

The impact of mobile technology in blended learning on student interaction and motivation in ESP classes: A case study in Omani higher education

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Abstract

This study examines how mobile technologies used in blended learning environments affect student participation and motivation levels during English for Specific Purposes (ESP) classes at Omani higher education institutions. The research aims to identify effective uses of mobile devices, examine how mobile applications promote interaction and motivation, and determine which applications best support these outcomes. The researchers used a qualitative case study approach, which included semi-structured interviews with five ESP teachers and three focus group discussions with second-year students at a maritime college. The thematic analysis process produced five primary themes. The results show that mobile technology enables users to communicate in real-time while working together and participating actively through gamified tools, AI-supported feedback, and interactive platforms, including Microsoft Teams, Moodle, Kahoot, Quizlet, and ChatGPT. Students experienced higher levels of confidence, independence, and greater enthusiasm when activities matched their professional development needs. The study identified several challenges, including unstable internet connectivity, device limitations, cognitive overload from using multiple platforms, and overreliance on AI-generated feedback and social media distractions. The study shows that effective mobile integration requires both technology availability and strategic instructional design, which follows motivational principles.

Keywords: Blended learning, ESP, Gamification, Higher education, Mobile learning, Motivation, Student interaction, Technology integration.

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Contribution of this paper to the literature

This study provides empirical evidence that mobile technology enhances student engagement and learning outcomes in blended ESP programs in Omani universities. It identifies gamification, AI-supported feedback, and collaborative tools as key pedagogical strategies, while highlighting contextual challenges and proposing a practical instructional framework for professionally oriented language education.

1. Introduction

The world has undergone numerous changes as a result of the coronavirus epidemic. People had to adjust to new methods of traveling, working, and studying due to the pandemic. This pandemic had a profound impact on education. More than 94% of the world's student population has been affected by the closure of schools and other educational institutions (Pokhrel & Chhetri, 2021). COVID-19 prevented nearly nine out of ten students worldwide from attending face-to-face classes (UNESCO, 2020).

Schools, colleges, and all educational establishments were temporarily closed to ensure everyone's safety. Consequently, traditional learning methods have been replaced by technology-based learning methods. Virtual learning environments, such as online platforms, had to be used to replace traditional classroom learning (Times News Service, 2020).

Developing countries, however, found this step difficult. When the world went into isolation, and people were on lockdown, developing countries struggled to take a step toward using technology for education due to a lack of network infrastructure, computers, and internet access (Tadesse & Muluze, 2020). 50% (826 million) of students worldwide did not have access to computers at home, and 43% (706 million) did not have internet access (UNESCO, 2020).

Despite the challenge of global access to technology, the situation in Oman was somewhat different. Due to Oman's developed telecommunications infrastructure, Internet access barriers were less severe than in some developing countries. Rural areas with limited network coverage faced multiple challenges that persisted beyond this period. Universities worldwide have adopted blended learning systems after restrictions were lifted, including universities in the Sultanate of Oman (Cobo-Rendón, Jofre, Lobos, Martin, & Guzman, 2022). The learning method combines digital media and technology with traditional classroom activities led by instructors to give students more flexible learning options. With blended learning, every student's needs can be fulfilled through an integrated classroom approach (Tran & Duong, 2022).

Blended Learning Environment (BLE) enables students to utilize computers, mobile devices, tablets, and the Internet to create their own learning experiences, thereby improving their educational outcomes. An example of a blended learning environment is an online platform, which simulates the real-life classroom environment for students (Kauts & Kaur, 2018).

Technology exists for schools to use as a tool that improves student learning processes. The use of technology can be highly beneficial when students understand how to access it, where to find it, and how to utilize it effectively (Paterson, 2019). Technology has made student learning more accessible and that is one of its major benefits (Al Balushi, 2025). As a result, students from developed countries and even the ones from rural communities have gained more access to colleges and universities. Online platforms made it easy for everyone and now there are no longer any challenges associated with a student's inability to find a college near their home since they can attend the class using online platforms (Al-Shihi, Sharma, & Sarrab, 2018).

They can view recorded videos or interact live with a teacher and classmates using a computer or even their mobile phones. It is no longer feasible for the new generation of learners to study with traditional textbooks and chalkboards. Bringing mobile devices into the classroom has been shown to be an important part of supporting learning (Ustun, 2019). With smartphones and tablets becoming ubiquitous, the millennial generation uses them to access various online activities (Paterson, 2019). Mobile phone use is being incorporated into many institutions worldwide to facilitate student learning through various platforms.

1.1. Research Background

Higher education in Oman begins with the General Foundation Programme (GFP). Colleges and universities that use an English language medium of instruction are required to have it. The GFP includes three components: English language, mathematics, and computing. The English language component aims to help students develop the English skills their colleges require (Al-Mahrooqi & Denman, 2018).

Students are also taught English in diploma and bachelor's programs through ESP courses. ESP stands for English for Specific Purposes, and it is taught to university students or people in the workforce, taking into account their particular vocabulary and skill requirements. The ESP curriculum operates independently from English Language Teaching (ELT), using its own approach, materials, and methodology, adapting and integrating with other subject areas. The distinctive nature of ESP requires that teachers assess learners' needs, develop courses, develop materials, choose appropriate instruction, and implement it according to the learners' needs (Chalikandy, 2013).

1.2. Problem Statement

Ustun (2019) pointed out that mobile phones are becoming the primary tools students use for learning as mobile devices become prevalent in education. Concerns were also raised about the effectiveness of this integration, as well as issues related to student motivation and interaction.

Switching the learning environment from the traditional way of learning to online classrooms due to the coronavirus pandemic has impacted students worldwide (Tadesse & Muluze, 2020). A year after the pandemic, some universities have decided to adopt blended learning to combine face-to-face instruction with online education and ensure greater flexibility (Cobo-Rendón et al., 2022). This change requires students in schools or colleges to have a technological device that supports hybrid curricula. Having a mobile device instead of a computer in online lectures is a cheaper alternative for those unable to afford a computer or laptop.

However, as of yet, the Ministry of Higher Education has not drafted a public or shared policy on blended learning. Some colleges and universities, however, have created their own policies or guidelines regarding the blended learning approach. Moreover, there is no policy on how students can use mobile phones in learning. Mobile phones have been used by students to complete several activities related to their studies, such as attending or watching lectures, participating in discussions, taking quizzes and exams, and reading handouts (Holland & Kellogg, 2020).

International Maritime College Oman, one of the colleges of the National University in Oman, conducted a survey in 2021 to measure the effectiveness of online classes during the COVID-19 pandemic. 274 students out of 630 responded to the survey. The survey confirmed that 94% of students use their mobile devices for online learning. Additionally, the survey revealed that students were unable to cope with online lectures; some struggled to address their questions and concerns during online learning. Moreover, many students felt unmotivated to attend online sessions or participate in discussions. The survey results concluded that many issues faced by students were associated with using mobile devices in online learning (International Maritime College Oman (IMCO), 2021).

Due to the pandemic, students gradually returned to colleges and universities after a year and a half of online learning. In September 2021, most colleges and universities in Oman shifted to blended learning. However, the repercussions of online learning appeared when classes resumed face-to-face. In English for Specific Purposes classes, it was reported that learners were very hesitant to participate and interact with their peers. Communication in English was a clear barrier, especially between teachers and students. Also, students were demotivated to communicate in English with their peers.

This research aims to investigate the effectiveness and impact of using mobile devices on students' motivation and interaction in English for Specific Purposes classes. According to the IMCO survey, 94% of Omani students use mobile devices for learning, but they also report lower motivation and participation. These results highlight the paradox of widespread technological adoption in Omani educational institutions combined with a lack of clarity regarding pedagogical effectiveness (International Maritime College Oman (IMCO), 2021).

1.3. Research Questions

1. What are the most effective uses of mobile devices in a blended learning environment?
2. What problems do students encounter when using mobile devices in blended learning?
3. How can mobile applications promote students' interaction and motivation in ESP classes?
4. What mobile applications can be used to improve students' interaction and motivation in ESP classes?

In Oman, little research has been conducted on how mobile technology impacts motivation and interaction among students in ESP classes, and the purpose of this study is to fill this gap.

2. Literature Review

2.1. Blended Learning in ESP

Researchers discovered that blended learning research shows successful results for teaching English to second-language students. The main advantage of the program creates a better learning environment, which functions as a crucial element for educational development. The research demonstrates that blended learning methods lead to improved teaching and learning outcomes.

Albiladi and Alshareef (2019) support the use of technology in blended learning for English. The research demonstrated multiple benefits, including better evaluation processes and customized assessment results. The researchers established their arguments through theoretical foundations instead of presenting actual research evidence. The experimental method of Banditvilai (2016) provides measurable learning results that demonstrate similar learning effectiveness to blended learning methodologies. The boundary of this research becomes important when researchers compare their results with Banditvilai (2016) research results, which show actual learning outcomes.

Zhang and Zhu (2018) examined 5,376 Chinese university students enrolled in ESL courses and found that students learning through blended learning performed noticeably better than those in traditional face-to-face instruction groups. Their findings indicate that incorporating digital tools can improve language learning by enabling more flexible interaction and independent practice. This also supports (Banditvilai, 2016), who claims that technology-assisted instruction increases motivation and proficiency, suggesting that it is the pedagogical design of blended learning, rather than the mode itself, that propels progress. Such data shows how blended approaches can improve student engagement and results in ESP programs in the Omani context.

2.2. Motivation and Interaction with Technology

Motivation comes from the Latin verb *move*, which means to move. A number of researchers and theorists have attempted to answer the question, "What motivates learners to move?" Educationalists have attempted to identify tasks and activities that would motivate learners to move, that is, to become motivated (Schunk, Pintrich, & Meece, 2008). Over the past several decades, researchers and teachers have developed valuable insights into how technology is used by students and teachers, and how that impacts motivation (Rozmanič, 2021).

According to Harmer (1991), there are several factors that can impact learners' motivation. The first is the physical condition, which refers to the classroom atmosphere. Classroom lighting, class size, and the number of students can all influence students' motivation. The second factor is the method of teaching, which pertains to how students are taught. Students' motivation decreases whenever they are bored, meaning teachers should keep their teaching methods fun and engaging. The third factor is the teacher, who can motivate or demotivate students, as the teacher is a very powerful variable. The fourth factor is success, which refers to the level of challenge set by teachers.

Hillman (2014) advocated for the integration of technology in classroom teaching. He mentioned that it contributes to meaningful learning, knowledge acquisition, a hierarchical cognitive structure, elaboration, and a broader depth of processing, which support (Schindler, Burkholder, Morad, & Marsh, 2017) findings that students can participate in higher-order thinking and communication, collaborative problem-solving activities using several technological applications.

2.3. Mobile Phone Usage in Blended Learning

Mobile learning refers to accessing learning content using mobile devices, which can be done anywhere and at any time (Antunes, 2020). Both definitions highlight one of the main advantages of mobile learning: the ability for learners to access their learning materials anywhere (Hussein et al., 2024). Therefore, mobile learning provides learners with a faster route to gaining knowledge and accessing resources by breaking chains of computers and internet connections (Ustun, 2019). Mixed results have been reported in research on the effectiveness of mobile learning. Ustun (2019) systematic review concluded that mobile technologies enhance learning acquisition. Although the author states there is no significant effect, he acknowledges several empirical studies have failed to demonstrate this. This highlights a methodological and interpretive problem.

2.4. Theoretical Framework

The theoretical framework for the factors that influence the learner's motivation and interaction in blended learning was developed by reviewing studies of factors influencing learners' motivation in computer-based instruction and distance education. As Song (2000) suggested, there are three major categories of motivational influences in Web-based instruction: internal, external, and personal factors. Internal factors relate to features that help learners accomplish their goals, originating from within. External factors influence motivation and interaction because they are outside the learner's control. Learners' personal factors are described as motivational influences (Aloufi, Tashtoush, Shirawia, Tashtoush, & Az-Zo'bi, 2024).

Personal Factors: According to previous studies, personal variables can affect one's motivation and teaching (Kim & Frick, 2011). Due to the potential for using online-based learning to deliver instruction that meets students' different learning styles, online learning researchers have given learning styles considerable attention. The way in which learners prefer instructional media can vary according to past studies (Kim & Frick, 2011).

Internal Factors: Learners' internal motivational processes for engaging with mobile technology are represented by the ARCS model components. The ARCS model of motivational design is a theoretical framework for instructional design developed by John Keller, which stands for Attention, Relevance, Confidence, and Satisfaction. The model aims to help instructional designers create learning materials that effectively engage and motivate learners.

Hartley (1999) suggests in his Cognitive Load Theory that students' motivation towards learning is impeded by cognitive overload. This supports Pintrich and Schunk (2001), who claim that students are less motivated to learn when they feel overwhelmed by the mental effort required.

External Factors: Motivating an individual is influenced by a variety of environmental factors. Web-based instruction seems to be associated with student satisfaction primarily due to learner support. As reported by Chyung, Winiecki, and Fenner (1998) in their study of adult distance education students, nearly half of those who dropped out mentioned that dissatisfaction with the learning environment is the reason.

3. Methodology

3.1. Research Approach

This study acknowledges that motivation results from the interaction between individual experiences and contextual factors, which is an interpretive approach. This approach aligns with Song's framework, suggesting that students' narratives and experiences are internal, external, and personal factors that can guide us in identifying motivated students.

In this study, we examine how mobile device usage in ESP classes can be used to understand students' motivations and interaction patterns. While these experiences occur within specific cultural contexts, they reflect broader patterns of how technology-enhanced learning is influenced by internal, external, and personal factors.

The qualitative case study involved two instruments for data collection: interviews and focus group discussions. The study focuses on one college within the National University, which is the International Maritime College Oman. Five teachers from the Maritime College were interviewed to gather their perceptions. Students selected for this study are second-year ESP students the college who have direct experience with mobile devices in blended learning environments. Focus group discussions were employed to collect data. A total of three focus groups were conducted to obtain student perspectives.

3.2. Participants

The study was conducted at the International Maritime College Oman (IMCO), which is part of the National University of Science and Technology in the Sultanate of Oman. The participants included five ESP lecturers teaching maritime-related English courses and eighteen second-year diploma students enrolled in English for Specific Purposes modules. The student participants were selected because they had direct experience using mobile devices in blended learning environments. The teachers had varying years of teaching experience in maritime English and blended instruction. This institutional context provides a specialized ESP setting where English is directly linked to students' professional maritime careers.

3.3. Data Collection Methods

Three focus groups were conducted. Six students were nominated by their teachers to participate in the discussion. The students received an invitation to attend the meeting. They were informed about the study's purpose and that they could withdraw their participation at any time. The discussion was recorded using an audio recorder.

For the interviews, an invitation was sent to the interviewees via email. The interviewees were asked to sign a consent form. They were informed about the purpose of the interview, and they were assured that participation is voluntary, and they can withdraw their participation at any time, even after the interview. The interviews were recorded using a mobile phone.

3.4. Data Analysis

Semi-structured interviews were used in this study. The interviews were transcribed and then analyzed using a thematic approach. As soon as the data had been analyzed, preliminary codes were assigned to describe the content.

Then, patterns or themes through the codes were identified, and finally, the themes were reviewed. The same was done for the focus group discussion. The discussion was recorded using a phone recorder. An app was used to analyze the data using a thematic approach.

4. Findings

This section presents the findings from thematic analysis of qualitative data obtained through semi-structured interviews with five ESP lecturers and three focus group discussions, which included eighteen second-year maritime students at the International Maritime College Oman (IMCO). The analysis produced five principal themes demonstrating how mobile technology affects student participation and academic motivation during blended ESP courses. The themes include (1) mobile tools as catalysts for enhanced interaction, (2) key affordances of motivational mobile applications, (3) strategic instructional integration of mobile technology, (4) the impact on student motivation and professional identity, and (5) implementation challenges and pedagogical tensions. Each theme is elaborated below, integrating participant perspectives with analytical interpretation.

4.1. Theme 1: Mobile Tools as Catalysts for Enhanced Interaction

Mobile technology implementation in educational settings resulted in permanent changes to classroom environments through its ability to create ongoing multiple interaction types. Educational staff and students both recognized that mobile applications served as learning tools linking classroom studies to outside school educational activities. The extended period of interaction with others created a learning community that developed stronger connections among its members.

The teachers found that Microsoft Teams and Moodle forums enabled students to communicate with each other in real time while maintaining ongoing conversations outside of their classroom time. The educator described that these tools enabled him to reach his teaching objectives through their various functions, "*bridge the gap between in-class and out-of-class learning*," allowing students to remain engaged with course content and each other continuously. Another teacher demonstrated how both Padlet and Quizlet enabled students to learn from each other through joint vocabulary activities and their discussions about real maritime situations. The interactive features of these platforms, such as discussion forums, group chats, and collaborative documents, were perceived to normalize academic discourse by integrating it into students' daily digital routines.

This finding suggests that the primary interactive benefit of mobile technology lies not merely in replicating classroom communication but in creating multiple, accessible channels for ongoing academic engagement. By extending interaction beyond scheduled class time, mobile tools support the development of teach communities where students can collaboratively construct knowledge, seek clarification, and practice professional communication in authentic contexts.

4.2. Theme 2: Key Affordances of Motivational Mobile Applications

Analysis of participant responses identified specific technological features within mobile applications that are instrumental in driving student engagement and motivation in ESP contexts. Participants consistently valued affordances characterized by immediacy, interactivity, and personalization.

Gamified elements emerged as particularly powerful motivators. Teachers and students frequently cited applications like Kahoot and Quizlet, noting that competitive features such as leaderboards and real-time scoring generated enthusiasm and focused attention. One educator described how a simple vocabulary game "*evolved into male against female*, and it enhanced participation because you could see how much they were enjoying." This illustrates how gamification can transform routine language practice into engaging, socially dynamic activities.

The speed and directness of feedback were also highly valued. Real-time messaging platforms like WhatsApp and instant feedback from online quizzes were seen as crucial for maintaining learning momentum. Students appreciated the immediacy of responses, which allowed them to quickly assess their understanding and make corrections. Additionally, tools enabling collaborative knowledge construction, such as Google Docs for co-writing incident reports, were highlighted for their practical utility in simulating authentic workplace tasks.

A significant finding within this theme was the emergence of AI-supported feedback as a motivational scaffold. Students reported using ChatGPT's voice mode to practice maritime communication scenarios, describing it as a low-stakes, readily available tool for improving fluency and identifying pronunciation errors. One student explained that using ChatGPT helped her "*identify pronunciation errors and improve my fluency*" before presentations. This indicates that AI tools can function as personalized tutoring resources, reducing anxiety associated with real-time human interaction while providing immediate, individualized feedback. Collectively, these affordances transform learning from passive information reception into an active, responsive, and personalized process.

4.3. Theme 3: Strategic Instructional Integration of Mobile Technology

The data revealed that the effectiveness of mobile technology is contingent upon deliberate pedagogical strategies rather than the mere presence of devices. Teachers acted as facilitators, strategically deploying tools to achieve specific learning objectives and scaffold student engagement.

A common strategy was the use of Learning Management Systems (LMS) such as Moodle for centralized content delivery. Students reported that having constant access to lecture slides, glossaries, and supplementary materials on their mobile devices enabled them to prepare for class, review complex concepts, and complete assignments more effectively. This was complemented by the use of communication applications like WhatsApp for announcements, assignment reminders, and informal peer discussion, creating what participants described as a continuous learning loop that reinforced classroom instruction.

Teachers also designed tasks specifically leveraging mobile capabilities for skill development. Several educators described asking students to record video or audio presentations of technical briefings, a strategy particularly noted for building confidence among hesitant learners. As one teacher explained, recording allows shy students to "*record themselves, then they get feedback from each other or get feedback from me*," enabling them to rehearse professional communication in a private space before public performance.

Another sophisticated strategy involved using mobile technology for authentic, professionally relevant tasks. One teacher described an activity where students created CVs and cover letters, then participated in simulated interview committees that used AI tools for candidate shortlisting. This approach not only taught technical language skills but also familiarized students with authentic workplace processes involving technology. Such strategies demonstrate that successful mobile integration requires thoughtful instructional design that aligns tool choice with pedagogical purpose and professional relevance.

4.4. Theme 4: The Impact on Student Motivation and Professional Identity

A clear consensus emerged across all participant groups that mobile technology positively influences student motivation, primarily by enhancing the perceived relevance and enjoyment of learning. Students consistently described mobile-enhanced classes using terms such as "fun," "exciting," and "motivating," while teachers reported observable increases in enthusiasm, participation, and proactive engagement with learning materials.

The data suggest that this motivational boost is linked to several interconnected factors. First, the alignment of mobile activities with students' professional identity was critical. Tasks such as researching maritime accident cases, practicing VHF radio communication protocols, or using AI for interview simulations were perceived as directly relevant to students' future careers as maritime officers. This relevance transformed language learning from an abstract academic requirement into a tangible professional investment.

Second, mobile tools fostered autonomy and confidence. Students reported feeling empowered to learn at their own pace, revisit challenging materials, and seek independent support through applications like ChatGPT. This sense of control over their learning process appeared to enhance both motivation and self-efficacy. One teacher's observation of a previously disengaged student becoming animated and focused during a Kahoot! activity powerfully illustrates how gamified, competitive elements can re-engage learners by providing immediate, visible feedback on performance. The teacher noted that seeing "*his name going up the period of the hierarchical structure, it really did motivate him.*"

Third, the flexibility afforded by mobile learning contributed to sustained engagement. Students appreciated being able to access materials, complete tasks, and participate in discussions outside of formal class time, which accommodated different learning paces and schedules. This flexibility, combined with interactive and professionally relevant content, created conditions for what one teacher described as students who "*explore additional resources independently, revise vocabulary on their own, or practice communication scenarios outside of class time.*" The motivational impact of mobile integration, therefore, stems from a synergistic combination of enjoyment, professional relevance, autonomy, and flexibility.

4.5. Theme 5: Implementation Challenges and Pedagogical Tensions

Despite the predominantly positive findings, the study revealed significant challenges and tensions that can undermine the effectiveness of mobile integration in blended ESP learning. These obstacles span infrastructural, technical, behavioral, and pedagogical domains.

The most frequently cited obstacle was infrastructural: unstable internet connectivity on campus disrupted online quizzes, video streaming, and access to learning materials, leading to student frustration and demotivation. One student described how "*the Wi-Fi disconnects during online quizzes on Moodle, and I have to start again, which is very stressful.*" This finding highlights that technological dependence on reliable infrastructure can introduce new sources of anxiety and inequity into the learning environment.

A second major challenge was the potential for distraction inherent in multifunctional devices. Students across all focus groups candidly acknowledged the constant lure of social media notifications during study sessions. One participant noted that "*notifications and other apps interfere with my focus,*" while another suggested a practical solution: "*turn off notifications.*" This tension between mobile devices as learning tools and sources of interruption represents an ongoing classroom management challenge.

Technical limitations further complicated mobile integration. Students reported insufficient phone storage, outdated devices incompatible with newer applications, and the cost of premium features as barriers to full participation. One student described losing motivation when "*the app wasn't compatible with my phone,*" highlighting issues of digital equity that can exacerbate existing educational disparities. Additionally, both teachers and students noted that the time required to learn new applications could detract from learning objectives, with students preferring familiar tools.

Perhaps most significantly, the data pointed to pedagogical tensions concerning cognitive overload and over-reliance on artificial intelligence. Teachers expressed concern that navigating multiple platforms simultaneously could overwhelm students, potentially undermining rather than enhancing learning. Furthermore, there was apprehension about students becoming overly dependent on AI tools like ChatGPT to complete tasks without genuine cognitive engagement. One teacher explicitly identified "*the fact that students tend to use ChatGPT to answer and complete their tasks*" as a significant challenge, reflecting broader debates in language education about maintaining academic integrity while leveraging AI's pedagogical potential.

These multifaceted challenges underscore that while mobile technology offers significant potential for enhancing ESP instruction, its benefits are not automatic. Effective implementation requires proactive management of practical, behavioral, and pedagogical constraints through thoughtful institutional policies, strategic instructional design, and clear classroom guidelines.

To enhance clarity and provide a structured overview of the qualitative findings, Table 1 summarizes the major themes and corresponding subthemes that emerged from the thematic analysis of interviews and focus group discussions. The table presents the core dimensions of mobile technology integration in ESP classes, highlighting both its pedagogical benefits and associated challenges. This structured synthesis facilitates a clearer understanding of how the identified themes relate to student interaction, motivation, instructional strategies, and implementation constraints.

Table 1. Summary of themes and subthemes identified in the findings.

Theme	Subthemes	Key focus
Theme 1: Enhanced Student Interaction Through Mobile Tools	• Real-time communication. • Peer collaboration. • Bridging in-class and out-of-class learning. • Community building.	Mobile applications facilitated synchronous and asynchronous interactions, strengthening communication and collaborative engagement.
Theme 2: Effective Features of Mobile Applications	• Gamification elements (quizzes, leaderboards). • AI-supported feedback. • Real-time messaging. • Collaborative editing tools. • Authentic, field-related tasks.	Specific technological affordances (instant feedback, competition, voice interaction, shared documents) support language practice and engagement.
Theme 3: Instructional Strategies Leveraging Mobile Technology	• Use of LMS platforms (Moodle, Teams). • Structured group chats. • Content sharing and material access. • Recording for speaking practice. • Role-play and simulation tasks.	Teachers strategically integrated mobile tools for communication, content delivery, and structured learning activities.
Theme 4: Impact on Student Motivation and Engagement	• Increased enthusiasm. • Greater participation. • Confidence development. • Autonomy and independent learning. • Career relevance and professional alignment.	Mobile integration enhanced affective engagement, self-confidence, and perceived relevance to students' future professions.
Theme 5: Challenges and Limitations of Mobile Integration	• Unstable internet connectivity. • Device/storage limitations. • Social media distractions. • Cognitive overload from multiple platforms. • Overreliance on AI tools. • Paid or incompatible applications.	Technical, pedagogical, and behavioral barriers constrained effective implementation.

5. Discussion

This study examined the impact of mobile technology integration within blended ESP instruction on student interaction and motivation in Omani higher education. The findings demonstrate that mobile-assisted blended learning does not merely function as a technological enhancement but operates as a pedagogical catalyst that reshapes engagement, autonomy, and professional relevance in ESP contexts.

First, the findings strongly confirm prior research indicating that blended learning enhances language acquisition and engagement. Consistent with Banditvilai (2016) and Zhang and Zhu (2018), students in this study reported higher levels of participation and improved interaction when digital tools were embedded into instruction. However, while previous studies primarily measured learning outcomes quantitatively, this research extends the literature by providing qualitative evidence explaining *why* engagement increases through real-time feedback, gamification, and collaborative affordances. The study contributes explanatory depth rather than merely confirming performance improvement.

Second, the findings align with Song (2000) framework on motivational influences in web-based learning. Personal factors, such as familiarity with applications and prior technological experience, clearly shaped students' willingness to participate. Students who were comfortable with specific apps demonstrated greater confidence and engagement, supporting Song's argument that learner characteristics mediate motivation in digital environments. At the same time, this study extends (Song, 2000) model by showing that professional relevance in ESP contexts acts as an additional motivational driver. Unlike general EFL settings, maritime students perceived mobile activities as directly connected to their future careers, strengthening intrinsic motivation.

Third, the findings strongly validate the components of Keller's ARCS model of motivational design. Attention was stimulated through gamification and interactive quizzes; relevance was reinforced through career-related simulations; confidence increased through AI-supported feedback; and satisfaction emerged through instant progress tracking. These findings confirm the practical applicability of ARCS in mobile-assisted ESP settings. However, the study also reveals a nuance less emphasized in ARCS literature: excessive platform switching and technological overload may undermine attention and confidence, suggesting that motivational gains are contingent upon strategic instructional design rather than technology use alone.

The study supports Cognitive Load Theory as articulated by Hartley (1999) and discussed by Pintrich and Schunk (2001). While mobile tools increased engagement, participants reported cognitive strain when navigating multiple applications simultaneously. This partially contradicts optimistic claims in mobile learning literature, such as those by Ustun (2019), who concluded that mobile technologies generally enhance learning. The present study suggests that effectiveness is conditional; technological integration without coherence can reduce motivation rather than strengthen it.

Another significant contribution of this research lies in its examination of AI integration, particularly the use of ChatGPT for speaking practice and feedback. Unlike earlier blended learning research, which focused primarily on learning management systems and communication platforms, this study highlights AI as a dialogical learning partner. Students used AI tools to rehearse maritime communication scenarios, reducing anxiety and increasing autonomy. This extends existing literature on blended learning by introducing AI-mediated feedback as a

motivational scaffold. Nevertheless, concerns regarding overreliance and academic integrity echo broader debates in language education, indicating a need for clear pedagogical boundaries.

Importantly, the study also reveals contextual constraints specific to the Omani higher education setting. Infrastructure limitations, unstable internet connectivity, and financial barriers related to paid applications demonstrate that technological equity remains a critical issue. These findings reinforce arguments by Tadesse and Muluye (2020) regarding disparities in developing contexts. However, the relatively advanced telecommunications infrastructure in Oman moderates these challenges, suggesting that institutional readiness significantly shapes blended learning effectiveness.

Overall, this study confirms much of the existing literature on blended and mobile learning but also extends it in three important ways. First, it provides qualitative insight into the mechanisms linking mobile affordances to motivation in ESP contexts. Second, it integrates AI-supported interaction into blended learning theory. Third, it highlights the dual nature of mobile integration, simultaneously empowering and potentially overwhelming, thereby emphasizing the central role of instructional design.

In sum, mobile technology in blended ESP instruction should not be viewed as inherently motivational. Rather, its effectiveness depends on alignment with professional relevance, cognitive manageability, and pedagogical intentionality. These findings contribute to a more balanced, context-sensitive understanding of mobile-assisted blended learning in higher education.

6. Conclusion

The research study aimed to discover how mobile technology usage in blended learning environments affects student interaction and motivation in English for Specific Purposes (ESP) classes at higher education institutions in the Sultanate of Oman.

The researchers conducted their study using qualitative research methods to address the research questions. The research team gathered data through focus group discussions and interviews conducted in classroom settings. They identified five themes through data analysis, which showed how mobile technology affects student motivation and participation in ESP classes.

The research demonstrated multiple successful methods for using mobile devices. The first benefit of mobile devices lies in their ability to improve both social interactions and team-based learning activities. Mobile devices help students work together on their academic assignments as they create shared project content. The learning platform provides two types of learning experiences, which include real-time learning and gamified educational content delivery. The study established another key discovery about how instructional design elements affect the motivational results of educational programs. Successful session outcomes depend on technology usage when it occurs through deliberate strategic implementation. The research team discovered that students found motivation from activities that simulated their upcoming professional responsibilities.

The study also tackled challenges students encounter when using mobile devices in a blended learning environment. Five main problems were revealed. To begin with, one of the main problems revealed is infrastructure limitations, such as internet connection. Second, another problem is device limitations, such as battery life and phone storage capacity. The third problem is that multiplatform complexity could lead to cognitive overload. The fourth problem is dependency on feedback, especially when using AI tools. The fifth problem is distractions caused by social media notifications.

The study revealed several mechanisms through which mobile applications enhance engagement. First, gamification is very effective in enhancing engagement and motivation. Second, active participation design is another effective method that promotes interaction and motivation. Third, AI tools that promote autonomy and control are very effective in promoting interaction and motivation. Fourth, collaborative features such as Google Docs are very effective in enhancing interaction and motivation.

Several mobile apps were recommended by both students and teachers, such as Microsoft Teams, WhatsApp, and Zoom for communication and collaboration. Additionally, Kahoot, Mentimeter, and Quizlet were recommended for gamification, polls, and sharing opinions. Additionally, ChatGPT is recommended for feedback and guidance.

7. Recommendations

Based on the findings of the research, the following recommendations are proposed for ESP teachers.

1. Create tasks that simulate professional communication, such as writing reports and conducting case discussions.
2. Set clear policies, instructions, or classroom rules for managing social media distractions on mobile devices.
3. Manage the feedback-autonomy balance deliberately.
4. Prepare for infrastructure failures with alternative plans.
5. Utilize gamification apps to engage students in learning.

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