

Mapping Tech Skills: Assessing Aspiring educators' ICT Proficiency in Professional Training

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Abstract

This research dissertation investigates the pivotal role of information and communication technologies (ICT) in revolutionizing teaching methodologies and engaging learners actively. Focusing on aspiring educators specializing in French language and mathematics for the secondary cycle at Regional Center for Education and Training Professions (CRMEF) in Rabat, the study aims to assess their ICT skills.

The primary objective is to determine if these prospective educators possess the essential competencies to effectively incorporate ICT into their teaching. The research relies on a questionnaire designed with sections emphasizing ICT mastery aligned with the teaching/learning objectives outlined in the "ICTE" module of their initial training program. Additionally, it explores the application of these tools during the participants' teaching internships.

Data analysis revealed several key findings. Firstly, most aspiring educators exhibit familiarity with technological tools connected to the Internet. Secondly, a majority of respondents acknowledged receiving ICT training during their CRMEF education. Thirdly, many future educators asserted their proficiency in digital educational resources and their adeptness at integrating them into teaching practices, supporting the initial hypothesis. Lastly, while a substantial number of teachers integrated ICT in their internships to enhance learner motivation, others refrained due to inadequate computer infrastructure in schools.

This research highlights both the potential and challenges associated with integrating ICT in educational settings and emphasizes the importance of equipping future educators with comprehensive ICT skills to enrich teaching methodologies and student engagement.

Keywords: ICT, Professional skills, initial training, French language, Mathematics

I. Introduction:

The integration of information and communication technologies (ICT) into teaching is widely recognized as a way of motivating learners. Research in the educational sciences has unanimously emphasized the crucial importance of motivation in student success. Experts such as Marie-Louise Zimmermann and Rolland Viau have highlighted the close link between learners' success and their motivation, and the imperative for teachers to take this aspect into account in their practice.

In the teaching of mathematics, the integration of ICT makes it possible to offer a dynamic experience, facilitating a concrete, real-life approach. According to researchers such as Nachit et al. and Hoyles and Lagrange, ICT offers undeniable opportunities for experimentation, visualization and simulation, enabling a more realistic and concrete approach to the subject.

Similarly, for literary disciplines, notably French, studies such as that by Abdelfettah Nacer Idrissi have explored the impact of ICT on academic success. The results showed that the use of ICT, albeit mainly for play activities and poetry, stimulated learners' involvement and motivation, reporting a positive change in their classroom behavior.

However, the success of this integration depends largely on teachers' skills in using these tools. Karsenti's observations underline the fact that the effectiveness of ICT in learning is closely linked to its pedagogical integration and requires adequate skills on the part of teachers. It is therefore essential for teachers to acquire these skills, and for teacher training institutions to ensure their development in this area.

In short, motivating learners through the integration of ICT, particularly in subjects such as mathematics and French, depends largely on the skills of teachers. It is imperative that the latter acquire adequate skills to take full advantage of ICT and provide an effective learning environment.

II. CONTEXT, PROBLEM AND RESEARCH METHODOLOGY

Information and communication technologies for education (ICTE) encompass all digital resources used to access, disseminate or produce information for teaching purposes. They offer an infinite range of knowledge, methods and tools for learning and teaching.

These tools enable pedagogical innovation, ensure learner motivation, make the learner active and diversify teaching/learning methods.

Since ICTE enables the student to learn in a more varied and interactive way through software, they also offer an opening onto the world by giving access to an unlimited number of information and the possibility of communicating with strangers.

From the above, we can deduce that the effective use of ICTE in the classroom depends on teachers' technical and pedagogical skills. In the light of the above, we can formulate our research problem around the evaluation of aspiring educators' ICT use skills, in order to determine the extent to which they are able to integrate ICT into their lessons. Our object of study is aspiring educators.

In the light of the above, we can formulate our research problematic around the evaluation of aspiring educators' ICT use skills, in order to find out to what extent they are capable of integrating ICT into their lessons. Our object of study will be aspiring educators of a literary subject (French language) and a scientific subject (mathematics) in the secondary cycle, who are undergoing their initial training at the Regional Center for Education and Training Professions (CRMEF) in Rabat during the year 2022 - 2023.

a. Research Issue:

This study focuses on a fundamental question: Do students undergoing initial training to become teachers at CRMEF acquire the necessary skills to effectively integrate Information and Communication Technologies (ICT) into their pedagogical practice?

b. Research Hypothesis:

To address this question, our hypothesis is as follows:

Aspiring educators specializing in French and Mathematics for the secondary cycle, undergoing their initial training at CRMEF in Rabat, possess the necessary skills to use Information and Communication Technologies in a manner that enables seamless and relevant integration into their daily teaching practices.

c. Research Objective:

The primary objective of our study is to assess and examine the skills acquired by aspiring educators during their initial training concerning the use of Information and Communication Technologies.

Our aim is to determine the extent to which these skills facilitate an effective and beneficial integration of ICT into their teaching methods.

III. Research Methodology**• a. Reasoning approach:**

We have chosen a deductive reasoning approach, proceeding from the general to the specific. In contrast to inductive reasoning, this method allows researchers to deduce new knowledge from prior understanding. In other words, we selected this mode of reasoning as it first provides a clear vision of the general concepts of the research (the use of ICT in the initial training of aspiring educators). Subsequently, it focuses on narrowing down the results to a specific sample (Examining the competencies in using ICT among aspiring educators in French/Mathematics).

• b. Research method:

Our research adopts a quantitative approach that relies on the generation of numerical data concerning a well-defined field. This method yields numerical data that verify hypotheses through descriptive analyses, tables, graphs, and statistical research analyses, among others.

These quantitative methods involve collecting a significant number of observations to describe and/or explain a phenomenon or behavior.

• c. Sample presentation:

"An sample is a subset of elements from a given population that represents this population in research" (Mayer & Ouellet, 1991, p. 378).

Our sample comprises aspiring educators of the French language and mathematics for the secondary cycle, undergoing their initial training at the Regional Center for Education and Training Professions (CRMEF) in Rabat for the academic year 2022-2023.

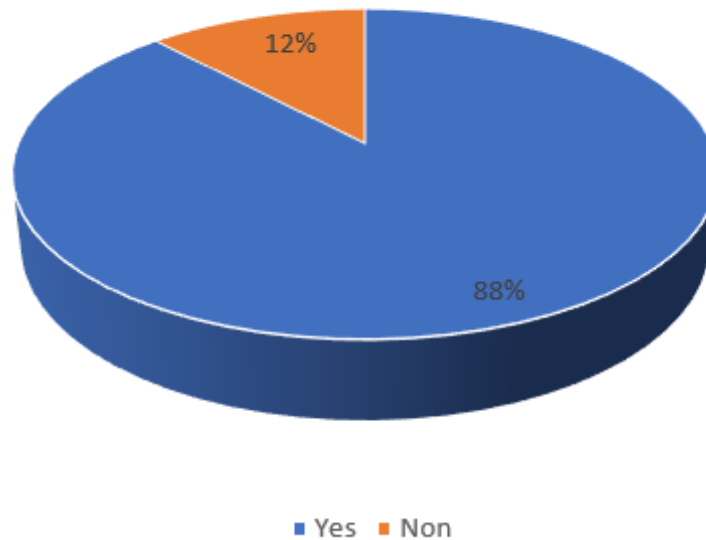
IV. Analysis and Interpretation of Results

The pivotal phase of data analysis stands as an integral component within any research pursuit. Following the data collection phase facilitated by the questionnaire, our analysis harnessed the capabilities of two distinct processing software: SPSS and Google Forms. Within this chapter, we showcase the amassed data subsequent to rigorous statistical analysis, employing visual aids such as graphs and tables. Furthermore, we delve into the interpretation of this data to validate our research hypothesis and provide comprehensive insights addressing the core research inquiry.

1. Presentation and Analysis of Data

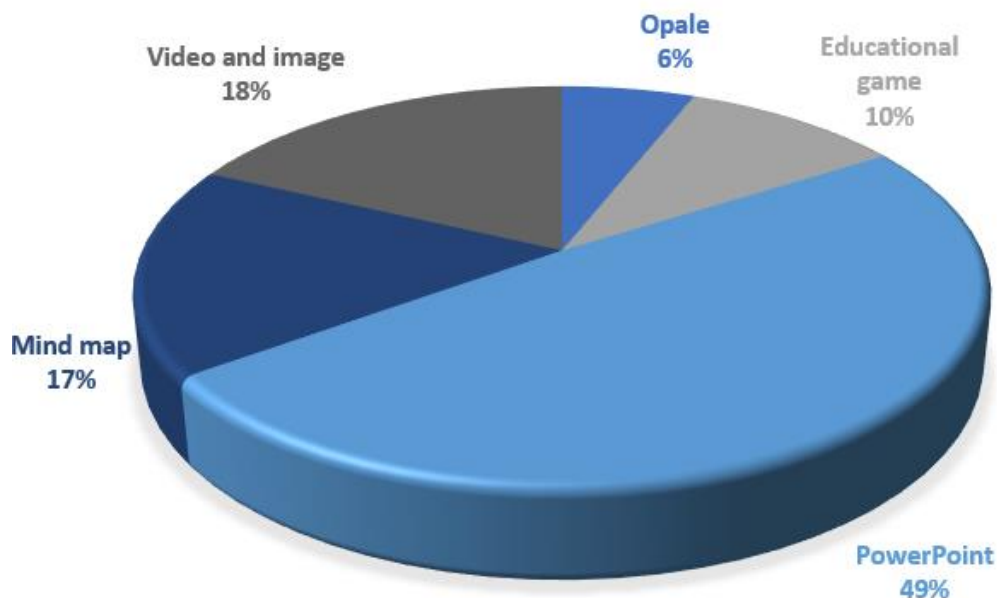
The targeted population consists of 193 prospective French teachers and 89 prospective mathematics teachers. Of these, 58 teaching interns responded to the questionnaire."

Graph 1 :The ability to deliver a lesson using ICT.



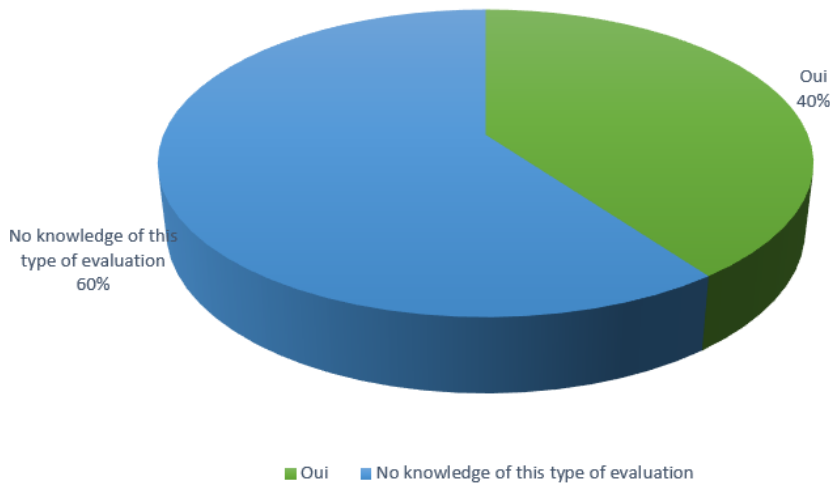
The results indicate that nearly the majority of aspiring educators, around 88%, claim to be competent in using ICT to deliver a lesson, while 12% of them express otherwise.

Graph 2 :Tools used for the presentation of lessons by teachers.



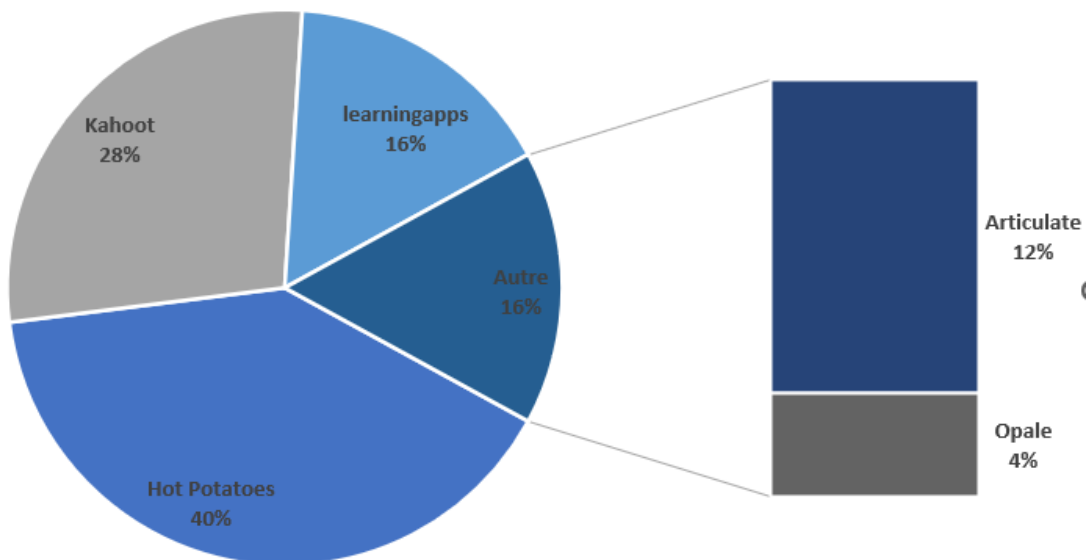
We understand that all aspiring educators who have previously affirmed their ability to deliver a lesson via educational technologies are capable of digitizing it using PowerPoint presentations, videos and digital images, mediated mind maps, educational games, and creating a digital course using software like Opale Scénari, for example, with percentages of 49 %, 18%, 17 %, 10%, and 6% respectively.

Graph 3 :ability to develop assessments with ICT.



Almost 60% of respondents are competent to evaluate learners via educational technologies while the rest of respondents, 40%, confirm their lack of knowledge of this type of evaluation.

Graph 4 :Technological tools used to develop assessments.



Aspiring educators are capable of integrating ICT into assessment sessions using software such as Hot Potatoes, Kahoot, and learningapps, with percentages of 45.5%, 31.8%, and 18.2% respectively. Meanwhile, 13.6% of aspiring educators use Articulate and Opale.

2. Discussion of the results

The present research allowed us to explore the competencies in the use of ICT among aspiring educators of the French language and mathematics in the secondary cycle, undertaking their initial training at CRMEF Rabat during the academic year 2022-2023. Overall, the results indicate that respondents acknowledge having a certain level of competence.

The hypothesis of our research aimed to investigate whether aspiring educators of French language and secondary cycle mathematics, undergoing their initial training at CRMEF Rabat, possess the necessary skills for integrating ICT into their teaching practices.

An initial observation from the conducted survey confirms that the daily routines of aspiring educators are increasingly influenced by ICT, as almost all of them possess at least one technological tool (Smartphone, Tablet, Desktop Computer, Laptop) connected to the Internet. In general, the survey results remain encouraging on several fronts, indicating that aspiring educators have access to necessary equipment to familiarize themselves with ICT and basic tool proficiency.

Moreover, a majority of aspiring educators in French and mathematics have endorsed their ability to master the concept of digital educational resources, as well as presenting lessons via ICT, planning and managing sessions integrating ICT, proposing evaluations, or remedial activities using ICT.

However, 60.3% of aspiring educators used ICT during their internship to enhance student motivation, pedagogical innovation, and diversify teaching/learning methods. The availability of computer equipment encouraged their integration into practices during the internship, confirming that some schools are better equipped than others.

Yet, some teaching interns did not use ICT during their internship, attributing this to the unavailability of a digital environment. Only 6.9% of respondents mentioned their incompetence in using technological tools.

This confirms our research hypothesis and demonstrates the achievement of objectives outlined for the 'ICT' module in the initial training program for aspiring educators at CRMEF.

The effectiveness of initial training at CRMEF Rabat was notably emphasized based on the relationship between it and the practices of ICT during internships. Additionally, self-training supports the acquisition of ICT usage competencies in teaching practices.

To enhance ICT training at CRMEF, aspiring educators have proposed several suggestions such as:

- Training in the most useful software for teaching the subject
- Allocating more time to the ICT module for greater benefit
- Focusing a bit more on practical training
- Having the module in both semesters
- Tailoring ICT training based on the specificity of each subject: the use of ICT for scientific subjects differs from languages, for example
- Being aware of the importance of ICT in teaching, developing pedagogical projects integrating ICT
- Accessibility to equipment
- Availability of a digital environment
- Prioritizing practical training over theoretical
- Giving importance to ICT (more time in the week)
- Motivating interns by providing laptops and tablets
- Adapting the program to the taught discipline, adopting efficient transmission techniques, and acknowledging that ICT goes beyond Word and PowerPoint. Additionally, understanding the neurodiversity of the class group necessitates a variety of techniques tailored to each learner's needs, along with competent teachers mastering ICT teaching methodology.
- Conducting comprehensive training on ICT usage
- Building a strong practice with digital tools, especially during internships

- Extending the duration of training to introduce these tools to teachers, integrating them into practical activities to develop everyone's ICT skills
- Ensuring equipment availability in the center and internship schools, emphasizing the importance of these skills. Starting with basic concepts, providing concrete examples, considering that some interns have little or no knowledge of ICT
- Self-training

Based on the analysis of the collected data, it is deduced that all respondents received ICT training at the Regional Center for Education and Training Professions in Rabat. Therefore, aspiring educators have the necessary competencies for using educational technologies in their teaching practices, confirming our research hypothesis.

V. Conclusion

The aim of this research was to evaluate and explore the competencies in using ICT among aspiring educators of the French language and Mathematics undergoing their initial training at CRMEF Rabat (class of 2022-2023). This study sought to assess the reality of educational technology proficiency among future educators. Despite the national education strategy's efforts to equip all schools with technological resources and multimedia supports, these endeavors will be ineffective if educators lack ICT skills.

A significant number of aspiring educators were able to integrate ICT into their teaching during their internships. They utilized PowerPoint presentations, videos, images, and digital mind maps. However, those unable to employ ICT during their internships often cited the absence of computer equipment in the educational institutions. Consequently, it's apparent that some schools are better equipped than others, revealing obstacles to ICT integration, such as inadequate equipment in educational settings.

Hence, the training provided at CRMEF in ICT usage empowers aspiring educators of French language and Mathematics with the essential skills to integrate ICT into their teaching practices, thereby enhancing the teaching and learning process. As this study is not exhaustive, future research could delve deeper into examining all the hurdles teachers face when attempting to incorporate ICT into their classroom practices. In conclusion, while highlighting the importance of ICT proficiency among educators, this study underscores the necessity of ensuring equal access to adequate technological resources across educational institutions. Enhancing teacher training in ICT usage remains crucial for fostering effective integration of technology into teaching methodologies, ultimately benefiting the learning experiences of students in diverse educational settings

VI. Conflict of Interest

No conflicts of interest to declare.

VII. Acknowledgement

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