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Developing English for Specific Purposes (ESP) Courses in IT: A Narrative Experience of the Universidad Técnica Nacional

Desarrollo de cursos de inglés para propósitos específicos en tecnología de la información: una experiencia de la Universidad Técnica Nacional

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Abstract

The importance of English and technology for the workplace increases the need of higher education schools to develop and promote English for Specific Purposes (ESP) programs that provide students with both effective communication competences and digital skills to prepare them for their professional development. Consequently, it has become a great challenge for English educators to look for innovative techniques to improve these two competences based on the activities that are relevant and typical to their profession and context. The preset work aims to share a one-year experience in the design and development of a three-course program on English for technology, for the English as a Second Language Program at Universidad Técnica Nacional.

Keywords: ESP, Course Design, Technology, Teaching English, ICT

Resumen

La importancia del idioma inglés y la tecnología para el trabajo aumenta la necesidad de las universidades de desarrollar y promover programas de inglés para propósitos específicos los cuales ofrezcan al estudiantado competencias comunicativas eficientes y habilidades digitales para prepararlo en su desarrollo profesional. Consecuentemente, se ha convertido en un gran desafío para el personal docente de inglés el buscar técnicas innovadoras para mejorar estas dos competencias basadas en actividades que sean relevantes y típicas a su profesión y contexto. El presente trabajo tiene como objetivo compartir la experiencia de un año en el diseño y desarrollo de un programa de tres cursos de inglés para tecnología, para la carrera de inglés como lengua extranjera de la Universidad Técnica Nacional.

Palabras Clave: ESP, Diseño de curso, Tecnología, Enseñanza del inglés, TIC

Introduction

In today's Information Age, technological advances have impacted every segment of society. From designing infographics to knowing how to use video and image editors, being digitally literate and trained to use Information and Communications Technology (ICT) that has become an integral aspect in our social lives, teaching and learning processes and our working

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world. As a result, Costa Rica has deliberately developed institutional and educational infrastructure to align its resources for technological innovation since Intel established in Costa Rica in 1997.

During the last decade, Costa Rica has been successful in attracting foreign direct investment. For example, according to the Costa Rican Investment Promotion Agency (CINDE), "multinational companies supported by CINDE created a gross figure of 16,718 new jobs and 10,141 net jobs in 2019." Several large multinational enterprises have set up all around the country. The great use of technology in the workplace seems to have increased the demand for people who not only speak English, but can also operate and work with technologies. The demand for specialists is evident at job fairs in Costa Rica where the main requirements always include a full command of English and comprehensive knowledge of ICT skills. The Organization for Economic Cooperation and Development (OECD) in 2018 expressed that

> digitalization, globalization and demographic change are challenging the adequacy of labor market and training policies that workers have the skills needed in the labor market. In most countries, many employers complain that they cannot find graduates with the skills that their businesses require. At the same time, a number of graduates face difficulties in finding job opportunities matching their qualifications. (p. 3)

Despite the growing demand of a specialized workforce, capacity development for skilled workers remain scarce. Today, addressing the emerging skills shortages is particularly important, and universities play an important role designing curricula and offering options to meet the job market demand with the more efficient employees.

In the context of Costa Rica's post-secondary education, universities offer ESP courses, but these language courses are for tourism, for business, or for the ESP courses are too general. Therefore, they do not meet, but specific content as ESP courses for technology. Although

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research in this area is limited, today the world is driven by technology, so it is important to adapt learning experiences to meet all the learner's needs. As Sharma (2009) exposed "if you wait for a case study to justify whether or not Twitter has value, you may be waiting a long time, and the technology will have moved on by the time the research has been done."(p. 1)

The Universidad Técnica Nacional's mission is to provide excellence in education, focusing on academic actions in the scientific, technical and technological areas with innovative research as an integral element of human development in coordination with the productive sector of society. Taking into consideration this reality, the English as a Second Language Major (ILE) major at Universidad Técnica Nacional (UTN) decided to design and implement a program that provides students with a specific job training that meets the labor market's demands to satisfy the high demand of specialized professionals.

Background

Students who complete the ILE program as an ESL in English have the option of pursuing specialization courses for business and commerce, tourism, and technology. English for Technology is a tri-course focus that is offered in the advanced stages of the program at the UTN. The main objectives of these courses are:

- to provide ESP instruction to enhance students' reading, writing, speaking and listening competence to communicate effectively in the context of technology
- to use personal/professional productivity tools to produce audiovisual material,
- to be able to interact with existing technology effectively, and
- to evaluate ethical and security issues related to the use of technology.

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Even though English for Technology was part of the program since its foundation, it was not until 2019 that the ILE program was approved by the UTN governing body. This English course for Technology's proposal is aimed at developing a language proficiency in various communicative areas at English level C1 in accordance with the Common European Framework of Reference for Languages (CEFR). In addition, the technology content is based on the Global Framework of Reference on Digital Literacy Skills published by UNESCO in 2018, which includes the following competences:

Table 1. DigComp 2.0 Competence areas and Competences

Competence Area	Competences
1. Information and data literacy	1.1 Browsing, searching and filtering data, information, and digital content 1.2 Evaluating data, information, and digital content 1.3 Managing data, information, and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licenses 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps

Source: A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2. UNESCO, 2018, p. 7

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Based on the ILE study program, including the exit profile and the current statistics of the job market, ILE graduates students have had a number of career paths since the UTN was founded in 2008. Graduates have gone on to become: interpreters, translators, trainers, teachers, customer service representatives/ agents in different technical areas, language consultants, data analysts, and document reviewers just to name a few.

Course Design:

Since the proposal of the English for Technology three-course program was new, yet its design was not easy because it involved a series of challenging decision-making processes because it had to take into consideration students' needs, methodology, and the selection, adaptation and creation of course materials.

The first step taken was to revise the original program, update, adapt the course syllabus and material, and review assessments and evaluation criteria to suit the integral needs and skills required for the job market. Dudley-Evans and St. John (1998 p. 4) established that an ESP course must have the following characteristics:

Absolute Characteristics

- ESP is defined to meet learners' specific needs.
- ESP makes use of underlying methodology and activities of the discipline it serves.
- ESP is centered on the language appropriately/in an appropriate way to these activities in terms of grammar, lexis, study skills, discourse and genre.

Variable Characteristics

- ESP may be related to or designed for specific disciplines.

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- ESP may be used, in specific teaching situations, in a different methodology from that of general English.
- ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level.
- ESP is generally designed for intermediate or advanced students.
- Most ESP courses assume some basic knowledge of the language systems.

These characteristics became very useful in making educators realize that the nature of this course demands flexibility in designing real-life learning environments where critical thinking and problem-solving in a context of a globalized world are necessary skills to prepare a competent workforce. Bao (2015) explains that

> Flexibility is a coursebook quality, which allows teachers to appropriate materials in context by adapting, rearranging, managing time, utilizing strategies, selecting, diversifying, blending, expanding, supporting, contextualizing, individualizing, among other decisions that bring about the optimal teaching and learning impact.
>
> (p. 42)

Learning Materials:

There are three compilations designed for each course. Each compilation has 11 units and each unit is divided into four sections: reading, grammar/writing, ICT in action, and speaking. Having worked on the first section was a challenging task in order to find the adequate text book for the digital competences that ILE students needed because the books from different publishing houses offered either too exclusive content of an specific area, for example, English for engineering, medicine or software developer, or they were too general covering many areas which did not suit the overall graduate competencies Additionally, the book contents were

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not intended for this specific area of need, or that of our national context, and; in most cases, they were not affordable. It was pivotal to use authentic materials. Lesiak-Bielawska (2015) explains that:

> To provide learners with the materials catering for their specific needs, many ESP educators are confronted with the challenge of designing tailor-made materials, adapting materials originally designed for other purposes or editing published materials related to a given subject area. (p. 20)

A comprehensive search for relevant material was conducted in order to try to make the best use of reading and writing resources available and taking into consideration the desired language proficiency level C1. Several educators analyzed the options and decided to take advantage of the technological reading passages and writing tasks used in the tests by the International English Language Testing System (IELTS).

According to its official webpage, the International English Language Testing System (IELTS) is one of the world's most popular high-stakes English language proficiency test for study and work recognized by more than 10,000 organizations, including educational institutions, employers, professional associations and governments in 140 countries around the world.

The reading texts used in IELTS tests offer several advantages such as: "they are authentic and are taken from books, journals, magazines and newspapers, they range from descriptive and factual to the discursive and analytical, and they may contain non-verbal materials, such as diagrams, graphs or illustrations. Furthermore, the writing exercises are task based." (IELTS, 2020) Finally, IELTS presents a series of rubrics, which help the teacher measure each student's individual progress based on the CEFR. These rubrics are created by professional language specialists from different English-speaking countries. These

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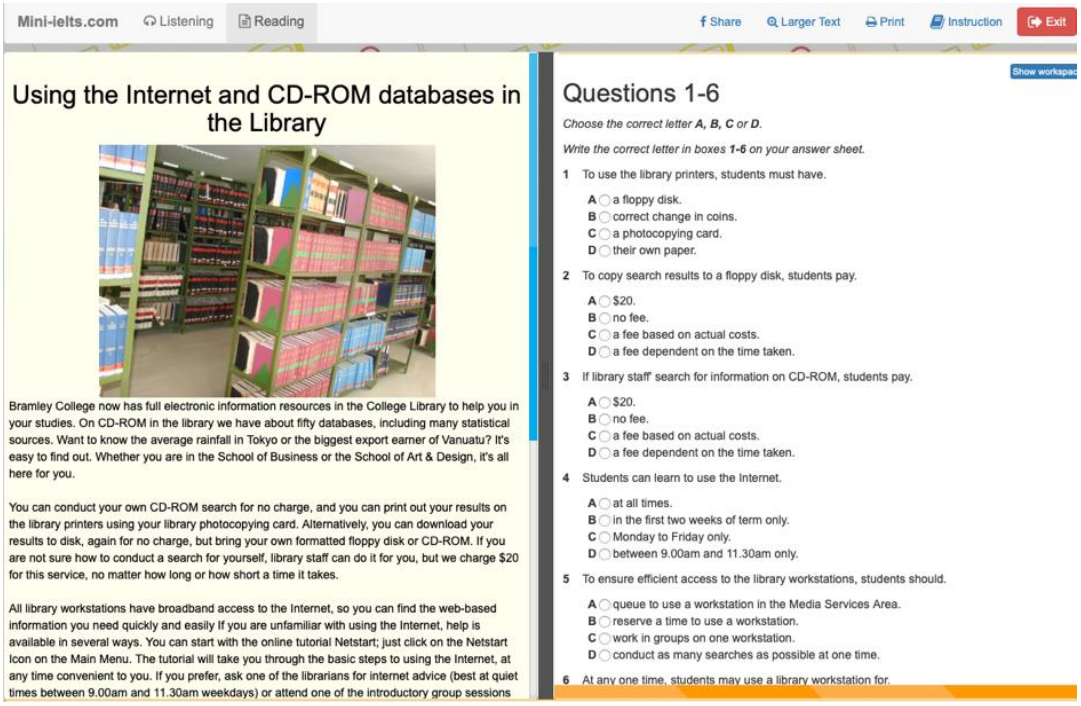
characteristics fully suit the needs of the English for Technology course the ILE program was implementing. Here is an example of one of the texts and exercises used to work with the reading skill in the compilation:

Figure 1. IELTS Reading Practice Test.



Retrieved from https://mini-ielts.com/1120/reading/using-the-internet-and-cd-rom-databases-in-the-library

In the second section of the unit, the first two courses reviewed complex grammar topics to understand technical materials. This task took about a month for each of the three courses because of the examination, selection, adaptation and, in most cases, the creation of materials that combined the target grammar with technological context.

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In the third section, English teacher mentors browsed, shared, and selected tools to meet the objectives of this ESP program, so students could interact and use the text, the content, and creation tools. This particular aspect allowed educators to monitor the effectiveness of the materials as time went by. All tools are either free of charge or have a free option that worked according to the target objectives. The tools included free internet websites and software to create audiovisual projects and instructional material to collect, to edit and to distribute information, to bookmark and to organize information, to research, to promote services and products, and to create and to manage online classrooms.

Taking into consideration the students' needs for a specific occupational purpose is difficult for an ESP teacher. One of the main challenges is to achieve a balance between the emphasis on the theory related to the language skills (listening, speaking, reading, and writing) and to develop the necessary and effective practice on a specific area of work because the educators are experts on language but not on the area of specialization (in this case technology) a course is designed for. Consequently, in the English for Technology course implemented at UTN, there was a challenge to develop a balanced integration between what the students needed to learn about language skills and what they needed to learn about the determined digital skills for the program. As a consequence, the teacher worked hard in offering the students an active learning environment where projects could combine language contents and digital skills-based tools. Because of this, it was decided to implement a Project-Based Learning (PBL) strategy. Goodman and Strives (2010) explained:

> project Based Learning, or PBL, is an instructional approach built upon learning activities and real tasks that have brought challenges for students to solve. These activities generally reflect the types of learning and work people do in the everyday world outside the classroom. It teaches students not just content, but also important skills in ways students have to be able to function like adults in our society. These

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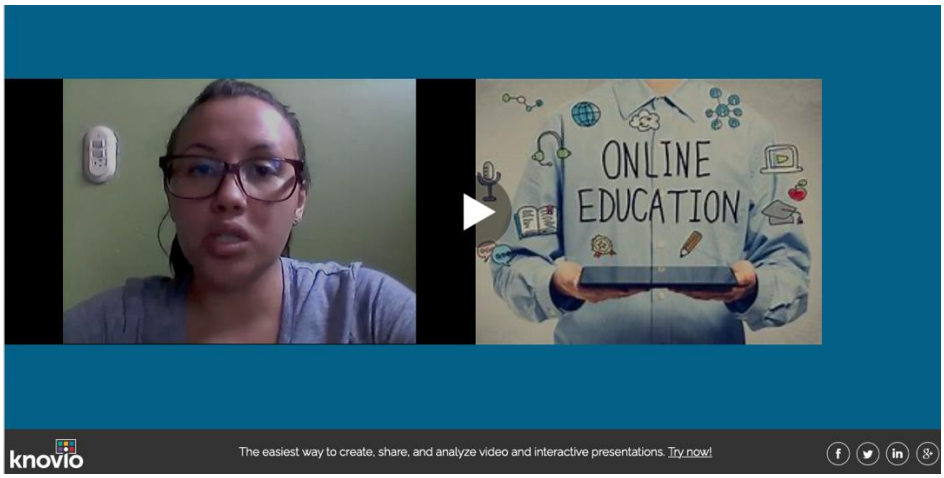
> skills include communication and presentation skills, organization and time management skills, re-search and inquiry skills, self-assessment and reflection skills, group participation and leadership skills, and critical thinking. (p. 2)

Here is an example of this third section of the ICT in Action that implements scenario-based learning of the compilation. You are the member of a group who is taking an international training course. Each member of the group must give a report about one of the following topics: “social media and my work,” “difficulties of technology I have faced in the last year,” “online education,” and “benefits of technology for my professional career.” There is no money for transportation because of difficult financial times the company is facing. Therefore, the company decided to use technological tools for your presentation in order to overcome this situation. Explore and learn about the website https://knovio.com . Using this tool, prepare a video presentation about the topic you chose and send it to your teacher.

Figure 2. Online Education Knovio Presentation.



Retrieved from: https://view.knowledgevision.com/presentation/1812488213264a38afc09cd3e817acc6

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As the practical aspect was essential to corroborate the assimilation of the different ICT used, the pedagogical mediation for the assessment opted for the implementation of several projects. The projects were presented to students by using a metaphor in which they were supposed to be trainers. Petrie and Oshlag (as cited in Botha, 2009) say: "Interactive metaphor would allow truly new forms of knowledge and understanding to be acquired by the student without presupposing the student already knows, in some sense, that which is being learned." (p.432)

The role of the student in the metaphor was to be the trainer of a group of new employees in a company, so his/her role was not the passive one of the student receiving information from a teacher, but a more interactive one as a teacher. The implementation of different ICT tools in the program allows the student to prepare learning resources for the class. This metaphor as an activity caught the students' attention, improved motivation and collaborative work, and exposed them to an experiential learning.

Some of the projects were done in pairs or small groups trying to promote interaction, creativity, teamwork and leadership.

> "...Vygotsky cited by Hyland (2006) expressed that "giving considerable recognition to the importance of collaboration, or peer interaction, and scaffolding, or teacher-supported learning. Together these concepts assist learners through two notions of learning: shared consciousness: the idea that learners working together learn more effectively than individuals working separately. Borrowed consciousness: the idea that learners working with knowledgeable others develop greater understanding of tasks and ideas." (p. 91)

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Each project has a rubric instrument defining what is expected from the student for each assignment. The rubric includes aspects related to both language and digital competencies.

The English for Technology class met once a week for three hours and thirty minutes over fourteen weeks for an approximate total of 147 hours. The first hour took place in a computer laboratory where the teacher presented the technological tool of the unit for students to comprehend, interact and collaborate in the tool development process. The rest of the class was used to learn and study the linguistic objectives. In addition to the face-to-face classes, the teacher always offered support, guidance, and on-line feedback.

Figure 3. Evaluation Instrument Used for Knovio Project. Adapted from Rubric for PowerPoint Presentation.

	4 Excellent	**3 Good**	**2 Fair**	**1 Poor**
Content	Content is accurate, comprehensive. Presenter has full knowledge of the content. Speaker demonstrates analytical and present discourse of the topic/s. The content is engaging and presented in a meaningful/dynamic /creative way.	Most of the content (75%) is accurate, comprehensive. Presenter has good knowledge of the content. Speaker demonstrates some analytical and present discourse of the topic/s. Most of the content is engaging and presented in a meaningful/dynamic /creative way.	Part of the content (50%) is accurate, comprehensive. Presenter has basic knowledge of the content. Speaker demonstrates basic analytical and present discourse of the topic/s. Not all of the content is engaging and presented in a meaningful/dynamic /creative way.	A little part of the content (25%) is accurate, comprehensive. Presenter does not show an appropriate knowledge of the content. Speaker demonstrates little analytical and present discourse of the topic/s. The content is not engaging and presented in a meaningful/dynamic /creative way.
Speaking Skills	Speaker presents in a loud, clear voice and does not read from screen. Presentation is	Speaker presents in a loud, clear voice but turns to the screen occasionally.	Speakers presents in a voice that is sometimes clear but constantly refers to the presentation.	Speaker does not present in a loud or clear voice and reads simply from the presentation.

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	between 2:30 and 4:30 minutes. Speaker sounds credible.	Speaker sounds somewhat credible. Presentation is between 2:30 and 4:30 minutes in length.	Presentation is less/more than the required 2:30 to 4:30 mins in length.	Presentation is less/more than the required 2:30 to 4:30 mins in length.
PowerPoint/ Graphics	Presentation is clear and legible. The use of slides captures the content clearly and accurately. Use of images enhances the speaker's knowledge of the content.	Presentation is clear and legible. The use of slides captures the basic content. Use of images helps the speaker's knowledge of the content.	Presentation needs improvement. Some parts are not clear and legible. The use of slides offers some guide to understand the basic content. Use of images does not clearly help the speaker's knowledge of the content.	Presentation needs so much improvement. Most parts are not clear and legible. The use of slides does not always offer a clear guide to understand the basic content. Use of images does not help the speaker's knowledge of the content.
Mechanics	Presentation has no misspellings or grammatical errors.	Presentation has no more than two misspellings and/or grammatical errors.	Presentation has three misspellings and/or grammatical errors.	Student's presentation has four or more spelling and/or grammatical errors.
TOTAL POINTS: 16			**POINTS OBTAINED:**	
Comments:				

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Besides, the different real-world subject-matter projects assigned focused on learning contents rather than on technical language. Even though some topics where suggested, students had the opportunity to come up with their own topics as long as they had previously communicated with the instructor. Solomon (2003) established that "when students understand that their work is ultimately valuable as a real problem that needs solving, or a project that will impact others, they're motivated to work hard." (p. 2)

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Table 2. Examples of projects using metaphors implemented during the course English for Technology at UTN

Situation	Task	ICT
You need to meet with two colleagues who work in different countries, but the company does not have travel funds to attend international conference meetings.	Based on the material studied in units 1-2. Organize and record a video conference of no more than five minutes discussing one of the following topics: -Uses of artificial intelligence at home -Risks of artificial intelligence for human race **Note**: If there is a different topic you want to use for this assignment, let me know, and we can discuss it.	-Google Meet/Hang-Out -Microsoft Teams -Zoom
You are the trainer of a group of new employees. They need to learn how to use an application, but it is impossible to have a session with all of them because of their different schedules.	Prepare a video tutorial of no more than three minutes explaining one of the following apps: -How to use Knovio -How to use Visme -How to use Skloog **Note**: If there is a different app you want to use for this assignment, let me know, and we can discuss it.	-Ice-cream -Screen Video Recorder -Free Cam
You are in charge of a presentation, but several people cannot come to the place where you are presenting.	Prepare an original presentation and send it to the people who could not attend on the date you presented it. You can choose one of the following topics studied in class: -Jobs of the Future -Technology: Now and Then **Note**: If there is a different topic you want to use for this assignment, let me know, and we can discuss it.	-Knovio

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One of the projects carried out by a group of students of this course was awarded with the first place in the category of pedagogic innovation during the Educational Innovation Conference (Jornadas de Innovación Académica or JIA) contest that took place in 2019, at Universidad Técnica Nacional.

The product of this project can be accessed here: https://agendau.weebly.com .
For the last section of the unit, a set of questions that worked as a summary and as a reflection on the topic was designed. Here, there is an example of this fourth section of the compilation:

Discussion and Reflection

Discuss the following questions with a partner. (25 minutes)

1. How does AI impact our society? What are some benefits/challenges/disadvantages?
2. Do you think we create a new problem with each invention? Think of examples.
3. Is there anything that does not exist yet that you would like to see invented? What is it?
4. Do you think life will be more difficult or easier for our grandchildren? In what ways?
5. Would you like to have a robot? Why? Why not? What do you think about people who want to marry a robot? 6. Would you become half-robot if it meant living 1000 years?
7. If you don't like your job now. What is the job you would like to have in future?

Figure 4. Discussion and Reflection. Own development based on material covered during the unit.

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Conclusions, Limitations and Recommendations:

As technology rapidly evolves, the need of more trained people with digital skills becomes necessary. Undertaking the design and implementation of the English for Technology program allows teachers become aware of new and countless opportunities with the use of technology together with the correct pedagogical mediation to promote a meaningful and functional learning. Additionally, the use and exploration of digital tools engaged students in the different projects and proposed activities, enhancing motivation and promoting soft skills such as teamwork, leadership, critical thinking, and cooperative learning. Little by little, it is important to see digital skills as an integral aspect of the learning activity and as a means by which skills in many different capacity areas are acquired. Universities need to design and implement more English for technology courses to meet the growing labor market demands for these professions.

Although there are many challenges in designing the courses that includes a project-based approach, its implementation in an ESP course encourages active learning that helps students with their professional and personal preparation. This particular aspect has been proven by several researchers. T. Nguyen's research (2017) shares that a project-based approach improves dramatically students' life skills, especially critical thinking, problem-solving, time-management, and communication. Moreover, it helps some students to improve their creativity and IT skills while they directly being involved in creating things (p. 131).

The main limitations faced during the course development process was the amount of time needed to look for materials, organize the class to run well, elaborate evaluation instruments, evaluate and give students feedback, and design activities that may contribute to meaningful learning with an appropriate balance between theory and practice. Even though these

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challenges are inevitable, facing them as a learning process helped educators to improve and prepare for any ESP for technology course in the future.

Presently, being able to use technology has become an essential requirement to get a job. The only way in which digital skills can be learned is if they are effectively used in the different courses that students take. Project-based learning offers students an engaging method to become active protagonists of their own knowledge development. Project-based learning as part of the pedagogical mediation in an ESP course provides the teacher the opportunity to design learning environments in which theory and practice converge adequately. In addition, this approach promotes the integration of the soft skills and the digital capacities that are being sought in this globalized society.

Universities must prepare for the growing demand of specialized workers by evaluating their programs and implementing more courses that are similar to the one described in this narrative. Hopefully, our narrative of our lived experience shared in this systematization will support and encourage other teachers to facilitate the integration of similar practices in different programs. Our lived experience in developing an ESP course provides evidence of how this course can improve university graduates' training and skills to become more competitive in an increasing technological-based labor market.

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