

The introduction of tablets in primary schools: What impact does it have on teacher training?

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Abstract:

In the context of a digital revolution and a quest for optimization, schools aim to improve individual student performance. The introduction of tablets in the classroom marks a shift towards an all-digital environment. However, the training and qualification of teachers and educational staff in various digital uses have not kept pace with this transformation, remaining a challenge to overcome. In this contribution, we will discuss the adaptation of continuing education programs for primary school teachers, based on expressed real needs, new pedagogies, and the challenges of digitalization for optimal educational use of tablets.

Keywords: digital; innovative pedagogy; tablet; teacher training

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INTRODUCTION

Information and Communication Technologies (ICT) play a crucial role in our education system. Their introduction into classrooms paves the way for innovative methods for learning, creating and sharing knowledge, while offering unprecedented flexibility in organizing learning space and time, and creating an exciting dynamic in education.

Since 2000, Algeria has spared no expense in integrating ICT into teachers' teaching practices. As part of the UNESCO-led Education System Reform Support and Assistance Program (PARE), the Ministry of National Education has implemented a comprehensive strategy to develop the education sector, highlighting the need to modernize infrastructure, equipment and teaching tools in order to achieve a successful transition to digital technology, which is part of a context where international quality standards are implemented in the education system.

The 2022/2023 school year was marked by a qualitative evolution in this area, with the implementation of a program to distribute touch-screen tablets in many primary schools in order to integrate them into teachers' teaching practices. This program is still ongoing and is planned to be extended so that other schools can benefit from it this year.

The main argument of institutional discourses in favor of touch-screen tablets is their ability to make learning more personalized for each student. Tablets would pave the way for individualized assistance and offer new possibilities for collective activities. In addition, they are seen as an exceptional tool for stimulating student motivation. However, teachers are faced with a major challenge: how to ensure an effective learning process while cultivating digital skills, experimenting with new approaches in the classroom and promoting innovative teaching practices where the student plays an active role in their own development in the field of ICT.

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In short, teachers bear the primary responsibility for education, and it is up to them to take up these challenges to transform the traditional operation of primary schools, characterized by a single location and the central presence of a teacher giving lessons at the same time, and offer quality education in order to stay at the forefront of the technological developments that shape our contemporary society.

It is in this context that the interest in training teachers in the uses of digital media takes on its full form. Indeed, teachers trained in basic skills, in the use of certain technological tools such as mobile phones and touch tablets - which are currently available to them in primary schools - are embarking on a process of transforming their skills. This "profound" transformation radically changes their teaching practices. And consequently, the challenge concerning the pedagogical skills required for the integration of technologies in the educational environment, leads to certifying teachers in terms of competence, and management of digital technologies, allowing them to be authorized to use and implement the various tools available in the school establishment.

In this contribution, which is part of this vision, we question the continuing training systems set up to support teachers in this innovative program, and try to propose solutions focused on the real needs of teachers in training in the uses of digital media on the media available in primary schools. We then put forward the hypothesis that adequate training taking into account the declared needs of teachers could lead to major changes guaranteeing a positive impact on learning using digital tablets.

1- Theoretical aspect

Sustainable integration of an environment where each student has a digital device into their establishment is a complex challenge for all educational staff, particularly inspectors in charge of continuing training. It

is crucial that they are able to establish and support significant changes in teachers' teaching methods [1]. This requires the ability to make decisions, delegate responsibilities, allocate resources, evaluate and regulate different processes. It is also essential to know how to encourage and support employees throughout this evolution.

According to Julio Cabero-Almenara [2], training in digital skills and technologies is a necessity for teachers, at all educational levels, and regardless of the country, because every education professional uses ICT in the teaching and learning process to design and manage pedagogical strategies, choose and structure materials, use the Internet as a teaching resource, manage information in digital format, communicate via email with students and teachers. This is manifested through the ICT skills standards for teachers, proposing digital or technological skills where each teacher develops and expresses them at different times and levels or degrees of complexity. The first moment is that of exploration which represents the first approach to an unknown world where it is very appropriate to imagine or remember things that are not present to our senses. The most important thing in the exploration moment is to break with fears and prejudices, open the mind to new possibilities, dream of ideal scenarios and discover the wide range of opportunities that open up with the use of ICT in education.

During the exploration moment, teachers gradually become familiar with the range of possibilities – from the most basic to the most advanced – that ICT in education offers. They begin to introduce ICT in their work and in their teaching and learning processes. They reflect on the options that ICT offers to meet their needs and those of their context.

In the second moment, the capacities to use ICT autonomously are developed; Teachers are ready to develop ideas that have value through the deep and creative integration of ICT in educational processes. Teachers arrive with prior knowledge and experience; By initially exploring, they discover the potential of ICT and, as they gain confidence in the new skills

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acquired, they begin to generate ideas and introduce new technologies into planning, teaching and assessment practices.

At the time of integration, teachers know how to use ICT to learn, in a non-face-to-face way, which allows them to take advantage of resources available online, follow virtual courses, learn with distance tutors and participate in networks and communities of practice. They integrate ICT into curriculum design and institutional management in a relevant way. They understand the social implications of including ICT in educational processes.

The last moment is that of innovation, it is similar to a great adventure, where teachers put new ideas into practice, explore new possibilities using technology to create, share ideas and build knowledge together. It is a magical moment where confidence and creativity mix, where mistakes are seen as learning opportunities and where teachers inspire their students to get out of their comfort zone to discover the unknown.

In the time of Innovation, teachers are able to adapt and combine a diversity of languages and technological tools to design learning or institutional management environments that meet the particular needs of their environment. They are willing to adopt and adapt new ideas and models that they receive from various sources, including training sessions. They share the activities they carry out with their classmates and discuss their strategies, receiving feedback that they use to make relevant adjustments to their educational practices. They have criteria to argue about how the integration of ICT qualifies the teaching and learning processes and improves institutional management.

Père Marquès [3], describes the usual use that should be given to digital tablets, in order to acquire technological or digital skills by citing

several actions, among others: the realization of educational exercises on any subject, the search for information on the Internet, the downloading and consultation of encyclopedias or virtual libraries, the reading of documents and digital books, multimedia files and FM radio, images, videos and music, the management of webcams, the recording of videos and sounds, the digitization of images and videos. The use of GPS, the creation and sharing of resources, etc ... and the list goes on.

Since 1990, teaching action has been studied in depth by researchers and trainers. A multitude of concepts related to this complex activity have been discussed, whether it is the teaching of writing, speaking, reading, vocabulary, grammar or spelling, at different levels of education, from primary to higher education. However, despite the speeches and declared practices, tensions remain between theory and the reality observed in classrooms, as well as between training content and its implementation by teachers. A fundamental understanding and explanation of training action as it manifests itself in ordinary practices is more than necessary, to adapt to new technologies and new expectations at the risk of being overtaken by other more effective solutions to meet the needs of institutions and individuals.

The growing need to use digital tools highlights the glaring lack of training for a significant portion of teachers. It is essential not only to know how to use these technologies for educational purposes, but also to master the use of tablets, software, applications, etc. The challenge is all the greater since user demand is high and the training sector is reluctant to change its habits quickly. This is reflected, for example, in the slowness and difficulty encountered in integrating e-learning, despite predictions of its inevitability for nearly 15 years, as well as in the difficulties in harmonizing face-to-face and distance learning.

2- Research context

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In order to explore the continuing training practices of teachers as part of a doctoral research, we accompanied the educational inspectors of the primary cycle of the province of BBA for 2 years (2022-2024). In addition to the observations made during our visit, the phenomenon of integrating touch tablets into classroom practices caught our attention. It was then that we decided to collect as much information and data as possible relating to this subject in order to report on the situation and propose ways to overcome the difficulties that teachers face on a daily basis, particularly those relating to training.

Qualitative research is conducted with six groups of teachers who attended training sessions organized by their inspectors. An audio recording using a smart-phone is made covering all the training operations we attended. We had prior permission from the inspectors to intervene in the way we deemed appropriate to conduct our research. This is how we were able to conduct interviews with all the teachers present. The interviews in question took place in class, and were limited to answering three questions, namely:

1. Have you encountered any difficulties when using the educational digital tablet in class? Which ones?
2. In your opinion, what kind of difficulties did students encounter when using the touch pad?
3. What suggestions do you see as suitable for the efficient use of this tool?

3- Interview analysis tools

As part of this study, we analyzed data collected during the implementation of the program to provide primary schools with touch-screen tablets since the 2022/2023 school year, 45 primary schools have been equipped, reaching a few thousand students. Our research population is made up of 132 French-speaking teachers and two educational inspectors.

A textual analysis is carried out using the NVIVO software dedicated to qualitative research after a full transcription of the content of the recordings made. Thus, several processes are implemented for the classification of the statements of teachers and inspectors.

Following the indications of Max Reinert [4], a hierarchical descending classification (HDC) is applied to the interviews to sort them and discover the groups that take into account the entire corpus, this means that a great variety of contents emerges from the global corpus given its significant heterogeneity, which adds to the considerable level of complexity of the analysis by using this process to filter the participants' statements and discard those that seem inappropriate or useless. Then, and based on the method of Claude Flament [5], an Analysis of Similarities (ADS) is carried out to deepen the representational fields of the discourses and observe more precisely the points of convergence and divergence, presented in the form of a tree of lexical links by class.

4- Presentation of the results and comments

We have isolated the four classes most representative of the remarks made by the different speakers. This is done according to the frequency of appearance of the concepts used. The keywords selected are: "Tablet; Training; Digital; Pedagogy". (See figures (1,2,3,4) illustrating the results of textual analyses).

We have carried out an analysis of the interviews by focusing only on the remarks where the selected keywords appear, in order to reduce the scope of the exploration task. Extracts of precise verbatim will be used to illustrate the meaning schemes around the selected classes.

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Figure 1: Text search query with the keyword "Tablet"

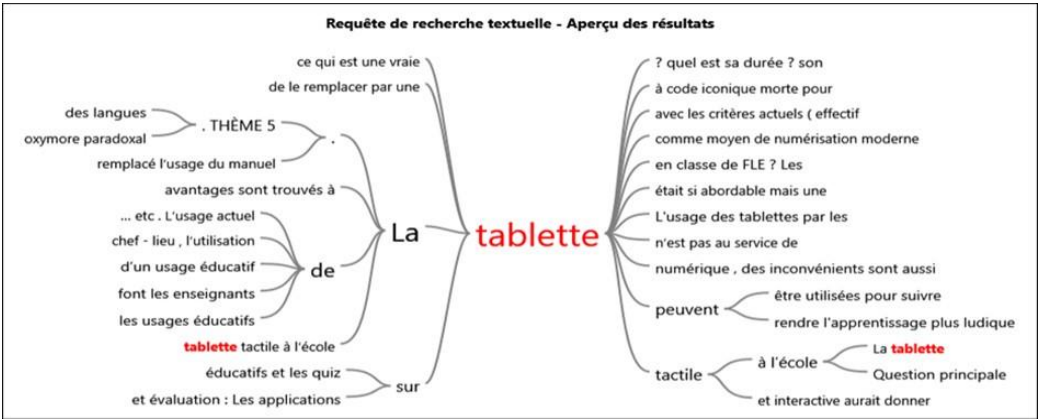


Figure 2: Text search query with the keyword "Digital"

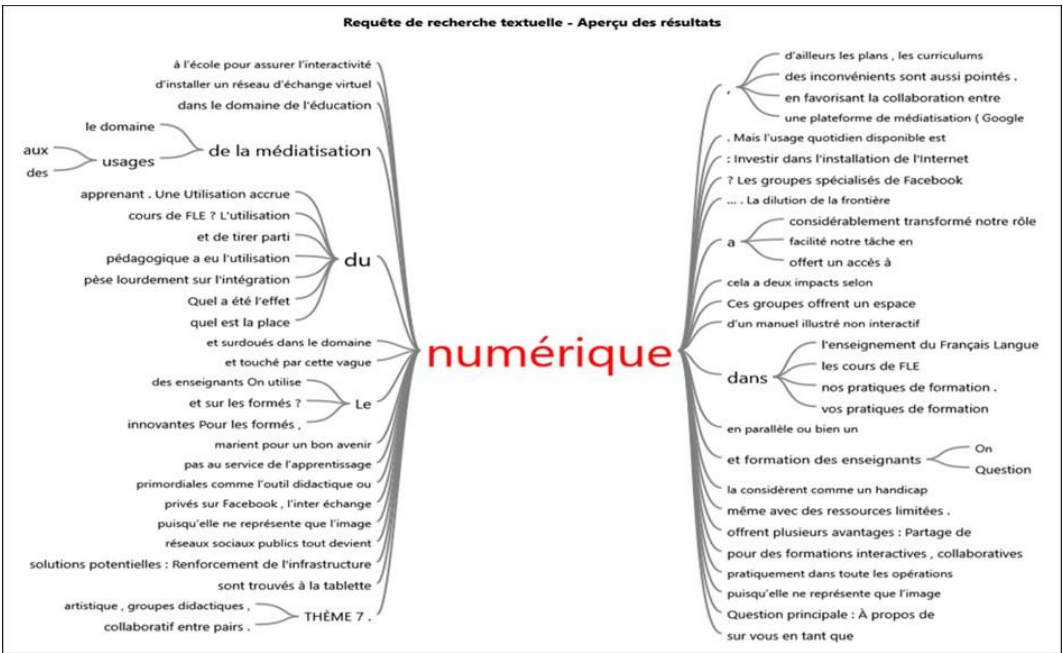


Figure 3: Text search query with the keyword "Pedagogical"

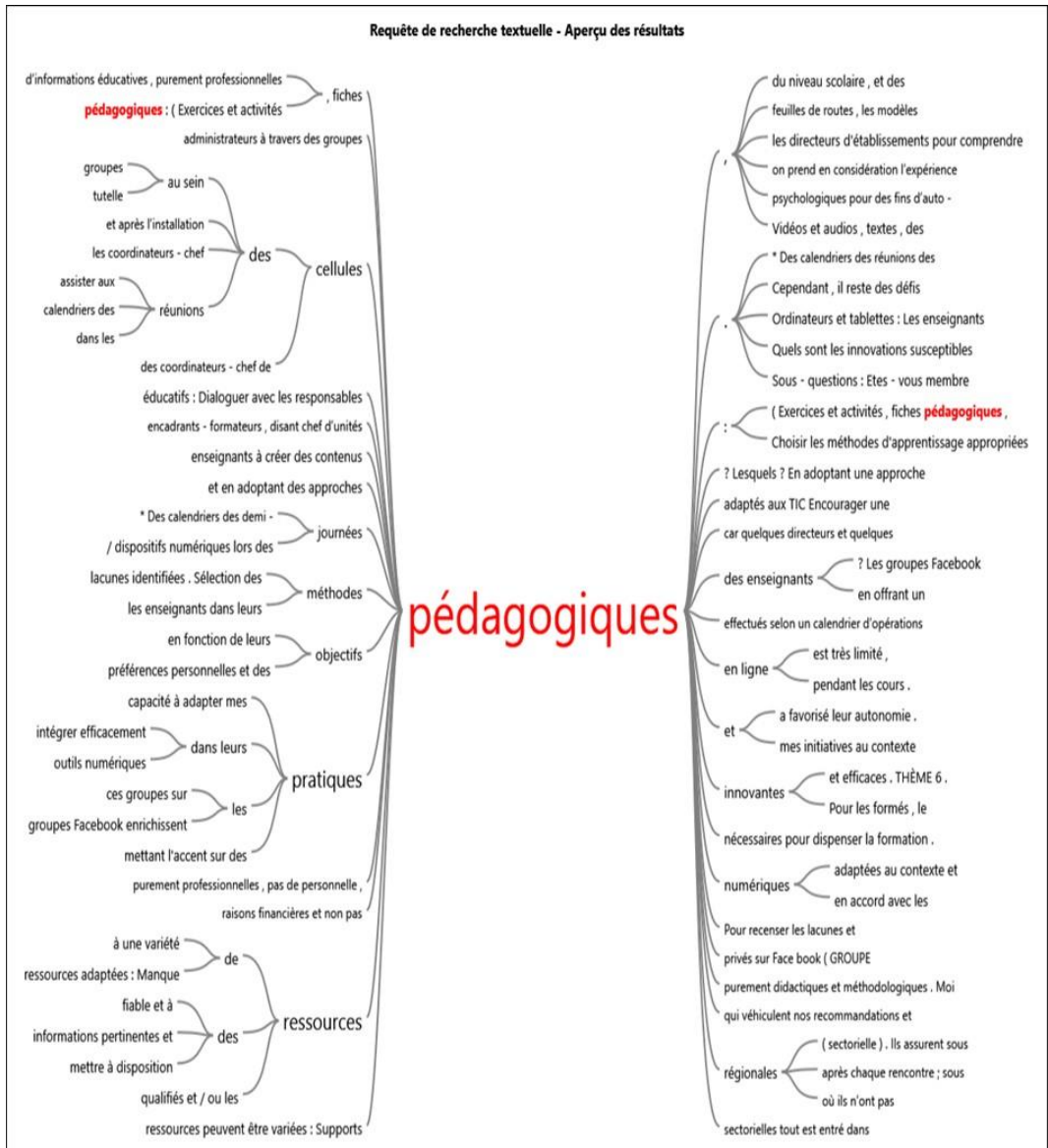
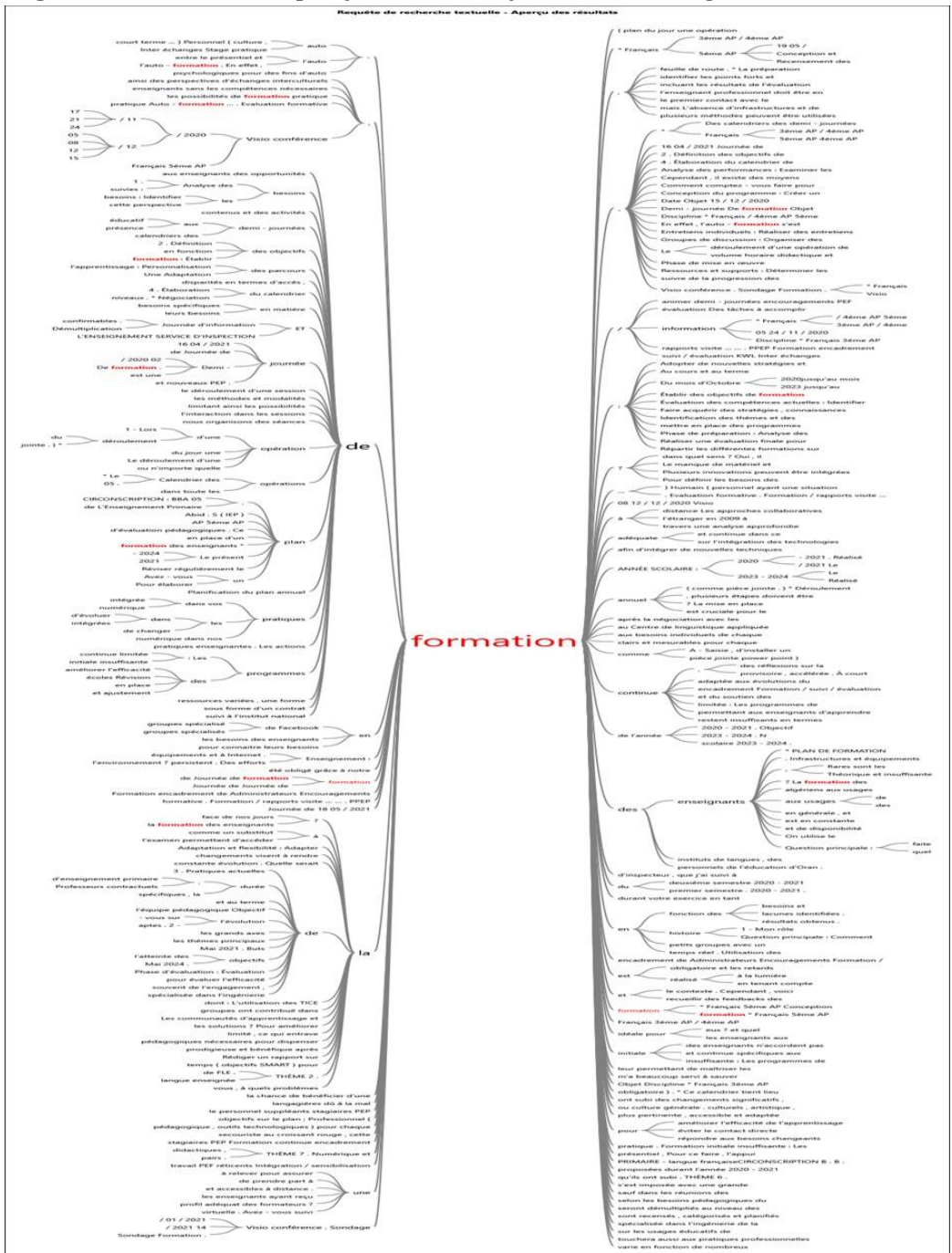


Figure 4: Text search query with the keyword "Training"



4.1- First question

Teachers and their inspectors cited several difficulties when using the tablet in class. These difficulties can be classified according to two main axes: difficulties related to technical skills, and difficulties related to pedagogical skills.

In the technical category, the following difficulties are cited: Lack of mastery of the tool where gaps appear in terms of adequate and optimal handling, teachers admit to resorting to students for certain features that they are unaware of, in addition to the choice of applications to use for the exploitation of available resources. *"It was my students who chose the application needed to open the school textbook in PDF format"*, others say they know nothing about how tablets and other technological media (computer, data show) work, this puts them in embarrassing situations, especially during sudden breakdowns, which increases their stress already caused by other factors that we will discuss in the next section *"I find that the tablets distributed... Are of poor quality... Their breakdowns are very frequent"*. *"A broken tablet... is a student deprived of a very important tool, and we can't do anything"*. *"These are situations... Well, delicate... that must be managed on a daily basis"*. Added to this is the problem of (re)charging the tablet (who should be entrusted with this task?). Teachers and inspectors agree that this issue has not yet been resolved. And given the time needed for a full recharge (around 1 hour) for a very large number of tablets, the task seems very difficult, if not impossible.

In the category of difficulties related to pedagogical and teaching skills, the following factors are cited:

The inability to manage the heterogeneous group, in fact, inspectors and teachers say they have very heterogeneous classes, particularly in rural areas where tablets are distributed as a priority, and consequently, class management becomes very difficult in view of the disparities that exist in the different social groups. *"We have overcrowded*

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classes, ... And in addition... with students who come to us from socially disadvantaged backgrounds". "I have students who have never seen a tablet". "but... on the other hand... there are... some who are beyond us in terms of technological uses" Added to this is the standard of use imposed by the supervisory authority, which defines the times and activities concerned by media coverage through these tools.

One of the inspectors gives us these clarifications about the educational use of the electronic tablet, taking as an example the 3rd year primary class, as recommended in the various official documents resulting from the various recommendations of the national and regional seminars.

"The tablet can be used during the presentation of the project: use of the illustration, the title of the project, titles of the sequences and the expected production, thus using vocabulary adapted to the level of the students. Orally (reception and/or production), the use of the electronic tablet is limited only to the use of the illustrations. During the nursery rhyme activity, the electronic tablet is used in the first three moments, namely: discovery, observation and analysis. In writing, the use of the electronic tablet is limited to the use of iconic and written supports: use of the image of the written support to facilitate access to the meaning, but also during the "I read out loud" section.

Another factor cited is that of the lack of time to achieve everything that is included in the annual progressions by integrating the tool in question into classroom practices, and this is mainly due to the complexity of the task that requires techno-pedagogical skills, and a reorganization of current curricula to adapt them to these new data by specifying the appropriate times for using tablets. *"We have a lot of difficulty finishing lessons within the allotted time". "With the introduction of the tablet... I thought I would save time, ... but in the end it's quite the opposite that happens"*

The lack of motivation of the teacher for this new technology is a completely predictable consequence. School teachers display a disconcerting indifference towards these tools, yet so precious given the scarcity of digital media in primary schools.

4.2- Second question

In response to this question, teachers put forward several arguments to justify the difficulties observed among learners when using touch tablets. All of the arguments are formulated in the conditional and are much more like hypotheses due to the lack of a scientific approach to analyze the actions and concrete performances of students, in order to affirm or refute their findings.

The most cited argument is that of distraction. Indeed, according to the comments collected, teachers face the phenomenon of learners' inattention when faced with the tablet, which is likened to a toy rather than a work tool. Teachers used the words "absorbed, diverted, completely absent" several times to support their statements. *"My students are becoming less attentive, ... it is certainly due to the tablet ... which distracts them from their work"* another teacher goes further and suggests no longer working with it. *"I think the tablet does more harm than good, ... it is the main cause of the students' lack of concentration"*. One of the inspectors explains this attitude by the fact that young children tend to play.

The second problem highlighted by the participants is that of the language. Everyone agrees that the lack of mastery of the French language in primary school is a factor hindering the efficient use of the tablet. The jargon used in the digital and technological field poses a great challenge for learners and sometimes even for their teachers. *"I don't know how to explain things to students ... so sometimes ... well ... that I don't know myself"*. *"The language is lacking, ... we are in primary school ... we are not*

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at university, ... the students can barely decipher the letters"

Moreover, no problem related to the learning process is put forward. This suggests that the students are following their path under normal conditions.

4.3- Third question

In response to the last question, all participants agreed to suggest *"good training"* in their words, as the best way to overcome the obstacles mentioned above in the medium and long term. *"Specialized training is urgent... at university we have learned nothing about new technologies"*, another teacher said: *"the current training is insufficient, ... it is below our expectations... I do not blame the inspectors... but it is the reality"*, an inspector confirmed *"we as trainers need this training to be able to multiply it"*.

In addition, other teachers put forward the idea that soliciting and raising awareness among partners about the importance and use of the tool is a prerequisite for the success of any enterprise aimed at integrating ICT into classrooms, given the large number of actors reluctant to any change. According to one of the inspectors, *"Resistance to change and to anything new is a classic phenomenon, ... our past experiences confirm this"*.

To the extent that the multiplicity of instructions tends to dispossess teachers of their responsibility for designing the teaching sequence, another suggestion is put forward to optimize the use of the tablet, it is the lifting of all current restrictions imposed in the various official documents, in order to allow use throughout the activity such as written comprehension, oral production, etc. *"The use of tablets is limited to certain moments of the activity... it's incomprehensible!"*.

A very large number of participants suggest equipping the class with a network that allows the teacher to monitor everyone's performance in real time. This implies an obligation to develop classroom management software, as well as interactive applications allowing students to interact and collaborate with their peers. The interactive whiteboard appears to be an unavoidable inevitability. *"The uses made of the distributed tablet are very limited, ... they do not promote the emergence of a digital culture"*. "We would have liked to see in our schools devices such as the touch screen board, with interactive applications".

Finally, and to solve the problem of tablet maintenance, teachers and inspectors want the supervisory authority to hire people to take care of (re)charging and saving the equipment.

5- Discussion

The comments made by teachers and inspectors challenge us on several levels: although supervisory authority has provided a large quantity of tablets to primary school establishments, the support measures remain very weak, particularly in terms of continuing education where there is a flagrant lack of trainers and trainees. Emergency solutions are proving useless (case of information days organized for teachers). Referring to studies done in this area, they indicate that it takes between 5 and 6 years for a teacher to master the integration of technology in the classroom. [6]. However, it turns out that our teachers took action without any adequate preparation.

It should be noted that managers and teachers expect that the integration of ICT - especially due to the large number of tablets currently available in educational institutions - will generate more user-friendly and attractive working environments for new generations thanks to innovation and the redesign of teaching processes within institutions. However, the

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restrictions observed in official documents limit uses to only a few activities, in addition to the absence of a varied offer of resources and software for educational use. And consequently, the emergence of digital skills among teachers and students through varied uses, as described by Père [7], is far from being achieved.

A redesign of curricula seems necessary in order to define the space reserved for new technologies in classroom practices, and thereby allow practitioners to integrate digital devices in an informed manner into their teaching intervention, promoting the installation and development of much sought-after techno-pedagogical skills, while taking into consideration the evolving nature of the software and hardware offering. A national training plan can be developed and implemented as part of a global strategy that takes into account the real needs of teachers, following the continuum described by Cabero [8], presented in the theoretical part, allowing differentiated training of education stakeholders (inspectors, administrators, teachers), directing each one towards the level (expressed in time) that suits them.

Learning processes in the age of technology - which are omitted by our study participants - will also be affected by innovation in classroom methods, by integrating digital tools. A deep reflection on this aspect must be carried out, to propose structural and methodological readjustments aimed at taking into account new data in classroom teaching interventions. Finally, and for purely organizational reasons, the operation of providing schools with equipment was done in a hurry, generating dysfunctions in the management of this equipment, in particular its maintenance. (Recharging, Repair, Distribution, Storage, etc.), putting teachers in stressful situations given the limited time they have. Adequate management of this aspect is more than necessary to allow teachers to focus solely on the educational aspect.

Conclusion

This study clearly shows that beyond the distribution of touch tablets in primary schools, the challenges of efficient integration of digital tools into classroom practices are still at work. It is a question of taking measures to support and guide school teachers, in order to develop the ability to understand and use the available technological devices. At this stage, the research question that guided our work seems to find a relevant answer, by confirming the hypothesis put forward. It is therefore essential to start by supervising and training teachers, as a first step, by rethinking initial and continuing training in the use of ICT for educational purposes in teaching and learning activities. In this perspective, we propose to consolidate and perpetuate the integration of technologies in schools by establishing a new discipline supporting digital literacy which will be taught at all levels of education, from primary to university, while taking into account the educational support of teachers in order to guarantee technological monitoring.

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