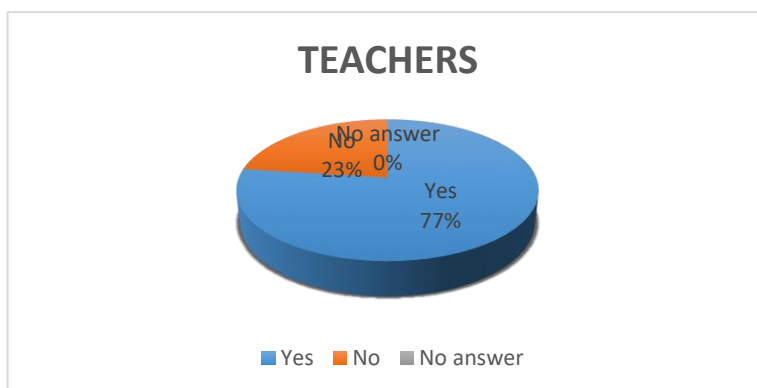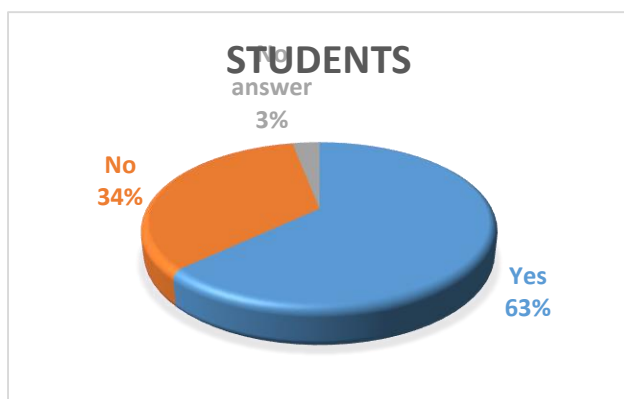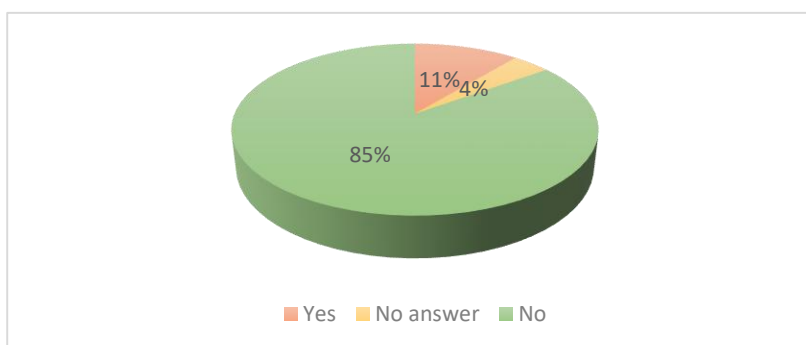

Graphs 2, 3 and 4: Existence of cybercafé
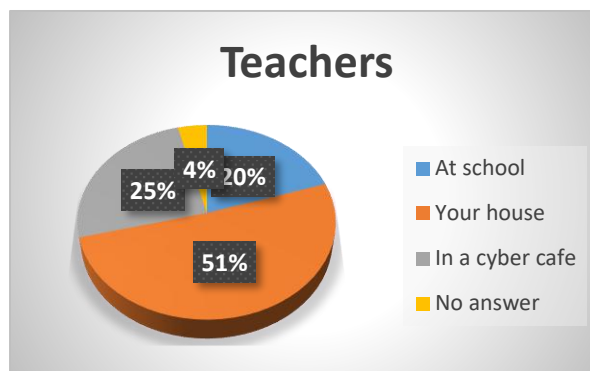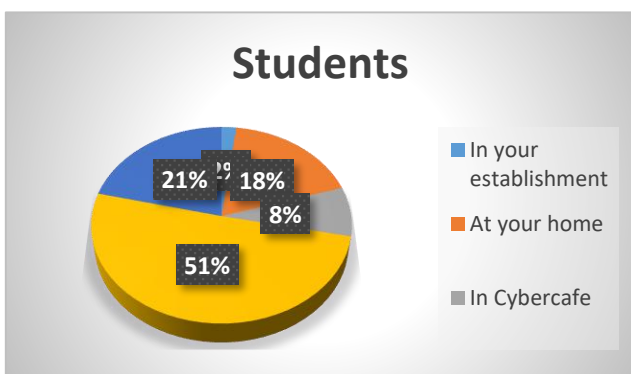
**Graphs 5 and 6: Where do teachers and students connect to the internet ?**

Although the CEG1-Covè has a computer room, the previous graphs show us that only 2% of students are used to connecting to the Internet in the college against 20% of teachers who say they are connected in the middle school establishment for the withdrawal of their pays lip; 18% of students connect to the Internet in their homes compared to 25% of teachers.

3.3 Students 'and teachers' relationship with ICT:
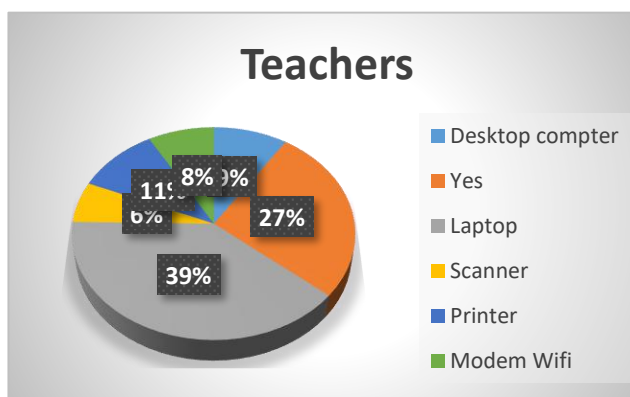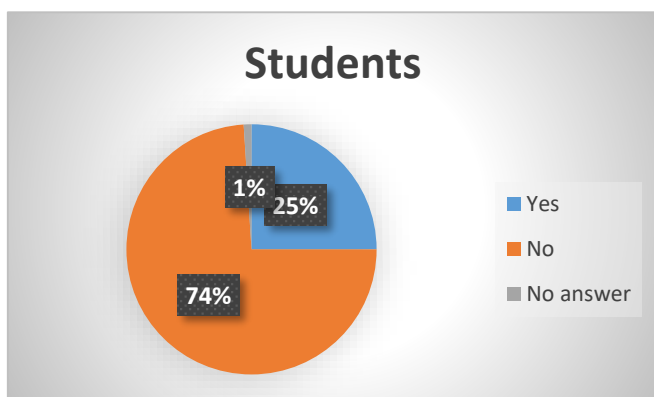
Figures 7 and 8: Possession of computer equipment

The results of our survey allow us to see that owning a computer is still a luxury at CEG1-Covè. More than two-thirds of respondents (74% of students) say they do not have a computer compared to 26% who do. On the other hand, 9% of teachers have a desktop computer, 38% have a laptop, 6% of teachers have a scanner and 8% have modern wifi.
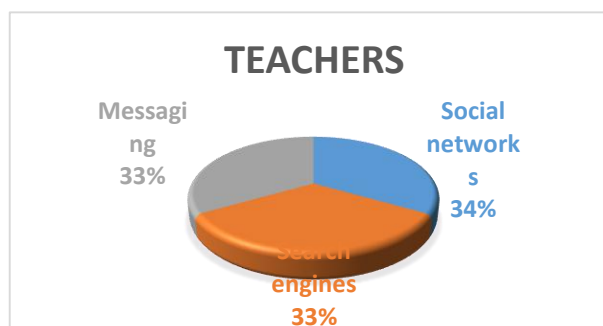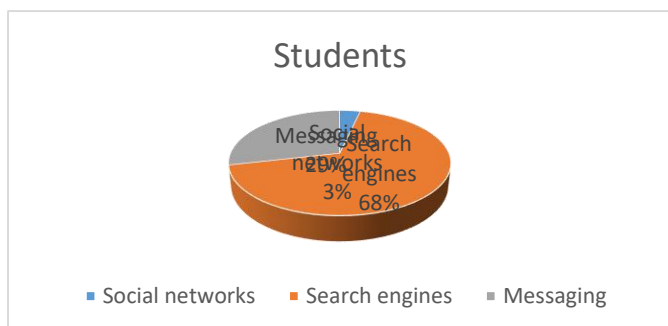
Figures 9 and 10: Internet services regularly used

These two graphs show that 57% of students use search engines and 24% referred to messaging. Regarding teachers, 33% refer to search engines while 33% of them use messaging.

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3.4 Educational use of ICT in teaching at CEG1-Covè
3.4.1 Teacher training in the practice of ICT

The survey that we had the opportunity to carry out with the teachers allowed us to realize that on the whole, both the ministry and the secondary schools make very little effort to participate in the teachers training for the use of Information and Communication Technologies for Education (ICTE). This is obviously a fundamental condition for the development of ICT in schools. Indeed, untrained and untrained teachers will never make use of digital tools, which they will never see useful for improving the quality of their teaching. Indeed, all the teachers interviewed affirmed that the ministry offered them no training in this area.

3.4.2 The use of ICT in the educational framework

In the panorama of computer and telecommunications tools that can be used to prepare or deliver lessons and prepare exercises and homework, the computer was the most cited by teachers interviewed in our survey. But only 35% and 32% of the teachers surveyed said they used the computer to prepare for their lessons. However, only 6%% integrate ICT on a regular basis in the classroom, 30% a few times and 64% have never integrated ICT in classroom activities.

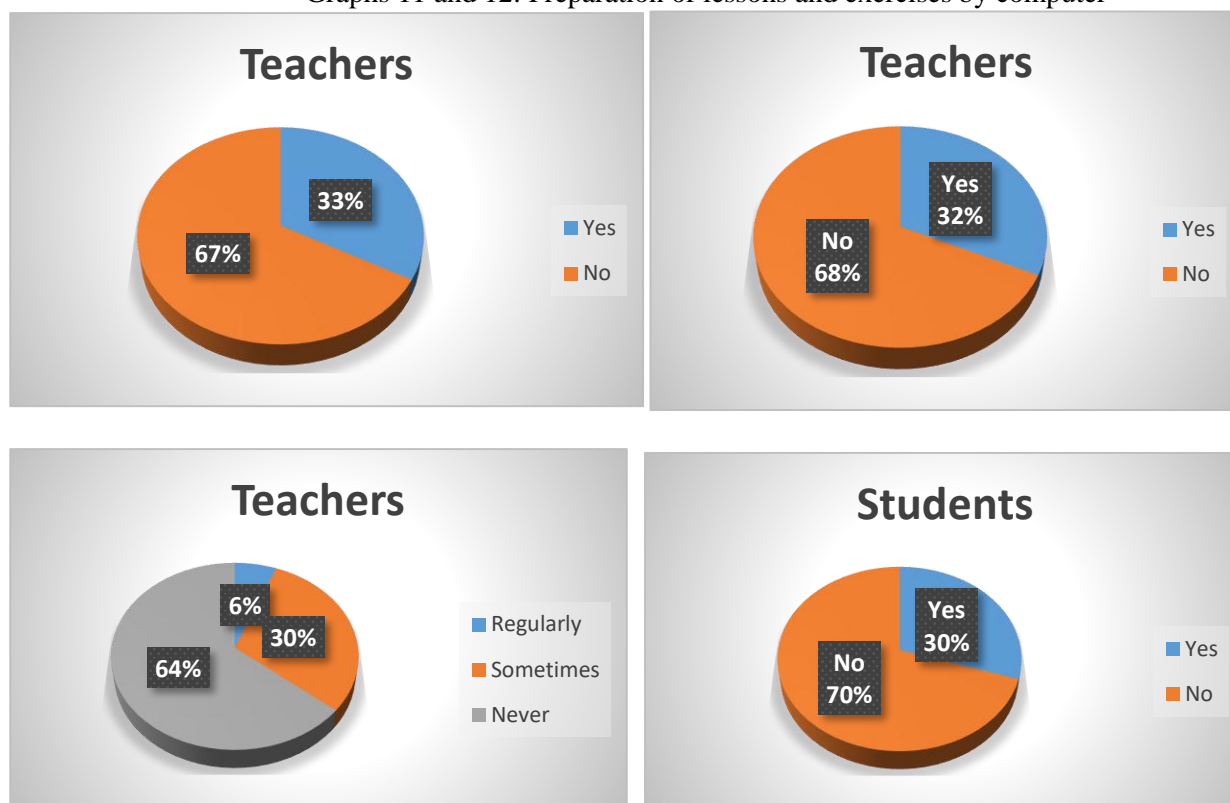Graphs 11 and 12: Preparation of lessons and exercises by computer

Figure 13: Integration of ICT in activities

Figure 14: Encouragement of school use by teachers ICT by teachers to studentsFrom this graph, it emerges that 70% of the students questioned affirm that their teacher never encourages them to use ICT in class, on the other hand 30% affirm the opposite.

3.4.3 Advantage and prospects for the use of ICT

From these graphs, it emerges that the majority of teachers (57%) and (65%) of students have no training in the use of ICT and all teachers 43% who have received training confirm that the integration of ICT improves the professional development of teachers, which shows that most teachers are aware of the importance of this integration in their teaching.
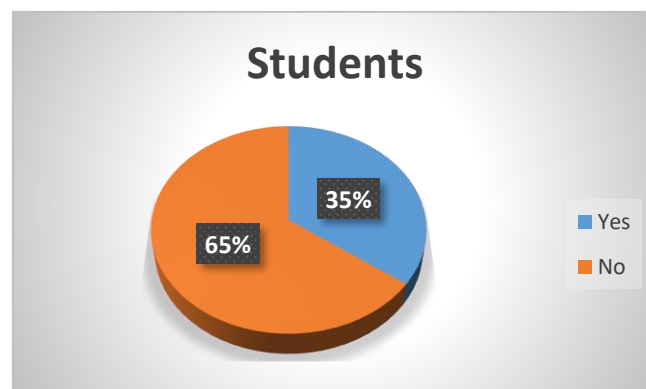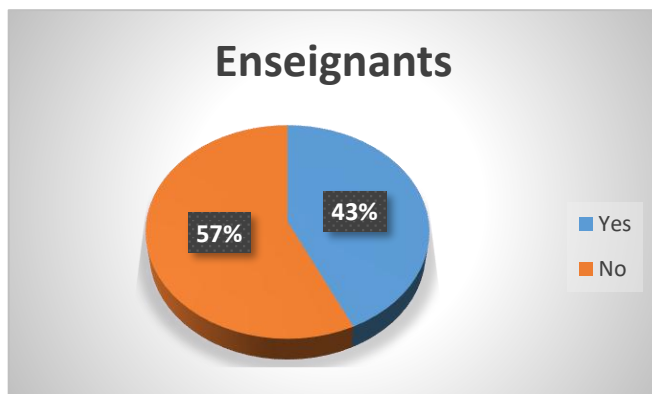
Graph 15: Personal training in the use of ICT among teachers
Graph 16: Personal training in the use of ICT among students

3.5 Presentation and interpretation of the results of the interviews

However, it emerges from the triangulation of interview data and field observations that the various projects initiated have not really made it possible to introduce computer science education in a lasting way at CEG1-Covè. Here are the words of the director of the establishment when approached, he attests to this point of view:

"In 2009, thanks to the support of a non-governmental organization and the support of the Honorable AKE Natondé, my establishment benefited from a computer room equipped with around 30 computers. We then initiated the teaching of computer science in our training programs for a period of two hours per week, especially for the 6th, 5th, 4th, 2nd and 1st classes. The aim was to introduce the learners to computer functions, to use Word and Excel software and to use the Internet. Unfortunately since 2013, we have been forced to discontinue computer education due to problems with maintenance of computer equipment, internet accessibility and support for the computer teacher. "

The analysis of these collected data shows that the main obstacles to the integration of ICT at CEG1-Covè relate to the ICT infrastructure, the absence of integrated computers in the classroom, the insufficient number of " computers operational in the establishment, insufficient number of computers connected to the Internet, insufficient number of peripherals, lack of educational software, educational content suitable for school curricula, lack of maintenance strategy and the lack of renewal of equipment. These results clearly show that factors related to the ICT infrastructure significantly influence the integration of the use of ICT into the professional practices of teachers and students of CEG1-Covè. In general, these results corroborate the conclusions of numerous previous scientific researches which specify that the lack or insufficiency of technological infrastructure is at the top of the obstacles encountered in the use of ICT in education (Pelgrum, Law, UNESCO, 2004; OECD, 2014; Karsenti and Tchameni, 2009). In addition, the comments of the censor of the establishment reflect this point of view: "The introduction of IT in the college certainly appears to be an important concern, but for the moment my establishment is mainly confronted with the insufficiency of rooms, classroom furniture and teachers". In this case, the introduction of computer science education is relegated to second place due to the persistence of the traditional problems of the Beninese school.

3.6 Discussion of the results:

At the end of the presentation of the results, it was found among teachers and students that they were very often obliged to pay to have access to computer tools or to the Internet. In fact, teachers and students did not even identify college as the primary place where they could connect to the Internet; cyber cafes were the ideal place for this. The majority of teachers and students did not know how to use the computer tool. These results corroborate with those of Charlier, Daele and Deschryver (2002) when they asserted that: "The integration of information and communication technologies (ICT) into teaching practices is generally considered to be a matter of training : teachers must be trained". This also confirms the conclusions of the work of Duarte-Cholat (2000), when she expressed herself in these terms:

"The rapid development of ICTs and the effects that they entail, mainly for consultation, sharing and dissemination of information, require teachers and learners to master these technologies in order to integrate them into their educational practices. There were also very few teachers who prepared their lessons, exercises and homework by computer ".

In short, the integration of ICT in secondary education, more particularly at CEG1-Covè, was still very far from being a reality in education. The results also show that the structural problems from which the Beninese

education system suffers, such as the problems relating to the working conditions of teachers, considered unfavorable, constitute real obstacles to the success of the integration of ICT in education. Indeed, the teachers interviewed believe that the number of students per class (50) is very high, and there is no equipment to cover all this number of students. 50% of respondents consider the lack of time as a dissuasive factor and finally, the absence or insufficient motivation and / or encouragement to use ICT in teaching practices is another obstacle hindering the use of ICT as learning tools. These results confirm those from the studies carried out in France by Lepetit et al. (2007) and in Canada by Karsenti and Larose (2005) and OECD (2001) on the factors that may slow down the integration of ICT in schools, should challenge leaders at the highest level of the Beninese education system in general and especially those of general secondary education to make the necessary arrangements if they want to give teachers and learners a chance to be at the same level of use of ICT in activities educational than those in the rest of the world.

In fact, the success of any project to integrate ICT into an education system requires preconditions relating to the educational policy adopted. On the one hand, ICTs must be incorporated into the nation's overall plans, which must themselves clearly assert their place within the country's educational strategy (Cynthia, 2005); (UNESCO, 2003).

4. CONCLUSION:

The present study aims to take stock of the challenges to be met in relation to the integration of ICT in CEG1-COVE. The main results of this study show that the use of ICT in secondary education at CEG1-Covè is still very limited, or even absent from the practice of most of the teachers surveyed, especially when it comes to teaching pedagogical integration of ICT in the classroom or professional use outside of class sessions (class preparation, grade management, communication between students and teachers). It therefore appears difficult to think about the integration of ICT in the Beninese education system without taking into account the many obstacles mentioned by the teachers interviewed.

In fact, five categories of obstacles are identified, namely: obstacles relating to ICT infrastructure, those relating to support and professional development, those relating to the policy and strategy for the implementation of ICT in education , those relating to cultural and linguistic issues and finally those related to general problems related to the Beninese education system itself. Generally, these results, which should nevertheless be considered with caution, corroborate the results of previous studies. Indeed, like all research, this study is full of strengths, but admittedly also has limitations. First, it is important to stress that these limits are particularly methodological in nature. Before presenting some of them, we recall that this research involved the participation of a fairly large number of teachers (100). It may be useful to remember that the integration of ICT in education is a complex process which requires the availability of both functional and quality technological infrastructure, competent human resources and financial support adequate and permanent. When these prerequisites are met, it is important for the teacher to establish a protocol with the students for the use of computers in school and outside of school. For this, he will have to ensure their basic ICT skills before embarking on the realization of learning activities. He will also have the delicate task of planning refresher training with the assistance of student ICT experts or other school resource persons.

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