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The ESP Technology-Supported Learning Environment

Slađana Živković

College of Applied Technical Sciences & Faculty of Civil Engineering and Architecture, University of Niš, Serbia

Email: sladjanazivkovic.ni@gmail.com

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Abstract

This paper discusses the implementation of computers and the Internet technology in the learning environment within the ESP context. Designing and implementing digital technology in the teaching and learning process is one of the most demanding tasks. The use of technologies in the ESP classroom enables students to be active and collaborative, which contributes to improving learning achievements and increasing learning outcomes. The ultimate goal is to improve the quality of learning experiences, as well as to produce a highly social and authentic, supportive and productive learning environment that allows students the construction of relevant knowledge. The study examines students' perceptions towards the implementation of digital technologies in the classroom. The results of the research show that students have very positive attitudes towards computers and the Internet technologies and their integration in the ESP learning environment.

Keywords: ESP, modern technology, learning environment, pilot study

Introduction

Designing and implementing digital technology in the teaching and learning process is one of the most demanding tasks in the 21st century. So, the key challenge facing ESP teachers is to refocus their teaching strategies and adopt new approaches, and to effectively and efficiently incorporate technologies into the language learning process. To be prepared for the new role in the 21st century, the teacher needs to

maximize the potential of digital learning by using it effectively, efficiently and creatively, and to provide models and opportunities for practical work. It is essential to promote information literacy, support collaborative working practices, in order to prepare students for the 21st century workforce.

The ultimate goal is to improve the quality of learning experiences, as well as to produce a highly social and authentic, supportive and productive learning environment that allows students the construction of relevant knowledge.

It has become clear that the 21st century classroom needs students to face real-world problems that engage them in higher-order thinking skills – creativity, innovation, communication, collaboration, critical thinking and problem solving (Jonassen & Reeves, 1996). With these skills students will become creators of knowledge, competent and productive communicators, successful collaborators, independent and inventive thinkers, problem solvers and career experts.

ESP teaching and learning

To meet the challenges, schools and universities need to be transformed in ways that will enable students to be creative and innovative, to think critically and analytically, and to be able to solve real-world problems. Fostering global awareness, the emphasis is on the need to prepare students for their future careers (Živković, 2014) in order to become competitive and productive members of the 21st century highly fluid society and competitive market. Thus, students would be able to learn and work collaboratively in positive working environments of openness, trust, mutual respect and tolerance. In that way, students take full responsibility for their learning and knowledge construction in the context of contemporary life.

As for the research on 21st century skills, it is of utmost importance to creating a computer-mediated learning environment that encourages success. Embedding technology support (videodisks, CD-ROMs, DVD) in the effective ESP learning environment increases the potential to support insights into an innovative teaching and learning approach based on communication, interaction and collaboration (Vygotsky, 1962).

ESP is concentrated on communication skills as the key factor in the development of knowledge. In other words, ESP focuses on "the specific linguistic knowledge and communication skills in order to accomplish specific purposes" (Orr, 1998). More specifically, ESP puts focus on preparing students (future specialists) to communicate effectively in the future work environment they will enter. Therefore, teaching/learning ESP is specialty-oriented which means it refers to the specific needs of students (Hutchinson and Waters, 1987) who learn a foreign language for use in their professional fields.

For effective ESP learning, construction of knowledge happens in a social context (such as a classroom, language laboratories), "where students join in manipulating

materials and, thus, create a community of learners who built their knowledge together" (Dewey, 1966). Progressive education (Dewey's terminology) highlights the social aspect of learning and interaction with peers. ESP concentrates on language in context with authentic tasks, which are related to students' future professional needs. Authentic tasks demand student interaction and language learning in real life situations. They motivate students to develop competencies that will be necessary to achieve the learning goal.

In computer-supported collaborative learning, students are encouraged to communicate with their peers and be prepared for *real-world problem-solving situations.*

To summarize, from the above mentioned, it is our belief that there is no single methodology for ESP teaching and learning. Furthermore, constructivists combine methodologies in order to produce a successful and an effective model for developing productive proficiency and carry out the objectives of a course. ESP courses concentrate on empowering students to use English to communicate effectively with professionals, and preparing them for lifelong learning.

The use of modern technology

ESP courses aim at helping students to become capable of using a language in future professional settings. This can be realized by means of a content-based curriculum, where students learn a language by concentrating on the specialized subject matter and using authentic materials.

The Internet is an excellent source for providing authentic materials in accordance with students' needs (Živković, 2011, 2013). "Internet-generated materials can be flexibly arrayed to engage students with topics and cognitive tasks relevant to students' professional futures" (Kimball, 1998). If used appropriately, this technology could add relevance and meaning to ESP learning because it has the potential to increase students' motivation for learning.

So, computers, together with the Internet, are an example of digital mediating technology whose role in education should not be viewed as an add-on, but rather should be viewed as an instructional tool for providing a richer and more exciting learning environment (Duffy & Cunningham, 1996).

"This technology (such as the computer-Internet combination) allows learners to do multiple language tasks, simultaneously integrating all the basic language skills--reading, writing, listening, and speaking. When used, it is an invaluable asset in the arsenal of language teaching and learning tools. Therefore, we must open the minds of the educators and motivate the learners by breaking down the walls of technical bias, unlocking the doors, and allowing the spider to cast her electronic World Wide Web of English around our students in and out of the classroom" (Wilson, 2004).

Accordingly, the use of information and communication technology (ICT) in ESP learning is a current challenge (Živković, 2011) to rethink a number of educational issues, such as students' autonomy, motivation, and creativity, as well as the enhancement of cognitive power. As Perkins (1991) observes, it is necessary to activate learners and to support the construction of meaningful new knowledge on the basis of the existing cognitive structures. Technologies are most successful when they are used to engage students in meaningful, relevant and authentic activities with open-ended software and the Internet (Jonassen, 1994, 2000). 'Mindtools' (Jonassen introduced this term) promote independent and meaningful learning, support interactive, collaborative, and student-centered classrooms, and engage students in creative and critical thinking while constructing new knowledge.

From the aforementioned, it is clear that constructivist pedagogical principles coupled with appropriate technology integration show the potential for major improvements in learning practices. Together they provide the opportunity to make and remake the concept of ESP learning, and have brought new possibilities for learning. In other words, they can allow ESP students to learn to their fullest potential.

A digital learning environment

An emerging trend in ESP education is to create such a learning environment where students' knowledge construction can be facilitated. Such an environment is one in which students are challenged without being frustrated, and in which they are focused on intentional learning (Jonassen, 1994). The environment creates engaging and content-relevant experiences by utilizing modern technologies and resources to support unique learning goals and knowledge construction (Young, 2003).

Wilson (1995) defines a constructivist learning environment as "a place where learners may work together and support each other as they use a variety of tools and information resources in their pursuit of learning goals and problem-solving activities". It is the environment that allows student-oriented activities to take place in order to develop problem-solving, critical-thinking and creative skills. In the learning environment "students join in manipulating materials and, thus, create a community of learners who built their knowledge together" (Dewey, 1966).

When we speak of modern ESP constructivist learning environments, it is worth mentioning that they are technology-based situations in which students are engaged in deep and meaningful learning as an important goal for the success in the 21st century.

"The richness of the technology permits us to provide a richer and more exciting learning environment…our concern is the new understandings and new capabilities that are possible through the use of technology" (Duffy & Cunningham, 1996). In the constructivist environment students are actively involved in perceiving, analysing and interpreting the world and reflecting on their interpretations.

The Internet is regarded as a pedagogical device to develop language teaching and the learning process (Lee, 2000). It can enable constructivist innovations in the classroom, thus contributing to the realization of meaningful, authentic, active, interactive and problem-based learning. Students search solutions to real world problems based on a technology framework, which leads to critical and analytical thinking.

Methodology

This is a pilot study that has examined how students perceive the implementation of modern technologies in the ESP learning environment.

For the purpose of this study a questionnaire method on students' attitudes (opinions and reactions) towards the ESP technology-supported learning environment has been developed. The questionnaire has been divided into the following areas: motivation, creativity and innovation, autonomy, communication, increased understanding, acquired skills, teamwork and collaboration, the use of ICT and critical thinking engagement.

Data collection

The investigation was performed at the Faculty of Civil Engineering and Architecture in Niš, based on the sample of 145 undergraduate students. Data collection was done in the spring semester, May, 2015. Data analysis was carried out through qualitative analysis technique. It has produced insightful results into students' perceptions of the ESP learning environment as technology oriented.

Results

The fact is that students learn more effectively when they are actively engaged in classroom activities, through discussions, interaction with peers and teachers, question-driven inquries, analyzing information and critically evaluate. Thus, equipping students with these skills is required for living and working in the 21st century.

The results have shown that students have very positive attitudes towards computers and the Internet and their use in the learning environment. From the responses from the survey, open-ended questions and the interviews, students have positive perceptions during learning in technology-rich environment may be only a temporary effect.

In the light of the ideas we have discussed, we will now present how students perceive a technology model in the ESP course.

Motivation

- Students are enthusiastic about learning in a digital classroom.
- They are motivated to successfully finish the course.

- They are highly interested in activities on those classes.
- They are encouraged by their teacher to activate and keep on a task.
- Students are allowed to choose the type of assignment they do.
- Thus, they are given a sense of control that motivate them to do more.
- They have a chance to come out with their own ideas.
- They take an active role in forming new understandings.

Creativity and innovation

- Students are given the chance to promote originality and inventiveness.
- They are aware of the fact that those skills are necessary in their future careers. In fact, they enable them to meet with with future challenges and market competition.
- They are allowed to explore different perspectives.
- They are stimulated to find innovative solutions for existing problems.
- They can use different idea creation techniques (such as brainstorming).
- They can demonstrate different ways of looking at problems.
- They are stimulated with new ideas for the development in organizational contexts.
- They are aware of the fact that they need to be open and responsive to new perspectives.

Autonomy

- Students are given autonomy in the classroom. In other words, they are active in their own learning process.
- Students are given opportunities to choose the way the material will be demonstrated.
- They are totally responsible for all decisions concerned with their learning.
- They are able to participate and take control of their own learning.
- Autonomy-supportive practices allow students to explore ideas and use their unique ways of problem solving. Thus, they are independent problem solvers and debate ideas freely.

Communication skills

- Students find the importance of developing successful communication.
- ESP classes prepare them to communicate effectively.
- Communication makes their learning easier. It increases opportunities for expanded learning.
- Being able to *communicate* effectively is the challenge of the current *global job market.*
- Communicating and thus connecting with colleagues (and later with business partners) is an essential skill in career development.
- They are encouraged to communicate through classroom discussions.
- Their understanding on the subject matter has been increased.

- They enhance their professional knowledge.
- Their understanding towards using computers and the Internet in the ESP class is improved.
- It is a new experience to use a computer and the Internet in the classroom.
- The knowledge acquired in the ESP course is strongly connected with their speciality.
- They are capable of applying their knowledge in more effective manner.
- Teamwork and collaborative learning
- It is a challenge to learn language in a collaborative learning setting.
- They work together to accomplish shared goals.
- Students have the opportunity to practice sharing their experiences with their colleagues.
- They learn to function in a team environment.
- Within cooperative activities individuals seek outcomes that are beneficial to themselves and beneficial to all other group members.
- Students work together to maximize their own and each others' learning
- They work together to search for solution, and thus, to accomplish shared goals.
- They can solve problems together with their colleagues.
- In teamwork they are able to organize their work effectively.
- They can share their ideas and discuss in the class.
- In computer-supported collaborative learning, students are encouraged to communicate with their peers and be prepared for *real-world problem-solving situations.*

The use of ICT

- Modern technology is the best way to acquire and create new knowledge.
- Modern technology activates constructivist innovations.
- Technology contributes to the realization of active learning.
- The Internet is an excellent source for providing authentic materials in accordance with students' needs.
- Internet-generated materials can be flexibly arrayed to engage students with topics and cognitive tasks relevant to students' professional futures.
- Learning technology is used to foster autonomous and collaborative learning.
- It encourages students to take responsibility and control over their learning process.
- They are able to develop some applications.
- They are capable to develop presentation skills.
- Technology enhances the cognitive power of students.

Critical thinking engagement

- Students are encouraged to actively engage in critical thinking.

- Classroom discussions can be enhanced with the use of questions which promotes thinking.
- They acquired ability to think rationally and openmindedly about how to solve a problem.
- They can actively and skillfully conceptualize and analyze information to reach a conclusion.
- They can now analyze and evaluate information.
- The development of critical thinking skills is important for students to be able to solve the complex problems facing our society in the future.
- encouraged students' ability to think critically which allows them "to recognize connections between their individual problems and experiences and the social context in which they are embedded". to function effectively in a rapidly changing world.

Discussion

This pilot study has reported on the effect of the importance of implementing modern technologies in the ESP instructional environment. It presents a challenge to both students and the teacher. The challenge for the teacher is to provide a relevant framework for students upon which they construct knowledge and become active participants in the learning process. On the other hand, students in the constructivist environment have more positive attitude towards learning as they share their experiences with their peers and the teacher, as well as they experience increasing discussions in the classroom. Students are encouraged to search for solutions to real-world problems, and thus, they are engaged in transformative learning, leading to critical and analytical thinking which is essential for success in the *21st century.* Piaget (1968) emphasizes the active role of the individual in the learning process. Establishing constructivist dialogue in the ESP digital classroom, students are inspired to become active, creative and motivated in their activities. In accordance with this, Bruner's (1986) concept of "learning by doing" involves students' active participation within the classroom context. "Learning becomes a continuous, life-long process which results from acting in situations" (Brown et al., 1989).

The increasing influence of technological advances in education demands the use of meaningful authentic activities, to give the learning situation a purpose and meaning and, thus, to make the activity an example of situated cognition (Reeves et al., 2002).

Thus, the utilization of advanced technology as an instructional tool should be seriously considered, depending on course goals and learning objectives which provide guidelines for the assessment of students' progress. What has become particularly evident is that technologies help build an extensive knowledge base, which will "engage the learners more and result in more meaningful and transferable knowledge… Learners function as designers using the technology as tools for

analyzing the world, accessing information, interpreting and organizing their personal knowledge, and representing what they know to others" (Jonassen, 1994).

ESP courses allow students to interact with learning materials, and to explore and construct vocabulary and meanings. The ultimate goal of today's ESP students is to acquire the ability to successfully communicate with others (professionals) in a meaningful and appropriate way. As stated earlier, ESP courses prepare students to use a language to communicate effectively in real-life situations and cooperate with colleagues in professional fields.

Conclusion

This paper has discussed the implementation of computers and the Internet in the ESP digital learning environment that is "learner-centered, knowledge-centered, community centered and assessment-centered" (Bransford et al., 2000).

The ESP learning environment together with information and communication technologies promote students' communicative skills, and foster their autonomy and responsibility. Moreover, the increasing influence of technological advances (Butler-Pascoe & Wiburg, 2003) in education demands the use of meaningful authentic activities, to give the learning situation a purpose and meaning.

With shifting values and a plentitude of information provided by modern technologies, "learning to think critically and to analyze and synthesize information in order to solve technical, social, economic, political and scientific problems are crucial for successful and fulfilling participation" (Dunlap & Grabinger, 1996).

The survey aimed to evaluate student motivation, originality and creative skills, teamwork and collaboration, communication skills, critical thinking skills, as well as overall attitudes towards learning with digital technologies and developing projects.

Moreover, the research study has presented a clear conception of what students perceive to be the quality of learning in the classroom. This study creates the opportunity for student voice "to express their opinions and make decisions regarding the planning, implementation, and evaluation of their learning experiences" (Rogers, 2005).

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