

# Analysis of the Skills of Teachers of Technical and Vocational Schools in the Use of ICTs in the City of Likasi in the DRC

Kalala Musangana Bantu<sup>1</sup>, Lumbu Wa Nyungu<sup>2</sup>

**Abstract:** *The appropriation and integration of information and communication technologies by teachers is a subject that is necessary and interesting to be introduced in the technical and vocational schools of the City of Likasi in the Democratic Republic of Congo. This article offers an analysis of its integration into technical education and the appropriation of this technology by teachers in view of its current importance in the development of practical skills. Analysis of the data revealed that most teachers feel that they do not have the required level. In particular, the appropriation of educational software remains limited. The results of the analysis also indicate that this lack of ICT skills is mainly due to the insufficient quantity and quality of training in this area.*

**Keywords:** Skills, ICT appropriation, integration, technical and vocational teacher

## 1. Introduction and Issue

Admittedly, the introduction of information and communication technologies (ICTs) in schools has produced significant transformations in technical education systems. Indeed, the findings of numerous studies show that the appropriate use of these technologies in education can bring multiple benefits (Balanskat, Blamire and Kefala, 2006). ICT in education can contribute to improving the quality of teaching and learning, increasing school achievement, enhancing motivation to learn and perseverance in learners' efforts (IICD 1, 2007). However, several conditions are required for the success of any project to integrate ICT in education. The integration of ICT in schools starts with the installation of equipment and technological equipment, as well as a full range of software and educational content (OECD, 2001).

Similarly, the results of the observations made show that teachers' lack of knowledge and skills in the field of ICT was a major obstacle to the use of ICT in their teaching (Pelgrum and Anderson, 2001). In addition, the level of competence of teachers must enable them to use ICT. In addition, teachers' level of competence must enable them to use ICT in a school context and in a professional and sustainable way, and not only to develop computer literacy skills (Farrell and Shafika, 2007).

In addition, teaching with ICT requires an innovative pedagogy based on the exploitation of collaboration between learners and limits the transmitting role of the teacher.

While the availability of ICT materials and equipment, in sufficient quantity and quality, is a highly essential condition for any successful integration of ICT in education, another very important factor is that relating to the ICT professional development of pedagogical actors, as well as their ability to use ICT effectively in their teaching practice.

In other words, the effective integration of ICT in education requires these actors to acquire new technological and pedagogical skills related to the new role and new learning practices. In particular, the acquisition of skills or lack of skills among teachers is the most important factor influencing

the success of any ICT integration project (Alwani and Soomro, 2010; Pelgrum and Law, 2004).

In fact, the analysis of these results has led to the identification of certain categories of concepts likely to block the process, among others; barriers related to ICT infrastructure at school level, ICT professional development, structural problems in the education system itself, ICT implementation policy and strategy in schools, and problems related to cultural issues, language and negative attitudes and the seriousness of managers.

However, factors related to the professional development of education stakeholders have been identified as one of the major obstacles to the integration of ICT into the education system in Likasi City in particular. Indeed, the majority of principals and promoters consider the lack of basic computer skills to be the main obstacle discouraging teachers and administrators from using ICT in their professional practices. In particular, almost all of them express their dissatisfaction and dismay, both in terms of quantity and quality, or the virtual absence of continuous training on ICT organized by the supervising ministry to strengthen the capacities of the main actors (Mastafi, 2014).

In the light of the situation that the city and the country are going through, it seems that despite mining and human resources as well as the provision of training for some teachers, they remain insufficient and do not provide teachers with the necessary skills to effectively use ICT in their teaching practices.

It therefore seemed legitimate to us to question the reality of the development of teachers' skills in terms of ICT and their appropriation of the basic techniques allowing them to integrate these technologies into their teaching practices. In other words, do teachers have basic computer skills and knowledge? What is their degree of mastery of multimedia software allowing the creation and/or adaptation of digital resources? Do these teachers have the capacity to use ICT in their teaching?

By answering these questions, we try to better appreciate the degree of appropriation of ICT by teachers. In this article, we

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think, after analyzing the different parameters of our research and our reflections carried out during the period from 2022 to 2023, relating to the professional development in ICT, of teachers of technical and vocational education in the field.

In general, the findings of many studies agree on the importance of teachers' acquisition of technical skills in the successful integration of ICT in education. Indeed, teachers' lack of ICT skills was a major obstacle to the use of ICT in their teaching, according to the reports of the teaching units of the inspectors in the field (Likasi Inspection I and II, EPSP, 2022 – 2023), and the evaluation of the APC and DAS programmes of the line ministry revealed that the lack of ICT skills is the main reason why teachers did not use ICT in teaching (Balanskat et al., 2006). In a survey of practitioners in the United Kingdom, BECTA (2004) concluded that many teachers are reluctant to use ICT and feel anxious when using the computer, in the presence of students, because of the lack of ICT skills and knowledge at home.

In this regard, in order to define the ICT competencies for teachers necessary for the successful integration of these technologies in teaching, several ICT competency frameworks have been developed such as the referentialized competency - based approach with the support of the Belgian Cooperation for the Democratic Republic of Congo (CTB RD CONGO AETFP 2010 PROJECT) AND WE EMPHASIZE THE STANDARDS, on the skills, knowledge, skills and attitudes needed by teachers in the use of ICT in education, published in 2008 by the International Society for Technology in Education (ISTE).

In the same vein, the Congolese Ministry of Higher Education and Research, in collaboration with the Ministry of Vocational Education, has instituted a framework of skills necessary for the pedagogical use of information and communication technologies, common to all teachers and trainers.

It is clear that there are a multitude of frameworks defining ICT competences for teachers. What the majority of these frameworks have in common is their participation in the implementation of standards that make it possible to continually question the real needs in terms of skills required for the use and effective integration of these technologies in education.

In this sense, the Moroccan Ministry of National Education has adopted a training programme, called "ICT and Professional Development", for the benefit of teachers, based on the three groups of ICT competencies constituting UNESCO's framework, and aims to equip teachers with techno - pedagogical skills that facilitate both teaching and student learning (GENIE Programme Central Directorate, 2010). This framework is also adopted for the present research.

If studies reveal that the pedagogical use of ICT in education in Morocco is still very limited, or even absent for the majority of teachers (Mastafi, 2014), and if the lack of ICT skills is considered to be one of the main factors hindering the integration of these technologies in education, we can therefore assume that Moroccan teachers lack appropriate technical skills for the effective use of these technologies in

their professional practice. Thus, the objective of the present research is to show the importance of integrating ICT into education at the level of technical and vocational schools in the city of Likasi in particular in order to strengthen the capacities of teachers in order to make the training of learners effective and dignified in view of the prospects of imminent industrialization of the region.

To meet the objective of this research, we opted for sustained observation and analysis. The choice of such an approach was based on the fact that this type of analysis allows us to detect and identify problems with teachers' techno - pedagogical skills. Anticipatingly, the results of this research reveal that this lack of ICT skills is mainly the result of the insufficient provision of adequate training in this field. Indeed, teachers have never received ICT training (initial or in - service) and more than half of those who have had the opportunity to benefit from it are no longer satisfied. However, teacher training needs to equip teachers with the skills needed to use ICT in a school setting and in a professional and sustainable way, not just the development of computer literacy skills (Farrell and Shafika, 2007).

In addition, according to the ICT competency framework developed by UNESCO (2011), the successful integration of these technologies in the classroom depends on the degree of acquisition of the teacher's technical, pedagogical, methodological and didactic skills. In particular, it will need to be able to "merge new technologies with new pedagogies and create a socially active classroom, stimulating cooperative interaction, collaborative learning and group work." (UNESCO, 2011, p.9).

In particular, in order to be able to provide quality education, teachers will need to have the capacity to communicate better, to produce quality teaching resources, to better disseminate knowledge, and to have easy access to distant cultures.

As a result, there is a great need in our conclusions on the provision of continuing training in ICT. Although this research sheds some pretty important light on one topic. This study, like all research, is full of strengths, but certainly also has limitations. First of all, it is important to emphasize that these limitations are of a methodological nature. Before presenting some of them, we recall that the present research involved the participation of a fairly large number of teachers. However, the scope of the study appears to be limited; on the one hand, the fact that only technical and vocational schools in the City of Likasi were selected for data collection may suggest that the field of investigation remains limited and restricted. On the other hand, we are aware that some teaching actors such as future teachers should, preferably, be among the participants in this research. Because of these criteria, the study would not appear to be representative of the situation with regard to the integration of ICT in education.

In conclusion, the results of this research have raised new questions that pave the way for further research. Thus, it is suggested that we deeply question the reality of continuing education organized in this field. It therefore seems extremely appropriate to ask questions more specifically about the real concerns and ideas of teachers who have had the opportunity to take part in certain training courses, their number of hours,

their contents, the technical and pedagogical skills of the trainers themselves, as well as their impact on the professional profession linked to these technologies in teaching practices. It is also very interesting, in the context of the reform of the education system in relation to the training of future teachers adopted by the Ministry of National Education, to carry out research within educational entities and vocational training centres with the aim of closely examining with a view to evaluating the initial training of future teachers in ICT.

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