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A Case Study of Informatics Professionals' Perceptions Concerning the Success of Teaching Strategies and Materials in an EOP Course

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Abstract

This study examines the experiences and perceptions of informatics professionals who participated in an English for Occupational Purposes (EOP) course. It explores the impact of different instructional strategies and materials on their language development and engagement. Key themes identified include the challenges learners face, particularly with language anxiety and mixed-proficiency group dynamics; as well as the effectiveness of teaching strategies that encourage skill development in technical vocabulary, communication, and critical thinking. The study features the need for learner-centered and task-based approaches for ESP courses, demonstrating how these methods can improve both language and soft skills, both critical components in professional environments.

Keywords: Informatics, EOP, ESP, learner-centered teaching, teaching strategies, soft skills, language anxiety, effective communication, critical thinking

Resumen

El presente estudio analiza las experiencias y percepciones de profesionales en informática que participaron en un curso de inglés con propósitos específicos (EOP, siglas en inglés). El estudio explora el impacto de diversas estrategias de enseñanza y materiales en el desarrollo del idioma y la motivación de los estudiantes. Los temas clave identificados incluyen los desafíos que enfrentan los estudiantes, especialmente en cuanto a la ansiedad lingüística y la dinámica dentro grupos con distintos niveles de competencia, así como la efectividad de las estrategias de enseñanza que fomentan el desarrollo de vocabulario técnico, habilidades de comunicación y pensamiento crítico. La investigación resalta la necesidad de enfoques centrados en el estudiante y basados en tareas en cursos de EOP, demostrando cómo estos métodos pueden mejorar tanto las habilidades lingüísticas como las habilidades blandas, esenciales en entornos profesionales.

Palabras clave: Informática, EOP, ESP, enseñanza centrada en el estudiante, estrategias de enseñanza, habilidades blandas, ansiedad lingüística, comunicación efectiva, pensamiento crítico

I. Introduction

1.1 Context of the study

English works as a globally recognized lingua franca, bridging communication gaps across diverse cultures and nations. Historically, it has evolved to become the primary language for an important part of the global population, thereby reaching the status of a priority foreign language. Its widespread adoption as both a native language for many and a second language for countless others underscores its importance as a tool for international communication and cooperation. As stated by Zafarghandi et al. (2017), the role of English as a global language of communication is indisputable as it is widely regarded as a tool that supports advancement in several other fields (p. 57). The consolidation of English as a lingua franca has caused English teaching to evolve into a burgeoning field and English to become a relevant school subject that needs to be reinforced and developed.

For decades, the field of English teaching has evolved significantly, transitioning through various theories and practices over the past century (Brown & Lee, 2015; Córdoba & Navas, 2009; Hyland & Shaw, 2020). Initially, the Grammar-Translation Method was mainly implemented, focusing on reading and writing skills through the memorization of vocabulary and grammar rules, with little emphasis on speaking or listening. In response, the Direct Method emerged, emphasizing immersion and interaction and prioritizing oral communication and listening skills. Then, the Audio-Lingual Method followed, influenced by different behaviorist theories and focused on habit formation through repetitive drills and pattern practice. Around the 1970s, Communicative Language Learning (CLL) became predominant, which shifted the focus to fluency and communicative competence through the use of authentic materials and real-life tasks to integrate listening, speaking, reading, and writing and promote interaction and learner

participation. Building on CLL, Task-Based Language Teaching (TBLT) emerged in the 1980s, centering around meaningful tasks that reflect real-world language use while developing task completion processes, including post-task reflection and feedback to consolidate learning. Moreover, Content and Language Integrated Learning (CLIL) gained popularity in the 1990s, merging content learning with language acquisition.

In addition to the above-mentioned methodological changes, nowadays, technology-driven teaching has become increasingly prominent as language teachers utilize digital advancements to complement teaching methods. For instance, language learning software, multimedia resources, and online platforms support interactive and collaborative learning with personalizing learning experiences in order to create a more dynamic and interactive class (Bonilla & Espinoza, 2014); currently, emerging technologies such as artificial intelligence and machine learning have been incorporated into the teaching field. The evolution of English teaching reflects a move from strict, grammar-focused methods to more flexible, communicative, and technology-integrated approaches, continually adapting and evolving to meet the learners' needs in a highly globalized world. These changes reflect trends in the fields of applied linguistics and second language acquisition about how English is taught and learned. English language teaching (ELT) has gradually shifted from using general ideas about language and language learning to more specific ones that emphasize the importance of the language learners' needs (Alghamdi et al., 2019, p. 271).

ELT has also developed various types of curricula as a way of responding to the needs of English language teaching and learning (Richards & Rodgers, 2001, p. 1). Among those curricular approaches, differences and similarities between teaching English for General Purposes (EGP) and English for Specific Purposes (ESP) have been addressed. Delgado (2009)

defined EGP as “the language that is used every day for ordinary things in a variety of common situations” (p. 353). On the other hand, González (2015) stated that, as a learner-centered approach, the primary goal of English for Specific Purposes (ESP) is to meet the specific needs of learners, focusing on their professional or vocational requirements (p. 380). Examples for the latter include medical English for healthcare professionals, business English for businesspeople, technical English for engineers and IT specialists, and academic English for students and researchers. Each of these teaching contexts requires the development of language and career-related skills, specific topics and contents relevant to the specific field.

The emergence of ESP follows a historical line that makes it different from EGP. Hutchinson and Waters (1987) highlighted three essential factors that contributed to increase the need for specialization in language learning: “the expansion of demand for English to suit particular needs, the developments in the fields of linguistics, and the ongoing developments in educational psychology” (p. 8). Furthermore, González (2015) asserted that the first boost for ESP is attributed to the identification of specific registers and the analysis of patterns in writing in the fields of science and technology. Rahman (2015) explained that English for Specific Purposes (ESP) differs from English for General English (EGE) instruction as the former is tailored to specialized contexts rather than general language proficiency. Moreover, the author stated that since the 1960s, ESP has emerged as a distinct field characterized by its focused approach to language learning and teaching that employs unique methods and environments separate from those of General English (Rahman, 2015, p. 24). Even though the origins of ESP seem to be the result of a series of events, Hutchinson and Waters (1987) explained that ESP should be viewed as an approach rather than a product so that ESP can be seen as a language learning approach that focuses on the specific needs of the learner (p. 19).

ESP is generally divided into two major branches: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP) (J. Brown, 2016; Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987). In fact, as stated by Anthony (2018), these two main areas of ESP can be further subdivided. EAP can be split into English aimed at General Academic Purposes (EGAP) and English tailored for Specific Academic Purposes (ESAP). Similarly, EOP can be categorized into English for Professional Purposes (EPP) and English designed for Vocational Purposes (EVP) (p.13).

1.2 Problem statement

The present study is focused on the need for EOP courses for professionals in the field of informatics. As mentioned by Fatihassalam (2021), learning English holds significant importance for informatics engineering, given that the programming languages used in this field rely heavily on English. For instance, commands in languages like C++, such as "for", "else", "while", "string", "return", and many more, are mostly expressed in English. Besides, the author mentioned that proficiency in English is essential for grasping the meaning and nuances of programming languages (p.1).

English knowledge is a necessity for those that study or work in the field of informatics. Therefore, the present research aimed to collect information concerning the perception of three informatics professionals regarding the effectiveness of different teaching strategies and materials in an EOP course. Strategies are understood as the set of activities designed to facilitate students' comprehension of concepts while also developing a connection between specific information and particular tasks (Vadillo & Klingler, 2004). As per instructional materials, they are defined as resources used by teachers to make their teaching more effective; these materials include both visual and audio-visual aids and can be either tangible or intangible (Tuimur &

Chemwei, 2015, p. 225). The different strategies, approaches, resources and materials used in the course were chosen after having conducted a needs analysis with the participants. Both, the present research project and the EOP course created for informatics professionals represent a novelty to the informatics field in Costa Rica because there are not many options of English for Specific Purposes (ESP) or English for Occupational Purposes (EOP) courses tailored to the specific needs of informatics professionals in the country.

In Costa Rica, there are different alternatives for adult learners in the field of informatics to learn English on their own. They may decide to enroll a course in a private language academy such as *Intensa*, *Centro Cultural Costarricense Norteamericano*, *Wizard Costa Rica*, among others. Nonetheless, these courses are focused on a general English approach and their emphasis is on conversational skills. Similarly, the *Instituto Nacional de Aprendizaje* (INA, acronym in Spanish), a government institute, offers English courses for professionals from different fields; nevertheless, none of them is taught using a robust ESP or EOP course methodology for informatics. As a matter of fact, the computing and informatics programs do not have a course focused on English. In fact, the only English courses that are offered are mainly focused on the customer service field (Instituto Nacional De Aprendizaje, n.d.). Therefore, it is well-known, and even supported from the needs analysis carried in this study, that professionals in informatics end up taking courses being focused on either grammar or speaking general English not specific contents focused on the informatics field.

In a similar fashion, many efforts have mostly been made by public universities in Costa Rica to fulfill the needs of professionals regarding English courses for their specific careers. Universidad de Costa Rica (UCR) has been working on a program called *Inglés por Áreas* (commonly called ESP courses in the context of this university). This program grants a

scholarship for active students the university who wish to learn and improve their English communication skills by enrolling its non-credit courses. The courses offered correspond to mixed groups from different majors based on a more general field: Social Sciences, Economical Sciences, Arts and Letters Sciences, Health Sciences, Engineering, and Agro-food Sciences. This program also finances university staff training for administrative purposes in order to attain job qualifications. In general, the courses focus on various skills that students should possess such as public speaking, reading and writing, and intercultural communication. It consists of three modules, each developing language levels. Additionally, students are required to complete two supplementary courses to finish the program, which has an approximate duration of three and a half years when taking courses at each level in every module (Inglés por Áreas, n.d.). In addition to *Inglés por Áreas*, the *Escuela de Lenguas Modernas* at UCR has designed and taught ESP courses with mandatory credits for those majors that have requested them; indeed, Quesada et al. (2019) stated that “academic programmes at UCR contain few or no English for Academic Purposes courses, with the exception of those at the School of Economics and the School of Administration and International Trade, whose list of English courses has recently increased” (pp. 87-88). These two ESP programs at UCR are examples of the most important initiatives in the country because they represent pioneering practices in the development of ESP in Costa Rica.

Likewise, Universidad Nacional (UNA) offers a similar program named *Cursos de Servicio* (Service Courses). In 2008, with the support of the Office of the Rector and the Academic Vice-Rector, the *Escuela de Literatura and Ciencias del Lenguaje* launched a pilot program for foreign language training, involving seven majors from UNA (Alfaro et al., 2010). These courses, currently taught at this university, develop integrated English skills for other degree programs and are part of the curricula of 98% of the programs offered at UNA. Students

in these courses are expected to use the target language both orally and in writing effectively in specific professional situations such as academic presentations, job interviews, phone communications, business meetings, managerial development, professional socialization, negotiations, and in delivering and evaluating reports and projects. They are university-level theoretical and practical courses designed to guide students from an A1.1 to a B2 level of proficiency according to the Common European Framework of Reference for Languages. Nowadays, informatics students only three of the integrated courses are compulsory in their study plans, and they could opt to take the fourth course; nonetheless, the focus of these courses do not follow an ESP methodology. At UNA, some majors have recently requested courses to provide students with the theoretical-practical knowledge and tools necessary to achieve an upper-intermediate level of proficiency in their ability to comprehend English using field-oriented courses in some fields: Veterinary Sciences, Preschool Teaching, Human Movement Sciences and Quality of Life, and Religious Studies. Students in informatics-related fields are not part of these new programs (Escuela de Literatura y Ciencias del Lenguaje, n.d.).

Cursos de Servicios had already been created and started working at UNA, when university authorities realized about the importance and necessity of having specific courses for the informatics field and decided to implement a differentiated pilot program of 4 courses named *Inglés para Informática* (English for Informatics) under the same *Cursos de Servicios* framework (Alfaro et al., 2010). In this particular case, the first three courses were conversational ones, and the fourth course comprised a technical reading course. These courses aimed to provide students with the foundations of the English language through the emphasis and interaction of the four language skills. Additionally, the courses focused on teaching syntactic, grammatical, functional, and semantic knowledge in accordance with the different thematic

content. The courses emphasized oral production on topics related to computer sciences. Some of the content covered in these courses included: computer entertainment network, high IQ buildings, Internet café, community service network, files warning, suggestions and predictions, viruses and computer styles of the future, among others (Cubillo, 2011). These courses as well as materials were created taking into account information collected by a specific group of professionals such as professors from the field, programmers, students of informatics and the needs of technological companies such as Intel. At the time, the materials were piloted to publish textbooks to teach this population. Cubillo (2011) reported a series of issues, which are expected in the development of ESP recent trend back then: courses were generally taught by teachers, whose training focused on other fields such as general language teaching or translation, or teachers argued that the textbooks did not have grammatical structures and that there were not enough resources to teach with the books such as a complementary CD to go with each textbook. The author also mentioned that the teachers in charge of piloting the textbooks had the idea of having a native speaker helping them record the audios from the textbook (Cubillo, 2011). Due to these constraints and the university policies enacted by 2008, *Cursos de Servicios* was established and continued offering courses for informatics students without implementing an ESP approach.

Similarly, the *Universidad Técnica Nacional* (UTN) has created the Institutional Program of Languages for Work (PIT, acronym in Spanish). This program is a unit within the UTN created with the goal of transforming the institution into a multilingual training center. It was established by the Conforming Commission during the session on November 8, 2010, according to Act No. 33-2010, Agreement No. 2, and began operations in January 2011 under the Vice-Rector's Office of Teaching. PIT focuses on improving language teaching and learning processes

through continuous teacher training, the use of technological resources, and the creation of strategic alliances. Its relevance is justified by offering training oriented towards interculturality and the development of multilingual competencies, thereby enhancing students' employability. The program initially focused on the English language due to its global importance. In addition, PIT promotes comprehensive education based on principles such as scientific humanism and eco-formation, with the goal of improving intercultural communication and the development of linguistic competencies. Its objective is to implement bilingual or multilingual study plans and to enable graduates to certify their competencies in English or other foreign languages, thereby strengthening the competitive position of UTN both nationally and internationally (Universidad Técnica Nacional, n.d.). Regarding the informatics field, the UTN (through PIT) offers students from information technology engineering and software engineering six mandatory courses for them to take as part of their career. These field-oriented courses are requisites for graduation (Yorleny Romero, personal communication, August 13, 2024).

Informatics, as a field, is characterized by its heavy reliance on English, with programming languages, technical documentation, and academic literature predominantly presented in English (Nimasari, 2018, p. 26). Therefore, I created an EOP course for informatics professionals not only to address the growing demand for English proficiency in this sector, but also to bridge the gap between language learning and the intricacies of modern technology. The EOP course designed and implemented for informatics professionals contains relevant and important topics throughout the whole course syllabus that are necessary for informatics professionals to understand and interiorize (see Appendix A). This EOP course acknowledges the unique language needs of informatics professionals, ensuring that they not only master the

English language but also acquire the specialized communication skills vital for success in this dynamic and globally interconnected field.

1.3 Research questions

For the purpose of developing the present project, the researcher intended to answer the following questions about the EOP course created:

1. What are the informatics professionals' perceptions about the effectiveness of the teaching strategies and materials in their EOP course?
2. What challenges or limitations regarding teaching strategies and materials do informatics professionals deal with in an EOP course?

II. Literature Review and Theoretical Framework

The materials and activities play an essential role in facilitating effective learning experiences and successful completion of course objectives. Authentic and thoughtfully selected materials offer students the necessary resources and tools to engage with course content, comprehend concepts, and develop skills efficiently. Activities offer students opportunities for active learning, interaction, and application of knowledge. This section examines a great selection of literature published on topics of English for specific purposes. Specifically, this section synthesizes the main characteristics of English for specific purposes and English for occupational purposes. Subsequently, it describes the content-based instruction, the learner-centered approach and the task-based approach, often utilized in ESP courses. This section concludes with a discussion of the importance of English proficiency in the informatics field.

2.1 Literature Review

2.1.1 English for Specific Purposes

Speaking a foreign language, especially English, has become critical for individuals' success in several social, academic, and professional settings. Consequently, for us as teachers, it is important to choose and implement techniques, strategies, and methods for teaching English as a foreign language appropriate for the students' context and specific situations (Dudley-Evans & St. John, 1998; Widodo, 2016). The specific needs for which individuals embark on the learning of English have led to new ways of teaching English, one of which is the English for specific purposes (ESP) approach. ESP is a branch of English language teaching that mostly focuses on providing learners with the language skills and knowledge required for specific professional or academic contexts. Hutchinson and Waters (1987) reported that the end of World War II in 1945 led to an era of unprecedented expansion in scientific, technical, and economic demands across

the globe, which brought a demand for an international language. Hence, English became the key to the international currencies of technology and commerce.

In the 1960s, changes in global markets led to the emergence of ESP as an academic field. According to Paltridge and Starfield (2018), due to the changes and expansion of global markets, ESP became one of the most important teaching fields in universities around the world, contributing to the creation of ESP courses in areas such as English for Engineers, English for Aviation, and English for Advertising, to name just a few (p. 3). Accordingly, “English for Specific Purposes (ESP) or English for Special Purposes arose as a term in the 1960’s as it became increasingly aware that general English courses frequently did not meet learner or employers’ needs” (Fitria, 2019, p. 144). Moreover, Hutchinson and Waters (1987) attributed the rise of ESP to advancements in technology, the economic influence of oil-producing nations, and the growing number of international students in English-speaking countries (pp. 6-7). Similarly, Johns and Dudley-Evans (1991) stated that the global community acknowledged the significance of English acquisition, viewing it not only as a tool for knowledge sharing and interpersonal communication, but also as a neutral medium for international discourse (pp. 301-302).

Dudley-Evans and St. John (1998) also stated that ESP is designed to meet specific needs of the learner and utilize the different methodologies and activities that come within a specific discipline. ESP is centered on the language appropriate to these activities in terms of grammar, vocabulary, register, study skills, discourse, and genre. Also, ESP is likely to use, in specific teaching situations, a vastly different methodology from that of General English. As stated before, individuals’ learning needs analysis are a huge part of the understanding and development of an ESP course. In fact, ESP is characterized by three specific elements: the needs analysis, the time, and the language. The needs analysis involves identifying the specific

language skills and vocabulary that learners need to perform effectively in their professional or academic fields. This ensures that the course content is directly relevant to their real-world tasks and goals. Second, time is an important factor as ESP courses are often designed to achieve targeted language proficiency within a limited timeframe, making efficient use of learners' time and focusing on the most essential language skills. Finally, obtaining knowledge of the given discipline in English and not just for the only purpose of having a general education is key for ESP students (Basturkmen, 2014, p.18).

Comprehending and analyzing the learners' needs is extremely important in an ESP teaching context. In fact, one of the main contributions of ESP to the extensive field of English teaching has been the centering of needs analysis since it helps teachers set teaching goals, select teaching content and materials, and explore approaches of teaching and learning (Trujeque-Moreno et al., 2021; Zela, 2017). The needs analysis is a vital element in assisting ESP teachers in understanding their students' needs, based on their weaknesses or lacks (Alsamadani, 2017; Strevens, 1988). Hence, several researchers have argued that successful ESP teaching depends on first recognizing the learners' needs, wants and lacks (Anthony, 2018; Astika, 2015; Cowling, 2007; Taillefer, 2007). A needs analysis is an essential part of the design of any ESP course that uses learner-centered methods (Chovancová, 2014, p. 44) as it provides the teacher with the necessary insights to create the course and accommodate their learners' needs.

2.1.2 English for Occupational Purposes

English for occupational purposes (EOP) is a concentrated branch of English teaching, focused on meeting the language needs of individuals in specific professional contexts. EOP encompasses a wide range of professional sectors such as business, medicine, engineering, and tourism, among others (Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987). This

approach ensures that students acquire essential vocabulary, discourse strategies, and communication skills related to their chosen career (Belcher, 2006, p. 149). With the above goal in mind, EOP instruction often combines workshop materials with authentic tasks that provide students with practical, real-world language experience (Hutchinson & Waters, 1987, p. 165). By addressing the specific language requirements of various occupations, EOP programs play an important role in enhancing students' employment and professional development opportunities (Jiang, 2019, p. 257). However, taking an EOP course requires students to have already developed a certain level of English proficiency (e.g., A2 according to the European Framework) to be able to study EOP successfully (Ahmadi & Bajelani, 2012, p. 795). This means that EOP courses are designed for specific professional or vocational contexts, where learners need to use English effectively in their work environments. To benefit from such courses, students must already have a basic understanding of general English, which allows them to grasp and apply the specialized language and concepts taught in the course. The A2 level, according to the European Framework, indicates that students have achieved basic communication skills in English, enabling them to understand and interact in familiar situations, which is essential for the more focused learning required in an EOP course.

Like ESP, one of the characteristics of EOP is that it is learner-centered (Hutchinson & Waters, 1987). Thus, it is necessary to ensure that an EOP curriculum is not built just on subjective teachers' perceptions and instincts, but rather on a comprehensive analysis of the specific needs within the EOP context. Since ESP pedagogy is determined by needs analysis, practitioners should collect first-hand data related to the needs of the learners to make sure that learning materials meet the specific needs identified (Belcher, 2004, p. 166). Aside from an effective needs analysis, an EOP course should focus on the learners using the type of language

required for their specific context. Also, learners should not leave aside academic skills even though the main focus is the occupational-related skills (Gatehouse, 2001, p. 7).

An EOP curriculum should be based on the learners' specific needs, focusing on field-specific terminology and usage (Rautenbach et al., 2018, p. 240). Therefore, in an EOP curriculum, the learners' specific needs serve as a foundation for effective language instruction and preparation for real-world occupational contexts. The demand for these types of courses is inevitably increasing due to globalization and the constant need for English proficient workers worldwide (Brunton, 2009, p. 8). This significant need for EOP implies a real challenge to learning institutions "to provide well-researched curriculum development for their English courses aimed at training in EOP" (Rautenbach et al., 2018, p. 242). Methodological principles implemented in the designed course are described below, and these were derived from Content-Based Instruction, the Learner-Centered Approach and the Task-Based Approach are briefly.

2.1.3 Instructional approaches useful for English for occupational purposes

Table 1 outlines the key features, roles, and benefits of three prominent instructional approaches used in ESP. The table provides a concise overview of how these methods operate, the roles of both teachers and students, and the specific advantages each approach brings to the educational experience.

Table 1

Main approaches used in ESP and EOP courses

Aspect/Approach	Content-Based Instruction (CBI)	Learner-Centered Teaching (LCT)	Task-Based Instruction (TBI)
Focus	Integrates language learning with subject matter content, focusing on real-life situations and practical language use	Focuses on students' active participation in their own learning process, with an emphasis on real-life applications and	Emphasizes meaningful communication through task completion, prioritizing content

	(Richards & Rodgers, 2001).	autonomy (Tzenios, 2022).	and practical language use over traditional grammar (Córdoba & Navas, 2009).
Main Characteristics	<ul style="list-style-type: none"> - Language is learned as a tool for acquiring knowledge, not just for mastering language (Richards & Rodgers, 2001). - Reflects learners' real-life needs, using content-based activities in practical scenarios (Stoller, 2004). - Students engage with content that is significant and pertinent to them, leading to meaningful language acquisition (Krashen, 1985; Navas, 2011; Wesche, 1993). - Interactions in CBI are purposeful, focusing on both content and language. This dual emphasis enables students to achieve higher levels of proficiency compared to traditional language classrooms (Dale & Tanner, 2012; Lyster & Ballinger, 2011). 	<ul style="list-style-type: none"> - Engages students in real-life situations, promoting collaboration and teamwork (Tzenios, 2022). - Empowers students to take charge of their learning process and fosters shared learning (Darsih, 2018; Kumar Shah, 2020). - Instructors create environments that support active involvement and guide students in setting goals (Weimer, 2002). 	<ul style="list-style-type: none"> - Centers around tasks that reflect real-world language use, fostering practical language skills (Richards & Rodgers, 2001). - Encourages learners to focus on content and meaning, promoting authentic communication (Córdoba & Navas, 2009). - Uses tasks as the main unit of learning, allowing students to plan and monitor their progress (Nunan, 2004).
Role of the Teacher	Acts as a guide, organizing the integration of language and content, creating interactive environments, and selecting authentic materials (Hall, 1995).	Acts as a facilitator or guide, creating learning environments that support active involvement and shared learning responsibilities (Blumberg, 2009, p. 16).	Serves as a mediator, instructor, and researcher, adapting tasks to meet learners' needs and guiding language development (Van Den Branden, 2016).

Role of the Students	Active participants who engage with content to develop both language and subject knowledge, often through peer interaction (Bula Villalobos, 2014).	Active participants responsible for their learning journey encouraged to engage with material, set goals, and collaborate with peers (Weimer, 2002).	Active participants who develop language skills through task completion, with a focus on practical language use in real-world contexts (Van Den Branden, 2016).
Benefits	Enhances motivation and engagement by making education relevant and challenging; promotes communicative abilities across various contexts (Krulatz, 2019).	Increases student involvement, fosters the acquisition of both learning skills and competencies, and considers diverse learning needs (Kutumba Rao, 2020).	Promotes practical language use, enhances engagement and motivation, and helps learners grasp language structure and cultural sensitivity (Schmidt, 1990).

Note. Data collected by the researcher based on common approaches to teaching ESP.

As illustrated in the table above, each approach offers a unique perspective on language learning, emphasizing different aspects such as integrating content with language, prioritizing student autonomy, and focusing on practical communication through task completion.

2.1.4 Importance and necessity of English proficiency in the informatics field

The importance and necessity of English proficiency in the informatics field are widely acknowledged in academic literature. According to Pudyastuti et al. (2014) for informatics students, mastering English is essential as it aids not just in grasping the theory of informatics but also in developing computer programs using specific programming languages (p. 1). Being this field an international one, it is essential to know English, a lingua franca of business and academic communication worldwide. Moreover, in college settings, proficiency in English is vital for comprehending programming languages and textbooks, which are predominantly in English. English language is the most widely used in programming languages. Without a solid

understanding of English, it is likely difficult and challenging to go through informatics courses and materials (Pudyastuti et al., 2014; Ruby & David, 2016).

A significant aspect to be considered is the real needs that informatics professionals have within their field and the usage of the English language. As mentioned by Pontoh et al. (2016), before designing materials for teaching English to informatics students, a needs analysis must be conducted to determine what the actual needs regarding the teaching materials and resources are (p. 14). According to Tangkelangi et al. (2021), several studies have investigated the needs of the informatics and technology students for their knowledge of the English language (p. 136). For instance, some authors have found that for students majoring in technology-related careers, productive skills like speaking and writing hold greater importance than receptive skills such as listening and reading (Tangkelangi et al., 2021, p. 136). Moreover, the authors discovered that informatics students require English proficiency to articulate their ideas in assignments, compose their final projects, and deliver presentations during their final project examinations.

Nonetheless, Tangkelangi et al. (2021) determined that listening and reading activities are necessary for students of informatics areas because these receptive skills help them understand the different learning sources they require in their academic and professional lives. Also, the authors mentioned that students need topics and materials in English that are related to their field instead of random topics (p. 142). Similarly, Sari et al. (2019) conducted a research study about a needs analysis on English for specific purposes to informatics students, in which the main findings reveal that “informatics students state that they want to learn all aspects of English such as grammar, vocabulary, reading comprehension, listening, and writing” (p. 36). However, the authors also stated that students’ main difficulties in learning English are related to limitations in vocabulary and lack of understanding of grammar. Besides that, they discovered that reading

skills can be developed through texts and books that interest the student. As stated by Sari et al. (2019), writing skills are needed in the informatics field, so students can write sentences for computer programs and social media communication (p. 36). Regarding the need for speaking, the authors found that students are required to speak English effectively and be able to answer and ask questions correctly, “followed by understanding English media (such as news, movies, songs, announcements, etc.) as learning listening needs” (p. 36).

In light of the above, it can be concluded that any informatics professional needs to have at least a basic level of English knowledge because professionals in this field are more likely required to use English in the business environment. English is necessary for communicating, accessing technical resources, and participating in global collaborations and conferences. During the process of reviewing literature, it could be noticed that not much has been written about EOP courses specifically for the informatics field. Several authors have stated the obvious: English is necessary in informatics. Nonetheless, not many have designed courses or investigated how students perceive those courses. The researcher of this study believed that this situation represented a gap within the field. Hence, it was this research’s main aim to study the perceptions of informatics professionals regarding the materials and resources used in an EOP course designed to fulfill their needs within their professional field.

This review of texts, studies and concepts highlighted the importance and necessity of ESP and, more specifically, EOP courses in the informatics field. As the field of technology and informatics continues to expand globally, the ability to effectively navigate and engage with different linguistic and cultural contexts has become vital. Therefore, understanding the significance of English proficiency in the informatics area shed light on the importance of integrating language learning into informatics education and professional development programs.

It also provided the researcher with theoretical support about principles from content-based instruction, task-based and the learner-centered approaches, which were the main instructional approaches for the EOP course created for the participants. Also, this literature review invites researchers to continue investigating the perception of informatics professionals regarding the teaching strategies and materials used in an EOP course, their effectiveness and efficiency, so they can be able to perform their jobs in successful ways.

2.2 Theoretical Framework

The main aim of the present study was to identify the perceptions of a group of informatics professionals regarding teaching strategies and materials in an EOP course. Because I was working with perceptions related to the activities and materials used in the class, the theoretical framework suitable for the study comprises Bandura's social learning framework. Bandura's Social Learning Theory (SLT) emerged in response to behaviorist theories, emphasizing the role of commentary, modeling, and reinforcement in learning (Bandura, 1971; Lave & Wenger, 1991). SLT has become one of the most dominant theories of learning and development because it is based on several basic concepts of traditional learning theories.

SLT is referred to as a bridge between behaviorist learning theory and cognitive learning theory because it includes concepts such as attention, memory, and motivation (Muro & Jeffrey, 2008). SLT was developed to explain how individuals acquire new behaviors through social interactions (Bandura, 1971; Lave & Wenger, 1991). In the context of the study, this theory provides a framework for understanding how informatics professionals learn English language skills within their occupational context. This theory suggests that learning occurs through social interaction, where individuals observe and imitate the behavior of others in their social context. By modeling, individuals may perform similar behaviors, especially when these observations are

positive or accompanied by rewards (Bandura, 1971; Lave & Wenger, 1991). Also, Bandura (1971) as well as Lave and Wenger (1991) argued that simulation involves the reconstruction of observed motor activities based on these observed experiences.

Social learning implies learning through practical and reflective activities and strategies. Individuals in social learning contexts acquire knowledge by interacting with others, recognizing various perspectives within the group. This interaction aids changes in both individual and collective behaviors, values, and beliefs, improving their ability to address complex issues (Eriksson et al., 2019; Misanya et al., 2023; Sol et al., 2013). In social learning procedures, a facilitator plays a vital role in giving space for the contributions of each participant, dealing with every individual to contribute equally, addressing any dominance from certain members, and striving to identify and rectify power inequalities among the group (Ernst, 2019, p. 4). In the context of the present study, SLT is focused on identifying how informatics professionals observe and learn from others, such as peers or the instructor in the EOP course. According to Romina (2014), SLT is created through interactive dialogues among involved individuals as they explore solutions to challenges, potentially improving collaborative efforts, collective action, community governance, and the collaborative creation of knowledge (p. 21).

Drawing on this theory, the present study included observation, modeling, and reinforcement. Observation refers to the action of individuals observing the behavior of others and developing similar behaviors. Modeling involves the emulation of those observed behaviors, particularly those related to effective language learning strategies. As a matter of fact, most behaviors exhibited by individuals are acquired, whether intentionally or unintentionally, through the impact of observing examples (Bandura, 1971, p. 5). Reinforcement is concerned with the consequences associated with using certain learning strategies or materials, which can influence

the chances of their adoption, adaptation, and continued use (Bandura, 1971; Manik et al., 2022). Hence, it is stated that individuals learn through observing, imitating, and modeling the behaviors, attitudes, and emotional reactions of others within their social environment.

SLT was chosen as the theoretical framework of this study because it can be applied to the main objective of it, which was to know the perceptions of the participants about the effectiveness of the materials, strategies and resources used in an EOP course as well as the different challenges informatics professionals have while learning English. For instance, the informatics professionals may see how their peers or the instructor engage with specific materials or employ certain teaching strategies during the course and imitate or at least relate to them through activities such as role-plays or impromptu conversations. Through active participation and learner-centered materials and activities, participants may form perceptions about the effectiveness or relevance of these materials and strategies in enhancing their English language skills within the context of their profession. I believe that by applying the principles of SLT, I was able to get valuable insights into how informatics professionals perceive and engage with materials and teaching strategies in their EOP course.

To conduct the data analysis, I examined how informatics professionals engage in observational learning by monitoring their interactions with peers and instructors during the designed course. This process is referred to as *swallowing* in ESP and it refers to the stage where learners absorb and adapt the language and practices of their field through observation and participation. Furthermore, this concept has been used as a metaphorical principle describing the process of internalizing language and professional norms through active observation and participation in authentic communicative contexts, associated with constructivist and situated learning theories (Lave & Wenger, 1991; Swales, 1990). This process entailed identifying the

learning strategies and materials observed by individuals and assessing their perceptions regarding the efficacy of these methods. Also, it involved the creation of associations with existing knowledge, grouping, and summarizing material (Bjork et al., 2013; Weinstein et al., 2011). Moreover, I explored the important role of reinforcement on second language learners' performance in English by examining outcomes such as positive feedback or perceived language proficiency improvements associated with specific learning strategies and materials (Crystal, 2015; Fromkin et al., 2018). By employing Bandura's SLT as a guiding framework, I was able to obtain significant data regarding the social dynamics shaping language acquisition among informatics professionals within their professional context. The theoretical foundations of this approach are supported by Bandura's work (1971), as well as studies by Lave and Wenger (1991), and Rogoff (1990), all of which highlight the importance of social interaction and observational learning in cognitive development and skill acquisition processes.

III. Methodology

The present section describes the different components of the methodological approach used for the study of informatics professionals' perceptions about the success of teaching strategies and materials in an EOP course. First, a discussion of the research paradigm, the research design, and the research genre is presented. After this, a detailed description of the research context and research participants is included. Subsequently, this section provides an explanation of the ethical considerations, the sampling strategy, researcher positionality, data-gathering methods, and data analysis procedures. Finally, this chapter concludes with an overview of the trustworthiness, the contributions, and the limitations of the research process.

3.1 Methodology and research design

The present study relied on constructivism because it aimed to examine the participants' understanding of the world through their perceptions, reflections, and experiences. Constructivism involves gathering and examining qualitative data to investigate individuals' viewpoints and lived experiences (Taber, 2019). One of the aims of this study was to build an understanding of the unique and specific experiences and realities of each of the informatics professionals in their respective working field. It is vital to mention that the perception of reality that every participant has might differ from each other, depending on prior knowledge, background, and experiences. Specifically, this study sought to build an understanding of the participants' perceptions regarding the materials and activities used and performed in their EOP classes using a qualitative approach. This is why the perceptions of the participants were analyzed as a process of co-creation of knowledge where understanding the way others perceive their own realities was seen through the lenses of the contributions and collaboration of the participants' experiences while going through their learning process.

In alignment with a constructivist paradigm, the present study was framed as a qualitative case study (CS), in which the researcher designed and taught a course with teaching strategies and materials specific for EOP in the field of informatics, while collecting the participants' perceptions about the effectiveness of those strategies and materials. According to Hernández et al. (2014), a qualitative case study focuses on understanding and exploring phenomena from the participants' point of view in a natural and contextual environment. And therefore, a qualitative design was suitable given that qualitative investigation examines the way individuals perceive and experience phenomena around them by interpreting meanings and establishing personal points of view. This research followed the design of a descriptive case study that corresponds to an ample description of a particular case and its analysis (Biba- Starman, 2013, p. 31).

In the present study, the underlying purpose was to methodically portray the details and attributes of a specific phenomenon or the connections between events and phenomena (Merriam, 2009, p. 5). It collected data from three informatics professionals through the documentation of their learning process in an EOP course as well as their perceptions and experiences learning English using the different activities and strategies designed based on the learner-centered and the content-based approaches.

3.2 Research context and population

The setting for the present study did not involve a regular physical classroom context. Instead, it was developed through virtual sessions on the Zoom platform. The total number of contact hours for the course was 20 hours divided into 10 weeks (2 hours per week). Lessons were scheduled for Wednesdays from 6:00 pm to 8:00 pm. The link to the meeting was sent to the students a week before starting classes, along with a Google Classroom invite to the course virtual platform. In this space, students were able to find their course materials and assignments.

The course included practical job-specific tasks, simulations, role-plays, authentic materials, and opportunities relevant to the informatics, as well as opportunities for peer collaboration, feedback, and self-assessment.

The role of researchers falls into an active one while collecting data to comprehend and interpret the behaviors of others within a specific context. This intentional approach features the acknowledgment that humans have the ability to distinguish and make sense of the actions and expressions of others, regardless of the researchers' own perspectives or biases (Hatch, 2002; Lave & Kvale, 1995). Therefore, by actively engaging with participants and the experiences they were living during the research and course processes, the investigator was able to acquire insights and understanding that may have not been easily apparent through more passive or simple observation methods. This intentional approach also allowed the researcher to examine more intensively the complexities of the participants' experiences and viewpoints. Also, due to the fact that the researcher was also the teacher in charge of carrying out the EOP course, the role of the researcher was the one of an insider, meaning that she acted as an observer and as a primary source for data collection. The researcher was responsible for collecting data by enacting a series of ethical principles to guarantee trustworthiness of the research.

The participants of the present research study were three informatics professionals who agreed on taking an EOP course in the second semester of 2024. Before designing the course, a needs analysis was conducted to find the specific necessities, wants and lacks informatics professionals would have regarding English proficiency. The information gathered from this needs analysis was used to choose the participants and create the course (see Appendix B). The first participant was 21 years old, identified as a male, and had a technical degree in Business informatics. He was working in the informatics field as an Information Technology (IT) worker

for a private company by the time the course was taught and had an English level of A2. The second participant was 20 years old, identified as a male, had a technical degree in business informatics, was studying at the university and also working as an IT worker in a family business during the study, and had an English level of B2. Finally, the last participant was 37 years old, identified as a male, had a bachelor's degree in informatics engineering and several specialized studies in different informatics areas, was working as an informatics teacher at MEP and as an independent programmer then, and had an English level of B1. It is important to point out that their language proficiency levels were given to the researcher by the participants. These levels were obtained by them through taking a standardized test before starting the course. This test was not provided by the researcher, participants got it on their own. All participants were from the Western area of Costa Rica and had taken previous English courses; however, none of those courses were EOP or even specific to their own needs.

All three participants met the criteria established by the researcher. Participants were selected using criterion-based sampling. This type of sampling “calls for the researcher to set a specific criterion which should be followed for participants to take part in the study” (Nyimbili & Nyimbili, 2024, p. 97). The six criteria that the informatics professionals needed to meet to be eligible as participants were as follows:

1. The participants must have at least a technical degree in informatics or related fields (cybersecurity, business informatics, IT, among others).
2. The participants are willing to enroll in a ten-week online EOP course, specifically, an English course for informatics professionals.

3. The level of the participants must be A2 or higher, because the course is not a real beginners' course. As stated by Ureña Salazar (2017), EOP courses are generally designed for students with at least an elementary level of English.
4. The participants have access to computers, headphones, and video conferencing applications such as Zoom that allow them to connect for classes and carry out the necessary tasks.
5. The participants must be available for synchronous and asynchronous work (for assignments and oral presentations).
6. The participants must consent to sharing personal information, pieces of their work done in the EOP course, and any other assignment and materials, as needed by the researcher in order to conduct the study.

3.3 Data analysis procedures

Data was collected from primary sources because the researcher was the first one in contact with the data (Ajayi, 2023, p. 1). Due to the fact that the researcher and the instructor were the same person, data from primary sources informed the study. The data collection methods used in the study comprised: participant observations, instructor's memos, and documents such as critical incidents and reflective journal entries. The first one constituted a set of observations with structured checklists used to assure the efficiency of the observations (see Appendix C). The second one referred to memos created by the instructor after every class. These memos included specific field notes from the perspective of the researcher as the instructor of the course (see Appendix D). Then, the critical incident technique involved showing participants a case that they had to reflect on and answer some questions about (see Appendix E). Finally, a reflective journal required participants to reflect on the class, which provided the

researcher with valuable information to understand their perceptions regarding the course, the materials, and the teaching strategies (see Appendix F).

Participant observations are great ways to collect data in qualitative studies. According to Jorgensen (1989) participant observations, as a part of the methodology, are suitable for investigating nearly any aspect of human life. These types of instruments enable researchers to detail the activities, individuals, timing, locations, processes, and reasons behind events within specific contexts, as perceived by the participants involved (p. 12). Participant observation refers to the process of researchers immersing themselves in the environment being studied and participating actively in the activities together with the participants. This method allows researchers to gain firsthand information into the social dynamics, behaviors, and interactions within the context under investigation. As a matter of fact, participant observation allows researchers to observe nonverbal expressions of emotions, identify social interactions, understand communication patterns among participants, and assess time allocation for different activities (Marshall & Rossman, 2016; Schmuck, 2006).

The first step on my observation journey was to determine what to observe. As stated by Merriam (2009), the first element to look for when thinking about how to start observing is to understand the object of study. The direction of the observation process depends on the research question, but the specific focus or endpoint cannot be predetermined beforehand (p. 97). In the context of my study, by using participant observations as part of this research process, the objective of the study was to find out the impressions and perceptions of my students regarding the materials and teaching strategies used in their EOP course.

A total of three observations were conducted during the EOP course. During these observations, I used a structured checklist protocol with statements regarding students'

perceptions of the class activities and materials. The first observation took place during week one of the course while students participated in the activities of the class. In this observation, I attended to the students' responses to the activities and their reactions towards the resources and strategies. The second observation was in week four, where students participated in different activities about emerging trends in informatics. For instance, they had to perform a role-play and use different vocabulary and structures to speak. Here, I observed the way they interacted with the contents, the materials, the activity, and each other. Finally, the last observation was done in week eight while students completed different tasks and worked on speaking and reading activities. Here, I was able to observe the students demonstrating their skills using the language they had been able to acquire and enhanced throughout the course. By doing so, I was able to assess the effectiveness of the materials and tasks developed. Having three different observation times throughout the course also represented a great way of understanding the students' impressions and perceptions and make changes to the course if necessary.

Similarly, memoing in qualitative research embodies an effective way of collecting data. In this particular case, the researcher, as the instructor of the course, wrote a memo starting two weeks prior to the start of the course, and then continued writing one memo for every class. In total, there were 12 memos. Qualitative research inherently demands that the researcher adopt a reflective approach toward the research setting, the participants, and the data being examined (Birks et al., 2007, p. 69). Hence, the importance of maintaining two different points of views, as an observant and researcher with the participant observations, and as an instructor of the course with the memos. For some people, writing descriptively comes naturally, as they "view description as an instinctive way to perceive life" (Glaser, 2011, p. 91). In fact, descriptive elements are frequently used across various forms of qualitative analysis because of the

naturality, and spontaneity memos can bring to research. As an instructor, I was able to create insightful and detailed memos that linked the experiences lived in the lessons to the observations and field notes from the other instruments. Memos contextualized the research process and provided me with several examples of data related to the implementation of the course.

In the same way, documents are a great way to collect data in a qualitative study. As mentioned by Marshall and Rossman (2016) “various kinds of documents can provide background information that helps establish the rationale for selecting a particular site, program, or population” (p. 160). The first type of document collected was the journal entry. According to Lutz and Paretti (2019) “one method that has potential for collecting qualitative data has been through the use of reflection” (p. 2). In the learning process, reflective journaling involves recounting a recent experience and analyzing key elements (such as individuals, resources, and activities) that influenced learning continuously over time. In a study conducted by Wallin and Adawi (2018), this method was used as a way to assess students formatively through a self-regulated learning tool. The results suggested that the usage of reflective journals can effectively portray descriptions and explanations of participants’ experiences as they adapt to new roles of organization and contexts. This method was vital for my study because it provided me with rich data that helped me answer both of my research questions. A total of five entries were collected for the analysis along the 10-week course. The main purpose of this technique was for participants to reflect on their own learning process in the EOP course regarding the materials and strategies used to teach them. Students had one or two main guiding questions for each entry that helped them write the journal and expand on their perceptions, challenges, and limitations while learning English in their EOP course.

The second artifact used as documentation was the critical incident technique. According to Flanagan (1954) this method is “a set of procedures for collecting direct observations of human behavior in such a way as to facilitate their potential usefulness in solving practical problems and developing broad psychological principles” (p. 327). Similarly, Hughes (2007) stated that the “critical incident technique (CIT) is a well-proven qualitative research approach that offers a practical step-by-step approach to collecting and analyzing information about human activities and their significance to the people involved” (p. 1). This method was excellent to observe how participants analyzed a specific situation. I gave students a prompt with a situation related to the informatics field. The prompt was used as class material and students had to read it, analyze it, and answer questions about it. The case provided students with a real-life situation, and they had to figure out what proper solutions or actions they would consider dealing with the incident. This was given in week six as students were familiarized with the course and the materials. In this way, I was able to explore the participants’ experiences and reactions towards the materials in the class while making them use their critical and analytical skills.

Due to the fact that a set of participant observations and two types of documents were the main collection methods, a specific protocol for analyzing data was followed. Once data was collected, it was subject to thematic analysis (TA). Thematic analysis was chosen as a way of organizing, analyzing data, and searching for themes and patterns within information (Dawadi, 2020, p. 62). This study sought to understand the perceptions of the participants regarding the course materials and strategies; hence, thematic analysis offered a way to analyze the obtained data through themes and codes that provided answers to the main research questions. TA implies a clear and organized form of “developing, analyzing and interpreting patterns across a qualitative dataset” (Braun & Clarke, 2022, p. 4). This requires methodical procedures of data

coding to be able to eventually develop themes (Braun & Clarke, 2022, p. 4). Therefore, to analyze the collected data, six steps presented by Braun and Clarke (2022) were used. First, I familiarized myself with the dataset. Second, coding of the data was done. Third, the first themes were created. Fourth, themes were developed and reviewed. Fifth, a process of improving, defining, and naming the themes was done. Finally, the sixth step was to write up the final report. The information collected from the participants was analyzed using codes to be able to obtain detailed themes about the participants' perceptions regarding the course materials and strategies. After this, the researcher interpreted and described said themes and created in-depth explanations about them. After data was analyzed and discussed, the researcher was able to find the perceptions of the participants to answer the research questions.

3.4 Ethical considerations

Ethics is an essential part of research. In the present study, ethics were considered to ensure correct research practices. Ethical considerations support researchers in structuring their studies within moral elements. Qualitative researchers are morally obligated to maintain the utmost ethical standards throughout the planning and implementation of their studies. Also, they must minimize potential risks as much as possible (Wa-Mbaleka, 2019, p. 117). In the present study, some important aspects were considered in order to provide the study with an ethical framework. The aspects considered were drawn from Mirza et al. (2023).

The first aspect is the ethic of respect. This means that all participants in the study must be treated with respect and trust regardless of their age, sex, gender, nationality, or any other characteristic. Every person that voluntarily participates in the study “must be treated equally and must receive close consideration for every point they make during the investigation” (Mirza et al., 2023, p. 442). Therefore, in the present research study, all participants were treated with

respect and kindness. First, because they are human beings deserving respect and trust, and second, because they were voluntarily participating in the study.

Another issue that was considered is the relationship with the participants and conflict of interest because there was an existent relationship of friendship between the researcher and the participants. According to Mirza et al. (2023), investigators are required to maintain transparent and distinct relationships with all participants throughout the research stages. It is vital to differentiate between personal connections such as friendships or professional relationships and the researcher-participant dynamic (p. 443). For this reason, a flexible but formal environment was created, so participants would feel comfortable and yet understand that they were participants of a study and had to maintain a formal and professional environment. It is essential to ensure participants understand the researcher's impartial stance to prevent potential distortion or misrepresentation of the future findings.

The third aspect is ensuring that participants provide informed consent for data collection. Hence, a consent form was created and sent for participants to fill out (see Appendix G); this document included the main objective, the purpose, and the ethical issues of the study, and collected data the participants' personal information and the communication channels. Also, it had the different procedures and steps on the research such as the data collection methods and finally their approval so that I could "seek their consent and agreement before we proceed with the collection of data" (Mirza et al., 2023, p. 443).

The fourth aspect is the usage of incentives. It is unethical to provide participants with gifts or goods when conducting research (Mirza et al., 2023, p. 444). However, there are other ways to motivate the participants and to pay forward for their help and contributions to academic research. In this situation, the incentive offered to the participants was the knowledge gained

while taking the EOP course. At the end of the course, students were able to properly analyze authentic informatics-related texts and audios in English in order to demonstrate a deep understanding of technical concepts and the ability to apply critical thinking skills to solve problems in the informatics field. Hence, all that knowledge represented enough motivation and incentive for show participants appreciation.

The fifth element is confidentiality and anonymity. This aspect refers to the importance of protecting the anonymity of participants and the confidentiality of the collected data (Mirza et al., 2023, p. 444). In the present study, anonymity and confidentiality were assured at all times. First, the consent form stated that all personal information such as names or other sensitive information was going to be changed to a pseudonym. Also, the information was shared only for academic purposes.

The sixth element is reporting back to the participants. According to Mirza et al. (2023) “the participants must be kept apprised of the research’s progress whenever possible” (p. 444). It is important to keep the participants on the loop of what is happening with their information. For this reason, the participants in this study would receive a summary of the most important research findings. Finally, the last aspect mentioned by Mirza et al. (2023) corresponds to trustworthiness. This element refers to the different ways in which a researcher can establish credibility and reliability to the study. Due to the importance of this aspect, it will be developed next.

3.5 Trustworthiness

Trustworthiness is an essential part of qualitative research. Guaranteeing trustworthiness is vital for establishing the credibility and dependability of qualitative findings, especially considering their subjective nature (Dogson, 2019, p. 220). In the case of the present study, it

was achieved by three standards. The first one is credibility which is said to be gained “by engaging over extended periods, observing persistently, and using triangulation” (Ahmed, 2024, p. 2). Credibility was achieved by the use of triangulation techniques. Triangulation implies the usage of different methods to collect data (Shenton, 2003, p. 65). In the case of this study, three main instruments used for this purpose included collecting data from the participants via a set of participant observations, a critical incident, and a reflective journal. By using three different methods, the potential biases inherent in just a single method or data source could be mitigated. Also, triangulation increased the reliability of research findings by verifying results across multiple data sources or methods.

The second standard is transferability, which denotes the external validity of the study. According to Ahmed (2024), transferability is related to the extent to which the findings of a study can be used and practiced in different types of situations. By establishing sufficient details and clear explanations, researchers allow the readers to be able to assess how useful the findings can be in similar situations (p. 2). In the present study, thick descriptions were utilized to achieve transferability. Thick descriptions provide comprehensive details about the research environment, participants, and methodologies; therefore, the readers can assess the similarities between their own circumstances and the study, allowing them to determine the appropriateness and implications of the findings for their particular contexts or scenarios (Ahmed, 2024, p. 2).

The third standard is confirmability. This element reflects the concern for objectivity. It involves taking measures to ensure that the findings primarily reflect the experiences and standpoints of the participants, rather than the biases or preferences of the investigator (Shenton, 2003, p. 72). Confirmability was achieved via peer debriefing by seeking feedback from others. In this case, the study went under scrutiny by three main sources. First, an advisor was in the

process from the beginning of the research providing feedback in every step of the way. Second, a reader provided the researcher with feedback. Finally, the review committee was in charge of analyzing the research study and providing feedback.

3.6 Researcher positionality

I identify as a Costa Rican female, bilingual (Spanish and English) language educator who has been working with English for specific purposes for 10 years. As a teacher working for the Ministry of Public Education (MEP, acronym in Spanish), I have experience in development and creation of ESP programs, which has helped me in the development of this project. Due to the fact that I have followed the academic path of English teaching and applied linguistics, my work has been focusing on the development and implementation of an English for vocational purposes course for informatics professionals in Costa Rica. I have been familiar with the growing demand for EOP courses in the field of informatics prior to embarking on this research, having previously served as an instructor and curriculum developer for similar programs for the MEP in Costa Rica. It is vital to mention that there are some power dynamics in this research. Since I was the instructor in charge of carrying out the EOP course, I am an authority figure for them. I have also observed firsthand the critical need for targeted language instruction to support the professional growth and international competitiveness of Costa Rican informatics professionals. My involvement in this work aimed to address these needs by creating an EOP course that effectively integrated industry-specific language skills with practical applications in the field of informatics.

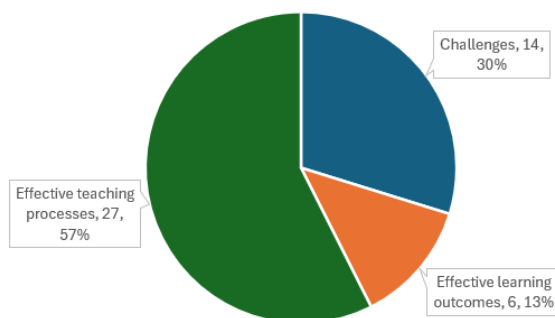
IV. Findings

In this section, I present an in-depth analysis of the findings, structured around three central themes: challenges, effective learning outcomes, and effective teaching processes. First, I explore the challenges that emerged in an English for occupational purposes (EOP) course for informatics professionals, offering a comprehensive examination of the obstacles faced by the learners. This analysis focuses on the complexities that can affect the learning processes. Second, I discuss the theme of effective learning outcomes, illustrating how students responded to the strategies, materials and instructional approaches used in the course, as well as the success and effectiveness these methods have generated. This theme emphasizes the role of well-structured learning experiences in promoting student engagement and achievement. Finally, I refer to the effective teaching processes, identifying the pedagogical strategies that contributed to the development of a productive and inclusive learning environment. The analysis of these three themes demonstrates the dynamics at play in the educational context of an EOP course, showing the interconnection between challenges, outcomes, and teaching practices.

The previously stated themes were selected due to the quantity of codes that they included (see Figure 1).

Figure 1

Quantity of codes per theme



Note. Data coded from observations, memos, and artifacts.

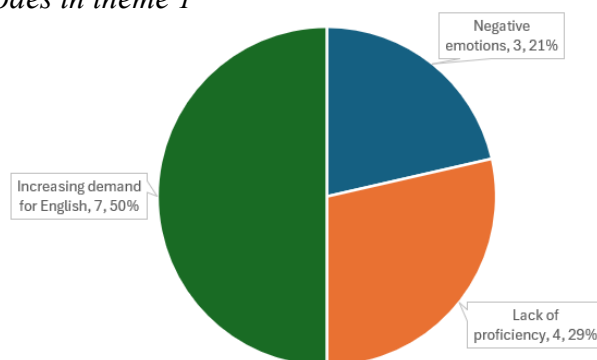
Figure 1 shows the codes related to the main themes: 14 codes (30%) were included under challenges, 6 codes (13%) under effective learning outcomes, and 27 codes (57%) under effective teaching processes. These themes are discussed in the next sections. As stated elsewhere, pseudonyms were assigned to each of the three participants: J, D, and E.

4.1 Challenges in an EOP course for informatics professionals

Within the context of learning English many challenges can arise. One of them, particularly for non-native speakers, is the complexity of the language itself, including its grammar, vocabulary, and pronunciation. This challenge can lead to increased anxiety and a perception of lower competence in language learning, as was the experience of the course participants. Challenges that arose from data were represented by three main categories, which are illustrated in the following figure.

Figure 2

Categories and quantity of codes in theme 1



Note. Data coded from observations, memos, and artifacts.

As presented in Figure 2, three main categories were found within the theme of challenges. Negative emotions, for instance, had a total of 3 codes (21%); lack of proficiency, with 4 codes (29%); and demand for English, with 7 codes (50%).

4.1.1 Negative emotions

Negative emotions during English language learning can significantly affect students' motivation, confidence, and overall course experience. Feelings such as anxiety, frustration, and embarrassment may arise because of challenges in comprehension, pronunciation, or communication. For instance, J experienced emotional discomfort while participating in an oral activity. In my fieldnotes for lesson four, I described his emotional response thusly: "In this class, J got really anxious when presenting his part of the cases and the instructor told him in English to calm down and to breathe and when he was calmer, he started all over again" (Participant observation, lesson 4). During this activity, J had to explain his point of view regarding a case study about a common cybersecurity issue. However, his fear of speaking in English made him feel anxious, and so he had to stop and start all over again. This excerpt shows a common emotional challenge that arises in settings where non-native speakers have to use their second language. Indeed, research has emphasized that non-native speakers often struggle with overcoming these difficulties, which can inhibit their ability to communicate effectively, both in written and spoken forms (Belcher, 2007, p.3).

In the same class (lesson four), I was able to observe that even the other two students, who have a high intermediate level of English, had to deal with some fear of speaking. For instance, in one of the activities students had to read a case study to roleplay a situation; they had to understand the different roles assigned to them and to provide a solution to a specific informatics-related problem. In one of my memos, I mentioned that "I knew the students were going to have some challenges with this speaking activity because I could notice their faces when I said it was a group work and speaking was involved" (Instructor's memo, lesson 4). In this class, just by looking at the students' faces, I could notice that they had some fear of

speaking. This same look on their faces was repeated every time they had to speak. I was able to notice that even though these two students managed to do the task, they developed anxiety when speaking in English. This is a common challenge when speaking in a second language. As a matter of fact, language anxiety can cause people to become excessively self-aware, reluctant to speak, and afraid of making errors in front of others (Horwitz, 2010, p. 154).

The factor of having to speak in English in front of classmates and a teacher was made noticeable to the instructor from J from the beginning of the course:

had some trouble with the pronunciation of words; however, I could tell that he had studied and practiced this presentation quite well. The grammar was perfect, and the content was great! He does need to work more on his confidence. I noticed that every time I wrote something in my notebook, he started feeling nervous. (Instructor's memo, lesson 1)

This particular participant had difficulties with his speaking skills. He became nervous and anxious. He was very adamant that I knew as his teacher that he had anxiety, and that this situation represented a challenge for him. On lesson five, he asked me to stay at the end of the class, and he expressed the following: "*yo nunca practico y con usted, usted sabe que yo soy una persona ansiosa, a mí me da vergüenza y me dan ataques de pánico si me encuentro en una situación estresante.*" [I never practice, and with you, you know that I am an anxious person, I get embarrassed, and I have panic attacks if I am in a stressful situation.] (Instructor's memo, lesson 5). According to Horwitz et al. (1986), foreign language anxiety is a general phenomenon that significantly impacts students' ability to communicate orally in a second language (p. 128). Similarly, Young (1990) found that students often experience increased levels of anxiety when

required to speak in a foreign language classroom, especially in impromptu speaking situations or when addressing large groups (p. 54).

4.1.2 Different levels of proficiency

Another important finding regarding challenges is related to the obstacles that different levels of proficiency represented for the students. Lack of proficiency in language learning refers to a student's insufficient ability to communicate or understand the target language effectively. This can manifest in areas such as vocabulary, grammar, speaking, or comprehension, and overall progress, especially in mixed-level groups. Mixed-ability classrooms are composed of a group of students with differing levels of learning abilities, interests, and skills (Chapman & King, 2003; Hedge, 2001). Research has shown that the varying proficiency levels within a target group can significantly impact teaching and learning for students, instructors, and the institution. Students in a class with such contrasting language abilities can "differ in strengths and weaknesses and have different approaches to learning" (Al-Subaiei, 2017, p. 182).

In the case of the participants, three levels were presented. Students reported these levels after each one of them took a standardized test last year; these reports were provided to the instructor during the needs analysis stage of the course. In this particular case, the levels correspond to levels of proficiency given by the Common European Framework of Reference (CEFR). J reported an A2 level, which corresponds to learners that can start engaging in simple conversations with an instructor or language partner (Zaki & Darmi, 2021, p. 16). D informed having a B1 level, which means that he is able to understand key points in familiar situations, manage common travel scenarios, produce simple text on personal topics, and describe experiences, goals, and briefly explain opinions and plans (Zaki & Darmi, 2021, p. 17). Finally, E's level corresponded to B2, which implies that he is capable of understanding complex texts on

both concrete and abstract topics, including technical discussions in their field (Zaki & Darmi, 2021, p. 17). I noticed in lesson one that the students' proficiency played a significant role in terms of adjusting materials and activities to the students' levels and specific needs:

students had some trouble with the activity on matching concepts [related to the informatics field]. I saw some challenges when they were interacting with this activity because they are all at different levels of proficiency. D is a B1 going into B2, E is a B2, and J is an A2; so even though the definitions were between A2 and B1 level, they had some difficulty in understanding them and in actually matching the technical terms and the definitions that are really similar (Instructor's memo, lesson 1).

During several moments of the course, there was a significant challenge with managing these mixed levels of proficiency. Students faced difficulties in comprehending and completing tasks designed for a particular proficiency range, for instance, technical vocabulary exercises related to the informatics field. Data revealed how students struggled with a matching activity despite it being created specifically for their proficiency levels, likely because of the complexity of technical terms and their varying abilities to understand them.

Additionally, classroom participation further demonstrated the impact of these proficiency differences. While students like J, A2 level student, actively engaged in discussions, his limited vocabulary often led him to code-switch between English and Spanish. As I observed lesson one, I could witness that:

students interact and participate actively. They enjoy answering questions and making comments. I notice J has a lot to say; however, due to the fact that he has a lower level of proficiency, his vocabulary is limited, so his participations are a combination of English and Spanish (Participant observation, lesson 1).

Throughout the course, the challenge of attempting to express complex ideas in the target language, while having lower proficiency, was present in many activities and tasks. For instance, in the case of J, his proficiency level is conducive to what lower proficiency students resort to: to rely on one's native language as a support mechanism (Ghafar & Raheem, 2023, p. 512). For instance, J used code-switching constantly when speaking in class. As a matter of fact, on lesson one, "J told me he felt '*muy* happy de *estar en este* English course' [very happy to be in this English course]" (Participant's observation, lesson 1). As stated in the quote, J tried to speak in English, but he relied on Spanish to talk.

The dynamics between proficiency levels also created challenges in collaborative tasks, as the students' varying linguistic abilities made it difficult to maintain the same level of engagement across the group. In one of the activities, I noticed that D would become frustrated with J when he did not understand an activity even though I had explained it several times. D's frustration was evident in his face and gestures. However, in a moment he unmuted his microphone and told J: "*La próxima vez que no entienda algo, dígallo en español. No importa, para que así pueda entender bien*" [Next time you do not understand something, say it in Spanish. It does not matter, so you can understand better] (Instructor's memo, lesson 7). Similarly, in the critical incident activity, E was having difficulties understanding what J wanted to express, and, in a moment, he told him: "I am sorry J, I cannot understand what you are trying to say, can you write it or just say it differently or even in Spanish?" (Participant observation, lesson 8). These interactions show how challenging it can be to communicate within the classroom having mixed proficiency levels, even when the students are engaged and willing to help each other. Both D and E recognized the communication breakdown and felt frustrated; however, they provided J with a solution by encouraging him to participate and even to use Spanish as a compensatory strategy.

4.1.3 Increasing demand for English in the informatics field

Another major finding regarding challenges was participants' perceptions about the increasing demand for English in the informatics field. As stated by Tangkelangi et al. (2021), nowadays, people need to keep up with technological advancements to improve efficiency and remain relevant. Hence, informatics students, who study and innovate technology every day, must stay updated on the latest developments and need a strong grasp of widely used languages like English to access current information in the technological sector. In the case of the participants of this study, they recognized the need for English in their field. For instance, E explained in journal one that: "a lot of resources are in English. Resources like research, tutorials, documentation, textbooks, and forums are in English, so learning English will give you more information on [sic] your fingertips" (Journal entry 1).

The participants' acknowledgment of the importance of English proficiency reflects a growing trend in the informatics field, where being multilingual is becoming more valuable. As stated by Tang (2020), English has emerged as a global language, leading to a growing worldwide demand for teaching it as a foreign language (p. 97). As English becomes the lingua franca for global communication and collaboration, educational institutions must equip informatics students with the language skills necessary to engage with international research and participate in global forums. Also, the predominance of technical materials in English widens a critical gap in resources for non-English speakers, making English comprehension essential for effective participation in the field. As stated by Crystal (2003), the majority of global scientific, technical, and academic content is now available in English, placing non-English speakers at a growing disadvantage when it comes to accessing this information (p. 12).

Participants were aware of the fact that being proficient in English is a necessity in their fields. In fact, on lesson one, J stated the following during a speaking activity: “English is important in the informatics field because many languages programs are in English.” Also, in the same lesson, D commented that: “the most important information about informatics is in English” (Participant observation, lesson 1).

English represents an essential part of informatics professionals. This is why, having a lower proficiency or even not being able to understand basic terms or commands represents a major challenge for these types of professionals in their everyday working life. The significant role of English in the informatics field suggests that students with limited proficiency may face difficulties in accessing academic materials and lectures in their field, which could become an obstacle in their ability to succeed. Consequently, the decision to enroll in an EOP course demonstrates a proactive approach to overcoming language barriers, enhancing academic performance, and preparing themselves for future career opportunities where English proficiency is a necessity. Even though participants were struggling to close the gap between the increasing demand for English and their perceived lack of English proficiency, which triggered an array of negative emotions, they remained engaged in learning English.

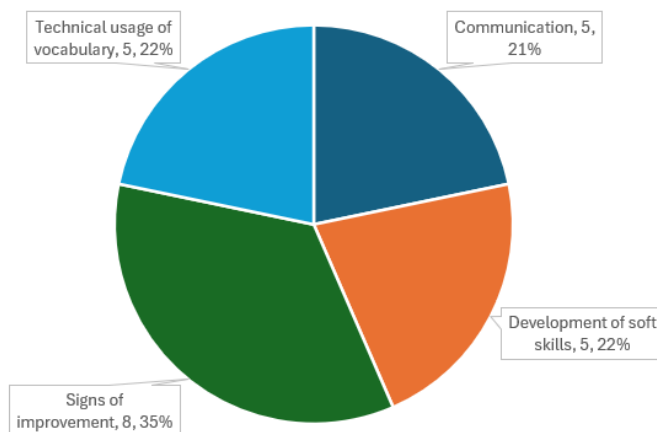
4.2 Effective learning outcomes

Effective learning outcomes refer to the measurable knowledge, skills, attitudes, and values that students are expected to achieve as a result of their learning experiences. These outcomes serve as clear goals that guide both instruction and assessment, which ensures that educational activities are aligned with desired results (Biggs & Tang, 2011; Zeggelaar et al., 2020). In the case of the participants from this study, they were able to develop several skills through the usage of different materials, resources, strategies and activities during the ten-lesson

course they took. In Figure 3, the most relevant codes in the skill development category and the quantity of examples that were drawn from data can be seen.

Figure 3

Participants' perceptions of their skills development in the course



Note. Data coded from observations, memos, and artifacts.

As presented in Figure 3, there were 8 (35%) examples for the code “signs of improvement,” which refers to different quotes that show the improvement of the participants throughout the course. Second, there was the development of soft skills, which refers to critical thinking, teamwork, among others. This code had 5 (22%) examples. Third, there is the technical usage of vocabulary, which is essential in an ESP course. This code had 5 (22%) examples. Finally, the fourth most relevant code was communication with 5 (21%) examples. This code refers to the way students experienced improvement in their communication skills.

4.2.1 Skill development

One of the main skills that students developed was communication, because they were able to increase their vocabulary and confidence when speaking. During the course, students had to write their thoughts and ideas through journals. For this specific journal entry, I asked them to openly tell me how they felt about the materials and activities used and performed in the EOP

course and if these activities provided support or helped them in their job-related tasks or general activities. As D explained in journal three: “the course has provided me with the tools that I need to improve my communication skills, which are important for my job and other tasks” (Journal entry 3). This remark regarding the importance of communication skills in the informatics field indicated that the real-world relevance of what was learned was significant. It also showed that the course provided students not only with theoretical knowledge but also with practical skills that have a tangible impact on their professional and personal lives; which is one of the main goals of ESP instruction (Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987).

This perception of having improved communication skills was echoed by other students, who also noted progress in both their vocabulary and overall fluency. In journal three, J stated that: “the materials learned in class help me to expand my skills, for example, I learn [sic] about technology, I develop my speaking skills” (Journal entry 3). J’s reflection centers on the practical benefits of classroom materials, specifically technology related materials in enhancing both technical knowledge and communication skills. By integrating technology and language learning, J was able to understand how academic content can develop a well-rounded skill set, which is essential for personal and professional growth.

Similarly, students were aware that to communicate effectively in the informatics field, they needed to have a good understanding of English. In journal 1, E stated that: “it [informatics field] is a big community that communicates in English. If you know English, you will be able to participate in forums making the community bigger and bigger” (Journal entry 1). Students in this class recognized the importance of English proficiency for effective communication in the informatics field. E’s journal entry pointed out that English works as a common language within this expansive community of the field, which allows individuals to engage and increase

collaboration within the field. Overall, these participants understood that a firm command of English is essential for active participation and success in informatics.

Another set of skills that students could develop through the course were soft skills related to their field. Soft skills refer to “all the competences that are not directly connected to a specific task; they are necessary in any position as they mainly refer to the relationships with other people involved in the organization” (Cimatti, 2016, p. 98). For example, participants were able to develop critical thinking. I could notice as an observant that “students liked the activity (writing tips on a collaborative board) a lot. During lesson eight, students mentioned that ‘they really like activities that make them think critically and also talk in front of the class and instructor’” (Participant observation, lesson 8). In fact, D stated that through the case studies he was able to express his ideas in more critical ways (Participant observation, lesson 8). Critical thinking was an important skill for students to develop because in their field of study and development, they truly need to think critically and solve issues accurately.

In addition to critical thinking, students could develop other soft skills such as confidence, teamwork, and problem-solving skills; abilities that are essential in the informatics field. On lesson four, I observed: “the case study was successful because it allowed students to participate, develop critical thinking and teamwork, while using the new vocabulary learned and problem-solving skills” (Participant observation, lesson 4). Similarly, E mentioned that: “we [students] learn in a group, so we have interaction and feedback from the teacher and classmates. It is easier to learn when we are surrounded by other people” (Journal entry 4). This statement shows that students acknowledged that by interacting with each other and working together, they could develop their skills not only individually but also as a group.

The course significantly enhanced students' soft skills, which are a significant component of any industrial organization and should be prioritized by any company (Cimatti, 2016, p. 98). Through engaging activities, students were immersed in a collaborative environment while cultivating meaningful interactions and feedback, and participation.

Several signs of improvement were documented through the different artifacts, observations, and memos from the class. One of the most recurrent signs of improvement in students on this course was their usage of technical vocabulary. As stated by Xhaferi (2010), students must understand the importance of language learning strategies and receive training in their effective use to acquire both general and technical vocabulary in ESP. Teachers play a key role in helping students learn vocabulary relevant to their fields (p. 233). This is why all lessons had an emphasis on learning real-life vocabulary and how to use it. In journal entry three, E mentioned that: "in this course I have participate [sic] in a variety of activities and used a lot of material that have improve [sic] my English skills in the Informatics field. Firstly, it makes me better in communication, vocabulary, and writing skills" (Journal entry 3). This shows how students could recognize their improvement and even showed it through a journal entry with minor mistakes.

In a similar way, there were many moments in which I could see and understand that the students were improving and learning from the course. In my observation of lesson four, I recorded that:

there was a moment in which J spoke so well, I even got surprised, because I did not know he knew so much vocabulary and he could express so well in an impromptu way. Also, I have noticed that D has improved his fluency. He presented the case, and his speech was not as choppy as most of the time. E has also improved. I noticed that he had

a big issue with past tense and in this class, he was almost perfect when speaking (Participant observation, lesson 4).

Participants in this class showed improvement while performing tasks and activities that were engaging, dynamic, and related to their fields of study. In the course, they found an appealing environment in which they developed skills of all sorts. Specifically, they experienced engaging activities as well as positive rapport, which drove them to participate in class actively. Collaboration and scaffolding allowed learners to feel more involved. Consequently, the development of skills shifted from students mastering declarative knowledge to implementing it procedurally since students were able to communicate more effectively.

4.3 Effective teaching processes

Effective teaching processes are important for creating a productive learning environment. As stated by Faryadi (2018), "the effectiveness of learning and teaching depends on many factors such as the environment, classroom conditions, and most importantly, styles of learning and teaching" (p. 222). These processes involve a range of strategies that educators use to enhance students' understanding and skill development. Also, by adapting instructional methods to different learning styles and incorporating technology, teachers can significantly improve their educational experience. Moreover, effective teaching processes prioritize content delivery, positive student relationships and rapport, critical thinking, motivation and collaboration among other important aspects that make learning an effective and successful process. As stated by Paolini (2015), to encourage a dynamic and engaging learning environment, instructors should support students in developing their ability to think critically and creatively, pushing them to explore ideas beyond conventional boundaries (p. 22).

Theme 3, effective teaching processes, presented a significant aspect in the present research study because of its relevance and importance among the different observations, memos and artifacts used to collect data. Table 2 shows the quantity of categories and codes per category.

Table 2

Main categories and codes from theme 3

Category	Motivation and engagement	Resources and materials	Classroom dynamics	Learning strategies
Codes	<ul style="list-style-type: none"> • Active participation. • Motivation. • Engagement • Games and competitions. • Relevance of topics. 	<ul style="list-style-type: none"> • Attractive materials. • Authentic resources. • Effective materials and resources. 	<ul style="list-style-type: none"> • Modelling. • Collaboration. • Effectiveness of class methods. • Feedback. 	<ul style="list-style-type: none"> • Application of content. • Learner-centered strategies. • Meaningful learning. • Meaningful materials and strategies.
Quantity of excerpts	32	10	18	20

Note. Data coded from observations, memos, and artifacts.

As stated in the previous, the four most relevant categories related to effective teaching processes included: motivation and engagement, resources and materials, classroom dynamics, and learning strategies. The main category was motivation and engagement with 32 excerpts, learning strategies with 20, classroom dynamics with 18, and finally, resources and materials with 10.

4.3.1 Motivation and engagement

Motivation and engagement are vital aspects of the learning process, significantly influencing students' academic performance and general experience. As Nguyen (2019) established, motivation significantly impacts student behavior and engagement in learning

environments; less motivated students often struggle with focus and discipline, while highly motivated students participate actively and concentrate better (p. 54). When learners are motivated, they invest time and effort into their studies, leading to deeper understanding and retention of knowledge. Similarly, when motivated, students create a sense of connection to the material and the learning environment, which encourages them to have active participation and collaboration in class.

Participants were found to be highly motivated, which was evident in their high levels of participation. For instance, in one of my memos, I stated that: “Students were eager to participate in an active way. They enjoyed the materials and completed all the tasks accurately” (Instructor’s memo, lesson 4). Students in this course were excited to participate in the class activities. They interacted actively with the materials in exciting and motivating ways while building on their individual and group knowledge. In the same way, in another one of my memos, I mentioned that: “D is a very active participant, and he loves to talk. He never uses Spanish and even to ask he says: ‘how do you say?’ or ‘how do you pronounce?’” (Instructor’s memo, lesson 3). All students in the course participated actively; however, D was always sure of using only English and utilizing the phrases and technical vocabulary provided by the instructor. This demonstrates that students wanted to learn and participate actively to enhance their skills.

Likewise, motivation was a key factor in students’ engagement in the course. The participants in this study enjoyed doing activities and being praised and motivated when doing so. In my observation of lesson one, I could see that by providing students with verbal feedback accompanied by encouragement and motivation, they felt engaged. In fact:

after every single activity I told them how well they did and to keep up the good work. I try to use only positive reinforcement with positive words, so instead of saying: ‘You

need to fix this mistake, I would say we can make this better by...’. (Classroom observation, lesson 1)

Students’ engagement was directly related to how motivated they were. Activities in the course were created with the goal of creating a safe, encouraging and motivating space for students to participate. J was one of the most motivated students, and he stated that:

con usted puedo aprender y expresarme y practicar lo que no practico. Entonces, para mí digamos, ha sido muy feliz, es algo que siempre me llena de energía y me hace muy digamos como realizado al ver que yo puedo hacerlo. [With you I can learn and express and practice what I do not practice. So, for me, let’s say, the process has been very happy; it is something that always fills me with energy and it makes me, let’s say, like accomplished to see that I can do it on my own]. (Instructor’s memo, lesson 4)

Students on this course were also able to find a sense of accomplishment through the different learning strategies and activities performed in class. As J noted, this course gave him the opportunity to practice and demonstrate that he could learn and use the target language. By providing students with engaging and motivating activities, students could feel excited about participating, which resulted in expected attitudes from activities of this nature: enjoyment or satisfaction in class (Liu et al., 2021, p.3).

Comparably, students appreciated games and competitions as part of the course strategies. As stated by Gozcu and Caganaga (2016) “games are one of the most important components in EFL classrooms. They include activities which have goals and rules at the same time fun” (p. 3). Games and competitions worked effectively for students to feel motivated and engaged in class. I could notice in one of the lessons that “Students played a game with questions about the text and the different terms. Students seem to love these kinds of activities. They really

enjoy playing games and having activities that involve competition” (Instructor’s memo, lesson 4). Games provide various advantages since they facilitate the learning of the target language by actively engaging students, allowing them to see their progress. Moreover, teachers appreciate the ability to present the language in a fun and enjoyable setting, which enhances the effectiveness of their teaching (Gozcu & Caganaga, 2016, p. 127).

By using games and competitions in class, students were able to bring their best selves to the class and show their eagerness and motivation. In observation of class four, I was able to see that “students loved playing an online quiz game about emerging technologies because it turns the activity into a competition, and they like to compete and show they can answer fast” (Participant observation, lesson 4). This method was used several times in the course because students showed a preference for it. As mentioned by Sharma and Sharma (2023) “by employing a combination of motivational, captivating, and educational techniques, gamification fosters confidence, empowerment, interaction, and collaboration among consumers and audiences” (p. 9). Gamifying the course created an atmosphere of empowerment where students were able to succeed and interact effectively in class.

One element that contributed to the students’ motivation and engagement was the relevance of the topics studied in class. When contents align with students’ interests and real-life experiences, it is likely for students to participate actively and connect with the material. Also, the way in which the contents are approached and taught has major implications in the effectiveness of students’ learning. In journal two, J mentioned that

if the approach is right, we learn in a better way, to listening to an audio about a topic that we like, if the approach is adequate, we learn in a better way, the different learning

methods used in class are effective, but if they are used in an adequate way (Journal entry 2).

Likewise, the mix of relevance, interactivity, and motivation created a learning environment that students enjoyed. In journal 4, E also explained that “the combination of relevant content, interactive learning, and varied activities makes this course engaging and effective in helping me improve my English skills” (Journal entry 4). The integration of relevant content, interactive learning, and diverse activities promoted an enjoyable and effective learning environment.

4.3.2 Resources and materials

The types of materials used in an English class are essential for developing students’ learning experiences and outcomes. Diverse resources and materials, including textbooks, multimedia content, and interactive activities, increase engagement and provide students with what they need. In ESP, incorporating authentic materials is vital, as it allows students to learn the specific terminology related to their field of study while also practicing professional communication in real-world situations (Rus, 2020, p. 1). Hence, materials and resources used in an ESP course must be creative, attractive and authentic. In one of my memos, I was able to find out that students liked the materials used in class. Once, “I asked them at the end of the class if they had liked the class and the materials and D said that he loved today’s class and that the materials are always so attractive and easy to follow” (Instructor’s memo, lesson 4). All materials in the course were focused and created tailored to their field, likes and needs. Likewise, in one of the last lessons, “D mentioned that he felt motivated to perform a face-to-face job interview in English and that by having role-plays and activities that encouraged him to speak, he was feeling really confident to speak in English in a business environment” (Instructor’s memo, lesson 6).

By having activities such as role-plays, case studies and real-life resources, students were able to develop their English skills, as well as their professional ones. In ESP settings, authentic materials provide several advantages for developing language skills: listening, speaking, reading, and writing, as well as sub-skills like grammar, vocabulary, pronunciation, and intonation. Authenticity in materials boost learner motivation and equips students with genuine professional contexts and real-life language applicable to their fields of study (Rus, 2020, p. 2).

4.3.3 Classroom dynamics

Classroom dynamics refer to the interactions and relationships between students, teachers, and the learning environment that influence the general educational experience. In the EOP course, there were several dynamics that were used in order to attain effective and successful learning outcomes. One of the main dynamics that could be found in the course was modelling, referred to actions done by people after observing others doing them, especially, when said observations are positive or complemented by rewards (Bandura, 1971; Lave & Wenger, 1991). In my observation of lesson four, I could notice that “these students love to have phrases to model their oral tasks since these phrases reflect professionalism and they can use them in occupational scenarios” (Participant observation, lesson 4). As stated before, one of the main goals of an ESP course is to give students tools to be able to succeed professionally. As shown in the observation, students enjoyed having these kinds of tools such as examples and phrases, so they can contextualize them in their own working environment. Correspondingly, in one of my memos I stated that “D gave us a very deep and thorough explanation of some threats informatics field-related threats. He even went into details of the origins and preventions of such threats” (Instructor’s memo, lesson 5). In this instance, D mentioned real ways in which users can prevent cyber-attacks, and he showed the class how to implement some best practices. The

input from this student served as modelling which allowed the other students to learn more meaningfully and contextualize what they were learning in class.

Collaboration was another element presented in this course dynamics. Participants collaborated to create knowledge by interacting with and helping each other. After an oral activity, J was struggling with understanding the instructions of the task. I helped him understand the exercise; however, “something that caught my attention is that even though J was struggling, students helped each other; and this actually showed social learning” (Instructor’s memo, lesson 1). Pahl-Wostl et al. (2007) defined social learning as the process of learning to work together, which involves building new relational skills. This includes enhancing collaboration and gaining a deeper understanding of others’ roles and abilities in a different way (p. 5). Another example of this dynamic in the course is one of the aspects I noted in observation of lesson one:

This group builds knowledge together, even with me. I am not a professional in the informatics field, but they are. So, together we used the materials I brought, their knowledge on the subject and my knowledge in English and learn together. (Participant observation, lesson 1)

Building knowledge together is extremely significant for students to be able to understand the target language in deeper ways. The main idea of the course was to provide them with the tools to increase their English proficiency in the working place, and by enhancing learning processes like the ones described above, students were able to meet their needs.

Effective class activities are essential for creating a dynamic and interactive learning environment that supports students’ success. In the EOP course, there were several tasks that proved to be efficient for students to learn and practice English. For instance, E mentioned in journal four that: “in this course, there are a variety of activities. We stay active and motivated

through roleplays, oral presentations, journals, videos, articles, and, in general, the use of technology” (Journal entry 4). Activities in the course followed the principles of learner-centered, task-based, and content-based approaches to focus on students’ needs. Similarly, in journal four, D commented:

I think that [the course] is very motivating, its methods allow me to learn English in a different way. I’ve never been before on a course like this [sic]. I’ve been in a typical course where a teacher explains some rules of grammar, but in this case, it is very different because I feel more confident when I learn English in my same field (Journal entry 4).

As reflected in this entry, EOP focuses on teaching English in ways that students are able to apply the knowledge they learn in their professional lives.

Another element stated by the instructor and the students related to classroom dynamics was feedback. According to Kutasi (2023), “feedback’s primary goal is to help students reach their learning objectives by pointing out their strengths and recommending areas for development” (p. 7). Feedback can be given in several ways, for instance, individually, as a group, immediately or after a while. It also can be given by the instructor or by peers. In class four, I noted that “students take feedback effectively. They correct pronunciation immediately and in written tasks they avoid previous mistakes in current tasks” (Instructor’s memo, lesson 4). This observation shows the positive impact of feedback on the students’ performance. By responding to feedback effectively, students demonstrated a proactive approach to learning, showing that they are both receptive and adaptive and viewed feedback as an opportunity for improvement rather than criticism.

In a similar way, peer feedback played a significant role in the students' development. In my observation of lesson four, I could notice that "Students are constantly listening to each other and helping each other. D has taken the role of a helper for J. This has translated into a wonderful improvement for J" (Participant observation, lesson 4). Having feedback from their peers helped students create a sense of collaboration and communication. It allowed students to engage with one another and build teamwork skills. It also promoted active learning by placing students in an evaluative role, which deepened their understanding of the materials and resources. Additionally, peer feedback helped participants develop critical thinking as they learned to analyze strengths and weaknesses in others' work.

4.3.4 Learning and teaching strategies

Learning strategies represent a major factor in students' acquisition of knowledge. Paudel (2019) defined learning strategies as an individual's method of acquiring and applying information to enhance personal effectiveness and language proficiency. Students employ these strategies to comprehend information and resolve language-related challenges (p. 87).

Participants were able to use several strategies to improve their understanding of the materials and increase their learning outcomes. One of the most important ones was the application of the contents studied in their real lives. In one of my memos, I pointed out that:

Something to point out is that the three students explained their articles using the useful phrases given by me, which shows me that they are actually noticing them along with the technical terms from their field, which is one of the main objectives of this course (Instructor's memo, lesson 5).

In this activity, each student had to read an article related to cybersecurity and then, they had to explain it to the instructor and the rest of the class. Each article was different (up to each

student's level) and specific to cybersecurity threats. Participants were able to use the technical vocabulary and phrases provided by the instructor to explain their article. This reveals how students used the content and applied what they had learned into their learning process.

One example of how applicable the course contents were is provided by D on journal entry three. He mentioned that “the materials and activities in this course have been very helpful for my job. The lessons have given me useful language skills, like how to write emails and reports, which I use every day at work” (Journal entry 3). D's reflection demonstrated the course's relevance, particularly in improving essential workplace communication abilities such as writing emails and reports, which is an essential outcome of any ESP course.

In a similar fashion, strategies that focused on the learner were the main priority of this course. Learner-centered strategies involve explicit skill instruction, opportunities for reflecting on the learning process and how it is accomplished, student autonomy in their learning journey, and encouraging collaboration within the classroom community (Tzenios, 2022, p. 916). In the course, students were familiar with these types of strategies, and they enjoyed them a lot. In my observation four, I stated that “the vocabulary presentation actively involved the students, emphasizing the learner-centered nature of this class. Students never stopped participating and they carried out their tasks with just a little help from the instructor” (Participant observation, lesson 4). In this particular class, I had a presentation on vocabulary. However, instead of reading it and presenting it to the students, I decided to involve the students by having them present the words, use them in a sentence, and explain the definitions. This activity turned out to be very successful because it engaged students in learning and understanding the terms. Also, the rest of the activities in the class were learner-centered, which contributed to the students' active participation and engagement with the materials and activities.

A learner-centered classroom gives students control to a certain extent of their own learning process, and this boosts their motivation (Tzenios, 2022, p. 916-917). For students to be able to learn in significant ways, it is important that they can have certain control of their own learning. For example, in one of my memos, I wrote that “students stated that they liked working on their own because they were able to go at their own pace and could express their ideas in an easier and more meaningful way” (Instructor’s memo, lesson 6). This comment shows the importance of autonomy in the learning process. When students work independently, they often feel more in control of their learning, allowing them to engage with the material at their own pace. This can lead to deeper understanding and retention, as they have the time to reflect on their ideas and express them in ways that resonate with them.

Meaningful learning is the process of connecting new information to existing knowledge, making it relevant and applicable to one’s life. It “promotes the construction of knowledge out of learners’ experience, feelings and exchanges with other learners” (Sharan, 2014, p.83). This type of learning encourages active engagement, reflection, and collaboration, leading to deeper understanding and long-lasting retention of information. In my observation of lesson four, I wrote: “students showed understanding of the emerging technologies by reflecting on the importance of these technologies and by coming out with ideas to use them in meaningful ways to solve real-life issues” (Participant observation, lesson 4). In this observation, I was able to start noticing the students’ ability to engage critically with new technologies and recognize their potential impact on real-life situations. Students had to speak and explain their ideas, which made them use the technical content. Through reflection on the different technologies studied in the class, students demonstrated not only comprehension of the subject matter but also awareness of its practical applications, creating effective usage of the materials and meaningful learning.

One successful strategy that students used throughout the whole course was the solving of case studies. In my observation of lesson one, I noted that “students seemed to really like the case study strategy. They were having a lot of fun, and they mentioned many times that they had fun with the case study activity” (Participant observation, lesson 1). As presented before, the case study strategy effectively engaged students and made learning enjoyable. When students expressed enjoyment during this activity, it indicated that they were actively involved in their learning process. Case studies allowed them to explore real-world scenarios, encouraging critical thinking and collaboration while making the material more relatable and applicable. The positive response to the case studies exemplifies how incorporating engaging strategies can lead to deeper understanding and a more enriching educational experience.

Similarly, meaningful materials and strategies can change a student’s perspective towards a class. Particularly, the materials and strategies used on the course were focused on the students’ likes and needs. Meaningful materials and strategies, such as real-world case studies and collaborative learning, enhanced student engagement and critical thinking, resulting in a more impactful educational experience. For instance, in journal entry four, J mentioned that

the methods used in this class are very good, they have taught me a lot, the class is interactive, the way of practicing is very good, they motivate me to practice and to want to continue learning, the different activities are very entertaining and make me have fun learning [sic] (Journal entry 4).

The effectiveness of interactive methods in the classroom contributed to meaningful learning.

The student’s appreciation for engaging activities and motivation to practice indicated that these teaching strategies encouraged J to enjoy the lessons. Similarly, D commented the following: “I can see that my knowledge in English is better now, and I think that is the way of teaching

because I really speak, and I use my knowledge of my field to apply it in different ludic activities” (Journal entry 4). This shows a clear recognition of the positive impact that effective teaching methods had on the student’s English language skills. This connection between the teaching style and the improvement in language proficiency exemplifies the importance of incorporating interactive and relevant methods in education, allowing students to actively use their skills in meaningful contexts.

Finally, it is significant to mention that through effective teaching processes like teacher praise, and relevant activities, students were able to feel encouraged and motivated to engage in the classroom. This engaging environment, filled with meaningful learning experiences and teamwork, caused significant enhancements, enabling students to apply technical vocabulary and develop soft skills, which are essential for real-world communication.

V. Discussion and Conclusion

The discussion and conclusion chapter aims to analyze the main findings of this study, which explored the perceptions of informatics professionals regarding the effectiveness of teaching strategies and materials in an EOP course. This section discusses the impact of learner-centered, content-based and task-based approaches; it in turn addresses how these methods contribute to English learning, professional communication, and the development of soft skills. Finally, it reflects on the limitations, offers suggestions for future research, and explains the broader implications of the findings for EOP course design.

As explained earlier, an EOP course was designed based on a needs analysis previously conducted. In this analysis, the participants emphasized informatics professionals' requirements for field-specific vocabulary, comprehension of programming-related language, and reading of technical materials. Additionally, participants expressed a desire for an EOP course with flexible scheduling, an emphasis on speaking and writing, and engaging, real-life resources. Key challenges that the participants reported included limited English proficiency, communication barriers, and work-related frustration due to language gaps, all of which were considered to create the EOP course tailored to their unique professional needs.

This study specifically examines the challenges these professionals faced in the course of the EOP course and how different instructional strategies used as part of the course impacted their learning outcomes. The research study sought to offer insights into how students' language learning and professional communication in the informatics field improved through the implementation of specific principles from approaches such as learner-centered, content-based and task-based.

As previously stated, the findings of this study were synthesized under three key themes: challenges, effective learning outcomes, and effective teaching processes. The study revealed that managing negative emotions, having proficiency differences in the course, and the growing demand for English in their field represented challenges. These course features were found to be related to foreign language anxiety, and its detrimental effect on students' performance, particularly in speaking tasks, which is consistent with Horwitz et al., (1986); and Nor et al., (2022). These findings suggest that foreign language anxiety, particularly evident in speaking tasks, created additional barriers to learning for the informatics professionals. It was shown that participants in this study worked together and encouraged one another, which helped them to overcome their fears and develop a sense of confidence in their language skills.

More specifically, the mixed-proficiency level course rendered certain limitations in classroom dynamics. Data revealed that participants struggled with collaborative activities due to differing English proficiency levels among students. This issue created a gap in comprehension during group discussions and debates about technical aspects of the field. Therefore, to achieve differentiated instruction, I tailored activities and resources to meet the varying proficiency levels and individual learning needs of each student. Also, on several occasions I adapted the materials to the students' level for them to feel comfortable and more efficient.

Moreover, participants recognized that English is a necessary tool in the informatics field, required for accessing technical resources, language programming, and global communication. Students' reported perceptions about a growing demand for English further justifies the need for EOP courses that focus on the informatics field. The lack of English proficiency could limit these professionals' access to essential knowledge, obstructing their ability to stay competitive in an evolving industry.

As per learning outcomes, participants demonstrated improvement in both technical language and soft skills. This study confirmed that ESP courses must develop the necessary practical communicative skills to succeed in fields like informatics while using the target language. Indeed, improvement in communication represented a major outcome from the course. Participants reported feeling more confident in discussions, presentations, and collaborations with people using the English language.

This study examined effective teaching processes as strategies and methods that enhance learning outcomes. Faryadi (2018) notes that learning effectiveness depends on factors like the learning environment, classroom conditions, and teaching styles (p. 222). This suggests that successful teaching involves not only content, but also supportive methods and environments tailored to students' needs. Regarding resources, using real-life case studies and informatics-related texts enriched the learning experience. Authentic materials facilitated problem-solving, role-play, and simulations, allowing participants to apply language and skills to real-world contexts (Benavent & Peñamaría, 2011, p. 89). Students valued practical relevance, as it aligned with their professional goals. Besides that, the study emphasized the impact of classroom dynamics and collaboration. Learner-centered strategies, particularly in the EOP course, allowed students to connect new knowledge to professional experiences, promoting a collaborative, active learning environment and deeper knowledge creation (Weimer, 2002, p. 16).

This study provides support evidence of the effectiveness of principles from learner-centered, task-based, and content-based approaches in EOP courses. These principles were shown to enhance not only language proficiency, but also necessary academic and professional skills. The first research question, intended to determine informatics professionals' perceptions about the effectiveness of the teaching strategies and materials in their EOP course, was

answered by data indicating that active participation, collaboration, and real-life tasks contributed positively to learner engagement and technical usage of the language. About the second research question, focused on identifying the challenges or limitations, data showed that students encountered different constraints such as speaking anxiety, and difficulties when communicating with others with lower levels of proficiency. Moreover, students stated that not being proficient enough in the target language represented another challenge in their professional domain due to the high demand for English.

5.1 Contributions to the field

This study makes a contribution to the body of knowledge in the field of ESP, particularly in the context of informatics professionals. It confirms the significance of learner-centered strategies in ESP courses which are focused on the students' needs. The findings indicate that specific activities such as role-playing and the use of authentic materials directly related to participants' fields and needs contribute to better language learning and allow the learners to transfer their linguistic skills to their professional environments in a more effective way.

Furthermore, this study emphasizes the importance of contextualizing learning materials to meet the needs of learners in specific fields. When integrating course content with real-world applications, students not only improve their technical English skills but also develop the confidence and competence necessary for professional awareness. As stated by Sambayon et al. (2023), a contextualized teaching and learning environment “encourages good student engagement and enhances student learning abilities” (p. 435). Moreover, research has indicated that learner-centered strategies deepen content engagement, supporting the development of critical thinking, problem-solving, and collaboration skills, which are essential in professional environments (Darsih, 2018; Kumar Shah, 2020). These strategies promote active participation,

enabling learners to apply skills practically and effectively related to academic learning with workplace requirements.

From a practical perspective, this research demonstrates the need for ESP courses to consider both emotional and proficiency-related challenges when designing ESP programs. There are relatively few studies that address the affective dimension of learning in ESP courses; hence this study fills a gap in the literature of ESP teaching and learning. Providing a structured and supportive environment, where learners can develop both hard skills (technical vocabulary, grammar) and soft skills (communication, teamwork), is necessary for overcoming these challenges (Dörnyei, 2005; Oxford, 1990). This study also emphasizes that creating a supportive and collaborative classroom environment can help learners reduce anxiety and improve their confidence in using the language in professional settings (Horwitz, 2010; Nagahashi, 2007).

Furthermore, this research contributes to language educators. For instance, educators could use the findings of this research to create EOP courses. They could adapt or even adopt similar approaches and create their own courses. This is an innovative research study because even though it has been written that informatics professionals need English proficiency in their field, there has been limited progress in creating solutions that specifically address these needs. Practical applications of this research include creating a specialized EOP course designed to meet the needs of informatics professionals. This course could emphasize primary elements such as technical writing, effective oral presentations, and professional communication skills, all customized to reflect the specific language and interaction requirements within the informatics field. By aligning these skills with industry demands, the course would support professionals in improving both their technical proficiency and workplace communication. Additionally, teachers

may organize workshops or seminars based on this study to provide specific language training and support for informatics professionals seeking to enhance their English proficiency.

5.2 Limitations of the study

Some limitations were found during the development of the study. First, a larger number of participants would have enabled the collection of additional data and facilitated more comprehensive analysis. Also, there were some time constraints because of the limited time for both course implementation and data collection. This restricted the ability to observe long-term progress and effects on language learning in real-life professional settings. Furthermore, the virtual nature of the course and data collection via digital means might have influenced the interactions and responses from participants, potentially limiting the richness from face-to-face communication. Finally, there were some limitations when assessing real-life application of the learning outcomes. Due to the virtual setting, it was challenging to directly observe how students applied their learning to real-life professional scenarios, limiting insights into the practical impact of the instruction.

5.3 Suggestions for future research

Future studies could build on this research by acknowledging its limitations and investigating additional aspects of ESP teaching. First, expanding the sample size and including participants from various professional areas of the informatics field would enhance the generalizability of the findings. This expansion would contribute to a better understanding of the perceptions of informatics professionals and their specific needs regarding English learning.

Furthermore, the impact of teacher training on implementing effective ESP instruction merits further research, as educator preparation and professional development are likely to play significant roles in the success of learner-centered, task-based, and content-based approaches.

Research could examine specific training methods, such as workshops, hands-on practice, and ongoing support, to understand how these contribute to instructors' ability to meet learners' specialized linguistic needs. Moreover, exploring how targeted training shapes teachers' confidence, adaptability, and skill in using authentic materials and creating real-world learning scenarios could provide valuable perceptions for enhancing ESP program outcomes.

5.4 Conclusion

The present study demonstrated the importance of using interactive, real-world tasks that support learners' professional needs while implementing effective principles from learner-centered, task-based, and content-based approaches. Regardless of the study's limitations, it offered significant perceptions for designing future EOP courses that better prepare professionals to meet the linguistic and technical demands of their careers. Finally, this study proved the effectiveness of authentic materials and resources in an EOP course for informatics professionals. In this course, students were able to overcome challenges and constraints and managed to build knowledge together by interacting with each other and the materials in effective and significant ways.

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VII. Appendices

Appendix A

Course syllabus

Course Syllabus

Course name:	English for occupational purposes	
Field:	Informatics	
Instructor:	Liseth González Alfaro	
Instructor's contact information:	lisn24@gmail.com / 83682172	
Course hours:	Synchronous time: 2 hours per week Independent study time: 2 hours per week	
Period:	August 2024 - October 2024	
Course Modality:	Online	

Course description

This course has been designed to prepare informatics professionals with the specialized language skills necessary for success in their field. This course focuses on developing both macro-skills, such as reading comprehension, technical writing, and oral performance, as well as micro-skills, such as acquiring technical vocabulary, sentence structure, and phrases specific to the informatics area. The total of contact hours is 20 hours divided into 10 weeks, 2 hours per week. Lessons will be scheduled for Wednesdays from 6:00 pm to 8:00 pm via Zoom. Through this course, students will acquire language proficiency and confidence for developing their everyday tasks in English-speaking work environments.

General Objective:

By the end of the course, students will be able to:

Properly analyze authentic informatics-related texts and audios in English to demonstrate a deep understanding of technical concepts and the ability to apply critical thinking skills to solve problems in the informatics field.

Specific Objectives:

By the end of the course, students will be able to:

1. Appropriately participate in discussions and conversations about informatics concepts with peers, demonstrating good usage of oral communication skills in English.
2. Successfully show understanding of technical documentation written in English, such as manuals or instructions, demonstrating the ability to apply acquired knowledge to informatics tasks and projects.
3. Effectively deliver professional oral presentations on informatics topics, using appropriate vocabulary to engage and inform others.

Contents**Unit 1: Understanding Informatics Conversation: Combining Technical Terminology with Critical Thinking**

- Introduction to specific terminology and vocabulary.
- Basic hardware and software terminology.
- Networking and security terms and concepts.
- Emerging Technologies.

Unit 2: Understanding Technical Texts: Developing Comprehension and Synthesis Skills through Reading

Contents:

- Cybersecurity measures and threats.
- Emerging technologies in informatics.
- Ethical and legal considerations in informatics.

Unit 3: Understanding Professional Presentations: Creating and Performing Impactful Oral Presentations

- Speech elements and oral presentations.
- Research techniques.
- Delivering techniques.

Methodology

The course uses a Learner-Centered (LCA) and Content-Based Approach (CBA) to teach English. Learner-centered approach lets students participate in the interesting and motivating process of learning, while the Content-Based Approach lets students obtain the language through content, which will be related to the field of informatics. Because professionals need language skills focused on their specific field, both approaches mix language learning with subject matter content and activities that are addressed to their occupational needs. By contextualizing language instruction within authentic informatics materials and tasks, students in this course will be able to learn English through interesting and motivating activities.

The teaching dynamics of this course are based on the approaches mentioned above. Students will be able to use the language in interactive and effective ways by analyzing, questioning, and justifying information through their learning process. The role of the teacher in a learner-centered classroom is the one of a facilitator. Moreover, the role of the student is a more active one. Classroom activities are designed to promote collaboration, interaction, and peer learning, reflecting the collaborative nature of informatics work environments. The classes will include both a theoretical and a practical component. Participants will be able to participate and discuss ideas based on interactions with others as building knowledge together.

Activities in the course include individual work, group work, role-plays, presentations, mini-projects, short quizzes, and games. Individual work will allow learners to focus on personal language development. Group work adopts collaboration, communication, interaction, and peer learning. Role plays and presentations provide opportunities for authentic language usage and performance. Mini-projects and projects will allow learners to apply their language skills to real-world informatics scenarios. Quizzes will allow students to show their understanding of the topics in a more academic and formal way. Finally, games will allow students to learn in interesting, motivating, and meaningful ways. Lessons will be delivered online through Zoom. Technological tools will be used to teach the lessons and interact between the teacher and the students.

Attendance

Attendance will be mandatory. Absences will be justified only by medical or out of control circumstances. Three absences with no justification will mean that the student does not want to continue with the course, and they will be removed from the course. Attending at least 80% of the lessons will grant the student a final accomplishment certificate.

Evaluation

The following criteria correspond to the evaluation of the course:

Criteria	Percentage
Participation	20%
Oral presentations (2 presentations)	30%
Assignments (5 assignments)	10%
Quizzes (2 quizzes)	10%
Reflective Journal (5 entrances)	30%
Total	100%

Participation: Students participate actively in classes by answering questions and engaging in conversations with their peers.

Oral presentations: In the first presentation, students (individually) research and present orally about a given topic related to the informatics field (IoT, automation, robotics, cybersecurity). In the second presentation students will have to present as a group (evaluation is individual) about the challenges informatics professionals have when learning English.

Assignments: Students complete all assignments in the time allotted to the independent work in an effective way. Students will have specific due dates for each assignment.

Quizzes: Students will complete quizzes related to the topics studied in class. These quizzes can include vocabulary, structures, or any other aspect developed in the lessons.

Reflective journal: Students keep a reflective journal to answer guiding questions after having studied certain topics. Entries will be done in the student's independent time.

❖ *Note for evaluative activities that require guidelines and a rating form: Specific guidelines and corresponding rubrics will be discussed and delivered at least one week ahead of*

submission of evaluative activities. In the case of participation, students will be evaluated according to the “participation” rubric given to the students at the beginning of the course. All rubrics and assignments can be found on Google Classroom.

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Course schedule

Session	Date	Content	Activities
1	August 21 st	Introduction to specific terminology and vocabulary: - introducing essential terms and concepts in informatics.	-Syllabus reading -Introduction to the course

			<p>Next week assignments (to be delivered August 28th):</p> <ul style="list-style-type: none"> - Assignment 1 - Reflective Journal #1
2	August 28 th	<p>Basic hardware and software terminology:</p> <ul style="list-style-type: none"> - identifying basic hardware and software concepts and definitions. 	<ul style="list-style-type: none"> - Discussion and usage of basic hardware and software vocabulary - Quiz #1
			<p>Next week assignments (to be delivered September 4th):</p> <ul style="list-style-type: none"> - Oral presentation 1
3	September 4 th	<p>Networking and security terms and concepts:</p> <ul style="list-style-type: none"> - exploring basic vocabulary related to networking protocols, cybersecurity, and encryption 	<ul style="list-style-type: none"> - Discussion, understanding and usage of terms related to networking protocols, cybersecurity, and encryption - Oral presentation 1 delivery
			<p>Next week assignments (to be delivered September 11th):</p> <ul style="list-style-type: none"> - Assignment 2 - Reflective Journal #2
4	September 11 th	<p>Emerging Technologies:</p> <ul style="list-style-type: none"> - introducing vocabulary related to emerging technologies such as blockchain, IoT, and cloud computing 	<ul style="list-style-type: none"> - Discussion, understanding and usage of terms related to emerging technologies
			<p>Next week's assignments (to be delivered September 18th):</p> <ul style="list-style-type: none"> - Assignment 3 - Reflective Journal #3

5	September 18 th	<p>Cybersecurity measures and threats:</p> <ul style="list-style-type: none"> - recognizing methods for protecting digital assets and mitigating cyber threats 	<ul style="list-style-type: none"> - Discussion and understanding of texts about cybersecurity and usage of terms related to the topic
			<p>Next week assignments (to be delivered September 25th)</p>
6	September 25 th	<p>Emerging technologies in informatics:</p> <ul style="list-style-type: none"> - investigating the latest advancements in informatics fields such as artificial intelligence, blockchain, and quantum computing 	<ul style="list-style-type: none"> - Discussion and understanding of texts about emerging technologies and usage of terms related to the topic - Guest speaker (Engineer Thomas Huertas)
			<p>Next week assignments (to be delivered October 2nd):</p> <ul style="list-style-type: none"> -Reflective Journal #4
7	October 2 nd	<p>Ethical and legal considerations in informatics:</p> <ul style="list-style-type: none"> -addressing ethical dilemmas and legal issues related to data privacy, intellectual property, and digital rights in the informatics field 	<ul style="list-style-type: none"> - Discussion, understanding and reaction of videos and texts related to ethical considerations in the informatics field - Quiz #2
			<p>Next week assignments (to be delivered October 9th):</p> <ul style="list-style-type: none"> - Oral presentation 2 - Reflective Journal #5
8	October 9 th	<p>Speech elements and oral presentations:</p> <ul style="list-style-type: none"> - recognizing the main elements of speeches and oral 	<ul style="list-style-type: none"> - Discussion, understanding and usage of the main elements of speeches - Oral presentation 2 delivery

		presentations when speaking in public	Next week assignments (to be delivered October 16 th): - Assignment 4
9	October 16 th	Research techniques: - conducting effective research - using credible sources and databases	- Researching a given topic Next week's assignments (to be delivered October 23 rd): - Assignment 5
10	October 23 rd	Delivering techniques: - practicing delivery techniques to effectively convey - enthusiasm and passion for the subject matter using prior knowledge.	- Writing and presenting about personal experiences - Final thoughts about the course

General Observations

A. Attendance

- Attendance at the course is encouraged. The instructor keeps a digital record of students' attendance in class sessions. The attendance record is the only proof that students were present in class. It is each student's responsibility to connect and participate in all synchronous sessions. Failure to attend or participate will result in an official absence from the class session. Absences affect academic performance and class collaborative work.
- Students who miss classes or arrive late are personally responsible for the material discussed, evaluated, and studied.
- During synchronous classes, it is prohibited to engage in activities unrelated to the lesson (e.g., listening to music, doing personal or work-related tasks, working on assignments for this or other courses, among others).
- Participation in class activities is considered mandatory. Students are expected to attend synchronous classes and participate in activities/tasks during their independent time of study.
- The consequences of missing synchronous or independent activities (assignments) activities are the responsibility of the absent student and will not be made up for without justified reasons. However, if the justification is accepted, the student will complete the activity missed during their absence or its equivalent, as determined by the instructor.

6. In case of unexpected connectivity issues during an evaluation or attendance in a synchronous class, students should seek alternative ways to connect, such as using a mobile phone, or inform the instructor and provide evidence of the connectivity issue as soon as possible. This should be done during the problem or as soon as the situation is resolved. The instructor will exercise the necessary flexibility, but it is the student's responsibility to maintain close communication with the instructor and catch up on class and evaluation activities.

B. Evaluations

1. The dates for evaluations are specified in the course schedule. Additionally, formative or summative activities/tasks may be assigned throughout the course, but the dates for these are not always announced.
2. Evaluations that involve creating a written document must be submitted in digital format in WORD or PDF (review and follow the guidelines) within the dates specified in the project, assignment, or work guides, and within the times established by the course instructor.
3. Evaluations are conducted through Google Classroom and are presented on the day and at the time determined by the instructor, as previously specified in the work guides.
4. The course schedule is subject to change based on the particular needs of the group, changes in activities, or other contingencies. Any change will be made in writing, and a mutual digital agreement between the students and the instructor will be recorded. Those not present when a change is made lose the opportunity to negotiate the terms.

C. Assignments and Materials

1. Assignments must be submitted on time as requested by the instructor. They are only accepted after the due date with valid justification for the absence.
2. Work guides, evaluation scales, and rubrics are provided in advance and explained in class no less than one week before the due date.
3. In addition to assignments with percentages, practice tasks are assigned throughout the course. Time will be allotted in class to clarify questions or comments regarding the tasks. Each student is responsible for completing all tasks and participating in their discussion.
4. All written work requested by the instructor must be typed, organized in APA 7 style, and submitted in Word or PDF format.
5. Plagiarism must be avoided at all costs.

E. Other Important Observations

1. It is at the instructor's discretion to decide whether students must have the camera or microphone on during synchronous sessions or when required to participate.
2. Technological tools that provide security to students and instructors must be used to prevent third parties from entering the sessions where virtual classes are held or to verify the participation of unauthorized individuals.
3. Partial or total audio and video recording of the class by students is not allowed unless authorized by the instructor and classmates.

4. Due to the fact that this course is part of the instructor's practicum, all lessons will be recorded and shared with the student-teacher's classmates and supervisor. However, they will be **only** used for academic purposes.

Appendix B

Needs Analysis results

<i>Needs</i>	<i>Wants</i>	<i>Lacks</i>	<i>Challenges</i>
<ul style="list-style-type: none"> • Knowledge of specific vocabulary related to the field. • Understanding terms related to programming languages such as C++, Python, and Java. • Knowledge of programming structures such as “if”, “while”, “for”, “end”, “end if”, among others. • Knowledge of the specific terms and contents that MEP’s programs have. • Knowledge to be able to understand manuals, research papers, tutorials, and videos. • Development of the speaking ability to be able to manage business and other opportunities abroad. • Emphasis on all the skills, especially speaking and writing. 	<ul style="list-style-type: none"> • An ESP course tailored to their own needs. • Flexibility in schedules to take the course. • Development of all skills. • Interactive, motivating, engaging and dynamic activities. • Authentic and real-life resources or materials. • Face to face lessons. • Instructors that know English and the informatics field. 	<ul style="list-style-type: none"> • Adequate proficiency in the language to be able to have a salary raise or a work opportunity in the country or abroad. • Not knowing their English level. • Time to be able to take a course. • An ESP course tailored for this professional’s needs and wants. • Limited knowledge to be able to do their job properly. 	<ul style="list-style-type: none"> • Not being able to understand written or spoken interactions. • Having to ask for help to perform work tasks. • Misinterpretation of important information. • Lack of comprehension and miscommunication. • Feelings of embarrassment or frustration for not being proficient in English.

Source: Data collected from the needs analysis created before creating the course through a questionnaire.

Appendix C

Observation protocol

Observation Protocol for Online EOP Classes		
<i>Section</i>	Details to Observe	Notes
1. General Information	Observer's Name: Date: Class/Session Title: Number of Participants: Instructor's Name: Topic of the Day:	
2. Online Classroom Environment	Platform Used: Zoom Layout of Tools: Video conferencing Visual and Technical Aids: <input type="checkbox"/> Videos <input type="checkbox"/> Slide shows <input type="checkbox"/> Audio Other _____	
3. Observation of Teaching Strategies, Activities and Materials	Teaching Strategies, Activities, and Materials: - What strategies and activities are employed? <input type="checkbox"/> Case studies <input type="checkbox"/> Quizzes <input type="checkbox"/> Debates <input type="checkbox"/> Reading comprehension <input type="checkbox"/> Discussions activities <input type="checkbox"/> Explanations activities <input type="checkbox"/> Forms <input type="checkbox"/> Role plays <input type="checkbox"/> Games <input type="checkbox"/> Slide Shows <input type="checkbox"/> Handouts <input type="checkbox"/> Vocabulary activities <input type="checkbox"/> Lectures <input type="checkbox"/> Writing production activities <input type="checkbox"/> Oral presentations activities <input type="checkbox"/> Pronunciation tasks <input type="checkbox"/> Other: _____ - How are these strategies implemented and managed? - Are there any instances of modeling? <input type="checkbox"/> Instructor demonstrating a task <input type="checkbox"/> Video demonstration <input type="checkbox"/> Guest speaker demonstration <input type="checkbox"/> Other: _____	
4. Observation of Student Engagement and Interaction	Observation: - How do students observe and respond to the instructor's actions and peers? - Is there any evidence of students modeling behaviors? (e.g., repeating phrases, following steps) Interaction: - How do students interact in chat, breakout rooms, or during discussions?	

	- Is there any evidence of social learning through peer observation or imitation?	
	Participation: - Are students actively participating in discussions or activities? - Are there any leadership or assistance roles taken by students?	
5. Motivation and Engagement	Motivation: - What factors seem to influence students' motivation during the session? (e.g., relevance of content, instructor enthusiasm) - How do students' motivation levels impact their participation and learning?	
6. Social Construction and Constructivism	Social Construction: - How do students contribute to the collective knowledge during the session? - Is there any evidence of collaborative knowledge construction? (e.g., building on peers' ideas, group problem-solving)	
	Constructivism: - Are there opportunities for students to relate new knowledge to their existing understanding? - How do students engage in reflective activities or discussions?	
7. Reinforcement and Feedback	Positive Reinforcement: - How does the instructor provide feedback and encouragement? (e.g., verbal praise, private messages) - Is there any peer reinforcement observed?	
	Student Reactions to Feedback: - What are students' reactions to positive or corrective feedback? - Are there any changes in behavior or engagement after feedback?	
8. Challenges and Limitations	Challenges Observed: - Are there any noticeable challenges students face? (e.g., technical issues, misunderstanding content) - How are these challenges addressed?	
	Limitations of Teaching Strategies/Materials: - Are there any limitations in effectiveness of strategies/materials? - What is the impact of these limitations on students' learning or perceptions?	
9. Additional Notes	Observer's Reflections: - Are there any additional thoughts on the session? - Are there any connections to SLT concepts and broader theoretical framework?	

Appendix E

Critical Incident

Critical Incident

Objective of the instrument: to understand the opinion of the informatics professionals regarding the necessity of knowing English in their field of work through a series of questions based on a common situation in the informatics field.

Instructions: Read the following situation and answer the questions below. The questions should be answered thoroughly and from your position as an informatics professional. All information provided will be used solely for academic purposes.

Case:

Ana María is a highly skilled informatics professional working at a leading technology company in Costa Rica. Her expertise in software development and cybersecurity has earned her recognition within the local industry. However, Ana María has recently encountered significant challenges that show the necessity of proficiency in English for informatics professionals. Ana María's company has been expanding its client base internationally, particularly in the United States and Europe. As a result, she frequently interacts with clients and colleagues who primarily communicate in English. Despite her technical proficiency, Ana María struggles with effective communication in these contexts, which affects her ability to collaborate, understand client requirements, and contribute to project discussions.

Discussion Questions for Analysis:

1. What specific aspects of Ana María's job require proficiency in English?
2. How does the language barrier affect her daily work and overall job performance?
3. In what ways could improving her English skills benefit Ana María professionally and personally?
4. What strategies or resources could Ana María utilize to enhance her English proficiency in a professional context?
5. How can companies support their non-English speaking employees in overcoming language barriers and improving their communication skills?
6. What are the main challenges that you personally have encountered as an informatics professional related to the lack or minor proficiency in the English language?

Appendix G

Consent Form

Consentimiento Informado

Sección I: Información Administrativa

Título de la investigación

Un estudio de casos sobre las percepciones de profesionales en la informática con respecto a la efectividad de las estrategias de enseñanza y materiales utilizados en un curso de inglés con propósitos ocupacionales en San Ramón, Alajuela.

Propósito de la investigación

Este estudio de caso tiene como propósito principal el describir las percepciones de tres profesionales de la informática sobre el uso de estrategias de enseñanza y materiales utilizados en un curso de inglés con propósitos ocupacionales en San Ramón, Alajuela.

Información y contacto de la investigadora

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Sección II: Especificaciones sobre el proceso de recolección de datos

El proceso de recolección de información se llevará a cabo a través de tres métodos principales: Observaciones de participantes, un incidente crítico con estudio de caso y un diario reflexivo. La recolección de documentos escritos en inglés y materiales será durante las lecciones. A continuación, se explica en detalle cada uno de los métodos a utilizar.

Método #1: Observación a participantes

1. Las observaciones se harán a los tres participantes, al mismo tiempo, durante algunas de las actividades del curso.
2. Las personas participantes deben tener conectividad durante el desarrollo del curso y por ende de las observaciones.
3. Las personas participantes deben de tener la cámara encendida durante el desarrollo de las lecciones.
4. Se espera que la persona participante sea reflexiva y profunda a la hora de participar en las actividades del curso.
5. Las sesiones serán grabadas con el propósito de analizar el contenido y crear notas más específicas sobre las observaciones.

Método #2: Incidente crítico: estudio de caso

1. Los participantes tendrán como parte de las actividades y materiales de clase, un incidente crítico en cual deberán analizar un caso y contestar preguntas sobre el mismo.
2. Los participantes deben completar de manera escrita preguntas relacionadas con la situación brindada.
3. Las respuestas de los participantes deben ser reflexivas, analíticas y detalladas.
4. Una vez respondidas todas las preguntas, los participantes deben leer nuevamente todo el documento para verificar que ninguna pregunta quede sin respuesta.
5. La investigadora recogerá los materiales por medio de un drive en donde los participantes deberán subirlos.

Método #3: entradas en diario reflexivo

1. Después de haber participado en las actividades de algunas clases, los participantes deben escribir en su diario reflexivo brindando respuestas a las preguntas generadoras dadas por la docente.
2. Los participantes deben reflexionar sobre las preguntas generadoras para responder de manera detallada y profunda y reflexionar adecuadamente sobre los temas desarrollados.
3. Los participantes deben enviar las entradas del diario reflexivo al drive del curso. Algunas entradas se harán en el tiempo sincrónico y otras en el tiempo asincrónico.
4. Los participantes deben cumplir con las fechas de entrega, sin excepción.

Sección III: Acuerdo de confidencialidad

1. Toda la información brindada por parte de los participantes de esta investigación será almacenada y protegida bajo clave en la computadora portátil personal de la investigadora, a la cual nadie tiene acceso. Se garantiza la confidencialidad de todos los datos obtenidos.
2. Los participantes estarán registradas bajo los seudónimos D, J, y E, con el fin de proteger su identidad, datos personales e integridad.

Sección IV: Participación voluntaria

La participación en esta investigación es absolutamente voluntaria. Por ende, cada persona participante puede decidir si desea participar o no en el estudio. Si la persona profesional de la informática acepta participar en este estudio, se le solicitará firmar este consentimiento informado en la última sección. Si, al contrario, la persona profesional de la informática no desea participar, está en todo su derecho a no hacerlo y no debe justificarse ante la investigadora. El no

participar en la investigación tampoco implica algún daño en la relación con la investigadora u otra consecuencia que vaya a causar algún daño físico, mental o espiritual a la persona participante. La persona participante también puede suspender su participación en cualquier momento, sin necesidad de justificar a la investigadora.

Sección V: Consentimiento

He leído detalladamente cada una de las secciones en este documento y entiendo mi rol como participante de esta investigación. Soy consciente de que mi participación en este estudio es voluntaria y anónima. Además, entiendo que puedo suspender definitivamente mi participación en cualquier momento sin necesidad de justificar a la investigadora. Por tanto, doy mi consentimiento para participar voluntariamente en este estudio, llevar a cabo el proceso de práctica y recolección de datos necesarios para la investigación.

Nombre completo de la persona participante: _____

Número de identificación de la persona participante: _____

Fecha en que se firma el consentimiento: _____