

## The Integration of Digital Technologies into the Teaching of English in Medicine

### Section Research Articles

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**Abstract:** English for Medical Purposes (EMP) has been a significant part in the field of English for Specific Purposes (ESP). In recent years, the teaching of Medical English has changed considerably to meet the needs of new generation of learners who have grown up in the advance of digital technologies. This study explores how EMP teachers at a university in the south of Vietnam used digital technologies to facilitate their teaching of Medical English. The digital age learning matrix described as an evaluation tool by Starkey (2011) was applied to identify aspects of learning occurring during the teaching practices with digital technologies (Starkey, 2011). Data were collected from interviews with 15 teacher participants in the Department of Foreign Languages at the research site. The result showed that all teachers perceived the benefits of integrating digital technologies into teaching activities, but their use of technologies remained limited. Findings also revealed some potential uses of web-based tools and applications in teaching activities triggering students' learning aspects. The study suggested that teachers in a digital age need to understand how to apply learning theories into their teaching practices and the digital age learning matrix could be a planning tool for teachers using digital technologies in teaching activities.

**Keywords:** English for Medical Purposes, digital technology, digital age learning matrix.

### Introduction

With the internationalisation becoming a growing trend, many universities have tried to equip their students with not only content knowledge but also language

competence so that graduates can compete in international contexts. English for Specific Purposes (ESP) has played a vital role in higher education. ESP is an approach in which the teaching and learning of language are integrated into a subject matter related to students' career aspirations or professional interests (Antic & Milosavljevic, 2016). ESP aims at developing students' English proficiency in their expertise so that they can access many global opportunities and meet the requirements of international job markets. In Vietnam, more and more tertiary institutions have recently focused on ESP programmes to satisfy the needs of their students.

English for Medical Purposes (EMP) is a subcategory of ESP designed for medical students (Arani, 2015). Like other areas of ESP, EMP is a language course related to the medical context and content. An EMP course is expected to provide students with not only high-specialized medical terminology but also technical language and skills that they can use in professional communications, doctor-patient interactions or processing medical literature in English (Antic & Milosavljevic, 2016). At the research site where this study was conducted, EMP has been a significant focus of the academic programme as the number of medical students is always outweighing any other majors.

In recent years, the teaching of Medical English has changed considerably to meet the needs of new generation of learners who have grown up in the advance of digital technologies. Different from General English courses, EMP requires a lot at the role of teachers in facilitating students' learning of both English and content knowledge. Thus, apart from teaching methodology, EMP teachers are required to equip themselves with a variety of skills and knowledge to cope with multiple demands of their learners (Antic & Milosavljevic, 2016). The use of digital technologies has been increasingly popular among language teachers in recent decades. Many researchers have tried to investigate both language teacher's digital skills and literacy. However, lack of evidence has been found among teachers of Medical English and their integrating of digital technologies into teaching. This study focused on teachers of

Medical English at a southern university in Vietnam to find out how they used digital technologies to support their teaching and enhance students' learning of Medical English. Based on the digital age learning matrix (Starkey, 2011), the research aimed to answer the following research questions:

1. What digital technologies do the teachers of Medical English use in their teaching activities?
2. How do the teachers of Medical English use digital technologies in their teaching activities?

## **Literature Review**

### **English for Medical Purposes and Digital Technologies**

EMP is a field-specific language course designed for learners with a need of learning English for medical context and content. In EMP courses, language instructions are closely related to the subject matter (Husinec, 2011). Traditionally, medical students, like those studying English for professional purposes, learnt English to get access to a wide range of materials and information resources written in English. They mostly used English to deal with literature in their subject matter. Nevertheless, students of medical study are currently learning English to use in their future working environment. They want to develop the ability of communicating with their counterparts, understanding and dealing with any situations at work using their high level of content knowledge and strong communicative skills in both their mother tongue and English as a foreign language (Arani, 2015). Thus, according to Antic & Milosavljevic (2016), the teaching of Medical English "is learner-centred and the role of the teacher is to facilitate learning and guide the students towards developing appropriate strategies that would promote autonomy" (p. 75).

Research have discussed different roles of teachers in teaching Medical English. Due to students' variety of linguistic needs, teachers should know how to integrate those needs into an effective course. Besides, teachers in EMP courses need to have thorough understanding of the job in the field of medical study (Svendson & Krebs, 1984). This would offer them more opportunities in professional development. Apart

from language proficiency, teachers have to accommodate themselves with knowledge in the specialized area so that they can “respond appropriately to the medical knowledge that the students bring” (Antic & Milosavljevic, 2016, p. 76). The fact is that students in EMP courses may have better content knowledge than the teacher who is expected to have good knowledge of communication practices to trigger students in using their content to generate communication. Thus, teachers in EMP courses can have different roles such as facilitators, course designers, materials providers or team teaching collaborators. (Antić, 2016).

Language teachers have used digital technologies to support their teaching and students’ learning in EMP courses. Frinculescu & Badea (2013) recommended using videos for medical language learning and some samples of home-grown materials for watching purposes in Romania. They concluded that video aide teaching of EMP was motivating as it provided students with opportunities to see medical situations while practicing different features of language (Frinculescu & Badea, 2013). Supporting the integration of digital technologies in teaching EMP, Arani conducted studies to explore the impact of different digital devices and web-based tools on EMP teaching and learning such as blogs (2013), blended learning (2015) and mobile phones (2016). Results showed that digital technologies explored in these studies had positive influence on the effectiveness of EMP course. For example, the use of weblogs has helped English teachers create a communicative language learning and given students a high motivation in learning Medical English. Meanwhile, blended-learning EMP module with the integration of online learning has conceptualized the content around the competencies that students needed for their learning of EMP. Finally yet importantly, “mobile syntactic supplementary SMSs can be integrated into EMP II course to enable students to develop better English sentence paraphrasing skills” (Arani, 2016, p. 52).

The use of digital technologies in EMP has been limited. Research has found that technology in medical language learning is relatively new in some countries. Lack of facilities or teacher training may be one of the reasons. Frinculescu & Bade said that

many teachers of EMP had negative attitudes towards technologies due to their little confidence in the ability of using technologies in teaching activities (2013). As a result, this has prevented teachers to optimize available resources online as well as utilize technology capabilities in their EMP courses (Zechia, 2017). At the research site where this study was conducted, language teachers are encouraged to apply advanced technologies in their teaching of EMP. Nonetheless, current practices may prove insufficient. Further research is in need to provide teaching staff with practical training or guidance as well as motivating reasons to integrate digital technologies in their teaching and supporting students' learning of EMP.

### **The Digital Age Learning Matrix**

The digital age learning matrix was developed by Starkey (2011) as an evaluation tool of teaching activities in the classroom. The tool was used to examine the types of classroom activities in which the use of digital technologies was incorporated. The researcher based on the analysis of different taxonomies to see whether they were relevant with the needs of the evaluation tool. As a result, the matrix was built on the combination of different categories of digital technology use and aspects of learning (Table 1). The digital age learning matrix includes six aspects of learning as following:

- Doing something within one context: e.g. look on the Internet for some information, upload pictures to wiki or take a quiz to rote-learn facts.
- Thinking about connections: e.g. share ideas or connect to a person.
- Thinking about concepts
- Critiquing and evaluating
- Creating knowledge
- Sharing knowledge

Table 1

*The Digital Age Learning Matrix (Louise, 2011)*

Aspects of learning: Digital technology use:	Doing	Thinking about connections	Thinking about concepts	Critiquing and evaluating	Creating knowledge	Sharing knowledge
Accessing information						
Presenting information						
Processing or creating digital objects						
Gaming or interactive programmes						
Communicating or collaborating						

The digital age learning matrix was piloted in a case study of six beginning teachers using digital technologies in their teaching activities (Starkey, 2011). Results showed that “the teacher in the study most frequently focused on their students’ engaging in an activity (doing), making connections and developing conceptual knowledge” (p. 33). The matrix appears to be a useful tool which helps clarify the learning aspects in activities where digital technologies were integrated. It can be used as a framework for discussion on the focus as well as the intent of the teaching and learning activities. In this study, digital age learning matrix was applied in delving into the teaching activities of English teachers in EMP courses.

**Method**

**Study Design and Participants**

This exploratory study used qualitative methodology to explore the teachers’ teaching practices in depth. Participants included 15 teachers (4 males and 11 females) of English working in the Department of Foreign Languages at a southern university in Vietnam (Table 2). They were responsible for teaching Medical English for students majoring in Medicine. Each teacher was invited to take part in a

30-minute semi-structured interview. The interviews were conducted in Vietnamese and audio-recorded for later transcriptions. The teachers were asked to list types of digital technologies they often used in their EMP classes for teaching, then described thoroughly how they integrated those digital technologies in teaching activities.

Table 2

*Summary of Participants*

Participants	Males	Females	Average age	Average years of experience
15	4	11	43.73	21.73

## **Findings**

### **Research Question One**

The teachers reported using different types of digital devices in EMP classes to support their teaching and students' learning. As shown in Figure 1, most teachers used the projector equipped in the classroom to show students slides of the lessons. Eight teachers preferred using the desktop computer available in the classroom while seven others brought their own laptops. The most important reason for this option was the convenience of using the devices. The computers were popularly used as the teachers did not want to bring their heavy laptops with them. Some female teachers said that they felt unsafe with their laptops in bags on the way to work. Those using their laptops in class stated that they could easily access resources and materials saved in their laptops.

Besides, four teachers said they sometimes used their mobile phones in the teaching activities. Tablets appeared to be the least commonly used by teachers (n=2). The teachers who reported using mobile phones or tablets in classroom activities said that they could utilize various applications supporting students' language learning and make their lessons more interesting and motivating to students.

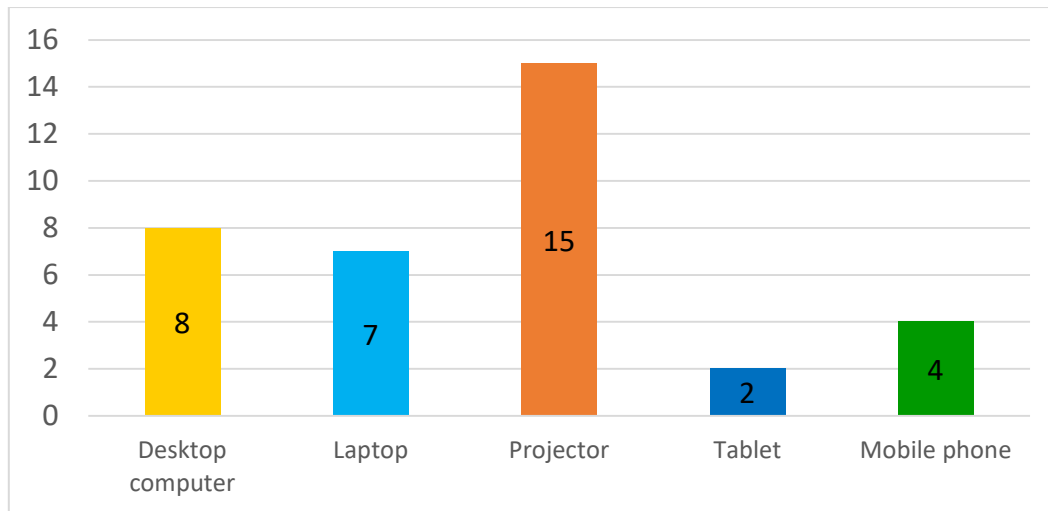


Figure 1. The number of teachers using different types of digital devices in teaching activities in EMP classes.

Regarding specific digital technologies, the teachers participating in the interviews listed different uses in their classroom. As illustrated in Figure 2, all teachers said that they used slides designed with PowerPoint or Prezi programmes in their lessons. Six teachers (40%) downloaded video clips from Youtube, Tedtalk or VOA special English learning programmes and conducted activities based on these clips. Five teachers (33.3%) also used searching tools like Google or Wikipedia. As mobile phones and tablets were not frequently used, there were only 26.7% of the teachers interviewed saying that they had used applications on mobile phones or tablets to enhance students' learning. Finally yet importantly, few teachers in EMP courses reported using social networks like Facebook or Twitter (13.3%), conducting digital games (13.3%) and accessing web-based materials (6.7%).



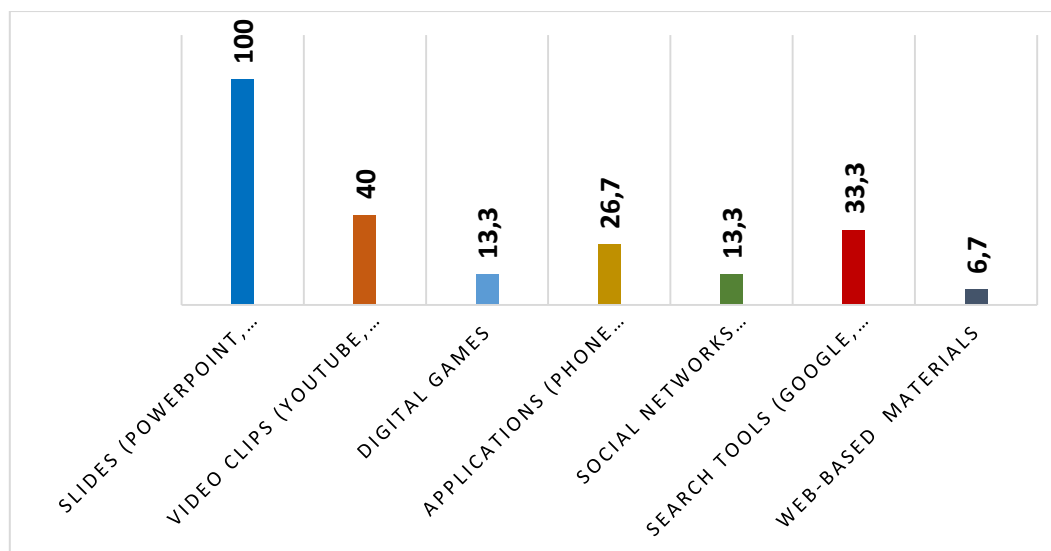


Figure 2. The percentage of teachers using different digital technologies in teaching activities in EMP classes.

The teachers expressed their opinions in the interviews. They said that they decided to use digital technologies for many reasons. First, they said that their students were familiar with the use of digital devices in their study. Thus, the teachers wanted to motivate students by providing them with ways to optimize the use of technology in learning EMP. Second, the availability of the Internet access and advanced equipment could provide both teachers and students with authentic sources of materials that were helpful for the practice of not only language skills but also content knowledge in Medicine. Finally, the use of digital technologies in teaching activities helped the teachers to enhance students' autonomy and independence in their learning. The teachers thought that this was an appropriate strategy to facilitate students' learning and guide them to develop their English proficiency in the professional contexts.

On the other hand, the teachers reported having some difficulties in using digital technologies in their teaching activities. 50% of the teachers did not feel confident in their digital ability, which prevented them from making decisions of using technology in class. They felt afraid of different technical issues they could encounter when using technology in class. More importantly, the teachers said that they had to deal with an issue of time constraint. They thought that the time allowed for EMP

courses was not enough for them to cover an overwhelming content. They believed that digital technology could be a good supporting tool, but took them more time in preparation for a lesson.

### **Research Question Two**

The teachers provided detailed descriptions of the teaching activities in which they used digital technologies or conducted students to use digital technologies to do the tasks requested (Table 3).

Table 3

*Descriptions of Teaching Activities*

	<b>Digital technology</b>	<b>Teaching activities</b>
1	PowerPoint, Prezi	The teacher asked students to present about one medical topic they had learnt with slides.
		The teacher asked students to present new vocabulary in a reading text.
2	Video clips from Youtube, Tedtalk, VOA	The teacher showed students a video clip about a medical topic and conducted discussions.
		The teacher asked students to make a clip of conversations on medical situations such as presenting complaints, explaining and reassuring or encouraging patients. Students were then encouraged to post their clips on Youtube or Facebook.
		The teacher asked students to access a piece of news about medical topics (VOA) and record (audio or video) their reporting of the news again.
3	Digital games	The teacher asked students to design a word game to review vocabulary they had learnt (crossword, word puzzles, spelling bees, Who wants to be a millionaire?)
4	Applications	The teacher asked students to use applications such as dictionaries, recorders or podcasts in listening or speaking activities.
5	Social networks (Facebook or Twitter)	The teachers created a group on Facebook, asked students to share their clips or recordings, and exchange comments.
6	Search tools (Google or Wikipedia)	The teacher asked students to look for photo to illustrate for medical vocabulary or medical topics.
7	Web-based materials	The teachers asked students to access links to magazines or journals in the areas of Medicine, look for a relevant article and practise summarizing and presenting to the whole class.

The detailed descriptions showed that the teachers used digital technologies in teaching activities for different purposes. They aimed to enhance students' learning through various uses of digital equipment. These uses could be grouped into five categories suggested by Starkey (2011): accessing information, presenting information, processing or creating digital objects, gaming or the use of interactive programmes for learning and communicating or collaborating. Based the teachers' descriptions of their teaching activities, the digital age learning matrix was employed to analyse the learning aspects expected by the teachers when using digital technologies in teaching Medical English (Table 4).

First, the teachers designed slides to present the lessons and got students to use PowerPoint or Prezi for presenting information at the same time. In this activity, students needed to focus on preparing the presentation by combining what they had learnt and trying to understand thoroughly significant medical points they were going to talk about. Second, the teachers used video clips from Youtube, Tedtalk or VOA programme with the aim of getting students to access information and create a digital object. Students were expected to complete the tasks by finding connects between information, understanding medical concepts and making some evaluation of information. Students were required to create new products and share with others for feedback. Third, gaming activities were aimed at getting students to learn not only through playing games but also designing games by themselves. This integration of games into teaching activities encouraged different aspects of learning in students from doing to sharing new knowledge. Fourth, the teachers encouraged students to use applications on their mobile phones or tablets in accessing information to gain understanding of medical content. Fifth, students were also asked to use search tools and web-based materials to access different resources of subject matter and language practice which required them not only able to understand but also critique and evaluate carefully. Finally, the teachers wanted students to use social networks like Facebook or Twitter in accessing and presenting information, then communicating or collaborating with others to expand their

learning. These networks were helpful for students to share and exchange knowledge.

Table 4

*Teachers' Use of Digital Technologies in the Digital Age Learning Matrix*

Aspects of learning	Doing	Thinking about connections	Thinking about concepts	Critiquing and evaluating	Creating knowledge	Sharing knowledge
Explanation of aspects of learning:  Digital technology use:	Isolated information. Focus on completing a measurable task.	Connecting thinking. Simple connections made within a context. Compare and share.	Develop conceptual understanding of 'big ideas'	Evaluating and critiquing to explore the limitations and potential of information, sources or process.	Creativity - applying ideas, processes and/or experiences to develop a new reality.	Sharing the new knowledge through authentic context and gaining feedback to measure value.
Accessing information	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA		
	Applications	Applications	Applications			
						Social networks (Facebook or Twitter)
	Search tools (Google or Wikipedia)	Search tools (Google or Wikipedia)	Search tools (Google or Wikipedia)	Search tools (Google or Wikipedia)		
	Web-based materials	Web-based materials	Web-based materials	Web-based materials		
Presenting information	PowerPoint / Prezi	PowerPoint / Prezi	PowerPoint / Prezi			
						Social networks (Facebook or Twitter)
Processing or creating digital objects	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA	Video clips from Youtube, Tedtalk, VOA

Gaming or interactive programmes	Digital games	Digital games	Digital games	Digital games	Digital games	Digital games
Communicating or collaborating						Social networks (Facebook or Twitter)

### **Discussion**

Based the results of the study, it is evident that using digital technologies in language classrooms is not a simple task because its affordances and constraints need to be taken into consideration. First, the integration of digital technologies into teaching activities proved to be potential in EMP courses at the research site. The teachers had designed meaningful activities in which digital equipment was actively used by both teachers and students to achieve the objectives of the lessons. The teachers knew how to get students to use technology in enhancing their Medical English and English use in professional contexts. This result added further evidence for the benefits of using digital technologies in language classrooms established in previous studies. For instance, Ducate and Lomicka (2008) supported the use of digital technologies because they can improve students' reading skills upon their participation in a research-based project. Furthermore, using technologies can enhance learners' autonomy because they have more control of their own learning rather than restricting them to practice language skills (Lee, 2011). Second, digital technologies were aimed for varying uses among students, which could motivate students in getting ahead in their study to become independent learners. As Kessler (2009) suggested, using technology in language classrooms may create a safe and interactive environment where students were willing and able to work collaboratively and autonomously. The integration of technology in language curriculum has the capacity of bringing students into a learning community where they can have easy access to each other and further foster a sense of community and belonging through social interaction (Lee, 2011).

Moreover, the digital age learning matrix has shown the positive effects of the teaching activities integrated with digital technologies. Different learning aspects

took place in the activities. This showed that the intent of the teachers was appropriate for students to achieve the objectives of the lessons. Each activity required students to develop a range of skills and knowledge. Learning aspects could be seen ranging in different levels that guaranteed the effectiveness of teaching and learning activities. Although some positive effects were noted in this study, it does not mean that language teachers can simply incorporate digital age learning matrix into their classrooms and achieve lesson objectives. Starkey (2011) cautioned that teachers, even digitally capable, have to understand and apply relevant learning theories in the digital age into their practice, otherwise they cannot increase student participation in a digitally enhanced classroom.

Despite some potential benefits, digital technologies may present some challenges for language teachers. In developing countries, teachers may not be competent with using emerging technologies. A good example is the teachers' limited capability of using digital technology in this study. Lack of confidence in digital ability, time constraint and overwhelming content have reduced the teachers' opportunities to utilize technology in the teaching career. Some teachers only used digital technology as an aid-on tool but did not know how to employ it as a part of the teaching activities which could promote students' learning and autonomy. As Kuponiyi (2010) posited, teachers play multiple new roles in language classrooms that involves innovative technology-supported practices. When technology is integrated into daily language instruction, teachers have to be capable of incorporating it into their curriculum. It is important that they work closely with an instructional professional to improve their teaching quality.

## **Conclusion**

The integration of digital technologies into teaching and learning should be a focus in EMP education at the university. Teachers of EMP are expected to gain more training and practice in using digital technology in their teaching activities and students' learning process. The digital age learning matrix would be a useful tool for teachers to clarify the learning aspects they would like to focus their students on.

This tool can be used as a guidance for teachers to make plan of teaching and evaluate their students' learning.

The study still has some limitations as it only focused on teachers' perspectives. Further research is in need to look at students' perspectives. It would be interesting to find out if students' responses to the teaching activities are matched with teachers' intent. Detailed analysis of learning aspects should be conducted within the digital age learning matrix to clarify how effectively students use digital technologies in their learning. Characteristics of medical students and EMP courses should be considered at the same time.

## **Reference**

- Antić, Z. (2016). Teacher education in English for special purposes. *Acta Facultatis Medicae Naissensis*, 33(3), 211-215.
- Antic, Z., & Milosavljevic, N. (2016). Some suggestions for modelling a contemporary medical English course design based on need analysis. *Lingua*, 184, 69-78.
- Arani, J. A. (2015). A blended-learning setting in English for medical purposes course incorporating competencies. *International Journal of Advanced Corporate Learning*, 8(1), 12-15.
- Arani, J. A. (2016). Mobile educational SMSs as supplementary means to teach sentence paraphrasing in EMP course. *International Journal of Interactive Mobile Technologies (ijIM)*, 10(1), 45-51.
- Ducate, L. C., & Lomicka, L. L. (2008). Adventures in the blogosphere: From blog readers to blog writers. *Computer Assisted Language Learning*, 21(1), 9-28.
- Frinculescu, I. C., & Badea, O. (2013). Video Aided Teaching of English for Medical Purposes in Romanian Higher Education. *Studii si Cercetari Filologice&58; Seria Limbi Straine Aplicate*, 12(2013), 148-158.
- Husinec, S. (2011). The Importance of Content Knowledge for Successful Legal Language Acquisition. *Research in Language*, 9(1), 125-133.
- Ja, A. (2013). English for Medical Purposes. *Modern English teacher.*, 22(4), 46.

- Kessler, G. (2009). Student-initiated attention to form in wiki-based collaborative writing. *Language Learning & Technology, 13(1)*, 79-95.
- Kuponiyi, S. O. (2010). The challenging roles of the teacher and the student in the technology-supported language classroom. *Knowledge Review, 20(1)*, 115-120.
- Lee, L. (2011). Blogging: Promoting learner autonomy and intercultural competence through study abroad. *Language Learning & Technology, 15(3)*, 87-109.
- Starkey, L. (2011). Evaluating learning in the 21st century: a digital age learning matrix. *Technology, pedagogy and education, 20(1)*, 19-39.
- Svendsen, C., & Krebs, K. (1984). Identifying English for the job: Examples from health care occupations. *The ESP Journal, 3(2)*, 153-164.
- Zechia, D. C. (2017). Professional communication skills and ESP teaching in the digital world. *Scientific Bulletin " Mircea cel Batran " Naval Academy, 20(1)*, 559.