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E-PORTFOLIO IN STUDENTS' LEARNING FOR SUSTAINABLE DEVELOPMENT

Abstract. Enhancing technical education by connecting sustainable development goals within the English for Specific Purposes framework requires motivating the professional advancement of students. Therefore, choosing an engaging active learning tool becomes one of the most crucial components of this process. Our understanding of ePortfolio as an all-inclusive and sustainable toolkit to provide non-native English speakers with new sources of professional growth and self-esteem has evolved into the current study's didactic and research scenario. The monitoring of 18 experimental group members while compiling individual electronic portfolios in English helped us explore their progress in terms of both linguistic and professional proficiencies. For this, qualitative and quantitative tools gathered learners' perceptions that were later analysed by statistic and sentiment analysis software. As a result, a visible improvement in B2 mediation, B2 reading and B2 writing communicative competences was detected; a collective awareness of a quality professional background presentation is another outcome of the study. A few technological means in the ESP and research context supported those achievements. The blended focus of this exploration might interest L2 practitioners and educators who are hesitant about involving measurements and analysis tools in their practice. By embracing the two-fold paradigm described above, we now understand that research happens while we are teaching. The study's results show how a method for teaching and researching English backed by technology may be applied in real-world settings. We expect this experience will motivate future efforts to combine the SDGs and ESP in higher education. Quality language instruction may serve as the cornerstone of future professional success while addressing the pressing demand for long-term adaptation to meet engineering specifications.

Keywords: electronic portfolio (e-Portfolio); English for Specific Purposes (ESP); sustainability; professional identity; communicative competences.

1. INTRODUCTION

Global partnerships within higher education and the business environment must be effective. In the new worldwide economy, manufacturers are firmly committed to incorporating automation and digitalisation into the production cycle via the Internet of Things and Artificial Intelligence (Industry 4.0). Also, the current companies' aim of guaranteeing human empowerment and customisation of human-technology interaction (Industry 5.0) requires a change of educational paradigm. Hence, the evolution of the connection between the productive sector and professional training presents new experiences undertaken by universities willing to prepare future Industry 4.0 and 5.0 professionals [1].

Complementary to that, there has also been an outstanding commitment to embracing the Agenda 2030 goals in the tertiary education curriculum [2]. Better comprehension and application of 17 sustainable goals opens a pathway for displaying the genuine pursuit of climate awareness, poverty eradication and quality education. Even more, Higher Education Institutions can embrace and promote the unique opportunity of new upskilling syllabi schemes, where sustainability represents a new mission, vision and hope for younger generations.

Analysis of recent research and publications. It is, therefore, crucial to implement this context in the English for Specific Purposes (ESP) area. How can that be done? The following general ideas might be commented on after carefully examining recent studies in this area and detailing them in the theoretical and methodological sections below.

In some studies, the ESP perspective is explored in connection to the corporate world and augmented reality technology, which combines labour market philosophy and technical studies. Furthermore, inter-university cooperation can enhance language abilities and provide scenarios for sustainable education.

However, with this growth in ESP exposure, increasing concern over students' needs and expectations has gained new prominence among many educators. This indicates a necessity to study new approaches toward sustainable English for Specific Purposes training where SDGs, linguistic competences and professional identity construction are embedded.

Electronic Portfolio development provides a reliable solution to this issue. This sustainable training tool aims to create, organise, and promote learners' competent, academic and professional profiles. Its practical classroom application was undertaken through four stages: introduction, development, presentation, and assessment. By employing quantitative and qualitative modes of analysis, we sought to establish meaningful connections between the methodology applied and the learning outcomes attained.

The aim of the research. Hence, the research targets to foster technical students' competences by connecting sustainable development goals within the English for Specific Purposes framework. Consequently, our primary focus is on building capacity in the student community by tackling the following research questions:

- (1) Which Sustainable Development Goals are behind the innovative ESP acquisition strategy employed in the current study?
- (2) How can e-Portfolio enhance the linguistic competences of technical undergraduates?
- (3) What part of the e-Portfolio methodology leads to professional identity strengthening?

The rest of this paper is organised as follows. First, in the Literature review, the theoretical foundations of the study are explored. After that, in Methodology, we place our proposal in context with the practical work in this area. Further, in Findings and Discussion, the data collected is described and discussed. In the end, in Conclusion, the results relating to each one of the research questions are summarised and commented.

2. THE THEORETICAL BACKGROUNDS

Research and training in the second and third (L2/L3) language teaching are governed by a wide range of goals. In recent years, English for Specific Purposes (ESP) courses have largely promoted and developed linguistic ability deployment. However, a broader scope of factors that inspire active participation, goal orientation and professional consolidation include sustainable values of modern global society.

2.1. Sustainable Development Goals

The international community pleads for more attention to Agenda 2030 [3] via Sustainable Development Goals (SDGs). Yet, university-based culture requires time and effort for consolidation, as Ojeda Suárez & Agüero Contreras reported [4]. It is this background that makes it necessary to combine “facts (science) and values (arts/humanities)” while educating for sustainability, advocates Bosselmann [5, p. 167].

Identifying long-term solutions to social, environmental, and economic issues strongly relies on education objectives. Moreover, the empirical focus is shifting to the specific curriculum design based on SDG 4, guaranteeing that everyone has access to comprehensive, egalitarian, high-quality education and encouraging possibilities for lifelong learning. From this standpoint, we envisage the following sustainable pathway implementation illustrated in Figure 1 below:



Figure 1. Theoretical foundations. (Source: own elaboration)

The necessity of combining engineering education and sustainability prompts a revealing setting where occupational health (Goal 3), quality and transnational education (Goal 4), industry and innovation (Goal 9), and partnerships for the goals (Goal 17) are present [6, p. 403].

Hence, creating a thoughtful SDG scenario brings us to the need to merge some of the above-listed items in the foreign language context. Additionally, valuable insight into the specific educational experience as a part of the professional identity construction may strengthen students' employability [7]. Engineering identity development reviewed by Rodríguez et al. [8] encourages understanding the expectations and realities of technical learners and paying particular attention to motivation, culture and institutional climate.

2.2. Communicative competence and ESP

Traditionally, it has been reasoned that the idea of communicative competence emerged from the studies of two outstanding linguists: Noam Chomsky and Daniel Hymes. The initial distinction between performance and linguistic proficiency described by the first scholar [9] materialised as a newly introduced concept by the second one [10]. Hymes believed that the capacity for effective communication must be cultivated in social interactions and language training.

Gradually, communicative competence moved from the essential listening, speaking, reading and writing interactions toward more complex and better-explored approaches of "interpretation, expression, and negotiation of meaning", as Savignon stated [11, p. 1]. With that, new challenges were brought to the classrooms and recent questions were raised. How should form, content and function be included in a lesson plan? What is suitable for L2/L3 engineering students? Can general communicative competences be merged with specific ESP goals and active sustainable training methods?

With these questions and concerns in mind, we will be focused on the expanded specific purposes of pedagogies and their implications. Several studies shed light on its current perspectives, proved ESP's intercultural value, connected ESP to technology and suggested course design notions [12], [18]. Moreover, a detailed examination of teaching linked to communicative competence by Whyte [15] showed that native-speaker standards are not the most pertinent in specific contexts.

A further characteristic of communicative competence given by Polyakova & Galstyan-Sargsyan [16] is adapted to the current study. The authors claim that the knowledge and skills that combine values, attitudes and problem-solving may be addressed via communicative

competences. Studies have demonstrated [11] that considering competences when defining the learning target is essential since it enables education to address the specific demands of the learning community directly.

Along the same lines, the recently updated Common European Framework of Reference for Languages: Learning, teaching, assessment – Companion Volume (CEFR) offers a clear, complete framework for developing language syllabuses and curricular standards, designing teaching and learning materials and evaluating foreign language ability [17]. Likewise, own *Universitat Politècnica de València* (UPV) competences guidelines available online aim to develop effective communicative competence are involved in the current ESP training (see Figure 2 below):

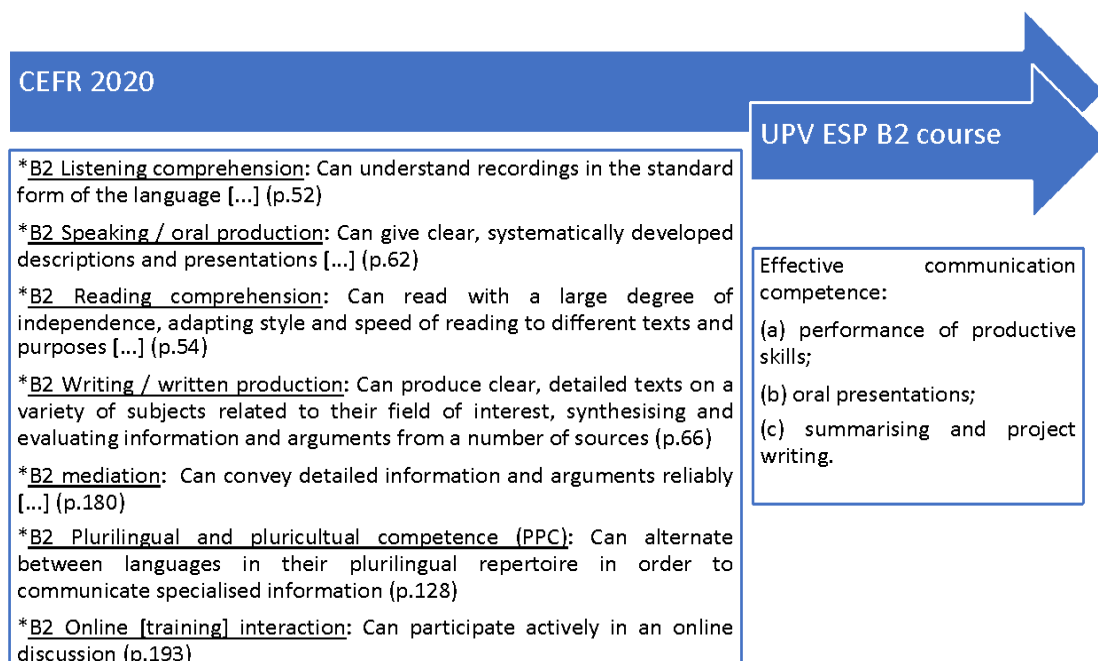


Figure 2. Communicative competence background. (Source: own elaboration based on CEFR 2020 B2 and *Universitat Politècnica de València* competences guide).

Hence, the literature review produced a comprehensive outline of the theoretical background of the current research. To complement the process, the connection between theory and practice must be investigated. In the upcoming part, a thorough explanation of the methodological strategies employed within a didactic scenario will be presented. Then, a research analysis focused on pre- and post-experiment results will be suggested in addition to a portfolio didactic process.

3. RESEARCH METHODOLOGY

3.1. Study aims, participants, and context

In the introductory part, three research questions that guide our experimental e-Portfolio approach have been established. Besides, active learning methodologies in ESP have been an important responsibility and learning engagement booster at universities [22]. The concept of active learning, which emphasises the learner's own dynamic knowledge generation, has its roots in constructivist educational tendencies and the Zone of Proximal Development [20].

In keeping with the above conceptual notions, we identify an e-Portfolio as a collection of digital materials that course participants create and arrange to highlight their academic progress, creativity, diversity and goals. For this study, it is also an all-inclusive and sustainable toolkit to provide non-native English speakers with new sources of professional growth and self-esteem. Taking this empirical perspective might imply certain organisational efforts concerning not only participants' and setting selection but also scholarly work reach.

The present study was designed (1) to investigate the effective use of sustainability goals within technical education, (2) to develop a methodology to implement and measure ESP intervention results empirically, and (3) to address professional identity enrichment through this experience.

We now create a design to demonstrate that the e-Portfolio method for enhancing the communicative competences of future engineering design professionals is possible. To do so, 18 participants (English for Specific Purposes B2 course and future design engineers from the Technical University of Valencia - *Universitat Politècnica de València*, Spain), were recruited. The small experimental group is comprised of Spanish and international mixed-gender students and offered the optimum pilot study scenario for combining all didactic elements and research components foreseen. Also, due to the limited number of students, their feedback, results and opinions were better tracked within individual, group and gender-based perspectives. Regarding the course context, we were able to build our research based on an Academic project task, the Engineering e-Portfolio.

3.2. Study design and procedure

It is at this point where uncertainty exists, with various authors taking slightly different approaches. For Ohremenko et al. [21], the electronic portfolio proves to be positive as a self-reflection and measurement device from professional development viewpoint, whereas Mgarbi et al. [22] claim e-Portfolios relevance for representing lifelong learning in a digital environment. However, Khoo et al. [23] focus on improving communication, critical thinking, problem-solving and teamwork skills via e-Portfolios and so produce the research closest to our intention.

Current study design and data collection methods are motivated by the requirement for feasible information on learners' perceptions at the beginning and at the end of the educational experiment. Further, the suggested methodological strategy consists of the following components illustrated below (Figure 3):

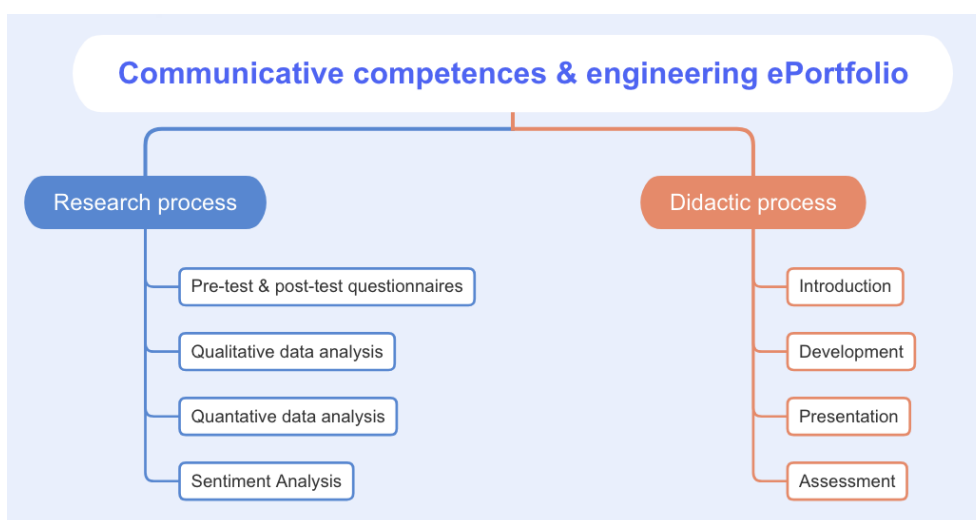


Figure 3. Study methodology. (Source: own elaboration).

Figure 3 displays the two-fold process where research and didactics are mutually supportive. Initially, the research questions and tasks fostered the necessity of creating a new approach to the instructional aims and organisation where the partakers clearly identify each training stage. While detailing the research procedure, we decided to use pre-test and post-test questionnaires in a quasi-experimental setting to collect quantitative and qualitative data and analyse them afterwards.

A semester-long (February 2021 – May 2021) ESP B2 course for technical students served as the study scenario. Weekly, 18 learners were presented with some activities related to the didactic aspects of the individual e-Portfolio elaboration as a part of the academic project task valued as 20% of the final mark. Specifically, five items previously agreed with the partakers comprised the selection of works (200-250 words each):

Item 1. Biodata, a brief overview of professional preparation and career goals.

Item 2. Project 1, description of a design project developed by the e-Portfolio author.

Item 3. Project 2, description of a design project developed by the e-Portfolio author.

Item 4. Review, professional opinion on a design proposal of another student.

Item 5. Conclusions, assessing the role of professional competences in the e-Portfolio project.

3.3. Research tools and study procedures

Therefore, it was decided to use several research tools by underlining the importance of data on learners' perceptions of communicative competences advancements while working on e-Portfolios. It is worth highlighting the practicality of *Google Forms* for surveying, *Statgraphics® Centurion 18* product for statistical analysis and *Lingmotif Sentiment Analysis* tool for qualitative data processing. For the teaching tools application, we combined Sakai-based learning platform options with some specific online tools, further detailed in Table 1.

Table 1

Technology-enhanced teaching and research procedures. (Source: own elaboration).

Study phases involving Teaching (T) and Research (R)	Technology-enhanced procedures	Goals
<p>Introduction</p> <p>T: selection of linguistic competences; learning objectives and procedures; assessment criteria</p> <p>R: pilot process design and introduction, pre-test launch.</p>	<p>a) <i>Symbaloo</i></p> <p>b) <i>GDrive & Google doc</i></p> <p>c) <i>writeandimprove.com</i></p> <p>a) online academic sources</p> <p>b) <i>Google Forms</i></p>	<p>a) sharing support information, links, and tools (guidelines, readings, rubrics).</p> <p>b) sharing a detailed project description.</p> <p>c) using an online writing correction tool for portfolio parts preparation.</p> <p>a) elaborating theoretical review and conceptual study design.</p> <p>b) collecting Pre-test responses.</p>
<p>Development</p> <p>T: keeping up with planned activities; scheduling portfolio items delivery and offering timely feedback.</p> <p>R: training activities</p>	<p>a) online e-Portfolio samples & templates</p> <p>b) <i>Microsoft Teams & email</i></p> <p>c) <i>Sakai LMS</i></p> <p>a) <i>Statgraphics</i></p>	<p>a) providing noteworthy examples.</p> <p>b) offering weekly Q&A sessions.</p> <p>c) offering useful feedback for specific tasks submitted.</p> <p>a) specific tool for statistical analysis used via UPV <i>Polilabs</i> virtual environment</p>
<p>Presentation</p>	<p>a) <i>Sakai LMS</i></p>	<p>a) e-Portfolio and Presentation PowerPoint submissions.</p>

<p>T: delivery of oral presentations of e-Portfolio; final e-Portfolio documents submission via Sakai</p> <p>R: training activities and academic licence reception</p>	<p>b) <i>Microsoft PowerPoint</i></p> <p>a) <i>Lingmotif</i></p>	<p>b) format used for supporting oral presentation.</p> <p>a) specific tool for sentiment analysis</p>
<p>Assessment</p> <p>T: antiplagiarism control and use of the specific portfolio rubric; grading.</p> <p>R: final parts of the research process, post-test launch; data analysis and results dissemination.</p>	<p>a) <i>Turnitin</i></p> <p>a) <i>Adobe Acrobat</i></p> <p>a) <i>Google Forms</i></p> <p>b) <i>Microsoft Excel</i></p> <p>c) <i>Statgraphics</i></p> <p>d) <i>Lingmotif</i></p>	<p>a) plagiarism and similarity prevention system embedded in the Sakai LSM.</p> <p>b) a PDF format rubric viewer.</p> <p>a) Google Forms for collecting Post-test responses.</p> <p>b) collected data organisation, graphs elaboration.</p> <p>c) statistical data analysis.</p> <p>d) sentiment analysis.</p>

Regarding the phases shown above, the relationship between teaching, research, and technology was highlighted. Certain practicalities should be pointed out within each phase:

– Introduction: students` engagement is closely related to the task purposefulness, evaluation, and support. To ensure this relationship and smoothly run the process, the instructor provided learners with information about the project and offered weekly follow-up sessions. Moreover, the initial questionnaire (12-02-2021) included not only communicative competences Likert-type questions but also several open-ended questions addressing the general definition of competence and e-Portfolio, the optimum number of its components and specific comments.

– Development: as noted above in Table 1, the participants were provided with the necessary technical tools for task completion. Their overall goal was to prepare all five e-Portfolio items both from technical gradually (visuals, prototypes, etc.) and communicative (different writing assignments) standpoints. To do this, we asked them first to select their most remarkable design proposals and write about them in English, following the guidelines and correction suggestions on the *Writeandimprove.com* platform. The draft writing covered five assignments submitted to the official university learning platform approximately every second week. This allowed for a rather swift correction and feedback procedure.

– Presentation: the range of communicative competences involved a variety of skills listed in Figure 2. Students read guidelines and project descriptions, listened to the lecturer`s explanations and classmates` expositions, delivered their oral presentations in public and elaborated individual e-Portfolios. Added to this is mediation capacity while making others understand their creative ideas, occasionally making references to the Spanish linguistic context and actively interacting with others during online follow-up meetings.

– Assessment: working on this project meant not only ESP progress; it also required a deeper personal connection to the future profession while choosing technical products and describing them publicly in *lingua franca*. In the final questionnaire (05-05-2021), they re-evaluated communicative competences according to the Likert scale as well as defined e-Portfolio, named its benefits and commented on its most and least enjoyable parts.

4. THE RESULTS AND DISCUSSION

As we will soon see, the goals of this section are manifold. The overall results evaluation seeks to check the following two hypotheses: (1) that e-Portfolios are reliable ways to enhance B2 communicative competences; (2) that e-Portfolios offer a novel approach toward

professional identity construction. Our quantitative and qualitative assessment methods hold surprising outcomes for the scholarly reader, as such instruments as pre- and post-test questionnaires, and sentiment analysis were used, among others.

Therefore, the questionnaires included a mixture of closed questions aligned with a consistent Likert-based scale and open-ended questions for qualitative approximation. For a reliable measurement of both types of perception, two different tools were used. The statistical part of this research was mainly supported by *Statgraphics Centurion* tool available for the *Universitat Politècnica de València* community via corporate licence and virtual *UPV Polilabs* environment. As for the qualitative data, by encompassing these in sentiment analysis concepts via *Lingmotif Sentiment Analysis* tool created by Tecnolengua Group at the University of Málaga, information on unbiased feelings expressed by the study participants was obtained.

4.1. Finding 1. Quantitative Pre-test and Post-test analysis

Numerous parameters should be considered in this part of the study. Both, the initial (before the trial) and final (after the trial) questionnaires displayed in the joint part Pre/Post-test Q2 of Annex 1 focused research attention on two factors: the linguistic and professional ones.

Building a quality quasi-experimental environment took time but was well worth it in the end. All statistics previously compiled using *Google Forms* questionnaire were processed by the following manner.

a) Cronbach alpha

For testing internal scale consistency, Cronbach's alpha was employed. This approach, which was first investigated by Lee Cronbach [24], reveals that a high alpha surpassing 1 point offers low reliability. Whereas Crano et al. [25] offer only the minimum scale borderline being 0,75, DeVellis [26] suggests a maximum scale boundary of 0,95.

The statistical methods applied in our study compared pre-test (18 responses) and post-test (18 responses) corresponding to the joint quantitative section of Annex 1. As shown in Figure 4, the average correlation among items is reasonably high, with the top value of 0,91-0,92 achieved by the B2 Online training item. Hence, all items have proved to display internal consistency, although special precautions should be taken in case of the highest rate that might indicate redundancies [27].

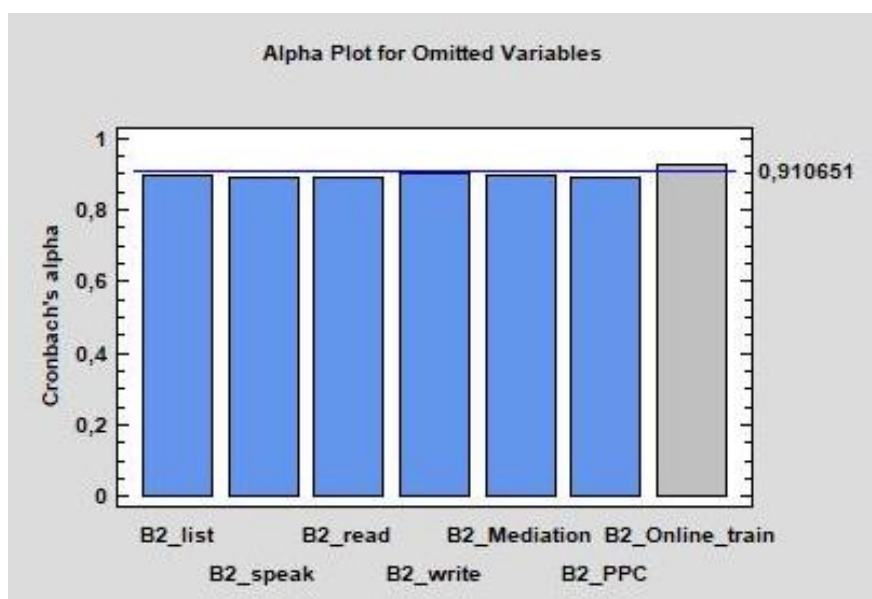


Figure 4. Cronbach's alpha. (Source: own data processed by Statgraphics Centurion).

b) Likert plot

Data collected using a Likert scale are analysed using the Likert Plot technique. To capture user reactions to a statement, Likert scales are frequently employed in survey research. For us, the 5-level range categorised learners' replies from 1 = Strongly disagree to 5 = Strongly agree (excluding the no response option). Once again, the statistical application already used in the previous step helped us address the approach named Likert plot.

Following clarifications of Robbins & Heiberger [28], this method computes summary statistics, shows the outcomes and displays them on a diverging stacked bar chart. In terms of our specific results, Figure 5 illustrates the percentage counts within each category. Therefore, to stay focused on linguistic competence in pre- and post-experimental settings, we will compare positive responses (green “agree” and orange “strongly agree”) per category. Based on the post-test versus pre-test numbers, the dataset comprises three main abilities that primarily benefited from the didactic process: B2 mediation (+ 17%), B2 reading (+ 12%) and B2 writing (+ 12%) due to the task typology. The capacity of B2 online training remained unchanged (0% variation), dividing positive transformations from the negative ones. On the opposite side, certain regression was detected in B2 listening (-11%), B2 speaking (-6%) and B2 plurilingual and pluricultural competence. This might happen due to the lack of personal contact and limited interaction while compiling an individual e-Portfolio while hybrid teaching model was still implemented due to COVID-19 restrictions.

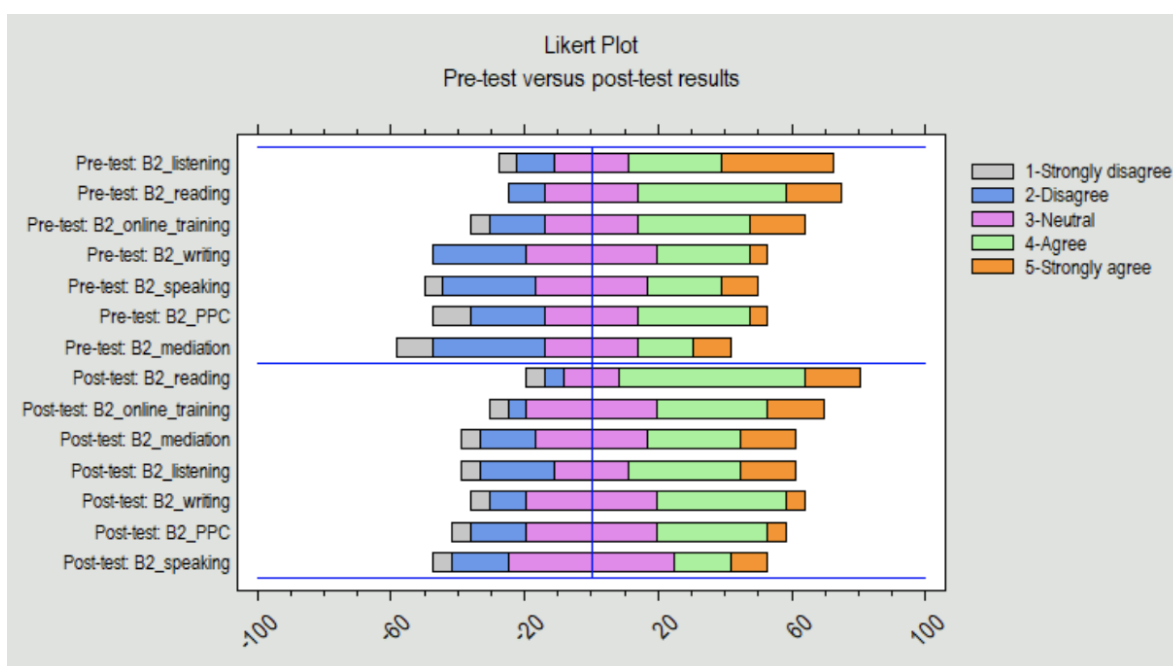


Figure 5. Likert plot (Source: own data processed by Statgraphics Centurion).

4.2. Finding 2. Qualitative analysis

Unlike quantitative and, therefore, more number-oriented analysis, the qualitative approach prioritises behavioural markers, naturalistic scenarios and minority model. Our method is closely related to understanding students' experiences for complementing analytical data from section 4.1.

Consequently, in order to give support to these conventions and implement unbiased consideration of participants' opinions, we are going to use *Lingmotif Sentiment Analysis* tool for processing qualitative information from pre-test and post-test. The most relevant open-question responses will be handled by the natural language processing software that is “lexicon-

based, linguistically-motivated” [29, p. 133] Regardless of the length or subject matter, *Lingmotif* accounts for sentiment shifters within the studied text.

a) Pre-test qualitative analysis

As established above, we first explore the following three questions corresponding to Pre_Q1, Pre_Q3 and Pre_Q5 (see Annex 1) and generate an analytical result of 384 lexical items (77 sentences) illustrated in Figure 6.

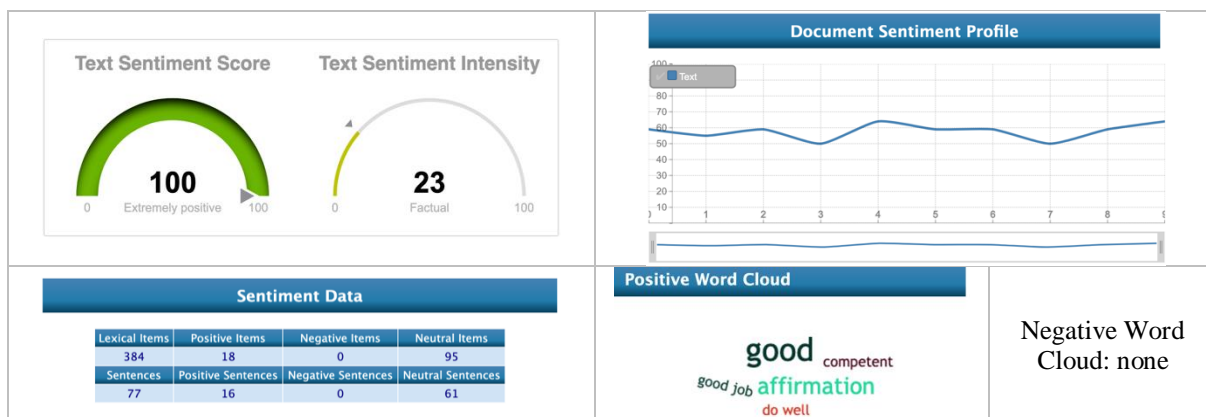


Figure 6. Pre-test qualitative sentiment analysis (Source: own data processed by *Lingmotif*).

Pre-test *Lingmotif* sentiment analysis results highlight implicit opinions of the didactic experiment participants regarding competences and e-Portfolio, mainly. In respect of both professional topics, technical students showed an exceptionally positive stance (100% text sentiment score). According to Figure 6, their perception of the e-Portfolio and professional preparation was linked to the words “good” (repeated 3 times) “competent” and “good job” (1 repetition each). Therefore, the initial part of the research was fully supported by motivated learned and the expectations set were high. Let’s compare them to the second dataset collected at the end of the study 4 months later.

a) Post-test qualitative analysis

Post-test sentiment analysis assessed qualitative answers to Post_Q1, Post_Q3 and Post_Q6 questions (see Annex 1). In this case, the focus was shifted to defining the e-Portfolio role and its benefits. Specifically, Figure 7 provides a screenshot of the scrutiny on the 468 lexical items (71 sentences) performed.

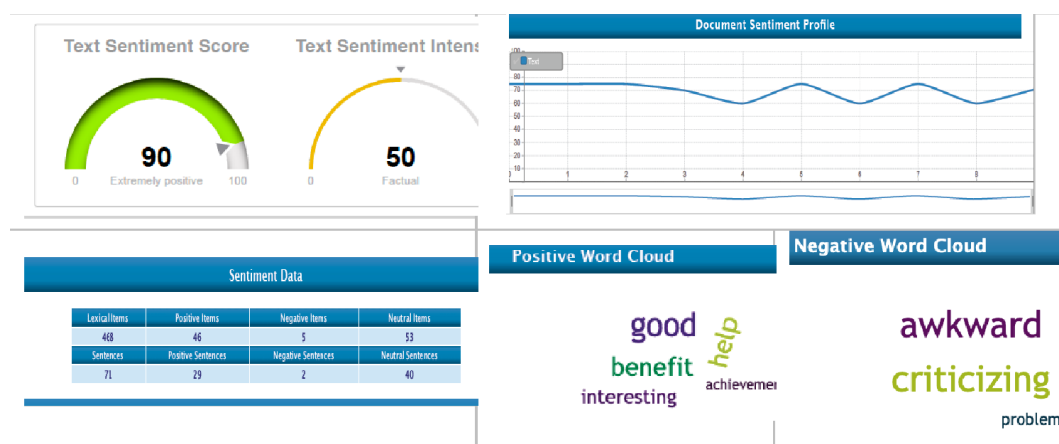


Figure 7. Post-test qualitative sentiment analysis (Source: own data processed by *Lingmotif*).

In line with the results displayed above, this microtext analysis tracks the specific views on the definitions and opinions requested. These lexicons showed an overall positive perception (90% text sentiment score) of e-Portfolio's importance for the professional future of UPV undergraduates. On the plus side, many positive keywords described the experience with such words as “good” (5 repetitions) or “benefit” and “help” (4 repetitions each). On the downside, the negative word cloud items “awkward” and “criticising” (4 repetitions each) referred to the experience of reviewing a colleague's project and therefore being somewhat traumatic.

5. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

Emerging health and tech scenarios constantly evolve the nature of university L2 training. The quality and relevance of English language teaching are of crucial importance in educational excellence and further labour success. This study serves as an experimental basis for developing both communicative competences and professional growth for future engineers. Its findings are built on a cross-sectional framework of English for Specific Purposes in technical university and, thus, can offer a helpful response to the initial research questions:

(RQ1) By exploring Goal 4 (Quality education), updated ESP methodology was linked to active learning tools and professional identity enhancement in a meaningful way. Consequently, the demands on language educators to establish relevant and true-to-life learning scenarios have been addressed here. Students' positive attitude toward the training format also ensured knowledge and capacity-building accomplishment.

(RQ2) While evaluating the linguistic outcomes, quantitative results are called to prove the improvement of B2 mediation, B2 reading and B2 writing communicative competences. Indeed, keeping track of learners' self-assessment in correlation with objective rubric-based performance might be a noteworthy co-evaluation practice. The e-Portfolio mode pushes linguistic targets much further than a primary coursebook task, and technical undergraduates only benefit from it.

(RQ3) Multilateral development occurs when students focus on their future pathway in an English as a Second Language (ESL) class. As qualitative data proves, the harmony of L2 goals and trainees' interests creates a satisfactory, positive, and committed mood regarding professional identity. Likewise, the applicability of the e-Portfolio to employability and career prospects transforms this experimental study into a driver for growth and a lifelong learning tool.

The findings of this study present a practical implementation of a technology-supported English teaching and research approach. We hope that this experience will serve as an inspiration for the upcoming fusion of SDGs, ESP, and technical education. Even though there is an urgent need for permanent adaptation to address the industry standards, quality language education can become the cornerstone of future professional self-esteem, confidence, and success.

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Pre-test and post-test questionnaire structure

<p>Pre-test Pre_Q1. Competence is the ability to perform a job according to the expected standard. Do you agree with this affirmation? Please, tell us Yes/ No and why</p> <p>_____</p>	<p>Post-test Post_Q1. How could you define an e-portfolio for design engineering students?</p> <p>_____</p>																																																
<p>JOINT PART: pre-test (before the ePortfolio implementation) and post-test (before the ePortfolio implementation), same items:</p>																																																	
<p>Pre/post_Q2. Please, rate the linguistic competences (LC) and your level of confidence while using then (scale of 1-5, 1 being the lowest and 5 being the highest):</p>																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Linguistic Competences (LC)</th> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">5</th> </tr> </thead> <tbody> <tr> <td>Pre/post B2_listening</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> </tr> <tr> <td>Pre/post B2_reading</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> </tr> <tr> <td>Pre/post B2_writing</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> </tr> <tr> <td>Pre/post B2_speaking</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> </tr> <tr> <td>Pre/post B2_plurilingual and pluricultural competence</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> </tr> <tr> <td>Pre/post B2_online training</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> </tr> <tr> <td>Pre/post B2_mediation</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> <td style="text-align: center;">*</td> </tr> </tbody> </table>		Linguistic Competences (LC)	1	2	3	4	5	Pre/post B2_listening	*	*	*	*	*	Pre/post B2_reading	*	*	*	*	*	Pre/post B2_writing	*	*	*	*	*	Pre/post B2_speaking	*	*	*	*	*	Pre/post B2_plurilingual and pluricultural competence	*	*	*	*	*	Pre/post B2_online training	*	*	*	*	*	Pre/post B2_mediation	*	*	*	*	*
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<p>Pre-test Pre_Q3. An e-portfolio is an online arrangement of data and assortment of records (documents) representing an individual's work. Do you agree with this affirmation? Please, tell us Yes/ No and why.</p> <p>_____</p>	<p>Post-test Post_Q3. In your opinion, what are the main benefits of compiling an e-portfolio for design engineering students?</p> <p>_____</p>																																																
<p>Pre_Q4. Your portfolio structure suggestions</p> <p>Student profile (+ biodata) Component 1 (task/ project & reflection) Component 2 (task/ project & reflection) Component 3 (task/ project & reflection) Component 4 (task/ project & reflection) Summary / Results References / Sources Final portfolio presentation</p>	<p>Post_Q4. Please, choose the MOST enjoyable part(s) of your e-portfolio:</p> <p>Student profile (+ biodata) Component 1 (task/ project & reflection) Component 2 (task/ project & reflection) Review (task/ project & reflection) Summary / Results References / Sources</p>																																																

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ЕЛЕКТРОННЕ ПОРТФОЛІО В НАВЧАННІ СТУДЕНТІВ ЗАДЛЯ СТАЛОГО РОЗВИТКУ

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Анотація. Покращення технічної освіти шляхом інтеграції цілей сталого розвитку в межах програми "Англійська мова за професійним спрямуванням" (English for Specific Purposes – ESP) вимагає мотивації студентів до їх професійного розвитку. Тому вибір привабливого інструменту активного навчання стає одним з найважливіших компонентів цього процесу. Наше розуміння е-портфоліо як всеохоплюючого та сталого інструментарію, що надає студентам, які не є носіями англійської мови, нові джерела для професійного зростання та самооцінки, трансформувалося в дидактичний та дослідницький сценарій цього дослідження. Моніторинг 18 учасників експериментальної групи під час створення індивідуальних електронних портфоліо англійською мовою допоміг нам дослідити їх прогрес з точки зору як лінгвістичних, так і професійних навичок. Для цього за допомогою якісних і кількісних інструментів збирались думки учнів, які потім аналізувались за допомогою програмного забезпечення для статистики та аналізу настроїв. У результаті було виявлено помітне покращення комунікативних компетентностей у медіації на рівні B2, читання та письма на рівні B2; ще одним результатом дослідження стало колективне усвідомлення необхідності якісної презентації професійного досвіду. Для отримання результатів під час навчання англійської мови професійного спрямування та дослідження було використано декілька технологічних засобів. Змішаний фокус цього дослідження може зацікавити практиків та викладачів рівня L2, які вагаються щодо залучення інструментів вимірювання та аналізу у своїй практиці. Приймавши описану вище подвійну парадигму, ми тепер розуміємо, що дослідження відбувається під час викладання. Результати дослідження показують, як метод викладання та дослідження англійської мови за допомогою технологій може бути застосований у реальних умовах. Ми сподіваємось, що цей досвід сприятиме поліпшенню викладання англійської мови професійного спрямування урахувавши цілі сталого розвитку у закладах вищої освіти. Якісна мовна підготовка може стати наріжним каменем майбутнього професійного успіху, водночас задовольняючи нагальну потребу в довготривалій адаптації до інженерних специфікацій.

Ключові слова: електронне портфоліо (e-Portfolio); англійська мова професійного спрямування (ESP); сталість; професійна ідентичність; комунікативні компетентності.



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