

## **Constructivism – an emerging trend in ESP teaching and learning**

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### **Abstract**

This paper argues in favour of constructivism and its implications in the design of the ESP digital learning environment.

Entering the world of globalization and competitiveness, the emphasis is on the need to prepare students (future specialists) to be creative and innovative, to think critically and analytically, and to be able to effectively solve real-world problems. With higher-order thinking skills students will become creators of knowledge, competent and productive communicators, successful collaborators, independent and inventive thinkers, problem solvers and career experts. Consequently, students take full responsibility for their learning and knowledge construction in the context of contemporary life.

Bearing in mind that ESP is a student-centered approach, it is clear that it fits well with constructivism which focuses on knowledge construction through the interaction with the environment. Modern ESP constructivist learning environments are technology-based which contributes to improving learning achievements and increasing learning outcomes.

### **Key words**

constructivism, ESP, learning environment, digital technologies

### **1. Introduction**

This paper highlights the importance of constructivism as an emerging trend in the design of the ESP digital learning environment.

In this globalized, competitive and technology-driven world, the goal of foreign language education is to provide students with language skills and professional knowledge necessary to succeed in the job market. As it is well known, companies need highly qualified specialists who are capable of using foreign languages “in the service of thinking and problem solving” (Cummins, 1981). As English has become “the primary means of communication *at workplaces both within and across boundaries*” (Purpura & King, 2003), there is an increasing demand for learning English for Specific Purposes (hereinafter referred to as ESP).

Bearing in mind that ESP is a student-centered approach which focuses on developing English communication skills in a specific discipline, it is clear that it fits well with a constructivist theory which emphasizes the central importance of students and their attitudes and motivation towards learning. Constructivism



argues that learning is an active process in which learners construct new knowledge based upon their previous knowledge through the interaction with the environment. A new learning environment creates engaging and content-relevant experiences by utilizing modern technologies and resources to support unique learning goals and knowledge construction (Young, 2003). In addition, the use of technologies in the constructivist classroom enables students to be active and collaborative in the learning process, which contributes to improving learning achievements and increasing learning outcomes.

## **2. The rise of the ESP approach**

The intention here is to explain that traditional principles of teaching and learning need to be reconstructed into modern education strategies. This involves expressing metatheoretical perspectives to discuss issues within educational theory, and provide a basis for transforming language teaching and learning in the era of globalization. By utilizing innovative pedagogy to support teaching and learning goals, students will be more likely to achieve their full potential.

An emerging trend in the ESP teaching and learning 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 to fulfill a set of learning goals (Jonassen et al., 2003).

Considering knowledge and skills in the 21<sup>st</sup> century, it is necessary to point to the importance of the social environment. According to social constructivism influenced by Vygotsky (1978), learning is constructed through communication and collaborative activities.

It needs to be noted that the main objective of ESP courses is to help students develop communicative skills they will need in the future target situation (e.g. industry or business settings). It focuses on the specific linguistic knowledge and communication in order to accomplish specific purposes (Orr, 1998). More specifically, ESP puts focus on preparing students (future specialists) to communicate effectively in future work environment they will enter. Therefore, teaching/learning ESP is specialty-oriented which means it refers to specific needs of the students (Hutchinson and Waters, 1987). This can be achieved with a content-based curriculum, where students learn the language by focusing on the subject matter with the help of authentic materials. This points to the rise of the ESP approach which has reshaped the English language curriculum to meet learners' specialized communication needs.

Besides, in the case of collaborative and problem solving activities, it can be said that they foster constructivist learning and provide learners with resources and guidance to engage them in building new knowledge and understanding. Digital information and communication technologies can support collaborative activities in the classroom. The Internet can be used to provide authentic content-based materials and activities which fit the students' needs. As Kimball (1998) points out, "Internet-generated materials can be flexibly arrayed to engage students with topics and cognitive tasks relevant to students' professional futures".

At this point, it should be concluded that ESP is "goal directed" (Robinson, 1991) as students do not learn the English language for the sake of it, but because they need to learn it in order to communicate a set of professional skills and to perform particular job-related functions.

### **3. A new paradigm of knowledge construction**

Facing up the challenges in the new millennium, there is a need for an emerging *paradigm* shift in educational practice. It has become clear that the 21<sup>st</sup> 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. Overall, a new paradigm implies knowledge that is "richer, better connected, and more applicable to subsequent learning and events" (Lehrer, 1993).

The discussion will focus on constructivism as a learner-centred approach which emphasises the concept based on the idea that students have choice in their learning. In other words, "students might not only choose what to study, but how and why that topic might be an interesting one to study" (Burnard, 1999) and thus, they "take responsibility for their own learning" (Benett, 1999). Similarly, Edwards (2001) highlights the importance of student-centred learning:

"Placing learners at the heart of the learning process and meeting their needs, is taken to a progressive step in which learner-centred approaches mean that persons are able to learn what is relevant for them in ways that are appropriate".

Student-centered methods, supported by educational theorists such as Piaget, Vygotsky, Dewey and Bruner, develop the ideas of progressive education.

The theory of cognitive constructivism, influenced by Piaget, emphasizes the active role of the individual in the learning process. For Piaget, knowledge construction takes place when new knowledge is actively assimilated and

accommodated into the existing framework. The Piaget's constructivist classroom provides a variety of activities to challenge students to increase their readiness to learn. With technology support (videodisks, CD-ROMs, etc.), an effective learning environment can be provided.

In addition to the above, Vygotsky's theory (social constructivism) can be seen in action in today's ESP classrooms through collaborative learning. The social constructivist approach argues that students learn by constructing their knowledge through interaction with others. In computer-supported collaborative learning, students are encouraged to communicate with their peers and be prepared for *real-world problem-solving situations*.

For effective ESP learning, construction of knowledge happens in a social context (Duffy & Jonassen, 1991), such as classrooms and 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. Dewey suggests a method of "directed living", which means that students are engaged in an authentic, real-world context in which they can expose their knowledge through collaborative activities and creativity.

In the theoretical framework of Bruner the focus is on language learning through dialogue (Socratic learning) as the best method of communication. Students are encouraged to collaborate and engage in the learning process through dialogues with other students and the teacher, "rather than simply require them to answer questions, supports the socio-constructivist paradigm" (Hausfather, 1996). The concept of 'learning by doing' (Bruner, 1990) involves students' active participation within the classroom context.

With regard to contemporary learning theories, they have tried to combine social and cognitive in the design of learning environments. Situated Learning Theory (similar to social constructivism), developed by Lave & Wenger (1991) emphasizes the importance of learning as a function of the authentic activity, context and culture in which it occurs (Lave & Wenger, 1991). In likewise manner, Brown et al. (1989) argue that knowledge is situated, being in part a product of the activity, context, and culture in which it is developed and used. In this sense, constructivist epistemology explains that knowledge, learning, and cognition, as social constructions, are expressed on the basis of the interaction with their environment. In addition, Jonassen (2000) explores the use of Activity Theory for designing learner-centered learning environments.

Looked at from an educational perspective, incorporating constructivist practices, teachers are able to prepare their students to be successful lifelong learners, responsible citizens and effective contributors in an increasingly complex and competitive world.

Importantly, constructivist practitioners can combine methods in order to produce a successful and an effective model for developing productive proficiency and carry out the objectives of a course.

#### **4. Digital constructivism**

The 21<sup>st</sup> century has been referred to as the age of global communication and the rapid spread of information. Accordingly, the use of information and communication technologies in ESP teaching and learning is a current challenge forcing to rethink a number of educational issues.

ESP courses aim at helping students being capable of using a language that they will need in future professional settings. This can be realized by means of a content-based curriculum where students learn the language by concentrating on the specialized subject matter and the use of authentic materials. The Internet is an excellent source for providing authentic materials (Živković & Stojković, 2011) 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" (Kimball, 1998).

It is worth noting that a computer, together with the Internet, is an example of digital mediating technology which role in education should not be viewed as add-ons, but has been largely viewed as an instructional tool for providing a richer and more exciting learning environment (Duffy & Cunningham, 1996).

Modern technology has the potential to optimize interactivity and availability as a communication device and as a classroom management tool. If used appropriately, the technology could add relevance and meaning to ESP learning because it has the potential to increase students' motivation for studying languages.

Concerning computer applications, we state that they have been developed to engage learners in critical thinking about the content they are studying (Jonassen & Reeves, 1996). Indeed, technology is the most successful in leading to learning when it is used to engage students in meaningful, relevant and authentic activities with open-ended software and the Internet (Jonassen, 2000). 'Mindtools' (Jonassen & Reeves, 1996) promote independent and meaningful learning, support interactive, collaborative, and student-centered classrooms, engage students in creative and critical thinking while constructing knowledge.

Moreover, technology is seen as an integral part of cognitive activities (Živković & Stojković, 2013). Along with constructivist learning environments, it activates cognitive learning strategies and critical thinking (Jonassen, 1994). It can enhance the cognitive powers of learners during thinking, problem-solving, and learning (Jonassen & Reeves, 1996). A student who uses a cognitive tool effectively should engage (actively), think (deeply) and articulate his/her knowledge (Jonassen, 1994).

Therefore, the use of modern technology is evident for students' increasing of autonomous and collaborative learning, as well as for taking responsibility and control over the learning process as one of the basis of constructivist pedagogy. Undoubtedly, it may help in transforming the present teacher-centered approach into a student-focused, interactive knowledge environment.

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

## **5. A constructivist ESP environment**

Constructivists emphasize the importance of the learning environment in which knowledge building can be facilitated. As Wilson (1995) defines, a constructivist learning environment is "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 learner-centred activities to take place where the teacher provides students with experiences in order to develop problem-solving, critical-thinking and creative skills, and apply them in a meaningful manner.

In the learning environment "students join in manipulating materials and, thus, create a community of learners who built their knowledge together" (Dewey, 1966).

Modern ESP constructivist learning environments are technology-based in which learners are engaged in meaningful interactions.

"The richness of the technology permits us to provide a richer and more exciting (entertaining) learning environment... our concern is the new understandings and new capabilities that are possible through the use of technology" (Duffy & Cunningham, 1996).

The function of the technology is to support and facilitate learning and “to encourage students to be creative, providing feedback about student performance and to analyze and reflect upon what has been learnt” (Jonassen et al., 1999). In such an environment the use of technologies can enable constructivist innovations in the classroom contributing to the realization of meaningful, authentic, active, interactive and problem-based learning. Students search solutions to real world problems which based on a technology framework lead to critical and analytical thinking.

An ESP technology-enriched learning environment exhibits the following characteristics (Butler-Pascoe & Wiburg, 2003):

- provides interaction and communicative activities representative of specific professional or academic environments,
- fosters understanding of the socio-cultural aspects of the language,
- provides comprehensible field-specific input and facilitates student production,
- provides sheltering strategies for language development and content-specific understanding (contextualizing, metacognitive activities, etc.),
- utilizes task-based and inquiry-based strategies reflective of tasks in discipline-specific settings,
- utilizes authentic materials from specific disciplines and occupations,
- supplies authentic audiences including outside experts in specific fields,
- supports cognitive abilities and critical thinking skills,
- utilizes collaborative learning,
- facilitates focused practice for development of reading, writing, listening and speaking skills across the curriculum and disciplines,
- is student-centered and addresses specific needs of students,
- uses multiply modalities to support different learning styles,
- meets affective needs of students: motivation, self-esteem and autonomy,
- provides appropriate feedback and assessment of content knowledge and English skills.

As Kanuka & Anderson (1999) point out, knowledge is constructed in the context of the environment in which it is encountered through the social and collaborative process. A relevant constructivist environment is one that supports learners in achieving their learning goals. It is the learner who interacts with his/her environment and constructs his/her own conceptualisations and finds solutions to problems, mastering autonomy and independence.

## 6. A need for redesigning pedagogy

The paradigm of constructivist epistemology have significant implications for instructional design in learning settings. 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. Importantly, the teacher is no longer perceived as the knowledge dispenser and decision maker. Instead, the teacher has become the facilitator of learning whose main task is to set goals and organize the learning process accordingly.

Here, we need to emphasize that it is a difficult task for the ESP teacher to conduct all these requirements within the classroom, especially in teaching ESP courses. Thus, the utilization of advanced technologies as instructional tools 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).

The following principles (Jonassen, 1994) explain how knowledge construction can be facilitated:

- provide multiple representations of reality,
- represent the natural complexity of the real world,
- focus on knowledge construction, not reproduction,
- present authentic tasks (contextualizing rather than abstracting instruction),
- provide real-world, case-based learning environments, rather than pre-determined instructional sequences,
- foster reflective practice;
- enable context-and content dependent knowledge construction,
- support collaborative construction of knowledge through social negotiation.

These principles provide a useful framework for summarizing the constructivist model of instructional design.

Based on the social constructivist approach, 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 meaningful and appropriate ways. 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. So, the focus of modern foreign language learning is on practical experience and direct activity of students. A student-centered approach requires students to set their own goals for learning, and determine resources and activities that will help them meet those goals (Jonassen, 2000). Strictly speaking, ESP students should become critical thinkers who know how to apply language in different situations.

As it has been discussed, social constructivism emphasizes the active participation of learners, including contextual and social learning where the teacher has become the facilitator of learning, and learners are designers, using technology for analyzing the world, interpreting and organizing their personal knowledge, and representing what they know to others (Jonassen, 1994).

Obviously, to be prepared for global competitiveness, ESP students need to become critical thinkers who share their own ideas, listen to the ideas of others, summarize concepts by analyzing, justifying, and defending ideas, make decisions, solve problems.

Therefore, learners need to be equipped with strategies and techniques to continue learning throughout the life. ESP is clearly founded on the idea that we use language as members of social groups.

So, the ESP constructivist approach offers teachers the opportunity to create learning environments where students actively participate to construct knowledge, develop autonomy, interact and complete a task by successfully transforming information coming from modern technology resources.

## **7. Transformative teaching and learning**

In order to meet the challenges, it is the task of the teacher to introduce innovative pedagogies following up the trend in shifting the focus from teaching to learning. The design and implementation of pedagogical and technological knowledge in the teaching process is one of the most demanding tasks. So, the key challenge facing ESP teachers is to refocus their teaching strategies and adopt new approaches, and to effectively and efficiently incorporate technologies in the language learning process. Within such context, to be prepared for the new role in the 21<sup>st</sup> century, the teacher needs to maximize the potential of learning, and to provide models for the practical work. It is essential to promote information literacy and support collaborative working in order to prepare students to succeed in this ever-changing world environment.

Concerning constructivist approach, an important issue to consider is the dialogue in the classroom – students' interaction with peers and the teacher. The teacher should encourage communication through dialogue interaction aimed at

mutual development and enrichment. As previously noted, the Socratic method, as a form of dialogic discussion, can be really efficient in ESP constructivist settings, as it can empower and support group learning based on either individual or a social constructivist approach. It highlights students' engagement in the discussion with a specific topic as a central focus. Consequently, students learn to think critically by examining one another's ideas and questions in an attempt to create a better understanding, and "to have their voices heard and build on their previous experiences and interests to plan for their continuing growth" (Dewey, 1938).

All in all, the above points to the fact that constructivism requires a teacher "whose main function is to help students become active participants in their learning and make meaningful connections between prior knowledge, new knowledge, and the processes involved in learning" (Copley, 1992) for multidisciplinary *teaching* and learning process. Teachers should also reflect on their own practice, and be willing to experiment with new instructional tools. Therefore, the existing programs should be updated by incorporating modern student-centered teaching methods and techniques (i.e. group work, simulations, case analysis, etc.) which would help to create a comfortable, high-quality learning environment, and encourage students to participate in the teaching/learning process more actively.

To end this discussion, we suggest engaging students into the digital learning environment that enables effective interaction and creates a rich collaborative learning experience. In such an environment, the use of educational tools activates constructivist innovations which contribute to the realization of holistic, meaningful, purposeful, authentic, cooperative and problem-based learning. 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*.

## 8. Conclusion

This paper has offered an overview of the concept of constructivism, and explores its possible implications in the design of the ESP digital learning environment that is "learner-centered, knowledge-centered, community centered and assessment-centered" (Bransford et al., 2000).

Such a model offers a set of design principles and strategies to create ESP learning environments wherein students are engaged in the social construction of reality (Dixon, 1995). The purpose of ESP is to prepare students (future specialists) to communicate effectively in the professional field and real-life situations. The ultimate goal is to become 'operational' in any learning situation.



Significantly, there is a need for implementing constructivist learning in practical settings which can help students to be prepared for the challenges that a *commitment to lifelong learning* will present (Herr, 1995).

“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).

As a final note, the paper has provided a representative view of the advantages in constructivist strategies for ESP teaching and learning, and, at the same time, it has clarified why the idea of this issue is worthy of study.

In addition, the paper outlines suggestions and considerations regarding transformation and improvement of current educational system. However, it is not proposed here that teachers should accept constructivism in the classroom as the only solution to achieve instructional goals. Instead, they should create their own methods in the direction of updating their instructional practices in order to make the learning process more flexible and easier.

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