T I E Journal
Volume 4 Issue 2, 2026
http://ijtie.com/v402/n40238
ISSN: 2820-7521

The International Journal of Technology, Innovation, & Education

Technology Integration in English for Medical Purposes: A TPACK-Based Study of Moroccan EMP Teachers

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Received: February 23, 2026; **Accepted**: April 12, 2026; **Published**: June 01, 2026

Abstract

This study aims to investigate the way teachers of English for Medical Purposes (EMP) in health-related programmes perceive their knowledge and preparation for teaching medical English. The study adopts the TPACK framework in order to describe their competencies in pedagogy, medical content, and technology, and to explore how these areas might relate to their interest in professional development. Data were collected from EMP teachers across different Moroccan universities through an online questionnaire. The data were analyzed using descriptive statistics, t-tests, correlations, and an exploratory structural model to examine the relationships between the variables. The results show that teachers with medical or scientific backgrounds felt much more secure when teaching medical content than those without such backgrounds. Similarly, teachers with ICT training reported higher readiness to use technology. A strong positive relationship appeared between TPACK integration and interest in professional development. The findings highlight the need for targeted support in medical content and technology use for EMP teachers.

Keywords: EMP, higher education, TPACK, professional development

1. Introduction

The concept of English for Specific Purposes (ESP) has become quite topical in today's world due to the requirements of higher educational establishments and businesses in terms of improved discipline-specific communication skills. According to Hyland (2022), ESP is "the teaching with the aim of assisting learners' study or research in the particular variety of English

they may need" (p. 202). Thus, ESP is considered the subdiscipline of English as a second/foreign language with the focus on a certain field or major. One of those fields is English for Medical Purposes (EMP), that is, the language of medicine, patient care, and academic health sciences communication. According to Chan et al. (2022), students regard English as crucial for their education and future profession, calling it "a professional and social requirement during medical training and for future practice."

The literature related to ESP is rich in works that emphasize the necessity of considering students' needs and the design of appropriate courses. However, little is known about teachers who deliver EMP classes. Specifically, according to Belcher, ESP teachers function simultaneously as analysts, designers, and teachers (Belcher, 2006). It makes their job challenging and complicated, especially if domain-specific knowledge is involved in the course content. Similarly, Cao et al. (2022) claim that ESP teachers experience complex professional development involving learning medical knowledge, designing courses, and developing a new identity of specialists working in this unique environment. Recent studies also corroborate this statement, proving that special language teachers face problems connected with domain-specific knowledge (Zhang & Zhang, 2023; Li, 2024).

In Morocco, higher education institutions are undergoing digital transformation, and, therefore, teachers of EMP are supposed to introduce ICT into their classrooms. The employment of technological resources in Moroccan HE is inconsistent. While some studies indicate that teachers appreciate ICT, others reveal that there is still a need for training and institutional support for teachers to feel confident using it (Laabidi & Laabidi, 2022). Studies that were conducted recently and related to the problem in question showed that teachers' application of ICT is influenced by their access to training, institutional support, and personal ICT competence (Chai et al., 2023; Tondeur et al., 2024). In light of these findings, it is critical to explore EMP teachers' perspectives on their profession, relevant knowledge, and required professional development activities.

The concept of teacher cognition provides an opportunity to address all these aspects. As defined by Borg, teacher cognition involves "what teachers think, know, and believe" (Borg, 2003, p. 81). It is possible to claim that according to Borg, the views and experiences of teachers influence their decision-making in a class. In addition to the approach discussed above, it is reasonable to use TPACK theoretical framework to explain how teachers combine their knowledge of technology, pedagogy, and content. According to Mishra and Koehler, TPACK

stands for the interplay of three areas mentioned before (Mishra & Koehler, 2006). EMP teachers perform their job by integrating language teaching, medical discourse and ICT. In other words, they have to possess certain confidence regarding these three dimensions. However, in the Moroccan context, research in the field in question remains scarce and, thus, provides no understanding of specific perceptions and needs of EMP teachers.

1.1. Research problem

Research examining the cognitive aspect and TPACK among EMP instructors in higher education institutions in Morocco is relatively limited. Specifically, in Moroccan HE, there is a lack of research regarding the perceptions of EMP instructors concerning the role of teachers in the classroom, the self-efficacy of instructors when it comes to EMP instruction, technology use, and the most beneficial professional development for them. Without this knowledge, efforts to improve EMP teaching and digital integration risk being generic and may miss teachers' real needs.

1.2. Research Question & Hypotheses

This paper intends to explore the way in which the teachers of EMP appraise their knowledge of the three areas under the TPACK framework. The study also investigates the connection between the background and training of the teachers in terms of their confidence and preparedness in integrating technology for EMP education. In line with that, four major research questions emerge:

a) How do EMP teachers rate their pedagogical, technological, and medical content knowledge based on the TPACK model?
b) Does a medical or scientific background relate to higher confidence in teaching medical content?
c) Does digital or ICT training relate to teachers' readiness to use technology in EMP classes?
d) How does teachers' sense of competence relate to their interest in professional development?

The objectives that guide these questions are:

a) To describe the beliefs EMP teachers hold about their teaching roles and practices
b) To examine the way EMP teachers evaluate their pedagogical, technological, and content knowledge

Given this, the study proposes three hypotheses:

- **H1.** EMP teachers who have studied or worked in medical or scientific fields are expected to feel more confident when teaching domain-specific content.
- **H2.** EMP teachers who have received training in digital tools are expected to show greater readiness to integrate technology into their lessons.
- **H3.** Teachers who report stronger teaching competence are expected to show greater interest in professional development.

2. Theoretical Framework

2.1. The Technological Pedagogical Content Knowledge (TPACK) Framework

The TPACK framework was generated from Shulman's idea of pedagogical content knowledge, which had brought together what teachers know about a subject and how they teach it (Shulman, 1986). Mishra and Koehler later expanded this idea to include digital tools and argued that teachers need to think about content, pedagogy, and technology as connected rather than separate (Mishra & Koehler, 2006). They describe "technological pedagogical content knowledge (TPCK)" as "an emergent form of knowledge that goes beyond all three components (content, pedagogy, and technology)" (Mishra & Koehler, 2006, p. 1028). This means that effective teaching with technology depends on how these types of knowledge interact in real classroom situations, not only on a teacher's skill with digital tools or their mastery of the subject on its own (Figure 1).

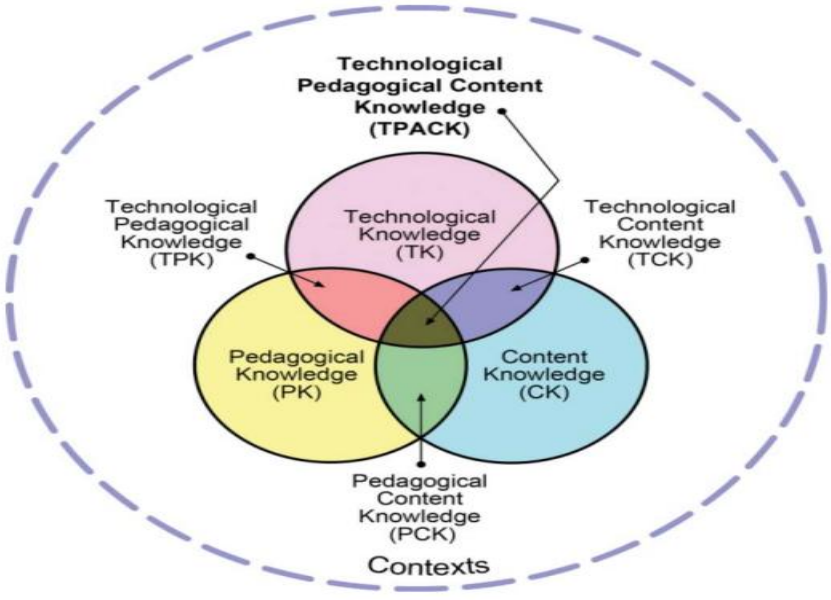

Figure 1. *Mishra and KoehlerTPACK framework (2006)*

Within this framework, teachers draw on several overlapping areas of knowledge. Content knowledge refers to understanding the subject itself, while pedagogical knowledge concerns how students learn and how to design teaching that supports them (Mishra & Koehler, 2006). Technology knowledge involves knowing how to work with both familiar and new tools and being able to adapt as those tools change. Mishra and Koehler explain that TPACK is "the basis of good teaching with technology" and that it "requires an understanding of the representation of concepts using technologies" and of "pedagogical techniques that use technologies in constructive ways to teach content" (Mishra & Koehler, 2006, p. 1029). They also note that content, pedagogy, and technology "exist in a state of dynamic equilibrium" (p. 1029), which means that when one part changes, teachers must reconsider the others.

Because it emphasizes the relationship among different forms of knowledge, the TPACK model has become a prominent framework used in studying technology integration in teacher development and in classrooms (Graham, 2011). The model has been applied in studying the relationship between technology confidence and the teachers' concept of their role in the delivery of lessons in different subjects and the relationship between the technology confidence and the concept they hold about the role they play in the medical field (Koehler & Mishra, 2009). However, researchers highlight the difficulty that arises in differentiating the dimensions of the construct in an empirical investigation and the need, therefore, for each construct to become specifically and precisely delineated and measured in an investigation (Graham, 2011). In the situation where English in Medical Purposes courses are involved, the use of TPACK enables this investigation to explore the approach adopted by the instructors in consolidating their knowledge in the medical field, the knowledge in the field of training individuals in the use of languages, and the knowledge in the use of technology when they are planning and executing their lessons in the medical field.

2.2. Teacher Cognition Theory

Teacher cognition helps explain what EMP teachers think about their work and how this shapes their decisions in the classroom. Borg defines teacher cognition as "the unobservable cognitive dimension of teaching – what teachers know, believe, and think" (2003, p. 81). His work shows that teachers are not passive users of methods. They are "active, thinking decision-makers" who work through "complex, practically-oriented, personalised, and context-sensitive networks of knowledge, thoughts, and beliefs" (Borg, 2003, p. 81). For EMP, this means that teachers'

beliefs about medical English, their own content knowledge, and their views on technology all shape what happens in class.

Current research on teacher cognition also shows that experience and context shape teachers' thinking over time. Borg notes that teachers' experiences as learners influence their ideas about teaching and that these ideas can continue "throughout their career" (Borg, 2003, p. 81). He later adds that many different terms have been used in the literature, yet they all "highlight the personal nature of teacher cognition, the role of experience in the development of these cognitions, and the way in which instructional practice and cognition are mutually informing" (Borg, 2003, p. 83). This means that what EMP teachers think grows out of their own learning history, their training, and the conditions they face in medical faculties.

In the present study, teacher cognition and the TPACK framework are employed together. The TPACK framework provides insights into the nature and relationship between technological, pedagogical, and content knowledge, and teacher cognition provides insights into the beliefs and personal experiences underlying these types of knowledge. In using the concept "teacher cognition" in her work, Borg describes teacher cognition as "an inclusive term to tease out the complexity in the mental lives" in teachers, referring essentially to "what teachers think, know, and believe concerning different aspects in their work" (Borg, 2003, p. 86). In relation to the instructors in the present study, teacher cognition and the TPACK framework enable the present paper to systematically explore the instructors' beliefs concerning technology and content, and link these beliefs to their knowledge structures.

3. Methods

This study used a quantitative design based on a self-report questionnaire. The purpose is to describe patterns in EMP teachers' TPACK-related knowledge and to examine the relationships between background variables and self-reported competence. Creswell notes that survey designs are suitable "to describe the attitudes, opinions, behaviors, or characteristics of a population" using numerical data collected at one point in time (Creswell, 2012, p. 376). Cohen et al. also explain that surveys help explore "relationships between variables" within a group (2018, p. 256). This design fits the aim of the present study, which looks at links between medical background, digital training, TPACK constructs, and interest in professional development among EMP teachers.

The study investigated English teachers who teach medical English in health-related programmes. A purposive sampling strategy was used to reach teachers who were currently responsible for EMP courses, be they professors or doctoral students who are currently teaching or have taught in such a context before. The target sample might seem quite large because it was difficult to reach a high number of EMP teachers in one setting. For example, at Mohammed First University Oujda, I was surprised to find that there is only one English language professor assigned to teach English in the medical faculty. Therefore, I aimed for a larger sample across different universities in Morocco. The final sample consisted of 33 EMP teachers. Survey research often works with intact and relatively small populations when the target group is specialised, as is the case with EMP instructors in a single institution (Cohen et al., 2018). The sample in this study reflects the real size of the accessible EMP teaching community at the university and provides an initial picture of their TPACK-related profiles in this context. Given the limited number of EMP teachers across Moroccan universities, the sample remains relatively small. This reflects the specialized nature of EMP teaching rather than a limitation in data collection. However, the findings should be interpreted with caution, as the sample size may limit the generalizability of the results.

Data was collected through a questionnaire, which was designed based on the TPACK and Teacher Cognition frameworks. It consisted of three sections. The first section collected general information about the respondents, including their years of teaching, their medical or scientific qualifications, and their prior experience with digital tools and ICT. The second section assessed participants' teaching practices in relation to the TPACK model. The last section measured their readiness and willingness to use technology. All items were rated on a five-point scale ranging from strongly disagree to strongly agree. The items followed the standard wording used in TPACK surveys, where respondents' beliefs and confidence in different aspects of their knowledge are measured (Schmidt et al., 2009, p. 125). The questionnaire was pre-tested with two EMP teachers to check clarity, wording, and overall structure. The feedback focused mainly on the clarity of some items and the wording of instructions. Based on this feedback, minor adjustments were made to simplify some statements and improve clarity. No major changes to the structure of the questionnaire were required.

Data collection took place over a two-week period. The questionnaire link was shared with EMP teachers through professional messaging groups and via social media. Two reminder messages were sent during this period to increase the response rate. Once the questionnaire

responses were collected, the data were exported to Excel and then imported into SPSS. The file was checked for missing values and coding errors before analysis. Most variables in the questionnaire were measured with single Likert items, so no composite scales were created for these constructs. For the two sections that included two items, a mean score was computed to give a single value for technology readiness and for professional development interest. Most constructs in the questionnaire were measured using single Likert-scale items. Opting for one single item was to keep the questionnaire short and manageable, given that EMP teachers are a specialized and hard-to-reach group. While single-item measures do not capture the full complexity of constructs such as TPACK, they were considered appropriate for this exploratory study. This trade-off allowed for higher response rates while still providing an initial picture of teachers' perceptions

The analysis began with descriptive statistics to answer the first research question and to give a simple picture of teachers' ratings across the TPACK-related items. Independent-samples t-tests were then used to examine whether confidence in medical content and readiness to use technology differed between teachers with and without medical or scientific backgrounds or ICT training. A Pearson correlation was used to test the relationship between teachers' sense of TPACK integration and their interest in professional development. An exploratory structural model was also tested in SmartPLS to see whether the relationships between TPACK, technology readiness, and professional development followed the same general pattern as the SPSS results. This model was treated as supplementary, because the indicators were single items and the sample was small. The main interpretations are based on the SPSS findings.

Participation in the study was voluntary. Respondents were informed about the purpose of the research before completing the questionnaire. All responses were collected anonymously, and no identifying information was recorded

4. Results and Discussion

4.1. RQ1. How do EMP teachers rate their pedagogical, technological, and medical content knowledge based on the TPACK model

The descriptive results in Table 1 show that there are clear differences in terms of how teachers evaluate their knowledge according to the TPACK framework. On the one hand, Pedagogical knowledge had the highest score (M = 3.91, SD = 0.57), while the mean score for TPACK integration was lower (M = 3.45, SD = 0.86). Technological knowledge had a moderate score

(M = 3.33, SD = 0.89), on the other hand, Content knowledge showed the lowest mean score (M = 2.88, SD = 1.08).

Table 1. *Descriptive Statistics for the TPACK Variables*

	N	Mean	Std. Deviation
Pedagogical Knowledge (PK)	33	3.91	.579
Content Knowledge (CK)	33	2.88	1.083
Technological Knowledge (TK)	33	3.33	.890
TPACK Integration	33	3.45	.869
Valid N (listwise)	33		

These findings complement the TPACK theory, since it considers the knowledge of teachers as an integrated whole, which consists of three types of knowledge, namely: technology, pedagogy, and content (Schmidt et al., 2009). As seen from the study results, EMP teachers indicated the highest level of confidence regarding PK, followed by moderate confidence in TK, while their level of confidence in CK was relatively low. It should be noted that the mean score for TPACK integration among EMP teachers was located between the mentioned above values. Such results might indicate that teachers tend to feel more confident when using general teaching techniques and digital technology; however, they lack sufficient knowledge in the specific content taught in EMP courses.

It goes without saying that in order to explain such differences in the levels of knowledge possessed by teachers, one should refer to the existing literature dedicated to ESP. More precisely, Belcher (2006) argues that ESP teachers are expected to take on analytical roles before designing and delivering specialized curricula. Likewise, Basturkmen highlights that ESP teaching requires instructors to design materials and continuously update their knowledge of specialized fields (as cited in Cao et al., 2022). Regarding EMP specifically, teachers need not only to teach medical terminology but also to use the specific language of medicine, including its typical vocabulary, structures, and discourse patterns (Maclean & Maher, 1994, as cited in Cao et al., 2022). Recently published findings regarding EMP teachers' cognition revealed that many of them feel the need to learn the language of medicine and rebuild their knowledge as they engage in this field (Cao et al., 2022). This fact explains the relatively low CK mean obtained during my research.

4.2. RQ2. Does a medical or scientific background relate to higher confidence in teaching medical content?

The second hypothesis tested whether teachers with knowledge of medicine or science were generally more confident when teaching medical content. The results obtained by an independent-samples t-test show a significant difference between the participants with medical or scientific background (n = 10, M = 4.10, SD = 0.57) and the rest (n = 23, M = 2.35, SD = 0.78). In this case, $t(31) = 6.42$, $p < .001$, indicating the statistically significant gap in teachers' confidence in relation to this particular variable (Table 2). Additionally, the effect size measured by Cohen's d shows a substantial difference between these groups (d = 2.43). Again, as the number of participants is small and the items used to measure confidence are individualized, the effect size should be treated with caution.

Table 2. *Independent-Samples t-Test for the Effect of Medical/Scientific Background on CK*

Group	n	Mean	SD
Studied medical/scientific content	10	4.10	0.57
No medical/scientific background	23	2.35	0.78

$t(31) = 6.42$, $p < .001$, Mean Difference = 1.75
Effect size: Cohen's d = 2.43

As it was discussed before, the difference between the two types of participants mentioned above has been noted in a number of studies, one of which is Cao, mentioning that EMP teachers "must rebuild their knowledge base to handle medical content" (2022). This result therefore comes as no surprise since, as Borg stated, the experience plays a central role in shaping the cognition of teachers (2003). Thus, the fact that the teachers with knowledge of medicine or science expressed their confidence in handling the task seems quite understandable. The comparison of the two groups provides an interesting conclusion in relation to the way of preparing EMP teachers. It is obvious that teaching experience alone cannot guarantee the required level of confidence in terms of handling medical content. Rather, such confidence develops out of domain knowledge. Therefore, it is essential for EMP teachers to receive additional training.

4.3. RQ3. Does digital or ICT training relate to teachers' readiness to use technology in EMP classes?

Thirdly, it was explored how ICT training is associated with teachers' readiness to integrate technologies into their EMP classes. An independent-samples t-test revealed a significant

difference between both groups (Table 3). Those participants who have received ICT training (n = 16, M = 4.03, SD = 0.29) had a higher level of readiness than those who have not had such training (n = 17, M = 2.56, SD = 0.58). The difference was statistically significant at t(31) = 9.11, p < .001. The effect size was substantial (Cohen's d = 3.17), indicating a substantial difference between groups. However, it should be interpreted carefully because of its possible overestimation due to a rather small sample size and insufficient assessment of both constructs.

Table 3. *Independent-Samples t-Test for the Effect of ICT Training on Technology Readiness*

Group	n	Mean	SD
ICT training	16	4.03	0.29
No ICT training	17	2.56	0.58

t(31) = 9.11, p < .001, Mean Difference = 1.47
Effect size: Cohen's d = 3.17

It is noteworthy that Schmidt argue that teachers need to develop their technological knowledge in ways that support effective and meaningful teaching (2009). Such a development can become much easier when professional learning is taken into account. Young (2013), being recognized as one of reviewers of many TPACK literature, claim that teachers feel more confident about their technology knowledge when provided with appropriate support. In addition, properly organized training can have a consistent and strong impact on teachers' development. These claims seem quite appropriate in view of this research results.

4.4. RQ4. How does teachers' sense of competence relate to their interest in professional development?

The last question was of interest to investigate participants' sense of competence and their willingness, or interest in professional development. To this end, a Pearson correlation analysis was undertaken (Tabel 4). The results exhibited a strong and positive relationship between TPACK integration and professional development interest, r(33) = .65, p < .001. That is to say, teachers who felt more confident in combining content, pedagogy, and technology also showed greater interest in developing their skills through further training.

In the same spirit, Borg (2003) explains teachers' beliefs greatly influence much of what they think, and they play an important role in shaping how teachers develop their teaching practices. Teachers' sense of being competent allows them to be more receptive to innovative ideas and

approaches. The positive correlation found in this study indicates how important it is for teachers to believe in the value of their TPACK.

Table 4. *Pearson Correlation between TPACK Integration and Professional Development Interest*

		TPACK Integration	ProfDev_mean
TPACK Integration	Pearson Correlation	1	.653**
	Sig. (2-tailed)		.000
	N	33	33
ProfDev_mean	Pearson Correlation	.653**	1
	Sig. (2-tailed)	.000	
	N	33	33

** *Correlation is significant at the 0.01 level (2-tailed).*

Mohamad and Akun (2021) also show that science teachers report strong scores in CK, PK, and TK, while their integrated TPACK domains remain moderate. They argue that teachers have to be provided with opportunities to develop their ability to combine content, pedagogy, and technology in order to achieve professional development. In these studies, professional development appears as the main route to improve teachers' TPACK.

A large review by Darling-Hammond et. all (2017) backs up this finding. According to them, professional development can be understood as organized learning experiences that lead to changes in teaching practices and improvements in student learning. They also claim that professional development should include the knowledge and skills that teachers aim to improve. They highlight that many current initiatives fall short and do not reach the teachers who would benefit the most.

Within the local context of Morocco, this finding may reflect the limited availability of structured professional development for EMP teachers. Indeed, EMP is usually not regarded as a specialization within university programs; thus, teachers have to seek such opportunities on their own. Therefore, the more competent a particular teacher is, the more eager he or she is to engage in professional development and enhance their knowledge.

4.5. Structural Model (Exploratory SmartPLS Results)

To complement the SPSS analyses, I tested an exploratory structural model in SmartPLS to see whether the relationships in the data follow the main expectations of the TPACK framework.

The model used TPACK as a latent variable based on three indicators: content knowledge, pedagogical knowledge, and technological knowledge. Two outcome variables were included. The first measured teachers' interest in professional development. The second measured their readiness to use technology.

As illustrated in figure 2, there is a positive correlation between TPACK and both variables. The effect of TPACK on professional development was rather significant, with a coefficient of .75 and explained variance in this case being approximately 56 percent. Another significant finding concerns TPACK's impact on technology readiness, with the coefficient being equal to .71. In addition, the model explains approximately 51 percent of variance in this variable (see Table 5). In other words, those teachers who demonstrate high levels of TPACK tend to express their desire to engage in professional development and readiness to adopt technology. Nevertheless, the obtained results should not be taken seriously, because of a limited number of participants and measures utilized.

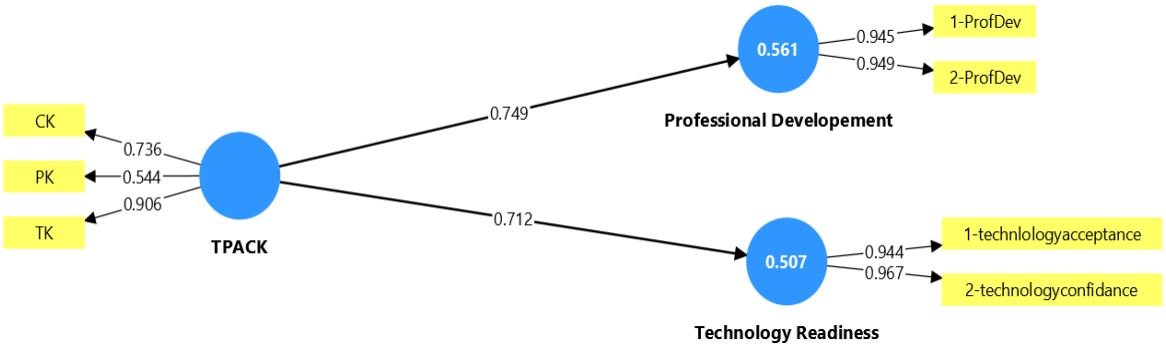

Figure 2. *Structural Model*

Table 5. *R-Square*

	R-square	R-square Adjusted
Professional Development	0.561	0.546
Technology Readiness	0.507	0.492

5. Conclusion

This study adopted the TPACK framework as a main analytical map to examine EMP teachers' knowledge, background, and professional development needs. The findings demonstrate that teachers have excellent general teaching abilities, moderate technological self-confidence, and

insufficient medical content knowledge. The more knowledgeable the teacher is about medicine or science and the more ICT courses he or she has attended, the greater his or her self-confidence will be. The greater his or her ability to combine content, pedagogy, and technology, the more inclined he or she will be toward additional training.

5.1. Study's Implications

The present study found that our sample of EMP teachers possess an imbalanced profile regarding their TPACK. To clarify, they reported themselves as being highly confident in their general pedagogical abilities, seem to struggle somewhat with their ability to using educational technologies are consider themselves least competent in terms of having a sufficient amount of medical content knowledge. They feel pedagogically confident, yet feel least secure when teaching medical content knowledge, for that it being more of specialized knowledge.

What this implies is that the current group of EMP teachers is still rooted in the area of EFL. Although they might be competent in teaching English as a foreign language, when it comes to teaching specific content, their competence is questionable, and technology use is also something of an issue. Those respondents who majored in a medical or scientific discipline at the time of their higher education showed significantly higher confidence in their medical content knowledge than those who did not major in these disciplines, and the effect size was large. Similarly, for the third research question, those EMP teachers who have taken part in ICT training courses had considerably higher confidence in using technological resources in class compared to their colleagues who had no such training. Therefore, it is safe to say that the confidence of EMP teachers cannot emerge solely from teaching experience. Rather, it depends on the combination of knowledge of a certain domain and ICT preparation. As such, curriculum designers and department heads need to bear this conclusion in mind.

5.2. Limitations and Directions for Future Research

This study has several clear limits that should be kept in mind when reading the findings. First, the sample is small and comes from a single university. The results therefore offer an initial picture of EMP teachers' TPACK rather than a general statement about all EMP teachers in Morocco. Future studies could include more institutions and a larger group of teachers, which would allow stronger statistical tests and comparisons across contexts.

Second, most constructs were measured with single self-report items and two-item scales. This choice kept the questionnaire short and manageable for a small and busy group of teachers, but

it also limits how far we can claim to measure complex constructs such as TPACK. Later work could use richer scales, classroom observations, or interviews to triangulate teachers' self-perceptions. Third, the design is cross-sectional. It shows how variables are related at one point in time, but it cannot tell us what causes what. Longitudinal or mixed-method studies could follow EMP teachers across several semesters and examine how their TPACK and professional development evolve.

Despite these limits, the study opens several paths for future work. One possibility is to design and evaluate a focused professional development programme that combines medical content workshops with hands-on technology sessions, then measure changes in teachers' TPACK and confidence. Another is to explore how EMP teachers and subject specialists in medicine can collaborate, for example through co-teaching or joint material design. A third option is to look at students' views and outcomes, and to see whether teachers' TPACK profiles relate in any way to how medical students experience and benefit from EMP courses.

Declaration

Availability of data and materials:

The dataset supporting the conclusions of this article is available in the Google Drive repository: https://docs.google.com/spreadsheets/d/1zb6njzaSRC_wkCbXF5t9eiDFInBo1cPfW-CKXmMEbn0/edit?usp=sharing

Acknowledgments

I acknowledge the financial support provided by the National Center for Scientific and Technical Research (CNRST) under the PhD-Associate Scholarship – PASS.

Disclosure Statement

The authors declare that there is no conflict of interest regarding the publication of this article. No financial, personal, or professional relationships have influenced the research, analysis, or conclusions presented in this work.

Notes on Contributors

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