

Students' Perceptions of Digital Oral Skills Development in ESP University Students: Strengths and Weaknesses in Digital Communication in the COVID World



Jelena Bobkina and Elena Domínguez Romero

Abstract The present study draws from the need to face twenty-first-century Engineering students' lack of oral communication skills in digital environments. The existing deficiencies became evident during the months of COVID-19 lockdown in 2020, when most communication processes, both in academic and professional settings, involved the use of digital means. On this basis, the study aims at identifying ESP university students' self-reported strengths and weaknesses to build persuasive digital oral speeches using a self-assessment rubric that was specifically designed to evaluate their communication skills in digital environments. The rubric comprised 22 items distributed between five significant areas of knowledge: building communication skills (content/cognition and linguistic area), performing communication skills (physical and socio-emotional areas) and creating digital content skills (technical area). The results reveal that about 40% of the students considered their level of digital communication skills deficient, being the linguistic, socio-emotional and physical areas of communication the most affected ones. The ultimate intention of the study is to help students become aware of their command of oral skills in digital environments –their specific strengths and weaknesses– to help them thrive in both traditional and digital communication.

Keywords Oral skills · Persuasive speech · ESP · Digital communication · Engineering students

J. Bobkina (✉)
Universidad Politécnica de Madrid, Madrid, Spain
e-mail: jelena.bobkina@upm.es

E. D. Romero
Complutense University of Madrid, Madrid, Spain
e-mail: elenadominguez@filol.ucm.es

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1 Introduction

University graduates seeking employment in the engineering area of multinational corporations face the challenge of standing out in a highly competitive job market. Among the primary skills they must command are communication, teamwork, critical thinking, problem-solving, creativity, innovation, and digital competence (Chell & Dowling, 2013; Johnston, 2019; Kallinikou & Nicolaidou, 2019). According to Passaw and Passaw (2017), communication is considered one of the top skills in the engineering field, along with planning, time management, and problem-solving. The accreditation board for engineering and technology (henceforth, ABET) recognises the importance of communication, which is included among the ABET curriculum requirements (ABET, 2017). Employers demand technical knowledge and knowledge of emotional and social intelligence, with a crucial communication basis (Gruzdev et al., 2018; Kassim & Ali, 2010; Ortiz et al., 2016).

However, communication remains one of the skills engineering students struggle with most in the twenty-first century, often failing “to appreciate that written words, not just calculations, express engineering content” (Conrad, 2017, p. 191). Very few universities prepare their students to face the needs of today’s job market regarding the acquisition of oral communication skills. Engineering students reach the workforce with adequate solid skills specific to their field but lack the communication skills necessary to effectively navigate the many audiences and situations required by modern companies (Kassim & Ali, 2010; McBain et al., 2016).

The lack of communication skills among engineering students is also evident in digital oral communication. The existing deficiencies have become especially visible during lockdown months, when most of the communication processes, both in academic and professional settings, have involved the use of digital means (Bobkina & Domínguez, 2020). However, very little is known about students’ strengths and weaknesses in digital environments compared to traditional settings (Domínguez Romero & Bobkina, 2021a). Contrary to traditional communication, digital oral communication, be it synchronous (e.g., videoconferences) or asynchronous (e.g., recorded communication), has remained mostly unexplored. The few exceptions comprise studies on videoconferences (Crawford-Camicciottoli, 2015; Darics, 2020) and online videos (Burgoon et al., 2017; Domínguez Romero & Bobkina, 2021b; Luzón, 2019). Attempts have also been made to explore the nature of social interaction in online synchronous learning environments from the social learning theory perspective (Wei et al., 2012; Whiteside et al., 2017). To bridge the existing gap, this study sets out to identify ESP (English for Specific Purposes) university students’ perceptions of their command of oral skills in digital environments, specifically, their strengths and weaknesses to build persuasive digital oral speeches. Our ultimate aim has pedagogical implications: enhancing metacognitive awareness of their command of oral skills in digital environments—their specific strengths and weaknesses—to help them thrive in traditional and digital communication.

In this vein, the following research questions – focused on a particular case study carried out with 76 engineering students in our ESP classroom at the Polytechnic University of Madrid, Spain (henceforth, UPM)– were raised:

- What are our students' general perceptions about their command of digital oral skills?
- What are our students' specific perceptions about their strengths and weaknesses to build effective digital oral communication?

Following the theoretical framework section, we will describe the study's methodology and the results obtained to answer the questions raised in the study. The analysis of the results will lead us to conclusions pointing to the need to emphasise digital communication in professional and academic contexts, preparing students for the new communication reality led by technology.

2 Theoretical Framework

Oral competence allows humans to express themselves clearly and understandably, helping them participate in a democratic society and navigate life (Burke, 1973). This competence is closely related to the ability to adjust to multiple social and cultural aspects and contexts. Research carried out in recent years points to solid relations between social competence, acceptance and status, and oral competence (van der Wilt et al., 2016). Specifically, research demonstrates the central role of oral communication in learning across the curriculum (Alexander, 2018) and the need to help students develop a broad discursive 'repertoire'. Mercer (Mercer et al., 2017) advocates oral communication as a tool for humans to think together creatively and productively (Littleton & Mercer, 2013; Mercer & Hodgkinson, 2008). For Alexander (2012), oral communication is an essential skill for life and learning, so students have to learn not only provide relevant and focused answers but also pose their questions, use talk to narrate, explain, speculate, imagine, hypothesise, explore, evaluate, discuss, argue, reason and justify.

Andrew Wilkinson, the most outspoken advocate of oracy, defined this term as the development and application of a set of skills associated with effective oral communication. For Wilkinson, oracy is not a subject in itself, but rather a condition for learning in disciplines neglected in education for years (Wilkinson et al., 1965). In recent times, Alexander (2012) has reiterated the plea for oracy, arguing that the significance of oracy and its role in modern education cannot be underestimated. At present, oracy is gaining importance because of globalisation and digitalisation processes (Crockett et al., 2011; Kaldahl et al., 2019; White, 2013). Distant discussions, brainstorming, decision-making, and collaborative work lead to digital oral communication modes comprising video conferencing, video calling, or web conferencing rooms (Atkinson, 2017).

The paradigm shift in communication was especially evident during the COVID-19 lockdown, when most communication processes were digital. Recent

studies claim that the proliferation of digital oral communication is reshaping the quality and quantity of face-to-face communication, revolutionising communication in informal situations and formal contexts such as public speaking (Bobkina & Domínguez Romero, 2017; Drago, 2015; Jenkins, 2013; Misra et al., 2014; Przybylski & Weinstein, 2012). Some researchers point to the way technological wonders affect how we communicate orally: “from long-winded, flowery oratory to slickly produced speeches that can be tweeted or live-streamed” (Graveline, 2013, p. 22). Nevertheless, overly polished speakers lack authenticity and result in “soaring levels of public scepticism” (Graveline, 2013, p. 25), mainly when they focus too much on crafting highly tweetable speeches with pithy sentences designed to be sent out by audience members via Twitter (Anderson, 2018).

Based on the above, digital oral communication skills are essential for ESP university graduates in their future roles as citizens and professionals (Bobkina et al., 2020; De Grez et al., 2009; Heiman et al., 2012), although knowledge about developing digital oracy in language teaching is rather lopsided (Mercer et al., 2017). Oracy has been under scrutiny in traditional, face-to-face EFL/ESL settings (Bøhn, 2016). However, little is known about how oracy is conceptualised and assessed in digital oral environments. The debate is still open (Mercer et al., 2017), yet it is commonly accepted that technology has not replaced the need to carefully prepare speeches (Alias & Osman, 2015; Checa Romero, 2015; Iordache et al., 2017) despite offering some additional tools to facilitate the process (Graveline, 2013).

One of the most recent attempts to develop an oracy skills framework was undertaken by Neil Mercer, Paul Warwick and Ayesha Ahmed in 2014. They identified the skills needed to communicate effectively, isolating key components of spoken language and breaking them into four areas: physical (e.g., voice projection, gesture), linguistic (e.g., using appropriate vocabulary, choosing the correct register and language variety for the occasion), cognitive and social (e.g., organising content based on audience awareness) and emotional (e.g., managing group activity, taking an active role in collaborative problem solving) (Mercer et al. 2014b, p. 3).

This framework was further developed by Bobkina and Domínguez (2020), who adapted it for assessing digital oracy skills. As shown in Fig. 1, the adequate skills to be developed when building effective digital speech comprise building communication skills, performing communication skills, and creating digital content skills.

Building communication skills focuses on five content and cognition elements: audience, content, organisation, visual aids and appearance (Palmer, 2015). On the linguistic side, vocabulary, language, and rhetorical devices should be considered (Scott & Gaunt, 2019). Performance skills are crucial in building digital speeches (Dunbar et al., 2006) and have two dimensions: the physical comprises poise, voice, life, eye contact, gestures, and speed (Palmer, 2011); the socio-emotional includes working with others, listening and responding, and confidence in speaking for synchronous digital speech, restricted to confidence in speaking and speech anxiety in case of asynchronous speech. Digital content creation skills comprise developing and editing new and existing digital content, production of creative expressions, and

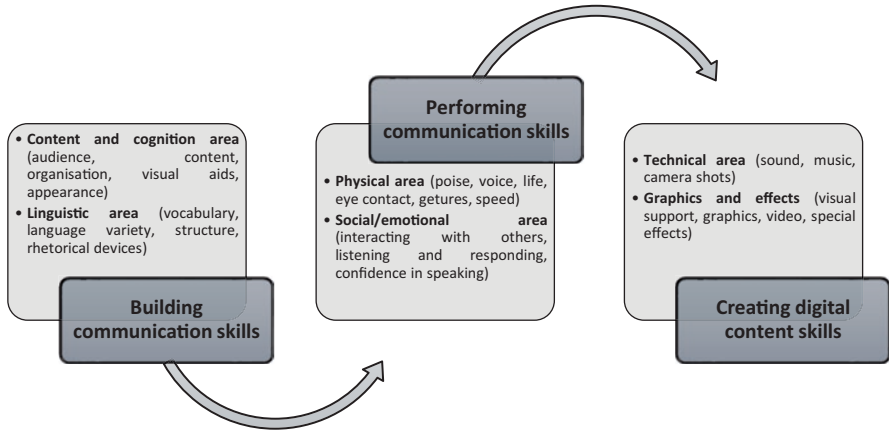


Fig. 1 Aspects to be considered when building effective digital speeches. (Bobkina & Domínguez, 2020)

awareness of purpose, audience, and composition techniques (Iordache et al., 2017; van Deursen et al., 2014; van Dijk & van Deursen, 2014). Technical elements and special effects are also to be considered (Palmer, 2015).

3 Method

The extraordinary situation caused by the COVID-19 pandemic gave us the opportunity to collect our students' perceptions of their command of oral skills in digital environments as 100% of our communication activities were online. This was not the case before the pandemic when all our teaching practice was face-to-face. Drawing on a challenge-based learning methodology (Fidalgo et al., 2017; Nichols et al., 2016), students were asked to identify a challenge associated with the field of computer engineering and develop a mobile app start-up to address such a challenge. More specifically, they were asked to record 1-min video pitches to introduce their mobile app start-up idea. After extensive research on the technical aspects of the start-up, they presented their resulting mobile app in the form of a short video developed as part of a classroom competition allegedly intended to launch the best product on the market. Both recordings were shared and commented on through a virtual forum on the Moodle platform of the course. The students were also informed that the video recordings of the tasks would be anonymised and used only for research purposes and consented to participate in the study.

3.1 Participants

To examine students' perceptions of their command of digital oral skills in ESP context, a case study was carried out with a group of 76 students from the Higher Technical School of Computer Engineering of the UPM who were enrolled in the English for Professional and Academic Communication subject, throughout the second semester of the 2019–2020 academic year. As reflected in Table 1, the analysis comprises data from 76 students, 55 men and 21 women, with ages ranging from 21 to 28 years, all fourth-year students of Computer Engineering and Computer Engineering and Mathematics. All but 12 participants were native Spanish speakers whose English level ranged from B1 to C2, according to the CEFR (Council of Europe, 2001), although they must certify the B2 level at the end of the course. The evaluation of their oral skills represented 20% of their final grade and was based on a short elevator pitch (10%) and a traditional oral presentation (10%). Due to the COVID-19 lockdown, the traditional oral presentation in class was replaced by an asynchronous video presentation.

3.2 Materials and Instruments

Working in small groups of 2–3 students, the participants developed 28 video pitches to present the mobile applications resulting from their research projects. From a technical point of view, one of the requirements for the video pitches was the combination of the presenters' images with their PowerPoint slides. The themes of the research projects centred around the use of machine learning, artificial intelligence, virtual reality, emerging technologies or home intelligence systems (e. g., PlayLoud, a new musical platform for young musicians; Catchclo, an application to identify the clothing brand and its origin; uGlasses, a new gadget for blind people;

Table 1 Participants

Factor		Frequency
Gender	Male	55 (72.4%)
	Female	21 (27.6%)
Age	21–23	34 (44.7%)
	24–26	37 (48.7%)
	<26	5 (6.6%)
Nationality	Spain	64 (84.2%)
	China	5 (6.6%)
	Romania	4 (5.3%)
	Greece	1 (1.3%)
	Bulgaria	1 (1.3%)
English level	B1	8 (10.5%)
	B2	60 (78.9%)
	C1-C2	8 (10.5%)

Mcard, the virtual card for the public transport; Hiper, a distributed computing system that divides the workload among users). The corresponding video presentations were part of a competition for the best start-up project based on a mobile application.

To explore our students' perceptions about their command of digital oral skills, we developed a self-assessment sheet for them to evaluate their ability to communicate in digital video environments: video pitches and video presentations (see Appendix A).

The first part of the self-assessment sheet aimed to collect quantitative data. As shown in Fig. 2, the evaluation criteria comprised 22 items distributed among three areas of digital oral skills: content/cognition and linguistic area, physical and socio-emotional area, and technical area. All items were assessed according to a four-point Likert scale ranging from 1 – inexperienced and insufficient – to 4 – exemplary, qualified, marked for excellence.

The second part of the self-assessment sheet aimed to collect qualitative data to complete the information extracted from the quantitative analysis and comprised a two-fold question: What are your strengths and weaknesses to build effective digital oral communication?

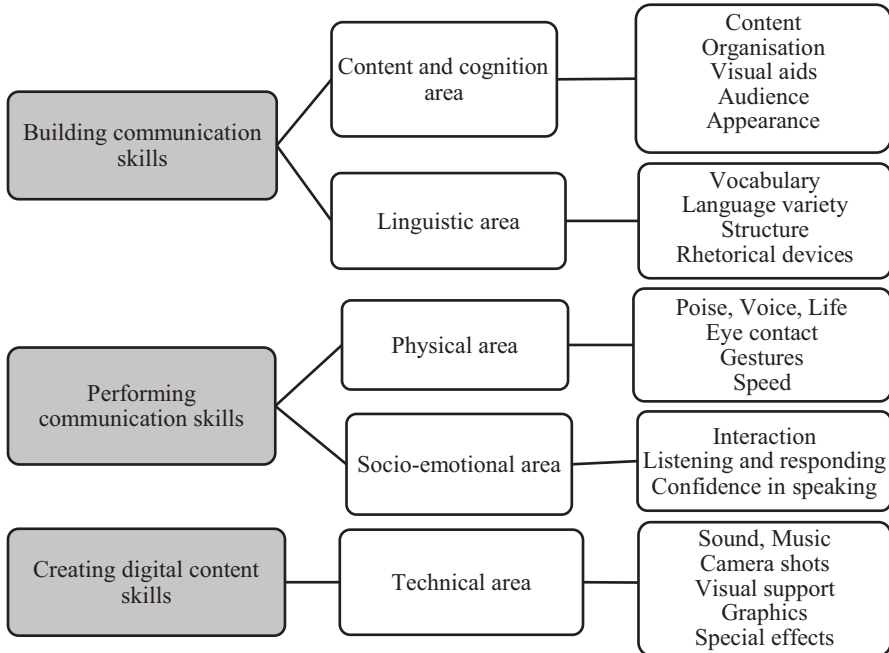


Fig. 2 Scoring criteria for grading digital oral skills. (Bobkina & Domínguez, 2020)

3.3 *Procedures*

The study was conducted over 15 weeks of classes during the second semester of the 2019–2020 academic year. At the beginning of the course, it was explained to the students that they would work in small groups of 2–3 students to create a mobile application aimed at developing and validating a business model in computer engineering; 20% of their final grade would be based on their participation in two oral activities meant to promote the final product of their research. The first activity consisted in creating a 60-s elevator pitch to publicize each groups' research proposal. The second activity consisted in preparing a 6–10-min oral presentation as part of an in-class start-up competition. Because of the COVID-19 lockdown, this activity was finally replaced by a synchronous online event, with students doing their presentations remotely.

The videos were shared and commented on through a virtual forum on the Moodle platform of the course. In addition, the final presentation was self-assessed by the students with the help of the assessment sheet created for this purpose. The information extracted from the self-assessment sheets was manually coded and processed with the help of the Statistical Package for the Social Sciences (SPSS version 25.00).

4 *Analysis of Results*

Following the structure of the self-assessment sheet, the first part of the analysis focuses on our students' perceptions about their command of digital oral skills. In contrast, the second part delves into their perceptions about their strengths and weaknesses in building effective digital oral communication.

4.1 *ESP University Students' Perceptions About Their Command of Digital Oral Skills*

To answer the first research question, the quantitative data retrieved from the first part of the self-assessment sheet were analyzed with the help of SPSS 25.0 (SPSS, 2017). Table 2 presents the descriptive statistics on the students' general perception of their digital oral skills command when communicating in digital environments. As shown in the table, 21% (N = 16) of the respondents considered their command of digital oral skills to be high compared to 57,9% (N = 44) who described it as average, followed by 21% (N = 16) who described it as low or insufficient.

Building communication skills achieved the highest number of positive responses (Table 3): 84.2% (N = 64) of the respondents rated their command as average or high compared to 15.8% (N = 12), who described it as low. However, the delivery

Table 2 Overall evaluation: Students' general perception of their command of digital oral competence

		Frequency	Percent
Valid	Insufficient	1	1.3%
	Low	15	19.7%
	Medium	44	57.9%
	High	16	21%
	Total	76	100%

Table 3 Students' perception of their level of digital oral competence per skill

		Frequency	Percent
Building up communication skills			
Valid	Insufficient	0	0%
	Low	12	15.8%
	Medium	44	57.9%
	High	20	26.3%
	Total	76	100%
Performing communication skills			
Valid	Insufficient	0	0%
	Low	17	22.4%
	Medium	41	53.9%
	High	18	23.7%
	Total	76	100%
Creating digital content skills			
Valid	Insufficient	2	2.6%
	Low	15	19.7%
	Medium	47	61.8%
	High	12	15.8%
	Total	76	100%

and creation of digital content-related skills were self-perceived as considerably lower, with 22.4% (N = 17) of the respondents assessing their command of these skills as low or insufficient.

Within the group of building communication skills, the linguistic area was the most negatively affected. As shown in Table 4, 26.3% (N = 20) of the respondents considered their command of English (vocabulary, grammatical structures, or rhetorical resources) to be low, and therefore, one of their main obstacles to achieving effective digital communication.

Regarding performing communication skills, essential deficiencies stand out both in the physical (non-verbal language) and socio-emotional areas (interaction, security and self-confidence). More than a quarter of the surveyed students (26.3%, N = 20) considered that their command of non-verbal language was insufficient, while a fifth (19.7%, N = 15) admitted not having the self-confidence to communicate in digital environments (Table 5).

Table 4 Building up communication skills: students' perception of their level of digital oral competence

		Frequency	Percent
Content and cognition area			
Valid	Insufficient	0	0%
	Low	3	3.9%
	Medium	44	57.9%
	High	29	38.2%
	Total	76	100%
Linguistic area			
Valid	Insufficient	0	0%
	Low	20	26.3%
	Medium	45	59.2%
	High	11	14.5%
	Total	76	100%

Table 5 Performing communication skills: students' perception of their level of digital oral competence

		Frequency	Percent
Physical area			
Valid	Insufficient	0	0%
	Low	20	26.3%
	Medium	35	46.1%
	High	21	27.6%
	Total	76	100%
Socio-emotional area			
Valid	Insufficient	1	1.3%
	Low	14	18.4%
	Medium	47	61.8%
	High	14	18.4%
	Total	76	100%

Finally, in terms of the creation of digital content, a similar number of students (22.3%, N = 17) considered that their technical knowledge (sound, music, video editing, or visual support) was not enough to ensure quality digital communication (Table 6). It is worth noting that the participants were taking their final year at the Higher Technical School of Computer Engineering of the UPM and enrolled in the English for Professional and Academic Communication course.

Table 6 Creating digital content skills: students’ perception of their level of digital oral competence

		Frequency	Percent
Technical area			
Valid	Insufficient	2	2.6%
	Low	15	19.7%
	Medium	47	61.8%
	High	12	15.8%
	Total	76	100%

4.2 *ESP University Students’ Perceptions About Their Strengths and Weaknesses When Building Effective Digital Oral Communication*

To complete the information retrieved from the quantitative analysis and further explore our students’ perceptions of their command of digital oral skills, we developed a self-assessment sheet based on our theoretical framework for research on digital oracy skills followed in the self-assessment sheet (Bobkina & Domínguez, 2020). As previously explained, the self-evaluation criteria comprised 22 items distributed among three main areas of digital oral skills: building communication skills, performing communication skills and creating digital content skills (Fig. 2). Then, we asked them to describe their most prominent strengths and weaknesses when communicating orally in digital environments (see Appendix A).

The qualitative data resulting from their responses were analysed using three main codes from the framework’s main areas: building communication skills, performing communication skills and creating digital content skills (Fig. 2). These comprise further sub-categories also shown in Fig. 2: content/cognition and linguistic area, physical and socio-emotional area, and technical area. Different codes were used for strengths and weaknesses. The contradictory sentences that fell into more than one code were subjected to a negotiated agreement process with two peer coders who were also asked to review the codes with an inter-rater reliability rating of 97% on the final stage of the coding cycle.

Unedited students’ responses, subject categories, frequencies, and a selection of relevant comments, are presented in Table 7.

As shown in Table 7, the qualitative data support the quantitative results. Regarding the strengths, the area of content and cognition stands out in 36.5% of the total comments collected. Students emphasised their ability to organise and present information logically and concisely and develop effective visual aids; 20.4% of their comments focused on the physical area, that is, on the presentation. Students highlighted their non-verbal communication skills, pointing to facial and body expressions, gestures, voice volume, or intonation. Regarding the socio-emotional area, around 20% of the students’ comments focused on their ability to convey the message safely and emotionally, imagining a specific audience behind the camera.

Table 7 Students’ perceptions about their strengths and weaknesses when building effective digital oral communication

Categories, frequencies, and a selection of relevant comments		
Categories	Frequencies	Relevant comments
Students’ strengths in digital communication		
Content and cognition area	36.5%	<p><i>‘I believe my strengths are that I clearly explain the topic and that the explanation is well – structured’.</i></p> <p><i>‘The slides are very clear; I have used many images to try to explain how our product works in a very visual manner and it is easy to understand for the audience. The functionality of the product has been explained step by step to make all the details comprehensible. The objective was to avoid being too technical and to focus on the essential part of the process’.</i></p> <p><i>‘Effective message and good visual aid, using specific data on the idea you want to show. In addition, a comparison of examples is used through a table for a quick visualization of the main idea’.</i></p> <p><i>‘I think that the presentation and the concepts that we expose are arranged in a clear way. The slides show both information and images about the project. We believe that the last slide with some of the sources provides credibility and information, not only in the presentation but also the one that has more interest afterwards.’</i></p>
Linguistic area	9.7%	<p><i>‘I think that my best strength is the pronunciation, because my oral expression is correct.’</i></p> <p><i>‘I have good control of English and I am able to construct grammatically correct sentences when talking’.</i></p> <p><i>‘From my point of view, I think one of my main strengths is that I have been taught English since I was a little boy and I consider that I have at least a certain level to speak fluently and to make myself understood’.</i></p> <p><i>‘The expressions and vocabulary used I think are on point and can be understood by any student’.</i></p>
Physical area	20.4%	<p><i>‘Our speech is well delivered as we have cared for our non-verbal communication’.</i></p> <p><i>‘I think my body language is OK and helps the audience to understand the presentation. Voice volume rises and lowers down to stress the key concepts of the presentation’.</i></p> <p><i>‘According to the strengths, I have had pleasant feelings with my body language and how I have communicated the fundamental ideas of the project in the presentation’.</i></p> <p><i>‘Body language: I was rather expressive. I also tried to look at the camera all the time, facilitating the reception of the information with future viewers.’</i></p>

(continued)

Table 7 (continued)

Categories, frequencies, and a selection of relevant comments		
Categories	Frequencies	Relevant comments
Socio-emotional area	19.4%	<p><i>'First of all, when I present something, I try to be expressive and to give the content to my audience in a proper way. When it comes to emotions, I put a lot of them in what I'm saying and try to not gesticulate too much as too many gestures in my point of view are unfit. I always fit in the time allotted to my presentation. I like to find statistics, facts, examples and stories that support my message. I consider that I have the ability to deal with audience participation challenges'.</i></p> <p><i>'In my opinion, our strengths are our positivity, good sense of humour and our research of the problem is as deep as expected'.</i></p> <p><i>'I like to speak in public and transmit my opinion and knowledge on certain subjects, which in works like this is a point in favour. In addition, I work with clients, which has helped me get rid of the nerves of public speaking'.</i></p> <p><i>'I was able to keep in contact with the audience. I also tried to make my speech emotional and create an appropriate atmosphere'</i></p>
Technical area	14%	<p><i>'The video represents a clean and happy style that combines well with the topic of the presentation –renovation'.</i></p> <p><i>'My main strength in this project is that i had made some other videos previously, uploaded on platforms that thousands of people watched and i am used to talking in front of many people'.</i></p> <p><i>'I have spent a lot of time presenting and editing the video to make it look smooth and natural and I think that shows. The presentation is very tight in time so that it is short and not heavy. The presentation script was thought so that there would be a good transition between some sections and others connecting them'.</i></p>
Students' weaknesses in digital communication		
Content and cognition area	5.3%	<p><i>'Another weak point could be that when trying to summarize so that the presentation was concise and that we did not digress into things that were not important, it is possible that I have been a little short when explaining it'.</i></p> <p><i>'Besides, the visual support was not really appropriate. It was very difficult to represent the idea in images.'</i></p> <p><i>'In the presentation, I think that I could have better unified the two slides, because in the manner they are designed, each one explains different functionalities without being completely connected'.</i></p>
Linguistic area	26.5%	<p><i>'Our level of English is quite good for B2 speakers, but probably it is not good enough for this kind of presentation'.</i></p> <p><i>'I should improve my pronunciation, and learn more vocabulary and grammar, with this I will surely feel more comfortable speaking in English'.</i></p> <p><i>'As for my weaknesses, I think I have a lot to improve on. Mainly, I think my intonation should be better as well as my grammar, which I think should be more formal. Also, I should improve my vocabulary in technical areas.'</i></p> <p><i>'I would like to improve my pronunciation and intonation. One of my greatest problems is that I first think in Spanish and try to translate it into English'.</i></p>

(continued)

Table 7 (continued)

Categories, frequencies, and a selection of relevant comments		
Categories	Frequencies	Relevant comments
Physical area	23%	<p><i>‘Though I tried to maintain visual contact with the imaginative audience, it was difficult for me and I was not very confident’.</i></p> <p><i>‘Moreover, we should talk with more energy in order to draw the attention of the viewers and be more interesting’.</i></p> <p><i>‘Other thing I need to improve is the speed that I do when I am talking. Sometimes I talk faster than I should because I get nervous when I am doing an oral presentation and it affects my self-confidence.’</i></p> <p><i>‘My body communication could be more natural and I should try to make more gestures with the hands emphasizing in the most important moments’.</i></p>
Socio-emotional area	23%	<p><i>‘Sometimes I get very nervous, although I have a correct pronunciation most of the time, there are words that are difficult for me to pronounce. When I go blank, I take a lot of breaks and I need to review the material in order to continue’.</i></p> <p><i>‘Regarding weaknesses, I considered myself as a shy person, I would need to be more self-confident and not have plenty of doubts about any tasks I try to resolve. Moreover, I believe that I should not relax at certain times and try to be more responsible when I am too conscious about the tasks’ solutions’.</i></p> <p><i>‘I get emotional when I have to talk, because it’s my first oral presentation, even if I didn’t have an audience, for me it was a little bit complicated. I think I need to work on this’.</i></p>
Technical area	22.2%	<p><i>‘The recording itself could be improved, especially the background’.</i></p> <p><i>‘My main weakness on this oral presentation are the resources that I have in my actual house to record and edit the video, without my usual computer I have done my best to record and upload to a platform to share’.</i></p> <p><i>‘The quality of the video is rather bad, low resolution, a lot of noise and inappropriate background’.</i></p>

The lowest positive comments were gathered for the linguistic (9.7%) and digital creation areas (14%).

Among the weaknesses, the linguistic area (with 26.5% of the comments) concerned students greatly. They highlighted their lack of mastery of specific vocabulary and complex grammatical structures, and severe pronunciation mistakes, which limited their general communication skills. The physical (23%), the socio-emotional (23%), and the creation of digital content areas (22.2%) were similarly problematic. Regarding the physical area, students self-reported their inability to maintain gaze with an imaginary audience, ineffective body language, excessive or static gesticulation, inappropriate volume, and voice speed issues. The socio-emotional area mainly was related to their high levels of anxiety and stress experienced when exposed to the camera, resulting in a loss of self-confidence. The students’ comments focused on their lack of experience and resources for creating quality digital

content regarding the content creation area. Finally, the content and cognition area gathered only 5.3% of the total comments.

5 Discussion and Conclusions

The study was undertaken in the belief that it could help better understand the ESP Engineering university students' needs when communicating in digital oral environments through the analysis of students' perceptions about their command of digital oral skills. Digital settings for oral communication are gradually becoming more generalised in the modern labour market. Their relevance as an essential element in current engineering education can hardly be overestimated (Bejaković & Mrnjavac, 2020; Minh et al., 2020). Therefore, analysing our students' perceptions regarding their command of digital oral skills offers essential information to help them thrive in communicating in traditional and digital settings.

The study results reveal that digital oral communication is a pending subject for almost 21% of the respondents who described their level of command as low or inadequate. Regarding the skills involved in communication, difficulties were detected at all three stages of language communication: building, performing and digital content creation. When analysing the data in detail, the most problematic areas of oral communication resulted in being the physical and linguistic ones (both with 26.3% of the students describing their skills as low or deficient), followed by the technical and socio-emotional areas (with 22.3% and 19.7% of the students describing their skills as low or deficient).

Building up communication skills was described by most students as the least troublesome area, especially when it comes to cognition and content. These results could be explained by students' broad experience in organising and presenting information during their academic years. On the contrary, the linguistic area was rated as especially problematic. About a quarter of the respondents considered that their command of English was not sufficient, even limiting their general communication skills. These results confirm some previous research on ESP students' needs, pointing out such aspects as a mismatch between students' general language competence and curriculum requirements, varying levels of English proficiency, or large classes, among others (Marwan, 2017; Hoa & Mai, 2016; Iswati & Triasuti, 2021), as well as the lack of general preparation in communication skills in ESP contexts (Mercer et al., 2014a, b).

Regarding performing communication skills, essential difficulties were detected in approximately 22.4% of the respondents who described their general level of performing skills in digital contexts as deficient. In particular, more than a quarter of the respondents considered that their command of non-verbal language was insufficient; meanwhile, about one fifth admitted not having the self-confidence to communicate in digital environments. In terms of non-verbal communication, the

students self-reported their inability to maintain their gaze with an imaginary audience, ineffective body language, excessive or static gesticulation, inappropriate volume, and voice speed issues. These findings support previous research on non-verbal communication in traditional settings, confirming the troublesome use of kinesics and proxemics elements, such as gestures/facial expressions and managing space and distance (Crawford-Camicciottoli, 2020; Maloney et al., 2020; Šerić, 2020). Nevertheless, some studies confirm that this challenge becomes even more complicated when acting in front of the camera (Palmer-Silveira, 2019; Jiménez-Muñoz, 2019; Valeiras Jurado & Ruiz-Madrid, 2015, Domínguez Romero & Bobkina, 2021a).

When dealing with the socio-emotional aspects of communication, lack of self-confidence and speaking anxiety are the two most common problems described by around 20% of the surveyed students. In particular, some respondents attributed high levels of stress to the pressure of speaking in front of the camera, resulting in a loss of self-confidence. These results are consistent with previous studies that establish a direct relationship between students' confidence and oral skills (Al-Hebaish, 2012; Kalanzadeh et al., 2013; Tridinanti, 2018; MacIntyre, 2017). In fact, numerous researches highlighted self-confidence as a key aspect for students to develop oral communication skills (Arifin, 2017; MacIntyre, 2017). In this way, the results showed that highly self-confident students were found to be more inclined to involve themselves in conversations and other spoken activities in English. Among the factors that negatively influenced students' self-confidence when performing oral tasks, lack of practice, lack of vocabulary, lack of ability, and lack of preparation were the most common ones (Tridinanti, 2018).

Regarding speaking anxiety, research confirms that this specific type of anxiety affects learners' language achievement, primarily when learners are asked to do speaking activities in front of the class (MacIntyre, 2017; Teimouri et al., 2019). Nevertheless, its impact on students' speaking anxiety is not clear enough for digital oral communication. Many students in our study commented that the digital settings allowed them to convey the message safely and emotionally, as their message could have been repeated as many times as necessary. In this sense, several recent studies confirm that virtual settings may positively impact the students' speaking anxiety and may reduce the level of stress (Bashori et al., 2020; Moise-Richard et al., 2021). However, this reduction in anxiety cannot always be considered a positive trait, as it might be related to the fact that "disembodied classes have less emotional resonance" (Resnik & Dewaele, 2021).

Contrary to our expectations, the creation of digital content was perceived as somewhat problematic, with approximately 22% of the students describing these skills as low or deficient. Quite surprisingly, the technical aspects of oral digital communication (sound, music, video editing or visual support) were reported to be particularly challenging as a good number of students considered their technical knowledge insufficient to ensure quality digital communication. These findings are in line with some previous research providing evidence of the fact that digital natives

(Prensky, 2001) are not as proficient in the use of technology as often expected (Lei, 2009; Thinyane, 2010; Thompson, 2013) and do not regard themselves as digital natives efficient at multitasking (Thompson, 2015). Their digital skills, which are not necessarily in line with their academic and professional work, are frequently overestimated by instructors (Kirschner & van Merriënboer, 2013; Magrino & Sorrell, 2014).

6 Pedagogical Implications

The pedagogical implications of the study point to the need for an emphasis on digital communication in both professional and academic contexts, preparing students for the new communication reality that is led by technology. Teachers should consider using video recordings and presentations as effective tools to prepare students for twenty-first-century communication. They should incorporate different techniques and activities that would be beneficial to them for developing skills related to digital communication, such as how to use academic language in oral communication, how to behave in front of the camera, how to speak for a virtual audience, how to overcome shyness and pressure, or how to record and edit videos.

In this sense, addressing how teachers include digital oral language development, and in particular vocabulary practice, is crucial to reducing student anxiety and increasing their communication skills and self-confidence. This study provides evidence that students believe they need additional long-time support as developing digital communication skills in academic and professional contexts is a time-consuming task in their view.

To conclude, it is essential to acknowledge that this study is based solely on self-reporting, affecting its reliability and validity. Besides, no comparison between students' scores on their work and their self-reporting results have been made. In addition, the limitation in the size of the sample renders our results preliminary. Research is therefore needed to further explore how digital communication contexts affect ESP students' oral communication ability, not only in the field of Engineering, but in others as well. However, these results open up a research niche that should not be neglected. Further research on digital online communication is indeed necessary to analyse the skills and abilities students must develop to tackle the challenges of twenty-first-century communication.

Appendix A

Oral Presentation Self-Assessment Sheet

	Digital Oracy Skills	Competence level (from 1 to 4)	Comments (include specific problems you noticed)
Building communication skills	Content and cognition area:		
	Content: Content and approach was relevant, interesting and engaging; the purpose of the speech was clear.		
	Organisation: Good organizational structure; opening grabbed the listeners; explicit and frequent signposts; powerful closing. Visual aids: Visual aids were relevant; aids clarified important concepts; aids were appropriate for the audience and the room; well designed Audience: Speech was perfectly designed for the specific audience; key points were understandable; several clear connections with the audience.		
	Appearance: Student looked sharp; dress was appropriate for the speech; added something to go above and beyond expectations.		
	Linguistic area:		
	Vocabulary and pronunciation: Student incorporated a wide range of vocabulary and used idiomatic expressions appropriate to the topic; spoke clearly, with accurate pronunciation.		
	Language variety: A proper register was used.		
	Structure: Sentences were well constructed and had a varied structure and length. There were very few grammar mistakes.		
	Rhetorical techniques: Rhetorical techniques, such as metaphor, humor, irony, and mimicry were used to gain audience's attention and make the presentation memorable.		
	Performing communication skills	Physical area:	
Poise: Student appeared calm and confident; there was no distracting behaviour.			
Voice: Student's voice was right for the space—not too loud or too soft; every word was heard; student did not mumble or blur words together.			
Life: There was feeling in the student's voice: emotion, passion, excitement, or sadness.			
Eye contact: Student maintained eye contact with audience, looking at each member of the audience; they barely glanced at their note cards.			
Gestures: Student's hand, face, and body gestures were very effective; their motions added to their speech.			
Speed and timing: The speed was appropriate: not too fast or too slow; with speed variations — faster for exciting parts and slower to add emphasis; pauses were used to let the main points sink in with the listeners; timing was accurate.			
Socio-emotional area:			
Interaction, listening and responding: Student used active listening techniques when listening to their classmates and answering their questions and comments.			
Confidence in speaking: Student spoke with self-assurance, liveliness, and flair in their voice.			
Audience awareness: Student followed the audience's reaction, taking account of their level of understanding, and adjusted their speech accordingly.			

What are your strengths and weaknesses to build effective digital oral communication? (please, provide a short paragraph of about 100-150 words):

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