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IMPROVING COMMUNICATION PROCEDURES BY MEANS OF VIDEO-RECORDED PROPOSALS

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ABSTRACT

There is an agreement regarding the importance of communication in the promotion processes of all types of technical or entrepreneurial initiatives. Communication skills have to make it possible to obtain the maximum interaction with the agents involved and facilitate the commitment of these agents to a project. In this context, communicators' erroneous perception of their own abilities and of how they are transmitting the information is a significant drawback that calls for improvement. Video-recording someone when speaking creates an impact on them given that the possibility of seeing themselves implies a significant change in the learning process. This technique has been applied as part of the teaching activities in the energy engineering master at the Universitat Politècnica de Catalunya and InnoEnergy.
In the experience developed, the students follow a first block in which they analyse a technological opportunity and subsequently detail a proposal to develop this opportunity. They prepare an oral presentation to deliver their proposal. This presentation is video-recorded and is the starting point of a second block of the course. In this block, some concepts and guidelines on communication are presented. Finally, a new proposal presentation based on the analysis and improvement of the previous presentation carried out is delivered. We conclude that these procedures can lay the ground for novel guidelines in the area of communication skills for technological innovation projects promotion.

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INTRODUCTION

Innovative teaching practices, such as project-based teaching (Beckett & Slater, 2020), have become frequent in the context of engineering in Higher Education. Communication has been considered one of the main skills needed in engineering and the lack of focus in it one of the main deficiencies in engineering education (Crawley et al., 2007). At the same time, necessary skills for the professional of the twenty-first century include creativity, curiosity, critical thinking, entrepreneurship, collaboration, communication or global competence (Zhao & Watterstone, 2021), bringing to the fore the existing relationship between entrepreneurship and communication competencies, and hinting at the need to take on a holistic stance to disciplinary literacies such that these skills are contemplated in higher education (Heron et al., 2021).

In many European technical universities, engineering students are sometimes assumed to come to class already equipped with these skills in their mother tongue and often English in the case of English Medium Instruction (EMI), as evidenced in the insufficient presence of languages for specific purposes courses in curricula. Considering that not only L2 speakers of English but also speakers in their mother tongue need to learn complex speaking skills (Dippold et al.,2019), such as persuading and negotiating, the assumption that engineering students have acquired them before reaching university may be unsupported and particularly unfair for students whose socioeconomic background could not provide them with sufficient resources and opportunities.

The need for a specific teaching of communication skills (Leung & Lewkowicz, 2013) for engineering as part of the necessary academic literacies that meet the specific needs of the current generation of engineering students proves essential in a course tackling entrepreneurship or technological innovation. Communication being a central activity of engineering professionals, having a good command (in English and in their first language) of the technical and formal register, of the most frequent documents, and of the common communicative situations they find themselves at work seems very pertinent in a globalised labour market (Heron et al., 2023) where engineers have to communicate effectively and appropriately to a highly diverse range of stakeholders.

Thus, communication should play an outstandingly vital part when the course is on entrepreneurship, given that obtaining the maximum interaction with the agents involved and facilitating the commitment of these agents to a project can determine its successful implementation. In a project-based engineering course on entrepreneurship, like the one under study, the project is usually viewed from a process perspective, the process involved in guiding students toward the processes that are required in all types of technical or entrepreneurial initiatives. One such promotion process is oracy, i.e. oral communication skills, which in the case of an entrepreneurial project implies orally communicating the project both to in-company and external audiences and for both informative and persuasive purposes. Surprisingly enough, in research oracy seems to be framed as a product explored

through monologic activities and evaluated through summative assessment (Heron et al., 2021) or from the digital communication skills standpoint (Bobkina and Dominguez Romero, 2022). Thus, the departure point of this study is not only the need to include academic oracy as one of the entrepreneurship skills but also the need to frame these oral communication skills along the same lines of the process perspective underlying a project-based course. Our project-based entrepreneurship course is based on a student-centred, inquiry-based, authentic and purposeful activity that requires students to explore solutions to authentic and significant problems by means of creativity, critical thinking skills and entrepreneurial spirit to be able to finally present an entrepreneurship proposal. Apart from this, students also develop abilities to cope with the unknown and uncertainty. Instead of requiring memorization of known solutions to known problems, students develop their learner autonomy–understood as the capacity to take responsibility for one's own learning (Brown, 2005; Benson, 2013). Because this pedagogy places the student at the centre, it seems reasonable to include self-assessment as part of this learning process where students take an active role, thus going beyond the view of feedback as mere transmission, a product.

It is against this backdrop that we seek to analyse the impact of self-assessment when students take on a metacognitive stance and are asked to watch their performance in a video-recorded team presentation of their entrepreneurship project. The main research question we address is: Is video recording student presentations a useful tool to obtain self-awareness about one's communicative shortcomings and foster the learning process?

1 METHODOLOGY

1.1 Context and Participants

As mentioned above, we analyse engineering students following a project-based course on entrepreneurship and technological innovation. The course was taught by the two authors during the spring semester of the academic year 2022-23. The activity described in this article is part of the teaching activities in the field of energy engineering at the Universitat Politècnica de Catalunya and InnoEnergy master school (Olivella et al. 2018). The course consists of two blocks; the first deals with technical entrepreneurship and innovation and is taught by a lecturer from the industrial engineering department; the second and shorter one is on communicating the entrepreneurship project they have developed in the first block and it is taught by a lecturer specialised in English for Specific Purposes and technical communication. When the first block is over and just before the second block starts, students orally present their project in front of their classmates. This first mock presentation, which is not graded, is video-recorded and sent to every team so that students watch and assess themselves, reflecting on their performance in an assignment. In subsequent classes the communication lecturer gives them personalised feedback and devotes several lessons to cover key communication aspects and skills–encapsulating both

verbal and non-verbal behaviour– to be both informative and persuasive and addressing different audiences and situations. On the last day, every team delivers their presentation in front of both lecturers, who this time will assess and grade students' performance in terms of content and communication. This tandem teaching thus allows teachers to integrate language and content in a realistic way, as for an innovative project to become a reality and succeed, both the solution proposed (content) and how efficiently it is delivered (oral communication), have to be professional and up to the standard.

Both groups were taught through the medium of English (EMI) and comprise a high percentage of Erasmus students in class. Out of the 36 students enrolled, 30 gave the presentation and were video- recorded. As already mentioned, students were asked to answer a short reflection questionnaire as a class assignment after viewing their first performance. Twenty-eight (out of 36) students completed the reflection assignment. As the questions in this reflection questionnaire were open and students had a lot of space to write, students' answers were rather long and varied. The answers were thematically analysed, after coding was carried out (examples of codes were: eye contact, voice, intonation, preparation, memorising, key words, etc.). This coding allowed us to obtain several recurrent themes (i.e. Content Planning versus Delivery and Verbal versus Non-verbal communication).

1.2 Instruments

The written reflection questionnaire after having watched the presentation comprised seven questions:

1-As a group presentation, what is your assessment?

Individual assessment:

3-What do you think of your presentation and how satisfied are you with your performance?

4-What are your strengths? Briefly explain.

5-What are your weaknesses? Briefly explain.

6-Of the weaknesses you have outlined, which one is for you the most difficult to overcome and why?

7-Is there any topic or content that you would like to cover in this course as regards persuasive oral presentations? Suggestions are welcome.

2 RESULTS

2.1 Findings of the reflection questionnaire

Findings of the reflection questionnaire were thematically analysed. The analysis of the first question (*as a group presentation, what is your assessment?)* revealed

students' overall satisfaction (21 mentions), although after assessing their team favourably (t*he presentation went well, it was fluid and complete*), they all highlight there is room for improvement. While some students give very general information (*communication part could have been better*), others are noticeably articulate, as shown in the representative excerpt below:

> *First, I think it is better not to have notes while giving a presentation, no matter if they are on a paper or on a phone. We should not have brought any of them, this way we could have all use our hands to point things on the slide show but also have our eyes looking on the person we are talking to. Secondly, I think that our presentation may have lack of energy. The tone overall employed was quite the same during the 10-minute-speech, but it should be more energic to convince better the people we are selling our technology to. We could have had transitions to our slide show, but also taken a more energetic position, using more our hands to show things, or putting more interactions in our presentation. (*Student 9)

In the second question enquiring into their individual performance (*how satisfied are you of your performance?*), all students but three reported being quite satisfied with their performance. When elaborating on their self-assessment, some of them mentioned only issues related to content and Planning, in both negative and positive ways (e.g. *good technical specifications; lack of structure; we showed our knowledge; well summarised and easy to understand; the slides are easy to read and with the right amount of information; design of the slides could have been better; I wish I would have come more prepared*). Most comments, though, pointed to the Delivery itself, more specifically to body language (intonation, pace, eye contact, too much/little body movement, and anxiety (e.g. *my nervousness made my voice shaky and less confident. I could have kept my posture for a more formal appearance*- Student 24).
Worth mentioning is the always negative assessment regarding their lack of confidence, fluency, showmanship and dynamism, as illustrated in the two excerpts below:

> *- I am more disappointed with my attitude during the passages where I do not present because I have a really fixed look and I am too relaxed. I need to work on that and also work on hiding some of the tics I've noticed from the recording* (Student 19)
> *-improving our narrative and being more convincing* (Student 25)

The third question eliciting their perceived *strengths* also yields a variegated range of answers, which were classified according to Planning the content and the Delivery itself. In terms of content, their acquired expertise and knowledge seems to be conducive to confidence: *the confidence in the information. I was confident due to the investigation we did before the presentation* (Student 26), while others refer to the preparation of the slides (*I can make slides that are not too heavy: I put key*

words on the slides, and complement the slide with words. I think this helps the audience to recognize what is the most important part of my speech- Student 14*)*. The overwhelming majority of comments stress aspects related to the Delivery (English *is understandable, clear; being fluid and acquainted with the English language and colloquialisms; clear voice; arms and hand gestures*). A few students mentioned being good at memorising and only two students, who reported having done theatre and received prior training in public speaking, mentioned their lack of anxiety. One student replied having no strength at all.

As to the *weaknesses* identified, students again place more emphasis on the Delivery (verbal and non-verbal behaviour) than on the Planning and rehearsing aspects. The students wrote lengthy answers here, which are summarised in Table 1 below:

Table 1. Weaknesses identified (students could mention more than one at a time).

PLANNING & REHEARSAL	DELIVERY: VERBAL	DELIVERY NON-VERBAL
insufficient practice and rehearsal 4 mentions	abuse of fillers (‘uhm’) 10 mentions	lack of eye contact (dependence on notes or screen) 8 mentions
lack of preparation (lack or organisation of talk and slides) 4 mentions	English level, accent, pronunciation (not my mother tongue) 7 mentions	Speaking too fast, no pauses 6 mentions
skipping too much of important information	repetition of the same word 3 mentions	Body language (fidgety, no gestures or excessive gestures/ movement) 5 mentions
Not making greater use of the visual support when speaking 2 mentions	more fluent, less hesitant, and engaging with audience 3 mentions	anxiety, being nervous 4 mentions
Too reliant on memory 2 mentions	Boring, not energetic 2 mentions	What to do when not speaking 3 mentions

The *most difficult weakness to overcome* for them (question 6) can be attributed to nervousness and anxiety. Students seem to have gained significant awareness about the underlying cause of many of their weaknesses: they think that as a result of feeling

nervous, they make the following two mistakes: a) use too many fillers (*the "uhm". It is a subconscious mechanism to avoid silences in the presentation and as so it is difficult to overcome* -Student 26); b) maintaining eye contact (*looking too much at the presentation, it is not because I don't remember the information, it is to avoid eye contact with the audience. It makes me nervous to look on the eyes of people superior than me* -Student 11*).* In short, fear of speaking in public seems to be at the root of the problem, albeit the presence of the camera exacerbates stage fright.

Worth mentioning is the bulk of replies in the last question *(Is there any topic or content that you would like to cover in this course as regards persuasive oral presentations?)* reveals students' awareness about the difficulty in becoming a good persuasive communicator. Even though there was no question enquiring into the usefulness of the video-recorded presentations, students did acknowledge the validity of this technique, as these two students explain: *Definitely watching ourselves makes the issues more evident and helps us improve* (Student 8*); It was uncomfortable to see myself on the screen, but I knew it was necessary to identify my mistakes and improve for future presentations* (Student 24).

Finally, it is of paramount importance to mention that students later told the teacher in class that they had watched their video-recorded presentation several times, some even stopping and rewinding at certain points. The opportunity to view oneself summarising the important amount of work done in the entrepreneurship block enabled them to live (and re-live) the experience of communicating the innovative project, which enables them to be very precise, thorough and extensive in identifying and verbalising their strengths and weaknesses. For our current generation of students, sensitive to the power of image, this activity therefore has the potential to get to know oneself from a constructive, metacognitive stance. Therefore, it seems that mirroring one's weaknesses enhances students' self-worth and self-confidence because their perception of room for improvement points to the fact that they are embracing opportunities to learn from their mistakes.

3 SUMMARY AND ACKNOWLEDGMENTS

This small-scale study has allowed us to find out the perceived positive impact for students of self-watching and self-assessing themselves as part of an entrepreneurship project. Since both teachers underlined that the error culture in this course had to be understood as an opportunity to improve not only individually but also collectively, and without dissociating content from communication and the learning process (Wingate, 2006), students viewed not only their mistakes but also those made by their team partners', and quickly they realised how important it is for the team to act as one–given that they are all explaining the same project. Together with the teacher's customised feedback and explanation–with constant reference to their mock presentation– students appreciated the first video-recorded presentation. Having watched and assessed themselves seems to contribute to improving their oracy literacies, not only in the sense of oral communication but also in the

acknowledgment of how important communication is for the promotion processes of an engineering entrepreneurship project and the impact on their future employability and career. Students have learned this as a lived experience, a personal process while doing, and not only as a final product (i.e. oral presentation as an unconnected class activity without having received any guidelines) that integrates entrepreneurial skills and oracy as crucial entrepreneurship skills for engineers.

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