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English for Digital Entrepreneurship: A Multidimensional ESP Needs Analysis in Algerian Higher Education

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ABSTRACT: *This study explores English-language needs for digital entrepreneurship among Algerian university students through a multidimensional English for Digital Entrepreneurship (EDE) needs analysis framework. Using a bilingual questionnaire completed by 361 non-English-major students, the study examines target needs, self-reported current proficiency, self-efficacy, learning preferences, and contextual constraints across key EDE tasks, including pitching, negotiation, investor communication, and LinkedIn interaction. The results reveal considerable self-reported proficiency gaps between what students are expected to do and how prepared they feel, particularly in oral pitching and negotiation (composite gap: d = 1.51), with self-efficacy varying noticeably across tasks. Students showed a clear preference for practical, technology-supported learning, especially mobile-friendly formats. However, regarding obstacles, time constraints and financial cost were the most frequently reported, while internet access was the least cited barrier. The study contributes a psychological and technological dimension to ESP needs analysis and provides a practical basis for EDE course design in Algerian higher education and similar non-Anglophone contexts.*

KEYWORDS: English for Digital Entrepreneurship (EDE); ESP Needs Analysis; Digital Entrepreneurship; Self-Efficacy; Technology-Supported Learning; Course Design; Algerian Higher Education.

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1. Introduction

1.1 Background

English has become a central language in digital commerce, venture capital, and startup ecosystems, where it mediates practices such as pitch decks, investor negotiations, cold emails, and online professional branding (Crystal, 2003; Karhunen et al., 2023). In this context, digital entrepreneurship (DE) refers to the creation and management of technology-based ventures that operate largely online, including e-commerce, mobile applications, AI-powered services, and fintech (Nambisan, 2017; Von Briel et al., 2021). In Algeria, this trend is closely linked to student-led projects encouraged under Ministerial Decree 1275, as amended by Decree 008. As Algerian students increasingly engage with English-mediated global networks, English has become a working requirement rather than an add-on.

Recent studies have already shown the relevance of this issue. Benali Reguieg (2025) reported that Algerian startup founders viewed English communication barriers as a direct obstacle to securing international investment, while Romadhon (2023) found that digital business students in Indonesia ranked English-mediated tasks among their highest professional needs. These findings suggest that DE is not only a technological and entrepreneurial field, but also a linguistically demanding one.

Although Algerian higher education has increasingly prioritised DE as part of a knowledge-based economy (Bentaleb & Boufas, 2024), its linguistic dimension has received limited attention. ESP provision for prospective digital entrepreneurs remains underdeveloped, and existing courses are still largely shaped by general English orientations. Yet DE generates specific digital genres investor pitch decks, cold outreach emails, LinkedIn startup profiles, and online negotiation threads that are multimodal, persuasive, and cross-cultural, and therefore require an ESP response grounded in systematic needs analysis. In this study, English for Digital Entrepreneurship (EDE) refers to the ESP area concerned with English-mediated communication in digitally mediated entrepreneurial contexts, including pitching, online networking, investor interaction, and platform-based business communication.

1.2 Problem Statement

Unlike EGP, which focuses on broad communicative competence, ESP is shaped by learners' specific academic or professional needs. Despite growing policy support for DE, ESP provision in Algerian universities remains largely EGP-oriented and only weakly informed by needs analysis (Achouri, 2025; Assassi & Rouaghe, 2024). The literature reviewed for this study suggests that several gaps persist. Little research has combined Target Situation Analysis (TSA), Present Situation Analysis (PSA), Learning Situation Analysis (LSA), and constraints analysis to examine DE as a distinct domain in Algeria. Self-efficacy, which plays an important role in engagement and persistence (Bandura, 1997), has rarely been included in Algerian ESP needs-analysis instruments. Learner preferences for AI-assisted tools, gamification, and mobile learning also remain insufficiently explored (Kohnke et al., 2023). Finally, practical barriers such as time, cost, and lack of institutional recognition have received little attention in the literature. Goubai (2024) offers a relevant local precedent, though the present study focuses specifically on DE genres and includes self-efficacy measurement with preliminary reliability estimates.

1.3 Aims and Research Questions

This study aims to conduct a comprehensive multidimensional needs analysis that can inform a future ESP course in DE for Algerian university students. Six research questions guide the inquiry:

RQ1 (TSA): Which English skills and tasks do students perceive as most important for DE?
RQ2 (PSA): How do students rate their self-reported current proficiency in English-mediated DE tasks?
RQ3 (Gap analysis): To what extent do statistically significant gaps exist between TSA and PSA ratings?
RQ4 (Self-efficacy): What is students' self-efficacy regarding EDE tasks?
RQ5 (LSA): What course design features do students prefer for a DE-focused ESP course?
RQ6 (Constraints): What obstacles do students anticipate in accessing or completing such a course?

Because RQ5 and RQ6 are exploratory and categorical, they are addressed descriptively through frequencies, percentages, and rankings (Brown, 2016).

1.4 Significance of the Study

Theoretically, this study draws selectively on three components of Dudley-Evans and St John's (1998) needs-analysis framework (TSA, PSA, LSA) and develops them further in three specific ways (see Section 2.1 for details).

2. Theoretical Framework and Literature Review

2.1 ESP and Needs Analysis

ESP is a learner-centred approach in which content and methods are driven by specific reasons for learning, typically professional or academic in nature (Hutchinson & Waters, 1987). Dudley-Evans and St John (1998) propose a comprehensive needs-analysis framework that includes multiple components: personal information about learners, learners' lacks, professional communication information, what is wanted from the course, and environmental information, in addition to TSA, PSA, and LSA.

The present study does not adopt this framework in its entirety. Instead, it draws on three of its core components TSA, PSA, and LSA and develops the framework further in three specific ways: by extending LSA with technology-supported learning, by operationalising environmental information as constraints analysis, and by adding self-efficacy, which has no counterpart in the original model. Within LSA, the general category of learner preferences (methods, tools, and course duration) originates in Dudley-Evans and St John's (1998) model; however, the specific emphasis on technology-supported learning (methods, tools, and resources such as AI-assisted writing, mobile learning, and gamification) reflects contemporary ESP scholarship (Hafner & Pun, 2020; Kohnke et al., 2023) rather than the original 1998 framework. Similarly, constraints analysis (time, cost, internet access, institutional recognition, **a**nd mismatch between course level and language ability) extends the more general 'environmental information' component into a dedicated, operationalised section. The only dimension with no counterpart in the original framework is self-efficacy, grounded in Bandura (1997) and treated as a psychological construct distinct from PSA.

2.2 Algerian ESP Needs Analysis

Teacher-focused work identifies barriers including limited NA training and weak collaboration with subject specialists (Zemali & Naoua, 2025), while student-level studies report dissatisfaction with vague course content (Assassi & Rouaghe, 2024). Goubai (2024) demonstrates the feasibility of NA-informed ESP design for entrepreneurship students, and Benali Reguieg (2025) documents English communication barriers facing Algerian startup holders. Based on the literature reviewed here (Achouri, 2025; Assassi & Rouaghe, 2024; Benali Reguieg, 2025; Goubai, 2024; Zemali & Naoua, 2025), three gaps appear to persist. First, to the best of our knowledge, no multidimensional NA instrument integrating TSA, PSA, LSA, and constraints within a reliability-checked framework has yet been validated in the Algerian context. Second, the distinctive communicative demands of DE remain relatively underexplored in the ESP literature reviewed here. Third, DE-specific digital genres such as pitch decks and LinkedIn profiles have received limited systematic attention in ESP research. These observations are based on the scope of the present literature review and should be interpreted as indicative rather than exhaustive.

2.3 Digital Entrepreneurship and Linguistic Demands

The linguistic specificity of DE lies in three broad genre families: promotional-persuasive genres (e.g., pitch decks and cold emails), relational-networking genres (e.g., LinkedIn profiles and investor follow-ups), and transactional-documentary genres (e.g., term sheets and metric-driven reports). These genres require learners to communicate persuasively across digital platforms while adapting messages to different professional audiences. They also rely on condensed multimodal communication that combines written

language, visuals, metrics, and platform-specific conventions. In addition, EDE communication frequently incorporates specialised evaluative vocabulary such as traction, burn rate, and unit economics (Hafner & Pun, 2020). Drawing on genre theory (Bhatia, 2004; Swales, 1991) and multimodality research (Kress, 2009), these DE genres combine promotional, relational, and transactional functions across digitally mediated entrepreneurial contexts. Teaching these genres therefore requires ESP approaches that go beyond traditional Business English, with attention to multimodal communication, audience awareness, and the conventions of specific digital platforms. Comparable needs have also been identified in other non-Anglophone contexts (Romadhon, 2023; Zela & Jata, 2024).

EDE and Business English: Four Communicative Differences

While EDE shares certain genre families with Business English, it differs in four communicatively consequential ways:

- **Platform-mediated multimodality.** EDE communication occurs on digital platforms (LinkedIn, pitch platforms, crowdfunding sites), where meaning is constructed through text, visuals, metrics, and platform-specific conventions simultaneously (Kress, 2009). This differs from traditional Business English, where communication is often linear and text-dominant.
- **Asynchronous and algorithmically mediated interaction.** Much of EDE communication is asynchronous (cold emails, investor follow-ups) and shaped by platform algorithms that determine visibility and reach. This requires what can be called platform literacy, that is, understanding how algorithms shape engagement (Hafner & Pun, 2020).
- **Distinctive lexical and conceptual repertoire.** EDE relies on a specialized vocabulary not typically covered in Business English: *traction, burn rate, unit economics, MVP, ARR, runway, pivot, product-market fit*. These terms are conceptually dense and used in investor-facing communication where precision is critical.
- **High-stakes, time-pressured, and iterative communication.** EDE communication involves rapid iteration (pivots, updated metrics, revised pitches) and high stakes (investor Q&A, demo days, term sheet negotiations). Unlike traditional Business English, it requires learners to improvise rhetorically under uncertainty.

In sum, EDE is not simply "Business English with digital vocabulary." These features suggest that EDE constitutes a distinct ESP domain, characterised by platform-mediated multimodality, algorithmic mediation, specialised conceptual vocabulary, and high-stakes iterative communication.

2.4 Self-Efficacy in ESP and DE

Self-efficacy refers to beliefs about one's capability to organise and execute actions for specific performances (Bandura, 1997), predicting task choice, effort, persistence, and achievement. In ESP, self-efficacy correlates with willingness to engage in challenging tasks and with communicative outcomes (Zhang & Ardasheva, 2019). In the present study, self-efficacy is treated as conceptually distinct from PSA. Whereas PSA measures learners' perceived proficiency in EDE-related tasks, self-efficacy captures their confidence in successfully performing those tasks under authentic communicative conditions. DE tasks include cold emailing investors, managing LinkedIn profiles, and responding to term-sheet queries. Such tasks are typically asynchronous, platform-mediated, and multimodal, requiring learners to combine linguistic competence with digital literacy and cross-cultural communicative awareness (Hafner & Pun, 2020). DE self-efficacy is task-specific: learners may feel confident in written entrepreneurial communication yet considerably less confident in live investor interaction or spontaneous pitching situations, which demand immediate rhetorical and interactional decision-making.

2.5 Technology-supported ESP and Learner Preferences

Technology-supported EDE learning in this study refers broadly to digitally enabled instructional practices, including AI-assisted writing tools, conversational agents, mobile learning applications, and micro-learning resources (Kohnke et al., 2023). AI-mediated practice enhances genre learning and communicative

competence in ESP and entrepreneurship contexts (Lee et al., 2025; Xiang, 2025), while generative AI increases both entrepreneurial self-efficacy and intentions (Park & Sung, 2023; Xie & Wang, 2025). Expert stakeholders similarly identify AI integration and digital communicative competence as priorities for future ESP curricula (Solihat & Fadhly, 2025). This evidence justifies including items on AI-based, gamified, and mobile learning tools in the NA instrument, given their role in shaping both self-efficacy and learner preferences.

2.6 Research Gap and Conceptual Framework

Algerian ESP research has identified institutional and pedagogical challenges, but learner-level barriers such as scheduling conflicts, financial cost, limited internet access, and lack of academic recognition, and mismatch between course level and language ability appear to have received limited attention in the studies reviewed here. Internationally, EDE communication is still often treated as part of general Business English despite its distinct multimodal and platform-mediated demands, while self-efficacy remains largely absent from multidimensional ESP needs analysis frameworks. The present study addresses these gaps through the adapted integrated framework introduced in Section 2.1. Figure 1 presents this model.

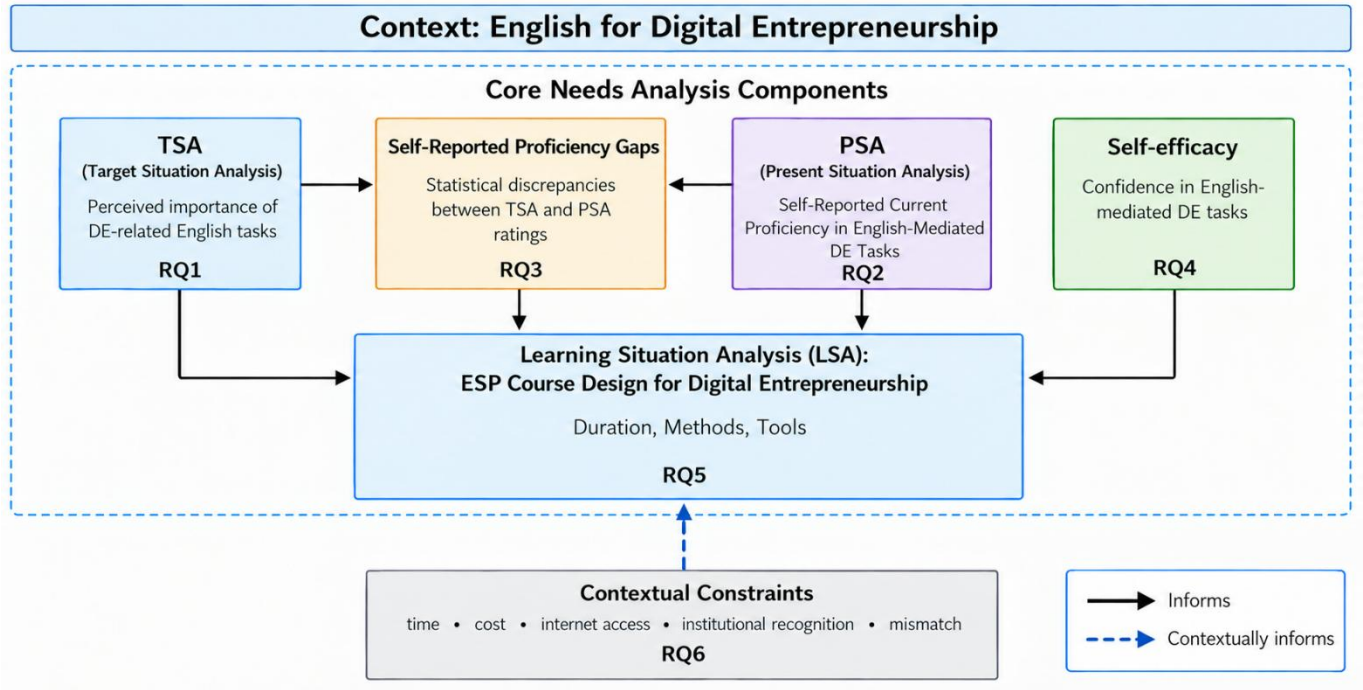


Figure 1. Adapted integrated framework for ESP Needs Analysis in Digital Entrepreneurship.

Note. TSA = Target Situation Analysis; PSA = Present Situation Analysis; LSA = Learning Situation Analysis; RQ = Research Question. Figure adapted from Dudley-Evans and St John (1998) and extended in three ways: technology-supported learning within LSA; constraints analysis, which operationalises the original 'environmental information' component; and self-efficacy (Bandura, 1997), which has no counterpart in the original model.

3. Methodology

3.1 Research Design

The study's conceptual model follows the adapted integrated framework presented in Section 2.1, rather than a direct operationalisation of the original Dudley-Evans and St John (1998) model.

3.2 Context and Participants

Context. The study was conducted at Constantine 2 University – Abdelhamid Mehri, an Algerian public university implementing Ministerial Decree 1275 on student-led digital ventures, where no DE-specific ESP course was available.

Sampling Frame. The sampling frame comprised all six academic units of Constantine 2 University (four faculties and two institutes), as the institution does not include additional units. All six were considered eligible because they are institutionally involved in student-led digital ventures under Ministerial Decree 1275. The criterion for "related to digital entrepreneurship" was therefore institutional eligibility rather than disciplinary exclusivity.

Sampling Procedure. Given the exploratory, needs-analysis purpose of the study, a convenience sampling procedure was employed within the six participating units. The questionnaire was distributed online (Google Forms) and in paper format to students across these units; no prior random draw of individual students from official enrolment lists was performed. Participation was voluntary and anonymous. A total of 361 valid responses were retained.

Participant Distribution. The distribution of participants across the six academic units was uneven. The Faculty of Economics, Commercial and Management Sciences accounted for the largest share (n = 114, 31.6%), followed by the Faculty of New Information and Communication Technologies (n = 73, 20.2%), the Faculty of Humanities and Social Sciences (n = 64, 17.7%), the Faculty of Psychology, Educational Sciences and Speech Therapy (n = 40, 11.1%), the Institute of Science and Techniques of Physical and Sports Activities (n = 37, 10.2%), and the Institute of Library Sciences (n = 33, 9.1%). This uneven distribution reflects the convenience sampling procedure and may reflect differences in course scheduling, staff availability, or class size across units rather than a controlled or proportional design; it should not be interpreted as proportionally representative of each unit's student population, since no enrolment figures were used to verify this.

3.3 Instrument

A bilingual (Arabic–English) self-administered questionnaire comprised five sections: demographic items, TSA/PSA grids from which self-reported proficiency gaps were subsequently calculated, a six-item self-efficacy scale, and items on course preferences, perceived obstacles, and open-ended questions. A five-point Likert scale ranging from 1 (very low/not important) to 5 (very high/very important) was used. All substantive items (TSA, PSA, and self-efficacy) were purpose-written by the research team for EDE-specific tasks (e.g., investor pitching, LinkedIn communication, negotiation), rather than adopted from existing general English or Business English instruments. The instrument was drafted in English, translated into Arabic, and back-translated by independent translators to ensure semantic equivalence, after which the full questionnaire was reviewed by three academic experts specialising in entrepreneurship education, who assessed relevance, clarity, and cultural appropriateness across all sections. For the self-efficacy scale, item wording and the confidence-rating format followed the task-specific approach established in L2/ESP research (Vitta et al., 2024; Zhang & Ardasheva, 2019), rather than reusing their published items directly, which target general oral tasks rather than EDE-specific ones. Based on this review, minor wording adjustments were made, and no items were removed. A pilot administration with 32 students yielded acceptable internal consistency across subscales (α = .78–.85).

Reliability Analysis

In the main sample (N = 361), Cronbach's alpha was .84 for the TSA subscale (7 items), .81 for the PSA subscale (7 items), and .82 for the self-efficacy subscale (6 items). Reliability analysis was limited to these three multi-item Likert subscales; demographic, single-item preference and constraint, and open-ended items were excluded, as they are not indicators of a unidimensional construct. No overall scale reliability coefficient is reported, as the instrument comprises distinct constructs that do not form a unidimensional scale.

3.4 Research Hypotheses

H_1: Mean TSA composite scores differ significantly from the theoretical midpoint ($\mu = 3$).

H_2: Mean PSA composite scores differ significantly from the theoretical midpoint ($\mu = 3$).

H_3: Statistically significant differences exist between TSA and PSA ratings across English-mediated DE tasks.

H_4: Mean self-efficacy scores differ significantly from the theoretical midpoint ($\mu = 3$).

3.5 Data Collection and Analysis

Data were collected during Semester 2 of the 2025–2026 academic year via online Google Forms and paper-based questionnaires for students with limited internet access. Participation was voluntary and anonymous. Participants provided informed consent prior to completing the questionnaire, and data were used exclusively for research purposes.

Analyses were conducted using IBM SPSS 28. One-sample t-tests compared composite scores against the theoretical midpoint ($\mu = 3$); paired-samples t-tests examined TSA–PSA discrepancies; effect sizes used Cohen's d (Cohen, 1988). Parametric procedures are appropriate given the sample size and their robustness with Likert-type data (Norman, 2010). Skewness and kurtosis values remained within acceptable ranges for parametric testing.

Open-ended responses were analysed using inductive thematic analysis (Braun & Clarke, 2006); inter-coder reliability on a 20% subsample (n = 72) yielded Cohen's $\kappa = 0.76$.

4. Results

4.1 Perceived Importance and Self-Reported Current Proficiency in English-Mediated DE Tasks

Table 1 presents descriptive statistics for TSA and PSA. All target tasks were rated above the midpoint in importance, with negotiating business deals (M = 3.96) and understanding legal/financial documents (M = 3.78) as highest priorities. Self-reported current proficiency remained below the midpoint across most tasks, with the largest discrepancies in negotiation (M = 2.66) and oral pitching (M = 2.67). Composite TSA (M = 3.69, SD = 0.45) substantially exceeded composite PSA (M = 2.86, SD = 0.34).

Item	TSA (M)	TSA (SD)	PSA (M)	PSA (SD)
Understanding specialised DE terminology	3.55	1.19	3.04	0.81
Writing business plans/pitch decks	3.44	1.14	2.87	0.95
Writing professional emails	3.73	1.12	3.11	0.82
Delivering oral pitches	3.77	1.18	2.67	1.15
Negotiating business deals	3.96	1.05	2.66	0.91
Understanding legal/financial documents	3.78	1.20	2.74	0.89
Managing LinkedIn communication	3.62	1.08	2.91	1.04
Composite Score	**3.69**	**0.45**	**2.86**	**0.34**

Table 1. TSA and PSA Descriptive Statistics for English-Mediated DE Tasks

Note. PSA = Present Situation Analysis, measured through self-reported current proficiency ratings.

4.2 Self-Efficacy in English-Mediated DE Tasks

Table 2 summarises self-efficacy descriptive statistics. Students reported highest confidence in writing LinkedIn promotional posts (M = 3.17) and explaining product features in English (M = 3.02), and lowest confidence in handling investor Q&A sessions (M = 2.65). The overall composite (M = 2.96, SD = 0.46) reflected moderate but variable confidence in English-mediated EDE communication.

Item	M	SD
Confidence in writing investor emails in English	2.94	0.89
Confidence in delivering elevator pitches in English	2.88	0.93
Confidence in handling Q&A sessions with investors	2.65	0.96
Confidence in writing LinkedIn promotional posts	3.17	0.91
Confidence in explaining product/service features in English	3.02	0.88
General confidence in using English for digital entrepreneurship	3.08	0.86
Overall Self-Efficacy Composite	**2.96**	**0.46**

Table 2. Descriptive Statistics for Self-Efficacy Items

4.3 One-Sample t-Tests for Composite Scores

Table 3 shows that TSA scores were significantly above the midpoint (supporting H_1), whereas PSA scores were significantly below it (supporting H_2). Self-efficacy scores did not differ significantly from the midpoint (H_4 not supported), indicating moderate overall confidence in English-mediated EDE communication.

Variable	M	SD	t(360)	P	d	Interpretation
TSA	3.69	0.45	28.96	< .001	1.52	Significantly above midpoint (Large)
PSA	2.86	0.34	−7.96	< .001	−0.42	Significantly below midpoint (Small)
Self-Efficacy	2.96	0.46	−1.71	.087	−0.09	Not significantly different from midpoint

Table 3. One-Sample t-Tests for Composite Scores

4.4 Self-Reported Proficiency Gap Analysis between TSA and PSA

Statistically significant TSA–PSA discrepancies emerged across all EDE tasks (Table 4), confirming H_3. At the composite level, the overall difference was significant, $t(360) = 28.64$, $p < .001$, $d = 1.51$, indicating substantial self-reported unmet English-language needs in the DE context. The most substantial discrepancies emerged in negotiating business deals ($\Delta = 1.30$, large effect) and delivering oral pitches ($\Delta = 1.10$, medium effect), suggesting that learners feel least prepared for spontaneous and high-stakes entrepreneurial interaction. Smaller gaps appeared in specialised terminology, business-plan writing, professional emails, and LinkedIn communication, possibly because students encounter these genres more incidentally through general English instruction and everyday digital use.

Item	Δ	t	p	d	Interpretation
Understanding specialised DE terminology	0.51	6.82	< .001	0.36	Small
Writing business plans/pitch decks	0.57	7.24	< .001	0.38	Small
Writing professional emails	0.62	8.58	< .001	0.45	Small
Delivering oral pitches	1.10	12.94	< .001	0.68	Medium
Negotiating business deals	1.30	16.93	< .001	0.89	Large
Understanding legal/financial documents	1.04	13.21	< .001	0.70	Medium
Managing LinkedIn communication	0.71	9.13	< .001	0.48	Small
Composite	**0.83**	**28.64**	**< .001**	**1.51**	**Large**

Table 4. Paired-Samples t-Tests for Self-Reported Proficiency Gap Analysis between TSA and PSA

4.5 Course Design Preferences and Perceived Obstacles

Students favoured short practical formats, particularly a four-week course with two contact hours weekly. Role-plays, authentic text analysis (using authentic materials), and case studies were the most preferred instructional methods, while AI tools and micro-learning videos emerged as the most desired learning tools (Figure 2).

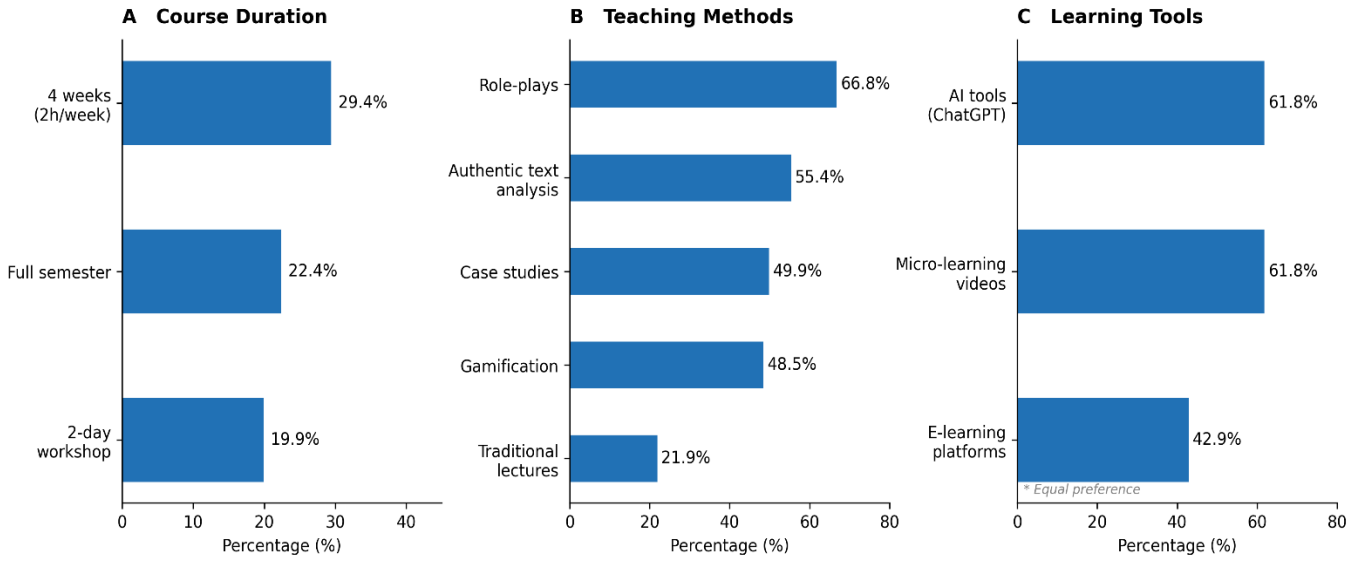


Figure 2. Preferred Course Duration, Teaching Methods, and Learning Tools

Regarding perceived obstacles, time constraints were most frequently reported (71.5%), followed by financial cost (48.8%), mismatch between course level and language ability (31.9%), lack of academic recognition (30.2%), and poor internet access (13.9%) (Figure 3).

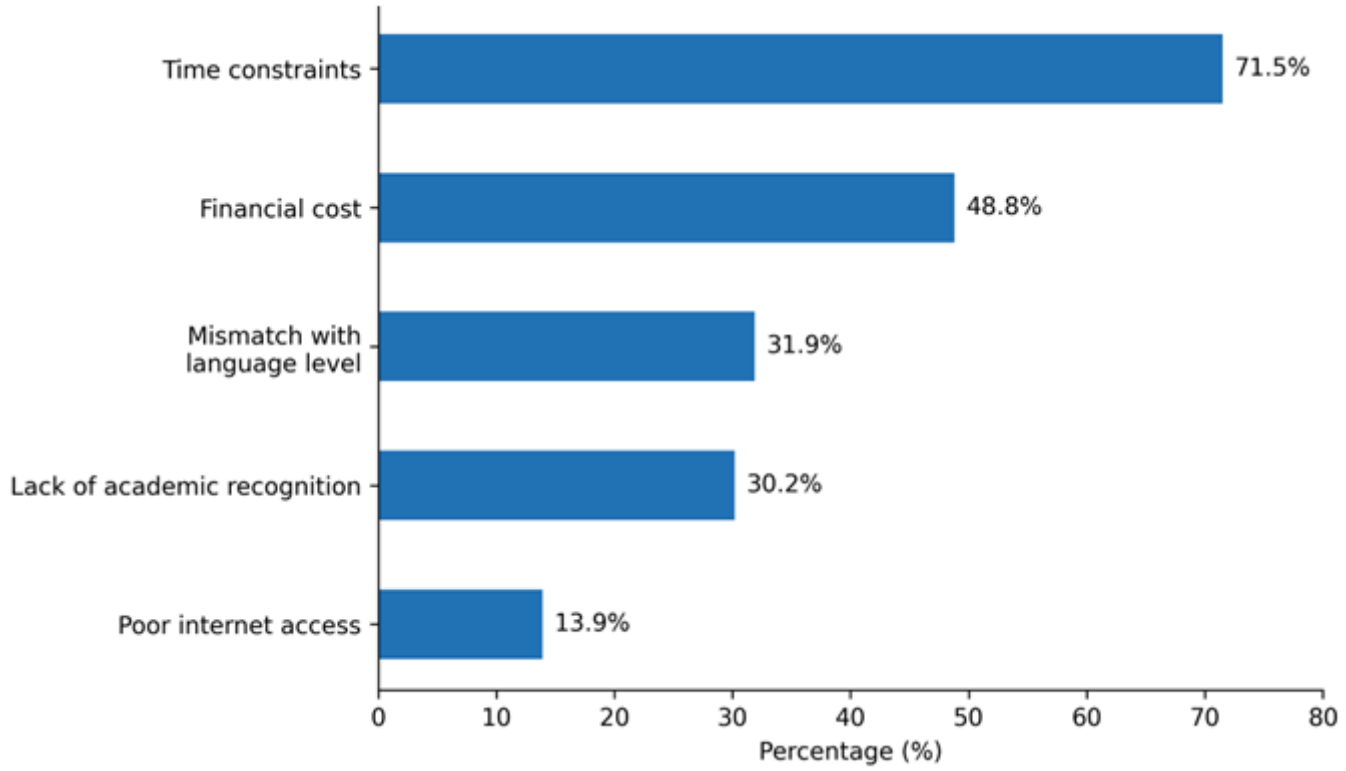


Figure 3. Perceived Obstacles to Participation

4.6 Qualitative Insights

Thematic analysis revealed two overarching themes. First, participants consistently reported a mismatch between classroom English instruction and DE communicative realities, noting that existing courses prioritised grammar and decontextualised content over authentic entrepreneurial tasks. As one participant stated, "We learn general English, but nobody teaches us how to pitch a project or communicate with investors in English" (Participant 47).

Participants also reported structural barriers, particularly financial constraints and limited internet access, which constrained opportunities for autonomous and technology-supported learning. Second, participants expressed strong preferences for interactive, AI-assisted, and flexible learning solutions, recommending tools such as ChatGPT, startup simulations, and micro-learning videos.

These qualitative findings are consistent with the quantitative gaps identified in pitching, negotiation, and technology-supported learning preferences, and help explain them in students' own words.

5. Discussion

5.1 The Centrality of English in Digital Entrepreneurship

The particularly high TSA ratings for negotiation and legal-financial communication suggest that students associate EDE competence with participation in high-stakes entrepreneurial interactions involving investment, partnership building, and venture sustainability.

Participants seem to view English less as a general academic requirement and more as a practical tool for reaching investors and expanding their entrepreneurial options.

This interpretation aligns with Benali Reguieg's (2025) findings regarding the impact of English communication barriers on Algerian startup founders and further highlights the limitations of predominantly EGP-oriented provision in addressing domain-specific entrepreneurial communication needs (Achouri, 2025; Assassi & Rouaghe, 2024).

5.2 The Self-Reported TSA–PSA Gap as a Curricular Mismatch

The composite TSA–PSA gap (Δ = 0.83, d = 1.51) reflects a curricular mismatch: students have not been taught the genres DE participation requires. The largest discrepancies concern negotiating business deals (Δ = 1.30) and delivering oral pitches (Δ = 1.10), suggesting that learners feel least prepared for spontaneous and high-stakes entrepreneurial interaction. Such communicative demands are rarely prioritised in instruction centred primarily on receptive language skills (Skehan, 1998). In contrast, comparatively smaller gaps were observed in specialised terminology, business-plan writing, professional emails, and LinkedIn communication, genres that may receive more incidental exposure through general English instruction and digitally mediated everyday practices. This gradient, convergent with findings from Indonesia (Romadhon, 2023) and Thailand (Howchatturat, 2024), reinforces the case for ESP interventions that prioritise performative and interactive genres.

5.3 Self-Efficacy as a Diagnostic Lens

Although H_4 was not supported at the composite level (p = .087), the overall self-efficacy mean near the scale midpoint conceals meaningful task-level variation. Students report higher confidence for asynchronous digital tasks (LinkedIn posts, M = 3.17; explaining product features, M = 3.02) and lower confidence for spontaneous interactive tasks (investor Q&A, M = 2.65; elevator pitches, M = 2.88), reflecting the support that drafting, revising, and digital tools provide in asynchronous settings(Hafner & Pun, 2020; Xia & Hafner, 2021). From Bandura's (1997) perspective, low self-efficacy in high-stakes interactive tasks risks avoidance behaviour, reinforcing both low confidence and low perceived proficiency. Self-efficacy can therefore serve as a useful diagnostic indicator, pointing to the tasks where low confidence is most likely to discourage participation. EDE courses should create structured mastery experiences precisely in investor interaction and live pitching, where confidence is weakest.

5.4 Learner Preferences and Pedagogical Implications

Students' preferences for role-plays, authentic text analysis, AI-assisted tools, and micro-learning reflect an understanding that EDE communication skills develop best through realistic task rehearsal, consistent with genre-based pedagogy and task-based language teaching (Bhatia, 2004; Ellis, 2003; Swales, 1991). AI tools are increasingly embedded in professional EDE communication (Kohnke et al., 2023); using them within ESP instruction may also build language competence and genre-specific AI literacy. Short, practice-oriented formats (four weeks, two hours weekly) suggest that students view EDE courses as a form of targeted professional development, supporting its embedding within entrepreneurship programmes under Ministerial Decree 1275.

5.5 Structural Constraints as Design Parameters

Time constraints (71.5%) and financial cost (48.8%) have direct implications for course design. These learner-level feasibility barriers, which remain underexplored in Algerian ESP research (Achouri, 2025; Zemali & Naoua, 2025), raise important concerns about the sustainability of predominantly synchronous and campus-based EDE delivery models, particularly in resource-constrained contexts. A well-designed course that students cannot realistically attend or afford will make little difference. Accessibility, through flexible scheduling, low cost, and mobile-friendly materials, needs to be built into the course from the start, not treated as an afterthought.

5.6 Toward Preliminary Course Specifications

The findings across RQ1–RQ6 provide an empirical basis for a first iteration of the course specifications presented in Table 5, each traceable to specific quantitative and qualitative findings and subject to expert review and pilot validation before implementation.

Course Component	Preliminary Specification	Empirical Source
Highest-priority skills	Business deal negotiation; oral pitching and elevator speeches	Largest gaps: negotiation (Δ = 1.30, d = 0.89); pitching (Δ = 1.10, d = 0.68) Table 4
Medium-priority skills	Understanding legal/financial documents; LinkedIn communication	Medium gaps: legal docs (Δ = 1.04, d = 0.70); LinkedIn (Δ = 0.71, d = 0.48) Table 4
Lower-priority skills	Professional email writing; DE terminology; writing business plans/pitch decks	Smallest gaps: terminology (Δ = 0.51, d = 0.36); pitch decks (Δ = 0.57, d = 0.38); emails (Δ = 0.62, d = 0.45) Table 4
Self-efficacy targets	Structured confidence-building for investor Q&A and elevator pitching	Lowest SE means: Q&A (M = 2.65); pitching (M = 2.88) Table 2
Course duration	4 weeks / 2 contact hours per week (~8 hours total)	Majority LSA preference Figure 2
Teaching methods	Role-plays, authentic text analysis, case studies, startup simulations	Top-ranked LSA methods Figure 2
Learning tools	AI-assisted writing platforms, micro-learning videos	Top-ranked LSA tools Figure 2
Delivery format	Asynchronous and mobile-friendly; offline materials where possible	Time constraints (71.5%) and financial cost (48.8%) Figure 3
Institutional anchoring	Embed module within programmes supported by Ministerial Decree 1275	Lack of academic recognition reported by 30.2% of participants Figure 3

Table 5. Preliminary Needs-Informed ESP Course Specifications for Digital Entrepreneurship

The alignment between negotiation and pitching as highest-priority skills and the lowest self-efficacy scores for the same task types suggests that self-reported proficiency gaps are compounded by motivational risk, reinforcing the case for structured mastery experiences in these areas (Bandura, 1997).

5.7 Contributions to ESP Needs Analysis

The findings show that communicative gaps alone do not fully explain learners' readiness for EDE participation. Adding self-efficacy to the TSA-PSA framework helps identify not only where learners report low perceived proficiency, but where low confidence may stop them from engaging with demanding tasks altogether. Needs analysis that accounts for this offers a more comprehensive understanding of what learners actually need going into high-stakes entrepreneurial communication. This contribution should, however, be read in light of the single-institution, convenience-sampled context of the present study.

6. Conclusion

This study explored the English-language demands associated with digital entrepreneurship among Algerian university students through a multidimensional EDE needs analysis framework integrating TSA, PSA, LSA, self-efficacy, learner preferences, and contextual constraints. The findings reveal that students perceive EDE competence as closely tied to participation in entrepreneurial communication practices such

as negotiation, pitching, and investor interaction, yet report substantial self-reported proficiency gaps in their preparedness for these very tasks. The study also shows that what learners need goes beyond language skills. It includes confidence, access to appropriate tools, and learning conditions they can realistically engage with.

The findings support a move away from broadly EGP-oriented instruction toward genre-sensitive, practice-based EDE provision that puts interactive entrepreneurial communication at the centre. Role-plays, simulations, and AI-assisted learning tools seem particularly well-suited to addressing gaps in negotiation and pitching, while also helping learners build confidence in high-pressure communicative situations. The preference for flexible and mobile-friendly learning formats further suggests that accessibility should be treated as a central design principle rather than a secondary logistical concern. Embedding EDE modules within entrepreneurship programmes supported by Ministerial Decree 1275 may also strengthen institutional recognition and learner participation.

Conceptually, the study suggests that self-efficacy and technology-related preferences can be incorporated as integral dimensions within an adapted ESP needs-analysis framework. Learner readiness for EDE is not simply a matter of language gaps. It also depends on confidence, available tools, and the conditions under which learning takes place.

Several limitations should be acknowledged. The study relies primarily on self-reported perceptions of proficiency rather than objective, performance-based assessment, and draws on data from a single institutional context. Participants were recruited through a convenience sampling procedure rather than random or stratified sampling; while this is appropriate for an exploratory needs analysis, it limits the statistical generalisability of the findings beyond the six participating units, and estimates of population parameters should be interpreted with corresponding caution. Additional limitations include the absence of stakeholder triangulation through employers, subject specialists, or classroom observation. The proposed course specifications should therefore be interpreted as preliminary needs-informed recommendations requiring further pedagogical validation through syllabus implementation and classroom-based evaluation. Future research may extend the present work through longitudinal or mixed-method designs that incorporate multiple institutions and broader stakeholder perspectives. Further studies could also develop and empirically evaluate EDE-oriented ESP syllabi in authentic instructional settings to examine their impact on communicative performance, learner self-efficacy, and entrepreneurial readiness.

For Algerian students seeking to participate in international startup ecosystems where English functions as a principal medium of communication, the needs identified in this study extend beyond self-reported current language proficiency alone. Addressing these needs through targeted EDE provision may be one of the more concrete steps universities can take toward making such participation a realistic prospect.

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