

The Potential of ICT Tools for Achieving Better Achievement in Learning English for Specific Purposes in the Context of Hybrid Learning

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Abstract

Educational technology as an interdisciplinary field whose subject of study is the effective use of modern technology in education is very significant when we talk about changes within the educational system. Bearing in mind that educational technology includes both means and procedures used in the teaching and learning process, the goal of its application is to increase the efficiency of the teaching process itself, as well as student achievement in learning. The paper is based on the assumption that the application of ICT tools in the teaching ESP has the potential to contribute to the success of students in mastering the desired material.

The research subject of this paper is the examination of the impact of the application of information and communication technologies in teaching on the learning ESP vocabulary at the academic level in the context of hybrid learning. With the aim of examining the mentioned impact, a survey was conducted on a convenient sample of 50 first-year students of the Faculty of Business Studies and Law and the Faculty of Information Technology and Engineering, UNION University "Nikola Tesla" in Belgrade. The obtained results are contrary to our expectations that teaching organized with the help of ICT will lead to a significant progress of the experimental group compared to the control group on the knowledge retest and indicate that although teaching generally leads to progress in the achievement of students of both groups, the use of ICT in teaching, in the way it was performed in this research makes no difference in terms of that progress.

Keywords: students' achievement; ICT tools; hybrid learning; vocabulary learning; English for specific purpose.

JEL Classification: I23; O33; O36.

Introduction

We are witnessing the daily expansion of scientific knowledge, as well as great technological progress. In parallel, new technologies in the field of education are being developed and applied. Sangrà and González-Sanmamed (2010) and Perić (2019) state that information and communication technologies are a mechanism that can help us review and redesign the educational system and process at all levels, as well as lead for a good quality education system in general.

Defining the term information and communication technology (ICT) is not a simple task since there are many definitions of this term. In this paper, the term information and communication technology will imply all those ICT tools that are available to teachers and that teachers use with the aim of improving and transforming the teaching process in the form of better student achievement, bearing in mind the definition provided by (Danilović, 2012), who states that ICT is "a symbiosis of technology, methods and tools that together as a whole enable the transmission

and use of educational content in accordance with the needs of the actors of the educational process, their intellectual capacities and the goals of the teaching process".

Since there is no single method that can meet the requirements of modern teaching, it is desirable and certainly necessary to combine traditional and modern teaching methods. We can say that the hybrid approach to teaching should combine the best aspects of the traditional and online approach to learning with the aim of improving the teaching process in the form of applying a model of student-oriented teaching and active learning. Although active learning methods can be realized without the use of ICT, new technologies determine and modify the application of traditional teaching methods, because viewed from the aspect of the application of educational technologies they rely on the use of one or more media.

One of the objectives of the ICT application is to increase the level of students' achievement. Námesztovszki (2013) believes that the motivation and efficiency of knowledge acquisition increase if new media such as hypertexts, hypermedia, multimedia and educational software are applied in a classic educational environment. This is supported by (Bonk, 2006), who state that simulations related to real-life situations can provoke engaged learning, and thus success in reaching a certain level of knowledge and developing students' skills.

1. English for Specific Purposes Vocabulary

English for specific purposes is not a special language, but a variety of language that is used within a certain professional field, and in addition to specific terminology, it differs from the general language by the frequency of use of certain linguistic means, the conventions of written and oral communication in typical contexts and speech situations (Dmitrenko, 2017). Researchers who have been involved in research regarding teaching ESP point out that the difference between the general language and the language for specific purposes lies in a different approach to teaching, which is largely determined by the reasons why an individual decides to learn a language, the role of the teacher in the teaching process, as well as the types of materials used are used during that process (Alexander et al., 2008; Basturkmen, 2003, 2006, 2010; Dudley-Evans and St. John, 1998, 1991; Hutchinson and Waters 1987; Strevens, 1988).

Teaching language for specific purposes has different goals than those that are characteristic of a general language, and "the curriculum and program of the professional language is formed on the basis of the participants' needs analysis with the aim of providing them with the knowledge and skills necessary for successful communication, *i.e.* language behaviour in typical situations and a certain discipline, *i.e.* profession, which inevitably affects the type of student motivation" (Đurović and Silaški, 2014).

When comparing language for specific purposes and general English, (Igrutinović, 2015) points out that although professional English has its own peculiarities, there are also numerous common features and similarities between them, so there is an overlap in the field of common vocabulary, terms and functions, structures, and method.

Language of the profession, language in the function of the profession, professional language, language for specific purposes, etc., are just some of the terms that we encounter in the literature dealing with this language field, whether in English or another language. Conceptual inconsistency is the result of the relatively short "life-span" of this specific area, but also the different understanding of numerous authors of what this linguistic area represents, which consequently makes it difficult to define it. However, the definition of the International Organization for Standardization - ISO (International Organization for Standardization) is considered to be the generally accepted definition of the language of the profession, which defines the language of the profession as "a linguistic subsystem that, using terminological and other linguistic means, tends towards unambiguous communication in professional domains and whose basic property is directedness towards the purposeful and

specific use of linguistic means" (Đorović and Mirić, 2011, according to Đukić, 2016). When it comes to the English language, the name English for Specific Purposes (ESP) is in use. Ignjačević (2008) states that the name language for specific purposes appears for the first time in the textbook English for Airmen: An English Course for Air Personnel (Jordan, 2000), where the name English for special purposes is mentioned, which was later immediately after the Second World War changed to the term English for specific purposes. In our work, for practical reasons, we will use the phrase English language of the profession, although perhaps the most appropriate and precise would be to use the name English language in the function of the profession (Bugarski, 1997).

Vocabulary acquisition is an extremely important segment of foreign language acquisition, both general and professional language. Often, students are motivated to learn words in order to achieve better communication in a foreign language and enrich their vocabulary.

During the long development of foreign language teaching methodology, different methods and approaches to foreign language teaching were developed and saw the importance of vocabulary in language learning in different ways. Certain approaches and methods emphasized the importance of grammar in the foreground, that is, they were based on it, while the vocabulary was quite limited in that it was used with the aim of clarifying grammatical structures. In the practice of language teaching, especially from the perspective of the communicative approach, vocabulary is of key importance when learning a foreign language, as it has a greater communicative potential than grammar.

Wilkins (1974) argued that few things can be expressed without knowledge of grammar, but that nothing can be expressed without knowledge of vocabulary. According to the communicative approach in methodical practice, it is important to give students the opportunity to use the English language for communicative purposes, and even more strictly speaking it should be insisted on language acquisition through the communication process itself, *i.e.*, through interaction in English (Nunan, 1991). In order to achieve basic communication, students at lower levels of knowledge aim to learn as many words as possible, while those at higher levels of knowledge strive to understand finesse in meaning and more precise expression.

2. Research Background

Research that dealt with the impact of information and communication technologies on the vocabulary acquisition generally showed that this impact is positive and very significant.

Vahdany and Majidi (2015) conducted a study with a group of Iranian students that aimed to investigate the effects of teaching vocabulary with the application of information and communication technologies on vocabulary learning. Seventy-six first-grade students of Bentolhuda High School in Tehran, who were divided into two groups - experimental and control participated in the study. There were thirty-seven students in the experimental group who studied about eighty new words in English for ninety minutes a week with the use of ICT. The used ICT tools were: CAVI software, which is a special type of Andisheh educational software developed by the Ministry of Education and which consists of two CD-ROMs, an electronic dictionary and tests, as well as educational games, an interactive whiteboard, a digital projector and the Internet. The control group consisted of thirty-nine students who were learning new words and using traditional methods in the same period of time. The obtained results indicate that students who were exposed to information and communication technologies during their studies and who used ICT tools during their studies learned a significantly greater number of words in a shorter time than those in the control group. They also showed significantly longer memorization of new terms compared to students from the control group.

Kiliçkaya and Krajka (2010) also found that students remember new words better if they learn them online. The aim of this study was to compare the effectiveness of teaching vocabulary within two different learning

environments - online learning and a traditional environment. Students in the control group (20) practiced new vocabulary from ten reading passages using notebooks and word cards, while students in the experimental group (18) practiced identical vocabulary online with the help of an ICT tool representing a vocabulary management system - WordChamp. The study showed that the students in the experimental group outperformed the students in the control group, and that the students in the experimental group remembered the words better as they learned online, which was proven by a follow-up post-test given 3 months later.

Based on the research they conducted, (Murnani and Salehi, 2015) concluded that the use of an electronic dictionary allows students to achieve much better results in learning collocations than printed dictionaries. The main purpose of their study was to investigate the effectiveness of using an electronic dictionary in learning collocations. One hundred students who were divided into two groups, experimental and control, participated in the research. Students of the experimental group learned collocations during class with the help of an electronic dictionary of collocations, while the control group listened to lectures based on traditional teaching methods. The results of the study showed that the experimental group that used the electronic dictionary achieved a significantly better result in learning collocations than the control group, and therefore the authors conclude that the use of an electronic dictionary for learning collocations could create favourable conditions for the effective learning of collocations by students learning English as a foreign language.

Another significant study was conducted by (Ahmad 2016) whose main focus was on determining the extent to which modern ICT tools influence the increase of competences and achievements, especially in learning vocabulary and grammar as well as developing listening and speaking skills. One hundred English language students from King Abdulaziz University participated in the experimental study and were divided into two groups - traditional (control) group and TALL (experimental) group. The respondents were between the ages of 18 and 25. Students of the control group attended classes in the context of traditional classes without the use of technology, while students of the experimental group attended classes that were supported by technology (CD ROM, online dictionaries, websites for grammar practice, etc.). The results of this study reveal that ICT helps students improve their listening and speaking skills, acquire more accurate pronunciation as well as a greater number of new words, and achieve significant grammatical accuracy. For all these reasons, they point to a significant gap between the achievements of online students and students in a traditional learning environment regarding pronunciation, grammar use and vocabulary acquisition. The author concludes that listening to native speakers on television, radio, chat forums and the Internet in general is of great importance in achieving students' pronunciation gains, and that students who learned vocabulary online achieved better results than students who learned vocabulary studied in traditionally organised classes. Moreover, not only did they learn new words, but the students of the experimental group also became competent enough to use new vocabulary in everyday speech. Students in the experimental group explored various websites where online grammar teachers explained various aspects of grammar on YouTube, which indicates that they made good use of the potential of e-learning and mastered grammar more effectively.

Hodžić-Jejna (2016) examined the level and significance of the influence that verbal-visual materials have on the acquisition of English vocabulary as a foreign language. The starting hypothesis of this paper is that the acquisition of English vocabulary as a foreign language is more successful with the application of verbal-visual materials from the means of visual communication. Seventy-two students of the English language and literature at the University of Novi Pazar participated in the research conducted by the author. An experimental group of students (41 students) attended classes in which they were intensively exposed to vocabulary with means of visual communication (posters, billboards, newspaper and advertising headlines, websites in English, etc.) where the teaching material was most often presented through PowerPoint presentations. The control group (31 students)

studied the teaching material without the use of verbal-visual material in the classic way, with the visual segment removed from the printed material. The students' achievement was tested in the form of a final knowledge test after attending classes and preparatory classes. Also, the experimental group was subjected to writing a report after each completed vocabulary lesson, while the control group gave answers about attitudes towards the teaching process through a survey and interview. The instruments used in this research are a questionnaire for students, a knowledge test, written student reports and interviews with students. The results of the research indicate that the influence of verbal-visual material from the means of visual communication on the acquisition of the vocabulary of English as a foreign language is generally positive. Interestingly, it was observed that this influence is statistically significant when it comes to acquiring the meaning and spelling rules, but this is not the case when it comes to acquiring word forms or less frequent words. Also, it was determined that, in addition to the fact that students' opinions and attitudes about the importance of verbal-visual material in classes and about the conducted experimental teaching are positive, students rarely use memory strategies that involve the use of verbal-visual material.

Stojković Trajković (2017) dealt with the analysis of improving professional language learning using hybrid teaching and a learning management system using the Edmodo platform as an example. The aim of this research was to determine how much the mastery of specific business language vocabulary can be improved by using a learning management system, more precisely the Edmodo platform, as well as whether this improvement is due to hybrid teaching. Eighty students of the Business School of Vocational Studies from Leskovac participated in the research. Students were divided into two equal groups - experimental and control. The experimental group attended classes in the context of hybrid classes in which the application for vocabulary acquisition within the Edmodo platform was applied. The control group attended traditional classes without the use of modern technology. Student achievement was measured using a vocabulary recognition scale, vocabulary recognition tasks, vocabulary recognition tasks with term placement, and a multiple-choice test. The results obtained through the mentioned tests indicate that there is a statistically significant difference in the final measurement between the subjects of the two groups, which indicates that the hybrid approach gives better results compared to the traditional one. Based on the obtained results, the author concludes that learning ESP can be improved by applying a hybrid approach, *i.e.* Edmodo platform. The research also confirmed that the subjects of both the experimental and control groups have a very positive attitude towards the use of ICT in teaching, as well as that the subjects of the experimental group believe that the hybrid approach in teaching can increase their efficiency in learning, the degree of autonomy and critical thinking, as well as motivations for learning.

3. Research on the Effectiveness of the Use of ICT Tools for Learning English for Specific Purposes Vocabulary

3.1. Research Methodology

The starting point of this work was the belief that the application of ICT tools in the teaching ESP has the potential to contribute to the students' success in mastering ESP vocabulary, *i.e.*, that the acquisition of ESP vocabulary within the teaching that is supported by the application of information and communication technologies (ICT tools) is more effective compared to acquisition with the traditional type of teaching. In other words, it was assumed that there will be a statistically significant difference in the achievement on vocabulary tests between the experimental and control groups after attending classes with the application of ICT (experimental) and traditional classes (control).

The student sample consisted of fifty first-year students of the Faculty of Business Studies and Law (departments of management, business economics, law and security) and the Faculty of Information Technologies

and Engineering (departments of engineering management and information systems), UNION University "Nikola Tesla" in Belgrade.

The groups of students with whom the research was conducted had been formed in advance in accordance with the organizational plan of the faculty, and as a result it was not possible to form groups by random selection of respondents, that is, by randomization. For the purposes of this research, two existing groups of students attending ESP courses were taken, and they were treated as experimental and control groups in the research. As for the groups themselves, there was no reason to expect systematic differences between them. There were 25 subjects in each group. The groups were approximately equal in terms of gender, age, work engagement and length of the English language learning.

A quasi-experimental method with parallel groups (experimental and control) was used in the research. During one semester (24 lessons lasting 60 minutes each), the experimental group was exposed to teaching ESP organized with the help of ICT tools, and the control group to traditional teaching ESP. At the end of the semester, changes in the achievement of the vocational vocabulary tests were registered when compared to the beginning of the semester.

The research was carried out at the Faculty of Business Studies and Law and the Faculty of Information Technology and Engineering, UNION University "Nikola Tesla" in Belgrade, with first-year students who study ESP as part of the compulsory course English 1. During the entire duration of the course, a detailed record of student attendance at classes was kept. Since there was no large number of absences of respondents within the groups, it can be concluded that the groups were equal in terms of the number of absences, that is, attendance.

At the beginning of the research, the students of the experimental and control groups took an initial test, and the research ended by re-testing the students with the final test.

The purpose of the initial test, which examines the ESP vocabulary knowledge, is to determine the real level of students' existing knowledge before the very beginning of classes. The initial test designed for the purposes of this research was given in the form multiple choice questions. The test had 30 questions that had been purposefully selected in accordance with the language material covered in the course. Students had 30 minutes to complete this test. When scoring the answers, each correct answer carried one point, while the incorrect answers of the respondents were not evaluated with negative points.

At the end of the semester, both groups of students took the test again, which examined the knowledge of ESP vocabulary, but in this case, it was the final test. The purpose of the final test, that is, the achievement test or retest, is to determine the extent to which the students have mastered the teaching units that were covered during the lesson and whether there is a difference in achievement between the experimental and control groups. The final test that the students took was identical in form to the initial test, i.e., it is again a test with multiple choice questions. The final test also had 30 questions that were based on material covered during the course. Again, each question consisted of three distractors and only one correct answer to be circled. Testing also lasted 30 minutes. The scoring of the final test was carried out in an identical way, that is, the total number of correct answers was taken into account.

The testing of the students of the experimental group was carried out using tablets and testing software, while the students of the control group did the tests on paper.

3.2. Research Results

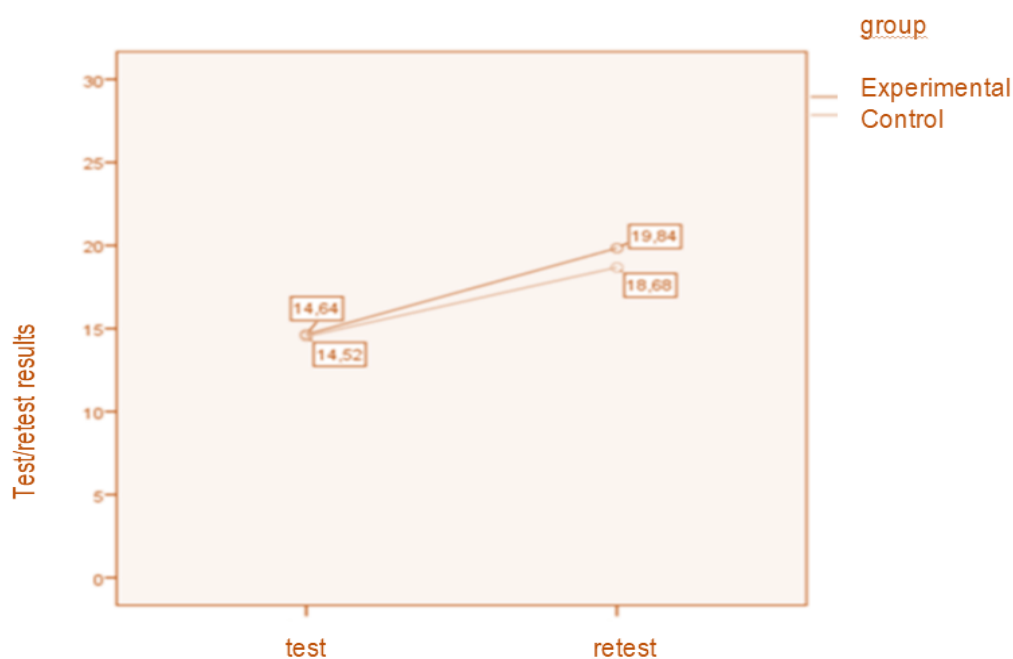
In order to determine the effects which, the application of ICT tools in teaching has on the achievement of students in the experimental group, an Analysis of Variance with one repeated and one unrepeated factor (Mixed design ANOVA) was performed. The repeated factor is the time of giving the test (test/retest), while the unrepeated factor is the type of teaching (using ICT/traditional). The results of the analysis show that there is no significant main effect of group, i.e., that if the test time is ignored, there is no statistically significant difference between the experimental and control groups in terms of achievement on the vocabulary test. A significant effect of the time factor was obtained, $F(1, 48)=32.03$, $p<0.001$, $\eta^2 = 0.40$, which indicates that the respondents improved their knowledge of ESP vocabulary at the end of the semester compared to the testing at the beginning of the semester. The interaction between group membership and time is not significant. This means that the progress in knowledge regarding ESP vocabulary did not differ in the experimental and control groups.

These results contradict our expectations that teaching organized with the help of ICT will lead to greater progress of the experimental group on the knowledge retest. It can be concluded that, although teaching in general leads to progress in student achievement, the presence of ICT in teaching, as performed in this research, does not make a difference in terms of this progress.

The existence of a statistically significant difference between the experimental and control groups in achievements on the test and retest of ESP vocabulary was tested. The hypothesis was not confirmed, i.e., it was determined that there is no statistically significant difference between the experimental and control groups on the vocational language vocabulary retest at the end of the semester. Also, the interaction between belonging to the experimental or control group and success on the test or retest of knowledge was not obtained. The obtained results indicate that both groups of respondents made significant progress compared to the beginning of the semester, regardless of the type of teaching in which they were involved. Progress in knowledge on the final measurement of achievement, compared to the initial test, is expected if we take into account that all respondents attended the English language classes during the semester, but also that the respondents of both groups were exposed to the same forms of exercise, while the way of presentation of the teaching content and practice of the material differed only in the form of means that were used during that process.

Therefore, we can conclude that both methods were effective and gave positive results when it comes to student achievement, that is, their progress. These results contradict our expectations that teaching organized with the help of ICT will lead to better success of the experimental group on the retest of vocabulary knowledge, as well as the results reached by Ahmad (2016), Khazaei and Dastjerdi (2011), Kiliçkaya and Krajka (2010), Loucky (2003), Mahmoudi et al. (2012), Murnani and Salehi (2015), Utami (2012), Vahdany and Majidi (2015) Yip and Kwan (2006). These authors found in their research that the application of information and communication technologies, i.e., ICT tools, has a positive effect on the acquisition of vocabulary in the sense that vocabulary learning is simpler, faster and more efficient.

Figure 1. Arithmetic means of the experimental and control groups on the knowledge test and retest



Source: Original author's work

Based on the obtained results, the researchers concluded that there is a difference in the achievement of English vocabulary learning in favour of teaching that is supported by information and communication technologies. Also, the positive influence of information and communication technologies was proven by Zhang (2022), Herron et al. (2006) when it comes to mastering the skill of listening and learning grammar, as well as Ljubojević (2016), Sullivan and Pratt (1996) when it comes to writing skills. In their study, (Lee and Chong, 2007) determined that students improved their vocabulary knowledge, as well as their listening skills, while this was not the case with the improvement of grammar knowledge and speaking skills where direct interaction with the teacher and other students was more useful. This leads us to the conclusion that the application of ICT tools is not necessarily a better approach in teaching.

Accordingly, the results obtained in our research fully correspond to those obtained by Adair-Hauk et al., (2000), Aist, (2002), Alshwiah (2010), Bagheri et al. (2012), Getkham (2004), Smith (2013) Tosun (2015) on a similar sample and in a similar time frame. These researchers also proved that there is no difference in achievement between students who were exposed to learning/teaching in the context of hybrid learning and traditional teaching. This indicate us that the application of information and communication technologies *per se*, that is, the use of ICT tools in teaching as another means, *i.e.*, available resource has no influence on the learning/teaching process.

Accordingly, we can conclude that courses that apply hybrid teaching in this way do not have the ability to transform the teaching process and do not cause a significant change in student achievement, that is, that the mere availability of modern technology in the classroom is not necessarily a prerequisite for better student achievement. This is supported by the division of technology into "teaching technology", which has the ability to influence student achievement because it helps teachers to create teaching methods and learning environments, and "delivery technology", which does not affect the learning process, but is a prerequisite for efficient and timely adapted approach to the mentioned methods and environment for learning (Clark, 1994).

Conclusion

Information and communication technologies in language teaching have the opportunity to replace their mostly passive role in the educational system with the role of an active tool that has the power to bring changes to the process of language learning and teaching. In order to achieve this and to achieve the goals of language learning, it is necessary to take a better look at the nature of learning in the modern environment. In this way, it would be possible to answer why there is no progress in how we teach, despite what would be possible with new technology (Laurillard, 2002). The answer to this question largely lies in the fact that the key question is not what modern technology can do, but how it can change the learning environment.

According to one of the influencing paradigms in the understanding of the learning process, the socio-constructivist one, the nature of social interactions shapes learning and therefore information and communication technologies change the learning environment with their characteristics and have the ability to transform the learning process. Their application changes the very nature of interactions in the teaching process, changes both the context and the learning situation. As Pešikan (2016) states, under the influence of information and communication technologies, social interactions can multiply and intensify, however, this type of interaction takes place in a reduced social context. As a result of such changes in interaction, there are also changes in the entire system, *i.e.*, technology and the role of teachers and students as participants in that system. Observing the learning process as a social process, *i.e.*, a process that is the result of social interactions, puts the teacher in a different role: not as a transmitter of information, but as a mentor who has the task of helping and providing permanent support and assistance to students during learning. The teacher's task is to monitor student progress and encourage it, assess student needs and include them in the planning of teaching activities, providing them with greater autonomy in learning, refer students to adequate learning resources, as well as encourage and encourage student initiative. This is precisely where the potential of using ICT in teaching lies.

Today's generations of students grow up in a social environment that implies the constant presence of artificial intelligence in various forms, and these electronic generations perceive the environment for learning, and even learning process itself, in a way that is largely different from the classic, traditional didactic environment, where they also express the need for significant autonomy in learning.

Therefore, the didactic triangle that includes the position and role of teachers, students and teaching content is transformed into a didactic quadrilateral by joining new educational technology (Jovanović, 2012). Accordingly, it is necessary that the interaction that takes place in this kind of teaching process should be of a multidimensional character, that is, that it should take place in the relationship student - teaching content, teacher - teaching content, student - teacher and student - student. In this way, it is possible to ensure the full engagement of all factors of the teaching process. This approach is conditioned by a new concept of learning that implies an active and interactive teaching process, in which student activity is expected when planning the content and learning methods, as well as designing the learning environment and mastering the teaching material, as well as other subjects of individual student interest. In the end, we can agree with Bush (1997) who said "Good instruction is good instruction, regardless of the delivery system".

Credit Authorship Contribution Statement

The authors confirm contribution to the paper as follows: D.B. V. carried out the experiment, wrote the manuscript with support from S. B. who performed the analytic calculations and performed the numerical simulations. All authors reviewed the results and approved the final version of the manuscript.

Acknowledgments

The authors thank all the students who participated in this research.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Cite this article

Doloris Bešić-Vukašinović, D. and Bešić, S. (2023). The Potential of ICT Tools for Achieving Better Achievement in Learning English for Specific Purposes in the Context of Hybrid Learning, *Journal of Research, Innovation and Technologies*, Volume II, 1(3), 57-69. [https://doi.org/10.57017/jorit.v2.1\(3\).05](https://doi.org/10.57017/jorit.v2.1(3).05)

Article's history:

Received 31st of March, 2022; Revised 27th of April, 2022

Accepted for publication 20th of May, 2023;

Published 30th of June, 2023.

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