ALTRALANG Journal
e-ISSN: 2710-8619 p-ISSN: 2710-7922
Volume 8 Issue 2 / October 2026 pp. 82-95

Intercultural Communicative Competence for International Entrepreneurial Communication: A Perceived Intercultural Communicative Needs Analysis of Engineering ESP Student-entrepreneurs at ENSTA

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Received: 30/06/2026, **Accepted:** 26/06/2026, **Published:** 31/10/2026

ABSTRACT: *In a globally interconnected and increasingly business-oriented world, graduates of all disciplines, including engineering, are expected to be not only technically proficient but also capable of navigating the entrepreneurial realm. As such, it has become paramount for higher education institutions to equip them with skills necessary to engage successfully in international entrepreneurial activities. Amongst these skills is the ability to communicate effectively across cultures, often referred to as Intercultural Communicative Competence (ICC), which has become a competitive entrepreneurial asset worldwide. Similarly, English for Specific Purposes (ESP) curricula tailored to engineering students-should meet the growing intercultural communicative demands required in international entrepreneurial contexts. However, ESP courses designed for Algerian engineering students at ENSTA often overlook the intercultural dimension of ESP instruction essential for meeting the needs of students, particularly those interested and engaged in entrepreneurial practice. Thus, attention should be turned towards the design of novel needs analysis-informed engineering ESP courses that prioritize developing learners' ICC for entrepreneurial interactions. As a result, the present study adopts a mixed-method explanatory sequential design employing both a student questionnaire and a semi-structured interview with an ESP teacher to identify ENSTA engineering students' intercultural communicative competence's perceived present and target situation needs. Findings indicate a consistent perceived deficit across all five savoirs, with the largest gap in intercultural knowledge, subsequently savoir-apprendre and attitudes. The ESP teacher prioritized the need for attitudes and reported further institutional constraints. The paper culminates in practical pedagogical strategies that can inform the design of a future engineering ESP course.*

KEYWORDS: Algerian Engineering Students, English for Specific Purposes, Intercultural Communicative Competence, Needs Analysis, International Entrepreneurial Communication.

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Introduction

In order to meet the demands of an increasingly globalized, interconnected, and economy-oriented world, higher education institutions worldwide are expected not only to prepare graduates who are proficient in their technical field of expertise but also entrepreneurs who are capable of leading business projects. However, in international entrepreneurial interactions, effective communication is deemed necessary, particularly when negotiating with international clients and investors, and even when collaborating with multinational teams and partners from diverse cultural backgrounds, to avoid any form of misunderstanding that could affect the marketization or realization of business projects.

As a result, it is imperative that students develop a combination of knowledge, attitudes, and skills (savoirs) (Byram, 1997, p. 34) referred to as intercultural communicative competence (ICC) along with entrepreneurial skills to be able to navigate effectively global professional intercultural communicative interactions. Based on this premise and given the status of English as the international lingua franca, the emphasis on international professional communication is particularly relevant to English for Specific Purposes (ESP) education which serves to equip learners with the necessary skills to navigate such international communicative contexts.

In the Algerian context, the entrepreneurial tendency of higher education policy expanded beyond the traditionally entrepreneurial disciplines such as business and tourism to include engineering education, whereby the prevailing prioritization of the acquisition of mere technical skills is no longer a warranty of success in an interconnected professional landscape. Entrepreneurial, along with intercultural communicative competences, have become; thus, indispensable in the engineering profession (Ahmad et al, 2026, p. 21). In fact, l'École Nationale Supérieure des Technologies Avancées (ENSTA) in Algiers has led the way with concrete steps towards an entrepreneurship-oriented engineering education. As a requirement for their graduation, engineering students at ENSTA are expected to present actionable economic project proposals assisted by an incubator that was created under an inter-ministerial decree of both the Ministry of Higher Education and Scientific Research and the Ministry of Finance to further harness students' entrepreneurial potential (École Nationale Supérieure des Technologies Avancées, n.d.). To complement these efforts, engineering ESP course at ENSTA is naturally expected to address the student-entrepreneurs' evolving needs pertaining to their international professional entrepreneurial communication, notably their intercultural communicative needs.

A review of existing scholarship reveals that prior studies have individually examined ICC integration in ESP contexts such as business and tourism (Djouahi & Ghedeir Brahim, 2025, p. 262; Trajanovska and Starkona, 2021, p. 188; Yue 2024, p. 114; Trang and Phuong 2023, p. 2599). Whereas, others explored the relationship between Intercultural Competence (IC) and entrepreneurial capabilities and skills (Huynh et al. 2024, p. 01; Leon 2017, p. 97), as well as entrepreneurial dimensions in ESP courses in general (Constantinou, 2026, p. 01). However, no study to date has brought these three dimensions together within a single investigation. The specific nexus of ICC and its perceived contribution to engineering students' international entrepreneurial communication within an ESP context represents a valuable contribution to the field. What renders this study even more distinctive is its centralization of the intercultural dimension in future ESP course design, a step that is often overlooked in current ESP course development in Algeria (Assassi, 2021, p. 439).

Given the exploratory nature of this inquiry and the central role of learner needs in ESP research and course design, which is inherently learner-centered, the present study adopts an explanatory sequential

mixed-methods design informed by an online questionnaire with students followed by a semi-structured interview with their ESP teacher. This study seeks to understand what intercultural needs ESP engineering student-entrepreneurs themselves and their teachers identify as relevant to their international entrepreneurial communication readiness, providing situated, experience-based knowledge that quantitative instruments alone cannot capture. Accordingly, this study is guided by the following research questions:

1) What are the specific knowledge, attitudes and skills of intercultural communicative competence do ESP engineering student-entrepreneurs need for their future international business interactions and which ones they perceive they currently possess as reported by learners and the teacher?
2) How can ESP courses at ENSTA bridge the gap to better prepare engineering students for intercultural entrepreneurial communication?

Literature Review

In recent years, scholarly discussion has specifically addressed the rise of Entrepreneurship in tertiary-level engineering education. In fact, many universities worldwide have increasingly developed acknowledgement of the legitimate position of entrepreneurship and the role of entrepreneurial skills in all disciplines beyond the longstanding confines of business schools (Byers et al, 2013, p. 36). However, due to the evolving role of engineers, the currently globalized business world demands particularly more than ever leaders with engineering backgrounds possessing entrepreneurial skills (Suto, et al, p. 2025, 01). This reality is exacerbated by proved growing interest of engineering students and graduates in learning about entrepreneurship and the entrepreneurial practice itself through various business areas (Duval-Couetil et al, 2012, p. 33; Lüthje & Franke, 2003, p. 141). This attention towards entrepreneurship is also supported by proved likelihood of students with entrepreneurial educational backgrounds to start their own business with benefits such as higher probability of success and lower risk of unemployment (ICF, 2015, p. 07). Similarly, results of research on engineering students at MIT, shows that technical research universities, indeed, produce prolific high-tech entrepreneurs and business founders (Lüthje & Franke, 2003, p. 142)

The term Entrepreneurship is widely defined as the process of starting a new business project, including products and services (Sudharson et al, 2013, p. 590). The European Commission, which places premium focus on the promotion of entrepreneurship education and the development of transversal skills, refers to entrepreneurship education as teaching and learning the capacity to identify and transform opportunities and ideas into financial, cultural or social value for others (European Commission, 2021, p. 16 developed from EU, 2018, p. 03). This conceptualization of the term evokes its multidisciplinary nature and places clear emphasis, in a teaching context, on the pedagogical process involved to support the entrepreneurial competency of all students and teaching staff across levels and disciplines (Gibb et al, 2009).

Nevertheless, what is ostensibly undermined in existing definitions of entrepreneurial training is the acknowledgement of flexibility of this educational tradition to both formal and informal, curricular and extracurricular pedagogical contexts. Nevertheless, it remains the responsibility of engineering educators to teach their students to be more innovative and more entrepreneurial (Byers et al, 2013, p. 36). In fact, teachers are considered key agents for this mission. Since they are required to apply specific competences, methods and tools (EU, 2021, p. 09), efforts for the design and implementation of novel teacher training programs are meanwhile equally required. Despite the absence of appropriate formal training and the fact

that engineering course designers still focus primarily on the profession rather than the development of entrepreneurship competences (Pasic et al, 2023, p. 162), educators have gradually started integrating entrepreneurship in various educational initiatives (Constantinou, 2026, p. 02).

In the same vein, a review of the existing scholarship accounts for sporadic efforts to theoretically and empirically investigate the integration of entrepreneurship education into higher education curricula, particularly those designed for engineering students. For instance, one single study conceptualizing entrepreneurship as a mindset that can be developed through, but not limited to, higher education programs, focuses on a case of an adult learning model called Transformative Learning Circles (TLC) (Slettli, 2019, p. 78-79). Another study suggests an integrated university-level course design that aims to foster entrepreneurial competences among students, employing challenge-based learning leveraging the experiential learning principle (Gil Doménech et al, 2024, p. 131). A similar study conducted an evaluation of an extracurricular course designed for engineering undergraduates with the aim of developing engineering leaders (Suto et al, 2025, p. 20). These studies, though modest in terms of practical contribution to classroom practice, serve as a basis for consideration of entrepreneurial skills among the learning aims and objectives in the design of future engineering courses, especially in the Algerian context.

Interestingly, both engineering and entrepreneurship comprise a major communicative dimension. As a matter of fact, a central characteristic of the entrepreneurship cycle involves the ability to communicate vision and goals (Sudharson et al, 2013, p. 591). Meanwhile, to meet the demands of the global labor market, engineering education is expected to train students to work effectively in groups through collaboration and the building of interpersonal relationships (Spencer & Mehler, 2013, p. 29). Yet, the issue with today's colleges and universities is that they tend to produce graduates who are technically competence, understand engineering concepts, and are able to apply them in real life, but lack soft skills that enable them to work well in teams and communicate effectively. They, eventually, find themselves far from meeting their full potential (Stephens, 2013, p. 31) and; therefore, unable to access the entrepreneurial realm.

It is noteworthy that according to Aškerc Zadravec (2021, p. 01), entrepreneurial higher education institutions cannot be entrepreneurial without being international. This claim is grounded on the fact that these institutions face diversified challenges in the preparation of their future graduates to work and live in a global society marked by an intercultural, entrepreneurial and rapidly changing reality, and that reinforcing the international intercultural dimensions of instruction is fundamentally beneficial for entrepreneurship education. As such, for international entrepreneurial engineering education to meet the goals of global citizenship in the 21st century as well as the job market demands, formal curricula should focus premium attention on the development of intercultural awareness and communicative skills along with the other necessary entrepreneurial skills. Consequently, tertiary education curricula must cater for future professionals' emerging intercultural and entrepreneurial communicative needs.

Likewise, ESP, being an approach to language learning based on learner need (Hutchinson &Waters, 1987, p. 19), is required to cultivate in engineering students the necessary linguistic and intercultural communicative competences to navigate successfully professional cross-cultural entrepreneurial interactions. In tandem, effective ESP course design goes beyond language instruction to include developing learners' intercultural awareness (Assassi & Rouaghe, 2024, p. 49). The importance of Intercultural and communicative skills acquisition in ESP context is further emphasized by means of a case

study of Algerian petroleum engineering students, it culminates in a call for ESP practitioners to transcend linguistic fluency to prepare students culturally for inevitable global professional interactions (Djouahi & Ghedeir Brahim, 2025, p. 263).

Intercultural Communicative Competence Model

Intercultural Communicative Competence (ICC) has emerged as one of the most consequential constructs in contemporary language education. Rooted in Byram's (1997) foundational framework, ICC is defined as the individual's ability to interact with people from another country and culture in a foreign language. It implies the ability to negotiate a mode of communication that is satisfactory to themselves and the other and the ultimate ability to act as a mediator between people of distinct cultural origins and backgrounds (Byram, 1997, p. 71). Even though various models and conceptualizations of ICC were developed by scholars in later periods (Fantini, 2019, p. 35; Spitzberg & Changnon, 2009, p.09-35; Risager, 2007, p.222-226), Byram's model remains the most appropriate for this study, largely due to its underpinning view of culture as a practice, a view that aligns with the intercultural entrepreneurial communicative practice. In addition to its relevance to foreign language education context, it was adopted due to its methodological operationalizability. This model identifies five interconnected savoirs necessary for forming an '*intercultural speaker'* and for a successful intercultural/interligual interaction; these savoirs are categorized under preconditions and necessary skills as follows:

1- Preconditions:
- Attitudes: they involve curiosity and openness, readiness to suspend belief about other cultures as well as belief about one's own (savoir-être).
- Knowledge: of social groups and their products and practices in one's own and interlocutor's country and of the overall processes of interaction at the individual and societal levels (savoirs).

2- Skills:
- Of Interpreting and relating: ability to interpret a document or event from another culture and to explain it and relate it to documents from one's own culture (savoir-comprendre).
- Of discovery and interaction: the ability to acquire new knowledge of a culture and cultural practices and the ability to operate knowledge, attitudes, and skills under the constraints of real-time communication and interaction (savoir-apprendre / savoir-faire).
- Critical cultural awareness: an ability to evaluate critically and on the basis of explicit criteria, perspectives, practices and products in one's own and other cultures and countries (savoir s'engager). (Byram, 1997, p. 50, 51, 52, 53).

In her book *'Intercultural Communicative Competence and Individual Differences: Model for advanced EFL Learner',* Dombi (2021, p. 26) suggests that despite the criticism of Byram's model for its static representation of national cultures and for separating language and culture, it still has to be acknowledged as a relatively influential work.

ESP Needs Analysis Framework

English for Specific Purposes has been historically distinct from English for General Purposes and other English language Teaching (ELT) branches by means of its needs-based approach. A synthesis of literature confirms that meeting the needs of a specific group of learners constitutes the core objective of ESP

(Dudley-Evans & St John, 1998, p. 04; Hutchinson & Waters, 1987, p. 53; Kırkgöz & Dikilitaş, 2018, p. 03). Therefore, effective needs analysis is paramount prior to and throughout the process of any ESP course design. However, first, a clear understanding of learners' needs and then of the available needs analysis frameworks should be established before planning to conduct any needs analysis study.

The present study adopts Hutchinson and Waters' (1987, p. 55-57) conception of target needs as ranging from '*necessities*', that is what the learner has to know in order to function effectively in a target situation, to '*lacks*', referring to what necessities the learners lack. In this sense, lacks are obtained after gauging what learners already know, and finally to '*wants*', that is the subjective view of learners themselves as to what their needs are and what the course should be like. Yet, Hutchinson and Waters, in this context, stress the fact that learners may well have conflicting views with other stakeholders, including employers, teachers and course designers (Hutchinson &Waters, 1987, p. 56). As a result, it is always advisable to include the views of such parties in an account of learners' needs analysis. As for the needs analysis framework, this study opts for Dudley-Evans and St John's (1988, p. 121) framework, which integrates Target Situation Analysis (TSA), Present Situation Analysis (PSA), Learning Situation Analysis (LSA), and Means Analysis to seek a comprehensive account for learners' objectives, subjective, and contextual needs in ESP course design. Notwithstanding, only the TSA and PSA components are adopted in this study. To elucidate, TSA is used to assess the intercultural demands placed on ESP engineering student-entrepreneurs in their target professional entrepreneurial situations, whereas PSA is used to assess their self-perceived current level of competence against Byram's (1997, p. 34) ICC model. This selective focus allows the study to capture the gap between present and target competence needs to inform future ESP curriculum design and instructional strategies.

Methodology

Research Design

This study adopts a mixed-method explanatory sequential research design, combining both quantitative and qualitative data to address the central research objective to assess the intercultural communicative competence needs of ESP engineering student-entrepreneurs at ENSTA, in order to inform the design of a future ESP course tailored to these needs. Addressing the target and present situation needs from both student and teacher perspectives and suggested pedagogies requires a design capable of capturing breadth across student population and depth of perspective from those directly involved in their teaching. Hence, the combination of questionnaires and interviews was deemed most appropriate.

Participants

The study was conducted at the National Higher School of Advanced Technologies (ENSTA). It involved two purposively-selected participant categories; the first category consisted of a group of 20 engineering students regardless of their engineering specialty, rather based on enrollment in the school's project incubator, actual involvement in or simply intent in engaging any sort of entrepreneurial activity in the future after or even before graduation. The second category consisted of an ESP teacher responsible for delivering English for Specific Purposes instruction to this student population, whose perspectives provided an in-depth and timely addition to the students' self-reported data. Ethical guidelines were respected

towards participants through getting participants informed consent, granted access from gatekeepers, and respecting participants' confidentiality and anonymity.

Instrument

Two instruments were utilized to collect data, administered in sequence. First, an online questionnaire was distributed to 20 student participants. Second, a semi-structured online interview was conducted with an ESP teacher at ENSTA.

The construction of both instruments drew heavily on two complementary frameworks. Dudley-Evans and St John's (1998) needs analysis framework provided the structural basis, with the present study specifically adopting Target situation and present situation analysis components to distinguish between the intercultural communicative needs of students anticipated professional/ entrepreneurial situations and their current level of competence. Byram's (1997) model of ICC provided the content basis, with its five savoirs serving as the constructs around which the questionnaire was built (savoir-être, savoirs, savoir-comprendre, savoir-apprendre, and savoir-faire). Each variable was operationalized across both TSA and PSA dimensions allowing the questionnaire to capture what is needed and what currently exists for each construct. To test its validity, the questionnaire was piloted on a smaller sample after being subject to two experts review one in ESP and another in entrepreneurship.

Overall, the questionnaire's close and open-ended items were grouped under four parts, following a five-point Likert rating scale as delineated below:

- **Part A**: Demographic and Background Information
  (sex, level, interest/ engagement in entrepreneurship, nature of entrepreneurial activity)
- **Part B:** Present Situation Analysis
  (Students' present ICC in entrepreneurial communication organized according to Byram's (1997) five savoirs)

- **Part C**: Target Situation Analysis
  (Learners' future ICC needs in entrepreneurial communication organized according to Byram's (1997) five savoirs)

- **Part D**: Perceptions of the engineering ESP course
  (General perception of the current ESP course at ENSTA and suggested strategies for the integration of intercultural communicative competence for entrepreneurial communication in engineering).

At its core, the interview conducted with the ESP practitioner at ENSTA sought to triangulate the student questionnaire data and further elaborate on it by gathering teachers' perspective on students' present and target ICC skills and attitudes and suggest pedagogical strategies for the implementation of ICC in ESP classroom to develop engineering student's entrepreneurial communication.

Data Analysis

Data obtained from the student questionnaire were analyzed using descriptive statistics, including frequencies, percentages and means to identify patterns in students' perceived target needs and self-assessed present competence across the five savoirs. Data from the teacher's interview were analyzed using thematic analysis, allowing recurring patterns and themes related to students' intercultural communicative needs and competence gap to be deduced and interpreted in relation to the questionnaire findings.

Results

Demographic and Background Information

The questionnaire that was completed by 20 ENSTA engineering student-entrepreneurs or aspiring entrepreneurs have yielded interesting results. Females constituted the majority of respondents (75%) while males accounted for (25%). Participants covered all five years of engineering program, with the largest group drawn from first year (35%) and second year (30%) students. The sample represented seven from 14 engineering specialties existent in the school, with Artificial Intelligence and Applications (30%) and Telecommunication and Network Systems (30%) being the most represented. As for their English language proficiency, the majority of respondents self-assessed their level as intermediate (B1-B2), while 15% reported an advanced level (C1-C2). The remaining 15% reported a basic level (A1-A2). With regard to their entrepreneurial engagement, most informants (65%) reported planning to engage in entrepreneurial activities in the future. Yet 20% indicated current involvement alongside future plans while the rest reported neither. In fact, university startups and spin-offs constituted the most frequently cited entrepreneurial ventures. A notable majority (85%) had received no formal intercultural communication training, suggesting that any supposed intercultural competence had been acquired through a self-directed learning or incidental exposure.

Student Questionnaire: Perceived PSA- TSA Gap Analysis

The central analytical aim of the questionnaire was identifying the gap between students' self-assessed present ICC (PSA) and their perceived target needs for future international entrepreneurial communication (TSA). Operationalized across Byram (1997) five savoirs' model, Table 01 presents the overall mean scores for each savoir and the corresponding gap values in descending order of need.

Savoir	Constructs measured	PSA (1-5)	TSA (1-5)	Gap (TSA-PSA)
Savoir (knowledge)	Cultural norms, communication styles, legal and international professional conventions and self – cultural identity	2.41	3.41	1.00
Savoir-apprendre	Real-time adaptation rapid norm learning, culturally-sensitive questioning discovery tools	2.49	3.08	0.59
Savoir-être (attitudes)	Curiosity openness, tolerance of ambiguity, comfort with unfamiliar norms.	2.95	3.52	0.57

Savoir-comprendre (Interpreting and relating)	Decoding non-verbal cues, identifying misunderstanding, negotiation strategy decoding	2.21	2.74	0.53
Savoir s'engager (Critical Cultural Awareness	Examining own biases, ethical evaluation, cultural mediation	2.72	3.15	0.43

Table1. Perceived PSA- TSA Gap Analysis

Taking a first look at the cross-savoir means, it is apparent that they fall within a low to moderate range indicating a consistent self-perceived ICC deficit in all five components of the model. Notably, TSA are higher confirming that students recognize the importance of all savoirs in their current or future entrepreneurial communication even though to various degrees. The following is a concise discussion of findings savoir by savoir.

Savoir (knowledge):

This component recorded the highest overall gap in dataset, highlighting it as the most urgent need. In this context, engineering students rated their present knowledge of international investment, legal and cultural communication styles as weak while simultaneously assigning this item the highest target importance in the entire questionnaire. Comparatively, students showed higher self-assessed knowledge of their own cultural identity and its influence on their entrepreneurial communication (PSA= 3.50). Open-ended questions results on the students anticipated problems in future intercultural communicative interactions to further point toward aspects of the lack of knowledge that risks leading to misunderstanding.

Savoir-apprendre:

The ability to learn and acquire new intercultural knowledge and apply it in real-life contexts constitutes the second largest gap (0.59). Students perceived the ability to adapt a pitch or project proposal in real time to meeting intercultural audiences as extremely important. Conversely, they feel ill-equipped to effectively execute it in cross-cultural entrepreneurial situations but rather, they developed informal strategies for rapid cultural learning mainly through online research prior to meetings.

Savoir-être (Attitudes):

Savoir-être, which comprises of intercultural attitudes including curiosity, openness and tolerance of ambiguity, as well as treating international counterparts equally regardless of cultural background, produced the third-largest overall gap (0.57). Results suggest that students believe their attitudes toward intercultural entrepreneurial interaction are more developed than their intercultural knowledge. Nevertheless, a notable within-savoir gap emerged as students report exceptionally low current tolerance for the unpredictability inherent in intercultural entrepreneurial encounters illustrated by respondents' open-ended responses pointing to potential issues such as '*shyness'* and 'stereotype' which, in turn, makes it a priority need for students to acquire.

Savoir-comprendre (Interpreting and Relating):

An analysis of the savoir related to interpreting and relating documents and events across cultures revealed a moderate gap (0.53). Despite considering their interpretive abilities as relatively weak, students did not fail to be aware of the importance of negotiation decoding, face-saving, and indirect refusal among many other manifestations of this savoir in professional entrepreneurial communication.

Savoir s'engager (Critical Cultural Awareness):

The highest-order ICC component in Byram's (1997) model involves the critical evaluation of one's own and others' cultural practices. In entrepreneurial contexts, it includes evaluating whether a foreign business practice is ethically acceptable in one's own context, acting as a cultural mediator between team members of different cultural backgrounds. Despite being the most theoretically sophisticated, students showed comparatively moderate PSA scores (2.72) for this savoir; however, with a slightly higher TSA (3.15). This reflects students' commitment to learning how to navigate real-world interactions.

Teacher Perceptions

During Analysis, qualitative data have been coded into the following themes:

Attitudes as the foundational ICC Component: The teacher emphasized that ENSTA engineering students lack attitudes such as respect to the other and motivation necessary for future intercultural communication, the teacher even clearly prioritized this savoir above all others.

This perspective positions attitudes at the heart of ICC and more importantly as the highest priority gap. The Current ESP course and intercultural preparation of engineering students: Both of the teacher and the students clearly acknowledged that the current ESP course at ENSTA does not adequately address students' intercultural communicative needs for entrepreneurial contexts. The teacher attributes this gap to institutional constraints. Explaining how integrating intercultural content alongside the existing technical language focus and teachers' task load presents significant pedagogical challenges, the teacher put:

> *'One session per week. We suffer a lot, actually. They ask us to teach them English so they can use it each day. And we offer only one session, an hour and 30 minutes per week. What can you do in an hour and 30 minutes in one week?'*

This is relatively accurate considering mounting pressure on ESP practitioners to design and implement courses and materials that meet students' rapidly evolving needs with the absence of any formal ESP training, guidance or coordination between ESP practitioners.

Suggested strategies: Despite all existing constraints, the interviewee suggested real-context intercultural business simulations as the most effective strategy for developing engineering students' intercultural communicative skills. The teacher further recommended inviting Engineering specialty teachers to attend students' frequent ESP oral presentations. Another proposition involved broadening thematic content to include cultural exposure:

> *' What if we change the topics a little bit, if we go astray a little bit, so it's no more about science and technology , it's going to be about intercultural things, culture, etc. One session, for example, about culture, the language, the attitude, the society, why not?'*

When asked about the feasibility of an ICC-focused ESP course, the teacher recommended targeting upper-year students rather than preparatory years because they still need language accuracy to be able to develop critical cultural awareness in later years. The teacher also raised the potential of inviting a specialist in intercultural communication to deliver target ICC sessions on a monthly or periodic basis, as such addressing the expertise gap without requiring ESP practitioners to restructure the entire course.

Discussion and implications

Consistent with the aforementioned research questions, the present study does not merely aim to highlight the deficit ENSTA engineering students indicate in relation to intercultural entrepreneurial communication competence; it rather aims to explore the gap between target and present needs across all savoirs. It provides a coherent perception of its importance and suggests possible strategies for integration in ESP courses and ultimately inform the design of future English for engineering course at ENSTA with the aim of developing learners; entrepreneurial potential in mind. This section addresses the study's main research questions, in turn, before drawing broader pedagogical implications.

- **What ICC components do students need, and which components do they perceive they possess?**

Data analyzed through PSA and TSA framework operationalized via Byram's ICC savoirs model suggested a considerable perceived gap in the domain of savoir (knowledge). The asymmetry between students' low self-assessed knowledge and their perceived importance of the same element in international business from knowledge of conventions to investor pitching to negotiations to international project presentations suggest that engineering students engaged in entrepreneurial activities may lack the foundational cultural schemata essential for anticipating, interpreting and responding appropriately to culturally-coded communicative behavior. These findings echo those of former studies (Trang and Phuang, 2023, p. 2614) who identified knowledge as a priority need for tourism students.

However, the findings that savoir apprendre and savoir faire especially at the level of real time pitch adaptation raises questions about the students ability to transfer mere intercultural knowledge to authentic communicative performance and under real-life constraints. Byram's (1997) distinction between savoir apprendre and faire is particularly relevant in this context. In this way, students may accumulate intercultural knowledge through natural exposure, research or self-directed learning, yet they may still be unable to employ that knowledge in real interactions. In effect, this leads us to the second research question.

- **How can ESP course bridge that gap?**

To meet students' needs and reinforce their lacks, it is essential for ESP courses and teachers to revise the content delivered to today's prospective engineers and to question the tools and strategies utilized to deliver that content while providing tailored instruction to students' needs. In reality, several pedagogical strategies emerge from the data. First, the teacher's emphasis on real-context simulation, employing simulated investor pitch scenarios, involving interlocutors from different cultural backgrounds in person or online through exchange programs or training by foreign professionals, in addition to negotiation role-plays.

The teacher participant's suggestion of dedicating periodic sessions to explicitly cultural content represents a feasible and proportionate integration strategy given the practical challenges. However, while it does not shift the focus of current ESP instruction on linguistic accuracy, it actually serves only as a preliminary step to pave the way for future reforms, as ICC is not limited to explicit aspects of culture. Therefore, it does not replace the need to design a new ESP course that is focused on adequately preparing

engineering students for intercultural communication as part of their entrepreneurial activity. In contrast, such a course would seem idealistic unless linguistic and communicative competences are developed and students' needs are clearly and precisely identified.

Conclusion

This study was interested in the identification of intercultural communicative needs of engineering student-entrepreneurs and/ or aspiring entrepreneurs at ENSTA, Algeria as a primary step towards the design of a future engineering ESP course, taking into consideration the growing role of engineering graduates as leaders in entrepreneurial arena. Drawing on a mixed method explanatory sequential design, the present study yields an initial understanding of the students' perceived intercultural needs at the savoir level.

Data from Student questionnaire analyzed through PSA and TSA gap analysis and ESP practitioner interview combined provide a partially triangulated account of the perceived present and target situation. The findings establish that all savoirs represent genuine areas of need with intercultural knowledge (savoir) constituting the highest-priority gap followed by real time interaction and attitudes, interpretive skills and critical cultural awareness. ESP practitioner emphasized the attitudinal gap while also highlighting a set of structural constraints as barriers to meaningful integration of ICC in current ESP instruction. These findings together point to the urgent need for a purposefully designed course tailored for Engineering ENSTA students' linguistic as well as entrepreneurial communicative needs, lacks and interests. Such course ought to be scaffolded through real-context simulation, periodic cultural focus sessions and a staged developmental progression aligned with students' level of study.

The present study's primary limitation resides in its small sample size and its institutional specificity, which limits the generalizability of findings beyond ENSTA context. Moreover, The PSA are self-assessed and therefore reflect perceived rather than demonstrated competence The Findings hence should be read as indicating a perceived gap. As a response to these limitations, further research should seek to replicate and extend the present study across multiple Algerian higher education institutions and to support learner and teacher perspectives with classroom observations of simulated or authentic intercultural entrepreneurial interactions involving international interlocutors. While a natural and necessary next step of this research program would be the design and empirical evaluation of an ICC-integrated engineering ESP course grounded in the present findings.

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