

Research Article

ICT Integration Practices in Vocational Education: An Exploratory Study of Moroccan ESP Classes at Engineering Schools

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Abstract: The ongoing technological developments and the desperate need for learning English, have pushed educators to think of innovative language teaching and learning methods. That is why, the integration of Information and Communication Technology (ICT) in specialized English classes has become a necessity, that do not only facilitate the teaching and learning English for Specific Purposes (ESP), but also increases students' engagement and motivation to achieve the learning outcomes. However, the integration of ICT in ESP courses raises many issues that hinder teachers' efforts to benefit the maximum from these digital tools. Eventually, this small-scale study aims to explore ESP teachers' ICT practices at ENSAM engineering school (Meknes, Morocco). To meet this purpose, the study adopted a qualitative research method through conducting a semi-structured interview with ESP teachers at the same institution. The thematic analysis of interview transcripts allowed to describe teachers' ICT practices at different levels of the ESP course and to highlight the main challenges they face to effectively implement ICT in ESP classrooms. The current research will pave the ground for effective ICT practices in ESP teaching and learning and will provide a basis for future studies that may be conducted on the use of innovative technology in education.

Keywords: engineering schools; ESP; ICT integration; teachers' practices

1. Introduction

The rapid growth of globalization and the status of the English language as a lingua-franca have led to the evolution of English for Specific Purposes (ESP) as a prominent field in English Language Teaching (ELT). The main goal of ESP is to meet the individual's socio-economic needs and prepare him or her for a prosperous professional life. To achieve this, the millennial requirements have generated great demands to change drastically the way teaching and learning occurs inside and outside ESP classes, making use of innovations in Information and Communication Technology (ICT).

In this regard, research in Applied Linguistics and language teaching and learning has highlighted an indirect positive impact of ICT integration in English classrooms on the teaching and learning process (Hubbard, 2009). In ESP, many of the studies on ICT integration (Muñoz-Luna & Taillefer, 2018; Anthony, 2018) emphasized the benefits of ICT and the use of the most popular technological tools in ESP classes. Likewise, studies in Morocco advocated the use of ICT in the teaching and learning of ESP (Laabidi and Laabidi, 2016; Zakhir, 2018; Hajji, 2018).

The issues discussed shed light on the importance of needs analysis (Mahraj, 2019; Ouardi & Fatihi, 2021; Ait Hattani, 2019), while others stressed upon teachers' knowledge and practices (Ennaji, 1997). Consequently, researchers reported a number of challenges that teachers face with regard to the implementation of ICT in the ESP course and to the extent to which students' needs are covered. The fact that impedes the effectiveness of ICT integration in ESP classes.

Therefore, the study at hand aims to investigate ICT integration in ESP classes by exploring teachers' practices at the ENSAM engineering school.

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The research questions that the study strives to answer are the following:

1. What are Moroccan ESP teachers' beliefs and attitudes towards ICT integration in ESP classes at the ENSAM engineering school?
2. How do Moroccan ESP teachers integrate ICT at different levels of the ESP course at the ENSAM engineering school?
3. What are the challenges that face ESP teachers to effectively integrate ICT in Moroccan ESP classes at the ENSAM engineering school?

2. Literature Review

2.1. *The Development of ESP in Morocco*

ESP has grown as a prominent ELT field due to its pragmatic nature, that aims to improve individuals' socio-economic status by helping them to meet their personal and professional goals. The advances in science and technology, the linguistic revolution and the shift of education psychology towards a more learner-centered approach to ELT, led to the spread of ESP teaching and learning worldwide (Hutchinson & Waters, 1987).

In Morocco, factors such as globalization, economy development, technological revolution, educational reforms and others, have contributed to the flourishing of specialized English classes to meet the demands of the evolving job market. The plans to reform higher education in Morocco focused on strengthening language learning, promoting digital technology, and teaching skills required in the global economy.

In the same vein, Morocco's strategic plan 2015-2030 demonstrated that the correlation between the quality of the educational system and the teaching and learning of foreign languages, is highly significant to meet the job requirements of the industry. Hopefully, this plan will have notable implications not only on ELT but also on ESP.

It is true that ESP education in Morocco has become a medial pedagogical and educational matter of interest which attempts to progress gradually in terms of theory and practice, yet it faces many challenges at the levels of content and methodology. Studies on ESP in Morocco highlighted the major role of needs analysis in designing ESP courses (Belkbir, 2019). Correspondingly, others argued that ESP practitioners should be aware of the new trends in needs analysis theory and practice to provide learners with effective learning opportunities (Ait Hattani, 2019).

Research on ESP has raised issues regarding the integration of technology in ESP and the extent to which students' needs are met. In the Moroccan context, EFL (English as a Foreign Language) and in particular ESP is facing many challenges at the levels of theory and practice. Students' needs are not generally taken into consideration (Ennaji, 1997; Mahraj 2019). In the same vein, Zakhir (2018) concluded that teachers expressed a shortage of ICT tools in ESP classes and the need for an adequate training to integrate ICT in ESP teaching to cover students' needs and expectations.

Another point that has been discussed in several research papers is teachers' readiness to teach ESP classes. Most of ESP teachers in Morocco are EGP teachers who did not receive any formal or non-formal trainings on necessary pedagogies, methods and approaches to teach ESP. As a result, some educators pointed out to the necessity of a well-established training for ESP teachers that incorporates the teaching methodology, the production of teaching materials and the new advancements in science and technology (Ennaji, 1997).

Ultimately, these are only few of the chronic matters that the ESP field in Morocco struggle with and that are still unsolved. In ESP literature, studies that probe into ESP teachers' ICT integration practices in ESP classes are still very few. Thus, the lack of data in this regard, urged me to explore ESP teachers' ICT practices in Engineering ESP classes, and to investigate the extent to which this latter meets students' needs and the ESP course objectives.

2.2. *ICT Integration in Moroccan Higher Education*

The integration of ICT in Moroccan education was implemented by the National Charter of Education and Training (1999). The article 10 of the Charter recommends the integration of ICT in education and supports the acquisition of computing facilities at schools with the promotion of distance education and learning. The government focused on education, governance, private sector development, e-commerce, and access as five key themes for effective use of ICTs.

Since then, the government and the privatization of the telecommunication sector led to spread the use of ICT in all aspects of life (Hajji, 2018). Thus, numerous ICT initiatives and projects were launched to effectively integrate ICT in education sector. Despite the efforts made by the Moroccan government, educationalists and economic partners to promote ICT integration in Moroccan higher education, the slow adoption of technology in university settings still reflects the complexity of the process at multiple levels.

Many of the researches conducted on ICT integration in Moroccan Higher Education focused on the obstacles to an effective use of technology in English language teaching and learning. Laabidi and Laabidi (2016) confirmed that teachers hold positive attitudes towards ICT implementation in the teaching and learning process. Nevertheless, they suffer from the absence of an effective school policy, large size classes, the unavailability of sufficient technological resources, limited internet connection, and lack of training.

Similarly, Hajji (2018) emphasized the importance of equipping Moroccan schools with appropriate ICT infrastructure and internet access, in addition to developing teachers' ICT competencies. He also highlighted the necessity to use more up-to date teaching methods rather than traditional ones to support the integration of ICT and make learning more enjoyable. In the ESP context, Zakhir (2018) concluded that both ESP teachers and students have positive attitudes towards the use of ICT in teaching and learning ESP. Students exhibit a great enthusiasm for the use of technology to learn ESP and teachers think that ICT facilitates their tasks and motivates students to learn.

Although teachers try to adapt the use of ICT to the needs of their courses, they struggle with issues related to the availability of technological resources and the lack of a supportive tech policy. Additionally, Mahraj (2019) stated that the teaching and learning materials in EFL settings are not innovative and available enough, because most of the teachers are "digital immigrants" whereas their learners are "digital natives" quoting Prensky (2001).

Therefore, teachers' technology-related competence seems to be a prerequisite in integrating technology creatively and genuinely into ELT. Generally, the studies conducted on ESP and ICT integration focused mainly on teachers' and students' attitudes but very few investigated teachers' practices.

2.3. ICT integration in ESP: The role of the ESP practitioner

The integration of ICT in English language teaching and learning in general and ESP in particular, requires the teacher to rethink of the course design at the levels of theory and practice. Li (2017) proposed five pedagogical principles of ICT integration, by which the ESP practitioner performs multiple roles. First, the teacher needs to understand the benefits of the various technological tools. For this, he ought to keep up with the latest technological advances and their multiple uses for ESP teaching and learning.

Second, the teacher has to link technology to his students' needs through analyzing their language levels and expectations, knowing available resources they have, their computer literacy level, and understand how technology can help them fill in their lacks. Third, the teacher has to integrate technology as part of the pedagogy rather than add it to teaching. Technology should be integrated at different levels of the ESP course including assessment. For this reason and others, ESP teachers have to be aware of their beliefs regarding language teaching and learning.

Fourth, teachers should understand that using ICT innovatively entails performing new multiple roles such as organizers, participants, facilitators, guides, creators and others, and that give students more control and agency over their learning. Finally, technology can help ESP teachers to expose learners to authentic language they might encounter in their professions. To add to this, the assigned tasks inside or outside classes have to be a simulation of the tasks that learners might carry out in their real-life work environment.

3. Materials and Methods

3.1. Research Methodology

Globalization and the ongoing technological advancements pushed educators to adopt more innovative language teaching and learning methods that can achieve better learning outcomes. In the ESP context, the integration of ICT has become essential to meet students' needs and increase their readiness for the job market. Against this backdrop, the current study aims to investigate ICT integration in ESP classes by exploring teachers' practices at the EN-SAM engineering school (Meknes, Morocco).

The current study adopts a qualitative method approach to enquiry, used to explore and understand the meaning individuals or groups attribute to a social or human problem. It is broadly inductivist, constructionist, and interpretivist (Creswell and Creswell, 2018). There are many qualitative research designs that can be used in research, but this study selected the case study design as an overall strategy to address the research problem.

By collecting data from single individuals, the case study design helps to have an in-depth understanding of the research problem and allows to describe people's experiences, attitudes and expectations. The effective application of this design would help to explore teachers' ICT integration practices at the ENSAM engineering school.

3.2. Sampling

This small-scale study has targeted ESP teachers as the main population to meet the research objectives and purpose. Selecting ESP teachers for this study was initiated by the pivotal roles they perform in ESP courses in terms of content and methodology. The ESP practitioner plays multiple roles starting from being a needs analyst to an evaluator. Furthermore, with the technological advancements in the field of education, the mission of ESP practitioners became more challenging. So, it was necessary to examine teachers' readiness to integrate ICT in ESP teaching and learning, and to shed light on their endeavors to implement this thriving in ESP classrooms.

The study has taken on one of the most common non-probability sampling strategies used in qualitative research namely convenience sampling. There are many advantages to the use of convenience sampling in qualitative research. It is mostly used because of its speed, cost-effectiveness and availability of the sample (Creswell & Clark, 2011). It is time and money saving, and it provides an easy way to receive specific feedback from individual perspectives. Hence, it results into a sample available to the researcher by virtue of its accessibility, especially if the participants are drawn from a close population group.

Samples in qualitative research tend to be small in order to support the depth of case-oriented analysis (Spencer et al., 2003). The teachers who participated in the study teach third-year engineering students from different engineering majors (civil engineering, mechanical engineering, electrical engineering and others) at ENSAM engineering school. Teachers in general and ESP practitioners in particular have busy schedules and restricted time availability. Accordingly, not all ESP teachers at ENSAM engineering school participated in the study. The sample size was limited to seven teachers as similar insights were recurrent and data reached saturation.

3.3. Data Collection

This case study has opted for a structured interview as a qualitative data instrument to explore ESP teachers' ICT practices. Though interviews are mostly used in qualitative studies, interviewing is a complex process that requires good planning, proper preparation and a sensitivity to the complex nature of interaction during the interview itself (Kothari, 2004).

The structured interview relies on asking a collection of predetermined questions in a set order that allows to easily compare responses between participants in a uniform context. The twenty-two question items asked are based on pillars of ESP proposed by Anthony (2018) and previous literature that discussed teachers' practices in ESP classes. The selection of questions varies between *WH-* and *yes* or *no* questions to explore teachers' practices in terms of content, methodology and evaluation.

The researcher has taken into account a number of ethical considerations to come up with good quality research. Before conducting the interview, the researcher made sure to establish a good rapport with the interviewees to encourage genuine answers. During the preparatory phase, the researcher explained the research scope, purpose and objectives to the participants. The anonymous and confidential analysis of data is guaranteed. In the same respect, ESP teachers gave their oral consent to be interviewed and recorded. Furthermore, the researcher allowed participants the right to take a break, stop or refuse answering a question, as recommended in research ethics.

The interviews were conducted at ENSAM engineering school. Each interview took between 15 to 20 minutes and maintained a good pace through varying the types of questions and using verbal and non-verbal communication.

3.4. Data Analysis

The interview' transcripts were coded and analyzed into themes that emerged from the teachers' responses. The transcription of interviews was done by the researcher in a verbatim manner (word for word transcription). The interviews were transcribed manually and

virtually. The goal of the qualitative analysis of data was to get inferences or conclusions by inductively condensing large amounts of data into relatively smaller bits of understandable information (Patton, 2001).

To achieve this, the researcher carefully read the transcripts to code them and attain data reduction, as many pieces of information were repeated, related to literature or highlighted because of their significance to the research purpose (Palys & Atchison, 2014). Subsequently, the researcher divided the segments into themes to interpret them in the light of the research questions and purpose.

4. Results and Discussion

The qualitative analysis of the structured interview took the form of a thematic analysis that allowed to explore teachers' ICT practices the ESP classroom at ENSAM engineering school. The analysis of the interview transcripts was treated anonymously, but teachers were given numbers from 1 to 7. The results of the analysis are presented into a number of emerging themes that answer the research questions and match the research objectives:

4.1. Teachers' Beliefs and Attitudes towards ICT Integration in ESP Classes

The ESP teachers interviewed hold positive attitudes towards ICT integration and they are aware of its benefits for ESP teaching and learning. Respondent number 2 said: "teaching and learning become easier, more engaging and more fun with technology." Another one stated "I think nowadays, we cannot talk about teaching without talking about ICT". Similarly, number 4 declared that "the classroom should be a recreation of the outside world, as students are hooked on their gadgets and phones".

In literature, to successfully integrate technology in ESP teaching, teachers need to be aware of the benefits of technological tools for language learning because different tools have different functions. For example: wikis, blogs, and other WEB 2.0 technologies are appropriate for developing collaborative learning, while the use of software, videos and corpora help students develop their linguistic skills and so on (Li, 2017).

Nonetheless, the wide range of technologies available can produce feelings of anxiety and uncertainty for teachers if they do not feel confident in the use of technologies as pedagogical tools. Eventually, teacher training and technical awareness are the key solutions to the appropriate use of ICT in the classroom.

In terms of teachers' technology related knowledge, most of the interviewees believe they have a good Technology Related knowledge level, teacher number 3 described his (TK) as follows: "I would say advanced because I have done some studies in computing and I have a degree in programming. So, I think for me, it is not a big deal". While, teacher number 1 said: "I think it is medium because all I have done was kind of personal 100 %. But I'm trying to develop. I'm actually learning from my students". Nevertheless, on the whole their technology Related knowledge is a result of their personal endeavors.

According to Mishra and Koehler (2006), Technological Knowledge (TK) is defined as "knowledge about certain ways of thinking about, and working with technology, tools and resources". Many researchers consider TK as an essential component in technology integration models in addition to content and pedagogy knowledge, like TPACK, Pierson's Technology Integration Model and others, that outline how content and pedagogy must form the foundation for any effective technology integration.

In a study conducted on Moroccan teachers, Biaz, Bennamara, Khyati, and Talbi (2009) concluded that most teachers use the computer to word-process their lessons or to download materials from the internet, whereas the implementation of ICT in English courses is a much more complicated process. In other words, the lack of teacher technological knowledge is a barrier that prevents effective ICT integration. Yet, the teachers interviewed believe that their perceived technology related knowledge permits them to integrate ICT in ESP courses.

4.2. ESP Teaching and Learning Environment

All the teachers interviewed confirmed that at ENSAM the classroom environment is favorable for ESP teaching and learning, and that "all the necessary conditions are available to teach ESP". Besides, the establishment of a language laboratory has a positive impact on the teaching and learning process as teacher number 2 explained: "We have experienced some years ago setting up a language lab that lacks some of the materials, but it has a great impact on our teaching. Now, we feel we have our own environment. And it's very beneficial for students."

Although there are various audio-visual facilities (desktop computers, data shows, interactive whiteboards, laptops, audio set and internet connection) provided at ENSAM, there is a lack of maintenance and technical assistance as teacher number 1 said: “there is a desktop installed in every class. Still, it does not function as it should be!”. Likewise, teacher Number 6 added: “All that you need is there.... but sometimes things are not running smoothly, we need maintenance. More care should be given to these kinds of equipment and resources”.

In the same vein, a study conducted by Laabidi and Laabidi (2016) asserted that the lack of technological resources, internet and insufficient technical support are among the barriers that discourage university teachers from integrating technology in their teaching practices.

On the other hand, language laboratories have proved to be beneficial if equipped with the necessary tools. Language labs are becoming highly valued because they offer students a structured e-learning environment, the technologies used facilitate the teacher’s role in creating a creative learning environment and offer students more practice hours, and up-to-date exercises. They focus on listening and speaking by enabling students to practice and assess their own speech to improve their communication skills. In fact, they respond to students’ learning needs and serve the purposes of ESP instruction.

4.3. ESP Teaching Methods and Materials

Even though teachers have an already agreed upon syllabus, they bring extra materials to support learning and respond to students’ interests. When discussing the sources of teachers’ materials, teacher number 7 said: “apart from the textbook, we do research and tap into different sources, whether online or offline. And we also try to cater for students’ needs and interests by bringing interesting materials.”

Initially, the types of syllabi used in ESP classes offer a flexible presentation and practice of materials but more importantly they prioritize needs over explicit linguistic features (Anthony, 2018). Still, ESP teachers may find it necessary to develop their own courses, since many of the commercially published textbooks are not relevant to their learners’ needs (Bocanegra-Valle & Basturkmen, 2019).

Respectively, ESP teachers at ENSAM engineering school declared that they bring additional materials to support learning and to cover students’ individual needs. Teachers vary their materials between online and offline resources, but most of them rely on online ones particularly internet. This latter offers teachers a wide selection of authentic materials that satisfy students’ demands.

There are specific-discipline websites that serve ESP learning goals and contain materials for both teachers and students (Li, 2017). Also, with online management systems teachers can assign readings and listening exercises or even videos for students to work on. Many researchers such as Dudley-Evans and St. John (1998) highlighted the importance of materials development in ESP. Ultimately, the choice of materials affects the extent to which the learning objectives are achieved and determines the type of methods adopted inside the classroom.

4.4. The ESP Teaching and Learning Methodology

The most prevailing approach to teaching and learning ESP at ENSAM engineering school, is the student-centred approach. Teachers adopt various pedagogical methods that meet students’ expectations and preferences. Teacher number 5 said: “With third-year and fourth-year students, I use project-based learning, but when it comes to the preparatory cycle, I use kind of eclectic Method that should be communicative and student-centred”.

Additionally, teacher Number 4 asserted that he uses “A bottom-up approach to teaching which considers the student an active agent and participant in the teaching-learning process.” Alike, teacher Number 3 adopts an eclectic method to teaching and learning ESP, in which he uses problem-based learning, project-based learning, teaching through coaching, and cooperative learning but all serve the purposes of a student-centred approach.

The most cited methods that teachers use, are project-based learning, problem-based learning, teaching through coaching, and cooperative learning. With this regard, a study conducted by Šliogerienė, Darginavičienė, Suchanova, Gulbinskienė, and Jakučionytė (2025) proved that problem-based learning is effective for improving engineering students’ communicative skills. All these methods, adopt a bottom-up approach to learning which considers the student an active agent and participant in the teaching-learning process.

As argued by Anthony (2018), learner-centred approaches are more effective than teacher-centred ones in ESP settings, as it seems to work well with short and intensive ESP courses that generally address advanced learners. These approaches go along with the principles of socio-constructivism, which consider students as active doers.

Consequently, by adopting the methods already mentioned, the classroom environment is more positive, there is more interaction between the students and the teacher, motivation is increased and learners' autonomy is fostered. Hence, the use of student-centred approaches favours ICT integration in ESP classes at ENSAM engineering school.

In teaching language skills using technology, teachers differ in their practices. There are who use technology to teach specific skills and others who integrate ICT in all language skills. Teacher number 2 uses technology to teach mainly speaking and listening and he justified that as follows: "We need materials, we need high-quality loudspeakers, for students to decipher sounds easily." Other teachers stated that they use technology to teach all language skills including speaking and writing.

Many studies pointed out to the positive impact of ICT integration on the acquisition of linguistic knowledge and the development of language skills (Macaro et al., 2012). There are various tools that can be used in the teaching and learning of each skill. Computer-assisted language learning (CALL) programs and activities have drawn praise from all quarters for supporting online reading, using multimedia glosses, and stimulating cultural knowledge (Blake, 2013).

CALL activities that support collaborative writing such as Data Driven Learning, have also been examined carefully in the literature (Elola & Oskoz, 2016). Besides, multimedia and the internet offer unlimited audio and video resources to improve students' listening and speaking skills. Eventually, ICT integration can support the teaching and learning of different language skills, however it is the role of the teacher to select the adequate technological tools and methods to respond to students' linguistic needs.

All teachers affirmed they integrate ICT in classroom tasks and activities but in different degrees. Teacher number 4 confirmed he always integrates ICT in classroom activities namely in team-based projects, online games and activities, Kahoot and others. In contrast, teacher number 4 said: "Not necessarily, when we have a vocabulary task, for example, I ask them to look on the internet for some vocabulary or to do some research." Both teachers and students use ICT during classroom activities, as mentioned by teacher number 1: "I do not always integrate technology in classroom activities, not 100%, I need to present lessons using PowerPoint, video and audio segments, but I also push students to use technology in their presentations, games and activities."

During classroom activities that entail the use of ICT, students mostly work in groups. teacher number 6 said: "Most of the time it is group work, because our classroom setting is usually in a U shape. Most of the time we set the classroom so that we can have groups of four students." Furthermore, teacher number 7 stated that students work in groups on their computers and mobiles to solve different problems, whereas teacher number 4 described students as "digital natives" because they are comfortable working and using technology.

The use of a group work method or cooperative learning matches the theoretical foundation of ICT integration in ESP classes that builds on the principles of socio-constructivism to foster students' learning. Previous studies have shown that when both cooperative learning and ICT integration are implemented in the classroom, there is a positive impact on students' learning (Brucklacher & Gimbert, 1999). In a study conducted at the University of Eastern Finland, the use of both technology and cooperative learning seem to increase students' motivation and engagement to accomplish the task assigned.

Moreover, the use of cooperative learning has supported the shift from teacher-centered instruction to student-centered learning by focusing on students' construction of knowledge that results into students' autonomy. Obviously, the teachers interviewed are supportive of the constructivist application of computer technology.

4.5. Evaluation Procedures

The teachers interviewed affirmed that two types of evaluation are adopted to assess students' learning: formative and summative evaluation. Teacher number 7 declared that he does both formative assessment by means of oral presentations and a mid-term project work, and summative assessment in the form of a final test. As far as online assessment is concerned, teachers expressed controversial opinions that reflect their personal attitudes and experiences.

The majority of the interviewees stated that do not use technology in evaluation, but teacher number 3 commented: "I have no idea about it, but it must be challenging given the limited tools available for students and the limited in-service training for university teachers". On the other hand, teacher number 2 talked about his experience with online assessment during COVID-19 pandemic: "We were obliged to evaluate students online and we designed online exams. However, I think those exams were a little bit deficient, we had no guarantees

that students were alone when taking the exams. They may have been in groups or working together in pairs.” Subsequently, he added “I think we need to find a solution on how to check the identity of students while taking online exams”.

Both types of assessment are essential in the teaching and learning process as they keep learners engaged and provide information about the effectiveness of the course. Formative assessment focuses more on how the learning experience is progressing and it is one of the most beneficial assessment strategies because it helps learners understand what they still need to learn as they progress in through the course.

This strategy is more diagnostic than evaluative as it was mentioned by the interviewees, it is used to monitor the student’s learning style, provide feedback and adjust the teaching style. Inversely, summative assessment is used to determine whether or not a module’s learning objectives have been achieved, it can help to determine whether a learner is ready to move to another level. All things considered, the implementation of both types of assessment is necessary to develop students’ language and communicative skills.

Concerning the use of ICT in evaluation procedures, teachers’ practices vary. One example is Academic management systems that open up new communication channels between teachers and students and students themselves (Monteiro de Carvalho, 2014). Tracking options allow practitioners to monitor and assess students’ interactions, interventions in forums, chats, wikis activities, etc. for formative evaluation purposes.

Another advantage of these systems is posting students’ assessments, to see their grades online and follow their progress, students can also see missing homeworks and submit assignments directly to their professors (Garrote Jurado et al., 2012). Accordingly, newer options of blackboards like «Haiku» offer a teacher-share option, whereby instructors can see deadlines and projects assigned by others, and students turn in wiki projects and have immediate information concerning due dates and progress (Schultz et al., 2024). Besides, electronic softwares like Mahara provide an innovative perspective on portfolio evaluation.

Speaking and listening are also two skills that proved difficult to assess in the classroom but with ICT there are many intensive English programs that use audio lectures to evaluate students’ listening comprehension. Students are exposed to academic lectures based on their levels. While to evaluate speaking, technology offers rooms for learners to record themselves and upload their files to the virtual platform where teachers can have permanent access to that output. Another way to assist students’ oral skills development is to simulate the speaking assessment of the TOEFL by using a speaking rubric.

One of the main principles of ICT integration in ESP is to use technology at different levels of the course including assessment. For this reason and others, technology offers numerous possibilities to assess students’ learning in an anxiety-free atmosphere that fosters language learning autonomy and initiates learners to the challenges of future workplace.

5. Conclusions

Exploring ESP teachers’ ICT practices at ENSAM engineering school (Meknes, Morocco), resulted into a description of teachers’ ICT practices and unveiled some of the challenges they face to achieve an effective ICT integration. Teachers try to integrate ICT at all levels of the ESP course in terms of content, methodology and evaluation, but they face some obstacles related to the unavailability of technological resources, the lack of maintenance and technical assistance, the lack of adequate training, teachers’ technology related knowledge, and the insufficient allotted time for ESP classes.

Eventually, ESP teachers’ and students’ experiences with ICT integration should be well-studied to identify the difficulties encountered and set an action plan for an increased quality of future ESP teaching and learning. Accordingly, without a well-defined educational strategy that incorporates all actors involved to support ICT integration in higher education, the Moroccan educational reforms may not succeed to attain the desired outcomes.

The study has uncovered ESP teachers’ efforts to integrate ICT effectively in ESP classes and shed light on some of the challenges they face to reach this aim. Yet, the study is limited methodologically, as it investigates the topic from a single perspective of ESP teachers. Also, it is limited to only one setting, which is ENSAM engineering school, while investigating the research problem in multiple engineering schools and from different angles may provide more valid and reliable results. However, this enquiry can be considered as a milestone for further research on ICT integration practices in ELT in general and ESP in particular.

This research has enabled the development of a base of recommendations for teachers, stakeholders, policy makers and educational leaders to improve future ICT integration

practices in the ESP classroom and to enhance the quality of ESP teaching and learning in Morocco:

(1) Engineering schools in Morocco should set up language labs for ESP teaching and learning that should be equipped with up-to-date technological materials and gadgets.

(2) ESP teachers should benefit from pre-service and in-service trainings on different aspects of teaching ESP and ICT integration, both tool and pedagogy focused with practical examples like demo lessons.

(3) Stakeholders of the educational system should think of maximizing the time allotted for ESP classes to help teachers achieve ESP purposes.

(4) Engineering schools have to provide computer maintenance and technical assistance whenever needed.

(5) Team teaching needs to be implemented to deal with pedagogical issues that can arise with the use of technology inside the ESP classroom.

(6) ESP teachers should benefit from professional trainings on syllabus design and material development.

(7) Evaluation procedures in ESP classes should be re-examined to go along the ongoing changes in education, the technological revolution and the job market requirements.

This small-scale study has targeted the exploration of teachers' ICT practices in ESP classes at ENSAM engineering school. The study has tried to provide a description of ESP teachers' ICT practices to investigate ICT integration in ESP classes. Nevertheless, future research can opt for other methodological approaches to investigate this issue.

Teachers' practices can be better described using other qualitative data collection methods such as classroom observation, to bring about new in-depth insights. In this regard, it would be interesting to use a mixed method approach to investigate teachers' and students' use of ICT in the ESP classroom and the extent to which this meets students' needs. Additionally, more research can be conducted to examine the impact of ICT integration on ESP learning

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