International Journal of Instruction *July 2026 ● Vol.19, No.3*
e-ISSN: 1308-1470 ● www.e-iji.net *p-ISSN: 1694-609X*
pp. 697-716

Article submission code: 20251203072700 Received: 03/12/2025 Revision: 16/02/2026 Accepted: 25/02/2026 OnlineFirst: 07/04/2026

Predictors of Non-Native English-Speaking Engineering Students' Perceived Likelihood of Success in Communication Skills Courses

Salah Zogheib
King Abdulaziz University, Saudi Arabia, *szogheib@kau.edu.sa* & *salahzogheib@hotmail.com*

The purpose of this study was to investigate engineering students' whose first language is not English perceived likelihood of success in communication skills courses. Participants in the study were 149 university students enrolled in a mandatory communication skills course at the faculty of engineering at a Middle Eastern university. The study utilized a theoretical model made up of eight potential predictors: engineering workload, time management skills, academic support, English proficiency, prior communication experience, intrinsic motivation, extrinsic motivation and educational background. Findings revealed that four of the eight predictors were significant predictors of success. The emerging model explained 55% of the variance in students' likelihood to succeed in communication skills courses. The most significant finding was that extrinsic motivation, contrary to expectations, was found to be the most significant predictor of perceived success, whereas intrinsic motivation was found to be insignificant. Another significant finding was that academic workload did not affect perceived likelihood to succeed. Relevant recommendations were made demanding the need for engineering programs to adopt a new curriculum that stresses the importance of professional relevance and targeted English language support for non-native students. This finding contributes to Self-Determination Theory by indicating that, in some cases (e.g., skill-based courses), extrinsic motivation may be a stronger predictor of students' perceived likelihood of success than intrinsic motivation. This study also highlights the difference between perceived success and actual achievement and, as such, suggests that engineering programs should focus on emphasizing professional relevance and providing targeted English language support to their non-native students.

Keywords: engineering education, motivation, English proficiency, communication skills, likelihood of success, engineering students

INTRODUCTION

Effective communication has become essential for engineering professionals in today's workplace (Beckner, 2024). Engineers must explain technical work to clients and managers, collaborate with specialists from other disciplines, and coordinate projects with international teams (Karatsolis et al., 2016). Most engineering programs have

Citation: Zogheib, S. (2026). Predictors of non-native English-speaking engineering students' perceived likelihood of success in communication skills courses. *International Journal of Instruction*, *19*(3), 697-716.

recognized this need by making communication courses a degree requirement without which engineers wouldn't be allowed to choose their field of speciality.

However, students pursuing a degree in engineering find themselves under a lot of pressure to balance between the demands of the main courses such as calculus and physics and the need to develop their communication skills particularly when their native language is not English (Zogheib, 2024 a). As such students find themselves in a complex situation where a lot of elements interact, for example course work demands, language background differences, motivation levels and support provided by institutions. This type of interaction shapes students' level of confidence related to communication skills courses provided at faculties of engineering.

The literature in the field has revealed that students' performance, especially in minor courses, is greatly impacted by academic workload (Baba et al. 2024). Pu et al. (2019) revealed similar findings across a variety of institutional contexts. Zogheib (2024a) revealed that engineering courses such as mathematics, science and technical coursework are always considered more important than communication skills courses despite knowing their professional importance.

Another important factor that seems to influence success in communication skills courses is students' English language proficiency. Nonnative English speakers seem to always struggle with understanding course material, participating in class discussions and teamwork, as well as completing assignments and meeting academic standards (Kindelán, 2013; Burganova & Valeev, 2015). This seems to impact students' confidence and performance expectations thus creating a big gap between likelihood to succeed based on language preparation or that based on academic capability.

Moreover, as good time management skills are always needed to deal with academic demands (Wilson et al., 2021), motivational factors are needed to stay engaged and persistent (Caldeira et al., 2020). The ability to perform well may also be influenced by prior communication experiences and academic support that students receive at the various stages of their academic life. These factors may also be crucial elements that would contribute to self-efficacy. Although a lot of research in the field has examined the effect of individual factors on engineering students' performance, to the knowledge of the research, there has never been any attempt to explore the complex relationships that may affect confidence in communication skills courses among students whose first language is not English. To be specific, the current literature in the field has mainly focused on single predictors or examined general student populations without taking into consideration the interaction among a variety of factors and their impact on engineering students' perceived likelihood to succeed in communication skills courses. Such a gap seems to be substantial and requires immediate attention, an investigation that will be the focus of this research paper.

The aim of this research paper is to explore the impact of engineering workload, academic support, time management skills, intrinsic motivation, extrinsic motivation, English proficiency, prior communication experiences, and educational background on non-native English-speaking engineering students' perceived likelihood to perform well in communication skills courses as well as any interactions among these various

elements in shaping such a success. Developing a robust framework that will help understand students' performance in communication skills courses will inform not only educators but also administrators to develop support programs and provide instructional techniques that will help students not only pass such courses but also enhance their communication skills.

LITERATURE REVIEW

Academic workload

Academic workload remains one of the main challenges that university students have to deal with in their endeavor to pursue a degree in engineering and the negative impact it may have on their achievement in the various courses is prominent, especially when the pressure resulting from such workload exceeds expectations or students' potential to deal with it (Baba et al., 2024; Pu et al., 2019; Jacob & Cherian, 2012). This negative impact on learning outcomes is quite obvious in engineering education where students find it hard to dedicate their effort towards technical coursework while at the same time they need to develop their communication skills. Time constraints alone seem to have a great impact in such a case.

The cognitive load theory is one of the few theories that provides a significant explanation of the effect of academic workload on students' ability to process information. Brown (2002) revealed that people have a limited capacity to handle complex information at once before their brains get overloaded. Engineering students are already under pressure to handle a variety of core courses that are at the heart of the engineering program, such as math, physics, math labs, and other engineering courses. This helps explain why students focus on their technical classes even though communication skills are important for their careers (Zogheib, 2024a). Although attendance was revealed not to have an impact on students' performance in communication skills courses (Zogheib, 2024a), universities' strict rules about attendance deny students the chance to miss communication classes to focus on other core subjects such as physics or math, risking failing the course because they failed to attend classes.

However, the story does not end with cognitive overload. Students get to a point where they find themselves exhausted and not able to be productive any longer. This leads to experiencing a variety of feelings that range from anxiety to stress and burnout, thus making it harder for them to accomplish their academic tasks (Aguayo-Estremera et al., 2019; Razali et al., 2018). Such pressure leaves them unable to complete core courses tasks and little time and energy are left to deal with communication skills. The outcome is a deficit in professional competency development.

Poor time management has always been a haunting experience for students who are required to handle heavy course loads. As such, students who learn to organize their work tend to perform better in all their classes, even when they're under a lot of academic pressure (Razali et al., 2018; Wilson et al., 2021). This becomes especially important for engineering students, who need to balance lectures, labs, problem sets, projects, and communication assignments.

Engineering students face particularly complex scheduling challenges. Research by Kim et al. (2021) revealed that students in demanding programs often dedicate more than 40 hours a week to academic work alone, excluding employment or extracurricular commitments. However, students who can meet the demands of the various courses are the ones who usually figure out ways to balance their technical course requirements with those of the communication skills courses.

Communication courses put a lot of pressure on engineering students because of the time management challenges they face in these courses. At the current university, engineering students are required to attend communication courses daily with strict attendance rules that make it hard for them to miss any class (Zogheib, 2024a). Moreover, students must set aside time for practicing presentations, working with group members, and writing multiple drafts of papers. All of this leads them to being incapable of managing their time. They find themselves rushing through presentations or submitting assignments written at the last minute, which affects both their grades and confidence (Kember, 2015; Chi et al., 2018). This pattern suggests that effective time management skills are needed for students enrolled in communication courses.

English language proficiency and communication competence

To non-native English students, communication skills courses always represent one of the biggest challenges they may encounter in their academic endeavor. Such a challenge stems from the fact that these courses are so demanding and extend far beyond learning new vocabulary or avoiding grammatical mistakes. Students who are not competent enough in English find themselves unable to read instructions and understand what they are being asked to do. Most importantly, the biggest challenge is using their productive skills. During presentations they find themselves unable to express themselves effectively, running out of terminology to express complex ideas especially when the topic requires showing critical and creative thinking skills. The same thing applies to writing where it is evident that there is a lack of potential to produce an essay that shows coherence, consistency and depth. The situation deteriorates when the topic is related to engineering as that requires specialized terminology. To those students, language barrier seems to be the main obstacle that prevents them from being engaged in class discussion and group work. As a matter of fact, research has revealed that mastery of effective communication skills is the biggest challenge among the various employability skills needed to be productive in academic and professional contexts (Idkhan et al., 2021).

Students who grew up speaking English don't have to deal with any of this. They are never challenged to comprehend material related to the various communication tasks, such as speaking, writing, and reading. For example, when reading, they can grasp content so easily. They can also engage in class activities without having to mentally translate their thoughts first and write papers where their ideas come through clearly instead of getting lost in awkward phrasing (Burganova & Valeev, 2015; Lemeshko et al., 2020). The self-efficacy beliefs of students pertaining to their ability to write, speak, read, and listen in English play a significant role in academic confidence and expectations (Gürbüz & Kışla, 2020). Finally, when you can communicate easily, you're

more willing to take risks in class, sign up for challenging seminars, or apply for competitive programs. Each of these experiences makes you an even stronger communicator.

Motivation and academic engagement

Self-Determination Theory explains why some students thrive while others struggle. As a matter of fact, motivation drives much of what happens in communication skills courses. The theory breaks motivation down into two main categories: intrinsic motivation, where students are genuinely interested in the subject matter, and extrinsic motivation, where they're focused on external rewards like grades or career advancement (Deci & Ryan, 1985). The theory emphasizes that students are in need of three major things to stay motivated: having control over their own learning, believing they're capable of succeeding, and building rapport with instructors and classmates (Siacor et al., 2024)."Both types seem to contribute to academic success in engineering programs, though which one works better probably depends on the specific course and student population you're looking at. Research demonstrates that success-oriented motivation—encompassing both intrinsic and extrinsic factors—significantly predicts academic achievement, with students exhibiting higher success-oriented motivation consistently achieving better language proficiency outcomes (Polat, 2020).

Students with intrinsic motivation tend to engage more deeply with course materials, persist through difficult concepts, and develop more sophisticated learning approaches (Muñoz et al., 2019). As such these students are more prone to invest in communication skills and go the extra mile as they find it very rewarding. They are ready to engage in the various discussions, group activities, pair work and presentations knowing that the extra effort put into these tasks will lead to the ultimate reward: improving their communication skills.

As to extrinsic motivation, it is as rewarding as intrinsic motivation, especially when students see the end goal of their endeavor realizing the positive impact good communication skills may have on a successful career path (Tokan & Imakulata, 2019). Although a lot of them have come into the program with ultimate focus on core courses such as math and physics and engineering, they come to realize that achieving well in communication skills courses is not only about getting a high mark but also allows them to develop soft skills that are much needed to land better jobs and to advance in their professional life. They are now well aware that even if they are not really interested in writing essays, doing public speaking or participating in group work or class discussion, it is their ticket to success.

Academic support systems

Research in the field has revealed a significant relationship between academic support and student success. Higher grades, better retention, and increased likelihood of graduating are found to be highly influenced by academic support provided to students (Alzen et al., 2021; Bornschlegl et al., 2020).

Faculty support appears to be the most crucial type of support that students find themselves in need of. When instructors provide clear expectations, offer regular

constructive feedback, and individualized guidance, students report higher motivation, greater confidence, and better performance (Vargas-Madriz & Konishi, 2021; Jacob & Cherian, 2012). Particularly, this kind of support is highly needed for non-native English speakers. To perform well in communication courses, they will need additional scaffolding and reinforcement.

Another form of support that might be of great help is peer tutoring. Well-designed tutoring programs help students develop specific skills whilst building confidence, and they teach transferable strategies that students can apply across different communication contexts (Simonds & Parnther, 2022). However, in our case there is no official peer tutoring programs that provides students with the chance to improve their communication skills. In our case, peer support is provided voluntarily amongst classmates and always happens within the class hours. This may not be enough, especially since not every student has the chance to receive support from his/her classmates. Moreover, engineering students are under a lot of pressure, which leaves them with no free time to help other colleagues. This would also leave students who are not willing to ask for help not to benefit from such a type of support.

Prior communication experience

Students who practice their language skills on a larger scale before enrolling in university-level communication courses will no doubt have more confidence and high expectations to perform well in these courses; they will demonstrate superior self-efficacy beliefs and academic outcomes higher than those with much less exposure (Lightbown & Spada, 2013; Bandura, 1997).

Students with prior communication experience had the opportunity to tackle complex writing tasks and professional communication encounters, which brings both practical skills and psychological resources to university communication courses (Schunk & Pajares, 2009). Even if they are subject to new challenges or demands in the communications courses provided at the university level, they can still approach those demands with more optimism and persistence than students who lack this background.

Finally, the positive impact of having prior communication experience extends far beyond basic skills transfer to having better metacognitive awareness. Because of such awareness, students are now more capable of understanding their own weaknesses and strengths. They can communicate in various circumstances even in situations that demand the use of critical and creative thinking skills. They are even ready to improve. With such great potential at hand, they develop better self-regulation strategies that allow them to continuously improve and seek help whenever needed.

Educational background and academic preparation

Research in the field has shown that students who graduated from public schools seem to struggle on standardized tests and language assessment compared to those who graduated from private schools thus highlighting the significant role of differences in educational backgrounds (National Center for Education Statistics, 2006; Soriano & Cruz, 2022). Many find this to be expected knowing the amount of money invested in resources, whether books, instructional tools, technology, teachers, the curriculum or

even the learning environment itself. English is even used as the first language of instruction in all the courses and is not limited to English or communication courses. This explains the great advantage private school students have over public school ones.

It's no secret that parents prefer to send their kids to private schools because they offer more intensive English instruction, smaller class sizes, and greater emphasis on communication skills compared to public schools. To parents, this pays off at the end of school or stage years when they notice that their kids have developed better language proficiency and good communication skills that will bring them closer to native speakers. These advantages are also available when students apply to universities and get admitted based on their proficiency and ability to communicate in English.

Finally, although the school students enrolled in might have an impact on students' performance in communication courses, this factor alone cannot be the sole determinant of success in such courses. As the literature review above has shown, factors such as motivation, academic support, prior communication experience, and language proficiency may be part of a model that can determine students' performance in communication courses. A question that the results of this paper would answer.

Research gaps and study rationale

Unfortunately, studies about the factors that hinder students' progress in communication courses, especially amongst non-native English-speaking engineering students in the Middle East, are rare (Zogheib, 2024b). Such studies have focused on individual factors such as attendance and its effect on students' performance (Zogheib, 2024a). Others explored factors such as technology use and online platforms, such as Google Classroom, and their impact on students' achievement in such courses.

As such, a deeper understanding of this important matter necessitates the development of a robust model rooted in educational and psychological theories. However, for such a model to be comprehensive and explanatory, it should not be limited to actual performance only. There is a great need to focus on the role played by self-efficacy beliefs as they are essential to understand students' willingness to engage as well as to achieve. Therefore, the current model focuses on academic, linguistic, motivational, and educational factors that can help determine engineering students' achievement in communication skills courses.

As the goal always remains to come up with a robust model that can help predict students' success in communication skills courses, this won't be achieved without exploring all the elements that may be affecting the learning process and preventing students from being high achievers. This paper presents a serious attempt to provide an in-depth analysis of all these elements by investigating any possible relationship between engineering workload, time management skills, English proficiency, prior communication experience, motivational factors, access to academic support, educational background and engineering students' perceived likelihood of success in communication skills courses. Findings from this research will provide practical explanations, effective strategies and suggestions that will enrich the educational field

and will help university students gain the utmost benefit from being enrolled in such courses.

While these studies provide insight into the subject matter, a significant limitation exists: nearly all of the prior research has examined a single variable in isolation as opposed to investigating how these variables interact when examined together. The present study addresses this limitation by employing an integrative predictive model that examines academic, linguistic, motivational, and educational factors simultaneously as they related to non-native English-speaking engineering students' perceived likelihood of success in communication skills courses.

THEORETICAL FRAMEWORK

Self-Determination Theory (Deci & Ryan, 1985)

According to Self-determination theory, there is a variety of elements that determine learners' motivation to engage in the learning process. These elements range from intrinsic factors (such as interest and mastery) to extrinsic factors such as grades and career prospects. Evidence shows that a supportive environment is highly likely to foster intrinsic motivation which in turn has a significant impact on academic achievement (Ryan & Deci, 2020). In communication skills courses, motivation can impact students' confidence in their ability to succeed. As such, this study will address the following hypotheses:

H1: Intrinsic motivation will positively impact engineering students' perceived likelihood to succeed in communication skills courses.

H2: Extrinsic motivation will positively impact engineering students' perceived likelihood to succeed in communication skills

English proficiency and prior experience

Academic self-efficacy reflects students' beliefs in their ability to perform academic tasks successfully. For engineering students in communication skills courses, self-efficacy enhances confidence in reading, writing, presenting, and discussing in English. English proficiency is a strong indicator of self-efficacy; students who are more capable English speakers feel more effective and competent, which supports their perceived likelihood of academic success (Bandura, 1997).

Moreover, students may have a prior successful experience using English for communication. This satisfies self-efficacy because they have or have had a practical and experiential context where they have successfully leveraged their communication skills for academic tasks. Likewise, students with prior experience communicating in English often have more confidence to do well in such courses (Alberth, 2023). As such, the following hypotheses will be tested:

H3: Students with higher English proficiency will be more likely to perceive themselves as able to succeed in communication skills courses.

H4: Higher levels of prior communication experience with communicating in English will positively predict perceived likelihood to succeed in communication skills courses.

Cognitive load/engineering workload (Sweller, 1988)

Cognitive load theory explains the limits of working memory and reflects the interaction between the theory and practical reality. Whilst these limitations may not independently affect cognitive capacity, an increase in the complexity of engineering coaching tasks can exacerbate these limitations and impact students' focus on other activities, such as their communication skills tasks. Empirical evidence in engineering education has shown that excessive workload negatively influences task performance (Khan, 2025; Zimmerer & Matthiesen, 2021). Accordingly, the following hypothesis will be tested:

H5: Higher confidence in engineering workload will negatively predict perceived likelihood to succeed in communication skills courses.

Academic support

Support in the university environment, such as collaboration or help-seeking behavior, indicates that students are getting some contextual or emotional support to manage through the university trajectory to manage their roles with completing the communications skills tasks. Working in a collaborative and supportive environment context ethos can increase students' self-efficacy, and perhaps, their engagement with learning and perceived likelihood to get through the communication skills tasks (Zogheib, 2024c). The following hypothesis will be tested:

H6: Higher levels of university support will positively predict perceived likelihood to succeed in communication skills courses.

Time Management

Effective time management enables students to balance the demands of engineering coursework and communication skills tasks. Research revealed that students who allocated their time efficiently achieved higher academic performance (Aeon et al. 2021; Razali et al. 2018). The following hypothesis will be tested:

H7: Higher levels of effective time management will positively predict perceived likelihood to succeed in communication skills courses.

Educational background/type of school

Different schools prepare students for communication in different ways. Bourdieu (1986) argued that students develop different abilities and ambitions depending on their histories, which is based on their levels of experience with English and the school's ability to prepare them for communication tasks, but generally, students from private schools have received a higher level of preparation and therefore tend to feel more prepared to engage in communication courses. The following hypothesis will be tested:

H8: Students from private schools are likely to feel more confident about doing well in communication classes compared to students from public schools.

The figure below explains the theoretical framework adopted in this study:

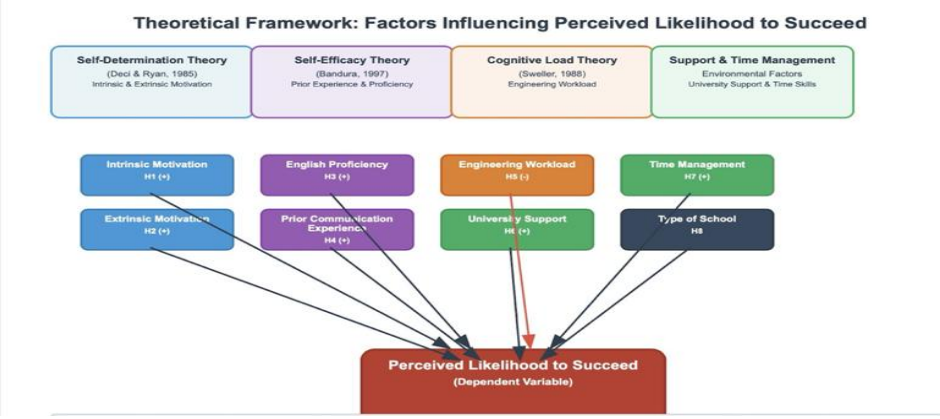

Figure 1
Theoretical framework adopted in this study.

METHOD

This cross-sectional quantitative survey study examines the predictors of students' perceived likelihood of success in communication skills courses. Several multiple linear regression analyses were performed for each predictor and student outcome variable. The research framework was based on two theories-Self-Determination Theory and Cognitive Load Theory-to help understand how motivation, workload, and support may relate to students perceived academic success.

Participants

Convenience sampling was used to recruit participants from second-year engineering students taking a required communication skills course in the Faculty of Engineering at a public university in the Middle East. Approximately 200 students enrolled in the course were invited via email to participate; 148 non-native English-speaking male students agreed to participate, yielding a response rate of 74%. The use of a convenience sample was necessary due to institutional limitations; however, this approach may limit the generalizability of the results to other student populations.

Participants in the study were male students who were 18-21 years old and had not chosen an engineering major at the time of the survey, as major selection is usually completed by the end of the second year at this university. Participant demographic data were collected to assist in providing descriptive information about the background of the participants. Among the 148 participants, 135 (91%) reported attending public schools during their elementary and secondary education, and 13 (9%) reported attending private schools. All participants were non-native English speakers with various degrees of English proficiency.

Data collection occurred close to the end of the academic semester to ensure students had sufficient classroom experience, and instructor feedback based on multiple assignments and assessments, prior to being asked to assess their perceived likelihood

of success in the communication skills course. Data collection at the end of the semester allowed participants to evaluate their perceptions of success based on their actual performance in the course rather than on initial assumptions regarding their ability to be successful.

Instrumentation

To investigate the independent variables, two items assessing burden and stress, and another two items assessing time management as to whether or how well students manage coursework were included. Also, two items assessing academic support were included, along with three items assessing English proficiency. In addition, prior communication experience, intrinsic motivation, and extrinsic motivation were assessed using two items each. Perceived likelihood to succeed was assessed using two items that assess confidence in performance in communication skills courses. Although many constructs were assessed using brief scales, this approach was validated through a pilot study that consisted of 60 students prior to the collection of the main data. Exploratory factor analysis supported the construct validity of the scales, demonstrating that items loaded appropriately on their intended constructs. All of the scales had adequate to good internal consistency, with Cronbach's alpha ranging from .75 to .87 (see Table 1). Brief scales were used to minimize participant burden while maintaining measurement quality across the eight constructs examined in this study.

The survey was distributed to students via an e-mail that was sent to all students enrolled in the communication skills course. The e-mail indicated the purpose of the study and that participation in the study was voluntary and anonymous. Reliability of the data collected was ensured by collecting the data toward the end of the semester after students had completed more than 95% of the tasks.

Data Analysis Plan

The data analysis was conducted using SPSS statistical analysis software. The analysis was preceded by descriptive statistics and correlation analysis to establish the nature of the relationship between all the variables and the characteristics of the data itself. Before the regression, all statistical assumptions that should be tested include normality, linearity, homoscedasticity, and multicollinearity. The multiple linear regression analysis will allow the researchers to test the hypothesized relationships between eight predictor variables and perceived likelihood of success. The analysis provided direction to assess R^2, adjusted R^2, and coefficients for each independent predictor. The researcher looks at the predicted ability of all eight variables used for the prediction model. Effect sizes and statistical significance will be reported for all analyses, with alpha set at $p < .05$.

FINDINGS

Preliminary analyses

Before conducting the main analyses, we examined the data for missing values, outliers, and regression assumptions for multiple regression. All multi-item scales were utilized to calculate internal consistency reliability using Cronbach's alpha. Table 1 presents

means and standard deviations for constructs and reliability estimates using Cronbach's alpha. In addition, intercorrelations among theoretically related variables provided preliminary support for construct validity**.** Reliability estimates using Cronbach's alpha for each construct ranged from .75 to .87 (reliability estimates should be above .70 for acceptable reliability). All constructs exhibited good to excellent reliability (based on the standard of .70). The regression analysis (Table III below) included multicollinearity diagnoses (i.e. it assumes no multicollinearity exists among the predictor variables). The variance inflation factor (VIF) values ranged from 1.15 to 2.40, and the tolerance values ranged from .42 to .87. Multicollinearity diagnostics indicated no problematic multicollinearity existed among predictor variables.

Table 1
Descriptive statistics and reliability of study constructs

Construct	M	SD	Cronbach's α
Engineering workload	7.81	1.57	.78
Time management	5.62	1.87	.80
Academic support	6.07	1.85	.78
English proficiency	10.17	2.59	.75
Prior communication experience	6.75	2.01	.80
Intrinsic motivation	7.16	2.11	.83
Extrinsic motivation	8.10	1.96	.78
Perceived success	8.21	1.95	.87

Note. Reliability coefficients are Cronbach's alpha values for each construct ($N = 149$).

Descriptive statistics and correlations

Table 2 presents mean (*M*), standard deviations (*SD*), and correlations for all study variables. Correlation analysis demonstrated several significant associations between predictor variables and perceived likelihood of success. Perceived success was positively and significantly correlated with time management ($r = .44$, $p < .01$), academic support ($r = .27$, $p < .01$), English proficiency ($r = .62$, $p < .01$), prior communication experience ($r = .48$, $p < .01$), intrinsic motivation ($r = .45$, $p < .01$), and extrinsic motivation ($r = .56$, $p < .01$). The type of school had a negative correlation to the perceived likelihood of success ($r = -.24$, $p < .01$) and the same negative correlation with time management ($r = -.30$, $p < .01$) and English proficiency ($r = -.31$, $p < .01$). Engineering workload showed no significant correlation with perceived success ($r = .00$, $p = 1.000$), which was unexpected given theoretical predictions.

Table 2
Means, standard deviations, and correlations among study variables

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Type of school	1.58	0.50	—								
2. Engineering workload	7.81	1.57	.13	—							
3. Time management	5.62	1.87	-.30**	-.43**	—						
4. Academic support	6.07	1.85	-.07	.17*	.18*	—					
5. English proficiency	10.17	2.59	-.31**	-.05	.42**	.30**	—				
6. Prior experience	6.75	2.01	-.20*	-.07	.25**	.14	.66**	—			
7. Intrinsic motivation	7.16	2.11	-.17*	-.22**	.43**	.27**	.34**	.18*	—		
8. Extrinsic motivation	8.10	1.96	-.16	-.15	.41**	.25**	.41**	.22**	.59**	—	
9. Perceived success	8.21	1.95	-.24**	.00	.44**	.27**	.62**	.48**	.45**	.56**	—

Note. N = 149. p < .05, *p < .01.

Multiple regression analyses

Table 3 presents the results of the multiple regression analyses predicting students' perceived likelihood of success in communication skills courses. There was a statistically significant overall regression model, $F(8, 140) = 21.65$, $p < .001$, $R^2 = .553$ (adjusted $R^2 = .530$). According to Cohen's (1988) guidelines, an R^2 of .55 represents a large effect size, indicating strong practical significance beyond statistical significance. The comprehensive model demonstrates considerable explanatory power for understanding factors that influence students' confidence in their communication course performance.

Four of the predictor variables emerged as statistically significant predictors of perceived likelihood of success. The strongest predictor was extrinsic motivation (β = .30, $p < .001$), followed by English proficiency (β = .27, $p = .002$). The other statistically significant predictors were time management (β = .18, $p = .016$) and prior communication experience (β = .18, $p = .020$). The standardized coefficients show that extrinsic motivation and English proficiency have a medium to high size impact; whereas time management and previous experience with communication had a low to medium effect size for this study, which demonstrates their importance to practical applications. While type of school (β = -.02, $p = .752$), engineering workload (β = .17, $p = .078$), intrinsic motivation (β = .10, $p = .177$), and academic support (β = .00, $p = .997$) were not statistically significant predictors in the final model.

Table 3
Multiple regression predicting perceived success in communication skills courses

Predictor	*B*	*SE B*	β	*t*	*p*	VIF
Type of school	-0.08	0.24	-0.02	-0.32	.752	1.15
Engineering workload	0.21	0.08	0.17	2.60	.078	1.38
Time management	0.19	0.08	0.18	2.45	.016	1.77
Academic support	0.00	0.07	0.00	0.00	.997	1.24
English proficiency	0.20	0.07	0.27	3.10	.002	2.40
Prior communication exp.	0.17	0.07	0.18	2.36	.020	1.80
Intrinsic motivation	0.09	0.07	0.10	1.36	.177	1.70
Extrinsic motivation	0.30	0.07	0.30	4.05	< .001	1.70

Note. $R = .74$, $R^2 = .55$, Adjusted $R^2 = .53$, $F(8, 140) = 21.65$, $p < .001$. B = unstandardized coefficient; β = standardized coefficient.

Hypothesis testing results

Table 4 summarizes the results of the hypothesis testing. Of the eight hypotheses tested, four hypotheses were supported by the data. Hypothesis H2 (extrinsic motivation has a positive relation to success) had strong support. Hypothesis H3 (English proficiency has a positive relation to success) and hypothesis H7 (time management has a positive relation to success) were also supported. In addition, hypothesis H4 (prior communication experience has a positive relationship to success) was supported, which indicated that previous experiences with English communication situations were clearly important in this study.

Table 4
Summary of hypothesis testing results

Hypothesis	Predictor	Predicted Direction	β (*p*)	Support
H1	Intrinsic motivation	Positive	.10 (*p* = .177)	Not supported
H2	Extrinsic motivation	Positive	.30 (*p* < .001)	Supported
H3	English proficiency	Positive	.27 (*p* = .002)	Supported
H4	Prior communication experience	Positive	.18 (*p* = .020)	Supported
H5	Engineering workload	Negative	.17 (*p* = .078)	Not supported
H6	Academic support	Positive	.00 (*p* = .997)	Not supported
H7	Time management	Positive	.18 (*p* = .016)	Supported
H8	Type of school	Positive	-.02 (*p* = .752)	Not supported

NOTE. B = standardized regression coefficient. Support indicates whether each hypothesis was confirmed.

DISCUSSION

In this study, we examined the relationships influencing non-native English-speaking engineering students' perceived likelihood of success in communication skills courses. The overall model accounted for 55.3% of the variance in perceived success, indicating that the proposed framework has considerable predictive power and practical utility. Of the eight hypotheses we examined, four received empirical support, whilst some hypotheses were not supported, which may reflect contextual factors or measurement considerations specific to this study.

Extrinsic motivation—the perceived importance of succeeding at communication skills courses because of the need to become eligible for a job or earn a passing grade—was

the strongest predictor of perceived success (β = .30, $p < .001$), which also supports H2, but poses important questions for theorists studying self-determination theory in relation to academic performance. As a reminder, Deci and Ryan's (1985) theory generally posits that intrinsic motivation is superior; yet such findings imply that career opportunities and obtaining grades upon course completion may have played a larger role in the perceived likelihood of success at communication skills courses in this study than intrinsic motivation. For non-native English-speaking engineering students, we would suggest that there is evidence to support the notion that extrinsic motivation may be particularly effective. In skill-based learning contexts, when students can make perceived instrumental value out of their learning, this can have a greater impact (Ryan & Deci, 2020); this may be particularly true in communication skills courses that have a real and practical connection to their careers as engineers, extrinsic rewards are likely (at least psychologically) to matter more than solely intrinsic enjoyment.

As extrinsic motivation turned out to be the most significant predictor of perceived success in communication courses, faculties of engineering need to redefine communication skills curricula in a manner that clearly stresses career relevance and professional applications. Although many universities around the world conduct career fairs or engineering days, this is not enough, especially since they are always optional for students to attend. To make this step more efficient, inviting guest speakers from industry regularly to share their experiences with engineering students should be a part of the communication skills curriculum. Moreover, authentic workplace communication tasks may serve to strengthen students' extrinsic motivation by demonstrating clear connections between course content and professional success.

Although intrinsic motivation was not found to be a significant predictor (β = .10, p = .177), this finding should be interpreted with utmost caution given the context of this study. A lack of significance here does not refute Self-Determination Theory; it is possible that a variety of factors inherent in a mandatory course on communication skills for engineering students impacted the findings. One explanation could be that when courses are mandatory and directly tied to professional requirements, extrinsic motivators may temporarily dominate intrinsic interests as students evaluate their perceived probability of success. It is also possible that the cross-sectional nature and the short duration of the assessment of intrinsic motivation may not have captured the full depth of students' internal motivations. More comprehensive assessments of students' motivations will need to be made through longitudinal studies if researchers are going to be able to determine whether a student's perceived success in communication skills classes is influenced by intrinsic motivation.

English proficiency was clearly another strong predictor (β = .27, $p = .002$) of perceived success in communication skills courses, confirming H3 and providing further empirical support to academic self-efficacy theory (Bandura, 1997). Students who are more proficient in English can point to their English skills and feel more confident about their likelihood of succeeding in communication skills courses. This pattern is consistent with previous research demonstrating that language plays a critical role in the academic performance of non-native speakers (Kindelán, 2013; Burganova & Valeev, 2015).

As such, this finding emphasizes the need to develop English language programs/support that will equip engineering students with the language skills required to succeed in communication courses. These programs are required to encourage engineering students to enhance their language proficiency, as well as eliminate any misconceptions they may have about the role of communication skills in determining their future. Such a factor is important, especially since nonnative language speakers are required to attend interviews and presentations in English.

The findings from time management ($\beta = .18$, $p = .016$) and prior communication experience ($\beta = .18$, $p = .020$) did provide a practical contribution to when educating non-native English engineering students in communication skills courses, which also supports H7 and H4, respectively. As suggested previously, we have emphasized the significant implications of possessing organizational skills, and we can use this model to suggest that accumulated experience will provide students with a greater sense of confidence when it comes to communicating. Students who can manage competing academic commitments and successfully deal with the challenges of communicating in English on prior occasions exhibited a greater likelihood of achieving self-efficacy for learning in communication skills courses.

Such a critical role played by time management skills in predicting engineering students' likelihood to succeed in communication courses raises the need to teach these students the value of striking a balance between technical and communication coursework, an aspect supported by other researchers in the field (Zogheib, 2024c). This could be achieved by providing training that teaches students effective scheduling strategies, planning techniques, and stress management approaches that help students see communication skills as complementary to, rather than competing with, their technical studies.

The fact that academic support (H6) did not serve as an important predictor of students' self-reported perceptions of their likelihood of achieving academic success should be examined carefully. This does not indicate that previous findings regarding the positive effect of a student's support system (Alzen et al., 2021) were incorrect; it is much more probable that there are contextual factors which affected the results from this study. To begin with, the types of academic support that engineering students receive at this institution may not focus on the support needed for the communication courses but instead may focus on the core technical courses. Additionally, because academic support was measured using a brief scale, it may not have captured all the different ways in which support could be provided to students. In addition to these two potential reasons, in this case, individual student factors such as motivation and language proficiency appear to be more predictive of students' perceptions of their own likelihood of academic success than support provided by institutions.

CONCLUSION

In conclusion, findings from this paper have undoubtedly provided strong support for the theoretical model generated by this paper where factors such as English proficiency, extrinsic motivation, and time management skills are crucial to understanding engineering students' confidence in communication skills courses. For educators, these

results emphasize the need for explicit career connections, targeted language support, and integrated approaches to technical and communication skills development. As to the dominant role played by extrinsic motivation in predicting success in communication skills courses, this sends a clear message to stakeholders about the importance of implementing a career-focused approach in universities that introduces students to the real world. Communication skills instruction should emphasize professional relevance and real-world applications to maximize student engagement and confidence.

Although the study found many important results, there are several important limitations that must be acknowledged. First, the cross-sectional nature of the study does not allow for the drawing of conclusions regarding causality. Second, since the study relied on self-report data, it is possible that response bias was introduced as a result. Third, the sample population was limited to male engineering students at one institution, thus limiting the potential for generalization of these results to female engineering students and other institutions. Future research should be designed using longitudinal or mixed method approaches to better assess how students' beliefs about their communication abilities evolve over time, and also to gain additional insights into what influences students' ability to achieve success in communication skills courses. In addition, future studies could be designed with more diversity in terms of gender and type of institution to increase the potential for generalization of results.

REFERENCES

Aeon, B., Faber, A., & Panaccio, A. (2021). *Does time management work? A meta-analysis. PLOS ONE, 16*(1), e0245066. https://doi.org/10.1371/journal.pone.0245066

Aguayo-Estremera, R., Cañadas, G. R., Assbaa-Kaddouri, L., Fuente, G. A. C. L., Ramírez-Baena, L., & Ortega-Campos, E. (2019). A risk profile of sociodemographic factors in the onset of academic burnout syndrome in a sample of university students. *International Journal of Environmental Research and Public Health, 16*(5), 707. https://doi.org/10.3390/ijerph16050707

Alberth, A. (2023). *How important is communicating with native English speakers to EFL learners' self-confidence in their English language proficiency? Journal of English Language Teaching and Linguistics, 8(*2), 380–393. https://jeltl.org/index.php/jeltl/article/view/380

Alzen, J. L., Langdon, L. S., & Otero, V. K. (2021). The persistence of students in engineering across institutional types and the effect of initial mathematics placement. *International Journal of STEM Education, 8*(1), Article 35. https://doi.org/10.1186/s40594-021-00292-7

Baba, A. I., Akalor, H. H., & Kenter, C. (2024). Analysis of academic workload and performance of students of English undertaking dual-course at NCE level in North Central Nigeria: A curriculum redesign approach. *Greener Journal of Educational Research, 14*(1), 132–141. https://doi.org/10.15580/gjer.2024.1.120424186

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.

Beckner, R. (2024). Effective communication skills: What engineers need most and least want. *Journal of Critical Infrastructure Policy*, *5*(1), 34–39. https://doi.org/10.1002/jci3.12010

Bornschlegl, M., Meldrum, K., & Caltabiano, N. J. (2020). Variables related to academic help-seeking behaviour in higher education—findings from a multidisciplinary perspective. *Review of Education, 8*(2), 486–522. https://doi.org/10.1002/rev3.3196

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood Press.

Brown, J. (2002). Bloodshot eyes: Workload issues in computer science project courses. In *Proceedings of the 9th Asia-Pacific Software Engineering Conference* (pp. 46–52). IEEE. https://doi.org/10.1109/apsec.2000.896682

Burganova, N. T., & Valeev, A. A. (2015). Development of technical college students' communicative competence. *Research in Education, 7*(5), 79–90. https://doi.org/10.5539/res.v7n5p79

Caldeira, A., Lopes, S. O., Costa, A. R., & Figueiredo, I. (2020). The effects of motivation in student academic success. In *Proceedings of the IEEE Global Engineering Education Conference* (pp. 1444–1450). IEEE. https://doi.org/10.1109/educon45650.2020.9125404

Chi, D. L., Pickrell, J. E., & Riedy, C. A. (2018). Student learning outcomes associated with video vs. paper cases in a public health dentistry course. *Journal of Dental Education, 78*(1), 24–30.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behaviour*. Plenum Press.

Gürbüz, O., & Kışla, K. B. (2020). A scale development study to determine the self-efficacy beliefs of university students for English. *Anatolian Journal of Education*, *5*(1), 53-66. https://doi.org/10.29333/aje.2020.515a

Idkhan, A. M., Syam, H., Sunardi., & Hasim, A. H. (2021). The employability skills of engineering students: Assessment at the university. *International Journal of Instruction, 14*(4), 119-134. https://doi.org/10.29333/iji.2021.1448a

Jacob, J., & Cherian, J. (2012). A study of problem based learning approach for undergraduate students. *Asian Social Science, 8*(15), 157–164. https://doi.org/10.5539/ass.v8n15p157

Karatsolis, A., Elgizawy, S., El-Gayar, O. F., & Sandhu, A. S. (2016). Engineering communication skills: A necessity for the 21st century engineer. In *Proceedings of the ASEE Annual Conference* (pp. 1–14). ASEE.

Kember, D. (2015). *Understanding adult learners: Cognitive and metacognitive strategies*. Routledge.

Khan, A. A. (2025). Assessing student learning by reducing cognitive load in postgraduate fire safety engineering courses. *Discover Education, 4*(1). https://doi.org/10.1007/s44217-025-00724-y

Kim, A., Nikseresht, F., Dutcher, J. M., Tumminia, M., Villalba, D. K., Cohen, S., Creswel, K., Creswell, D., Dey, A. K., Mankoff, J., & Doryab, A. (2021). Understanding health and behavioural trends of successful students through machine learning models. In *Proceedings of the International Conference on Human-Computer Interaction* (pp. 516–525). Springer. https://doi.org/10.1007/978-3-030-74009-2_66

Kindelán, M. P. (2013). Communication skills in the scientific and technological sphere: Some basic skills and strategies to start writing documents. *Epos, 16*, 371–371. https://doi.org/10.5944/epos.16.2000.10159

Lemeshko, O., Lemeshko, V., Moroz, N., & Bloshchynskyi, I. (2020). An analysis of proposed ESP teaching activities in Border Guard Automobile Transport masters training. *Universal Journal of Educational Research, 8*(6), 2296–2304. https://doi.org/10.13189/ujer.2020.080613

Lightbown, P. M., & Spada, N. M. (2013). *How languages are learned* (4th ed.). Oxford University Press.

Muñoz, J. G. S., Carreño-León, M. A., Rubio, B., Banos, S. M., & Encinas, I. D. (2019). Experience in the use of rewards to help increase motivation and participation of university students. In *Proceedings of the Latin American Conference on Learning Objects and Technology* (pp. 142–148). IEEE. https://doi.org/10.1109/laclo49268.2019.00034

National Center for Education Statistics. (2006). *Comparing private schools and public schools using hierarchical linear modelling* (NCES 2006-461). U.S. Department of Education. https://nces.ed.gov/nationsreportcard/pubs/studies/2006461.aspx

Polat, M. (2020). Measuring language learners' success oriented motivation. *Anatolian Journal of Education, 5*(2), 151-162. https://doi.org/10.29333/aje.2020.5213a

Pu, S., Yan, Y., & Zhang, L. (2019). Peers, study effort, and academic performance in college education: Evidence from randomly assigned roommates in a flipped classroom. *Research in Higher Education, 61*(2), 248–269. https://doi.org/10.1007/s11162-019-09571-x

Razali, S. N. A. M., Rusiman, M. S., Gan, W., & Arbin, N. (2018). The impact of time management on students' academic achievement. *Journal of Physics: Conference Series, 995*, Article 012042. https://doi.org/10.1088/1742-6596/995/1/012042

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology, 61*, Article 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Schunk, D. H., & Pajares, F. (2009). Self-efficacy theory. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 35–53). Routledge.

Siacor, K. H., Ng, B., & Liu, W. C. (2024). Fostering student motivation and engagement through teacher autonomy support: A self-determination theory perspective. *International Journal of Instruction, 17*(2), 583-598. https://doi.org/10.29333/iji.2024.17232a

Simonds, J., & Parnther, C. (2022). What is academic integrity? In *Academic integrity in the digital age* (pp. 1–15). SAGE Publishing. https://doi.org/10.4135/9781071887233

Soriano, M. A., & Cruz, L. P. (2022). A comparative study on the English proficiency of students from public and private schools. *Journal of English Language Teaching and Applied Linguistics, 4*(2), 89–102. https://doi.org/10.55057/jeltal.2022.4.2.8

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4

Tokan, M. K., & Imakulata, M. M. (2019). The effect of motivation and learning behaviour on student achievement. *South African Journal of Education, 39*(1), 1–8. https://doi.org/10.15700/saje.v39n1a1510

Vargas-Madriz, L. F., & Konishi, C. (2021). The relationship between social support and student academic involvement: The mediating role of school belonging. *Canadian Journal of School Psychology, 36*, 290–303. https://doi.org/10.1177/08295735211034713

Wilson, R., Joiner, K., & Abbasi, A. (2021). Improving students' performance with time management skills. *Journal of University Teaching and Learning Practice, 18*(4). https://doi.org/10.53761/1.18.4.16

Zimmerer, C., & Matthiesen, S. (2021). Study on the impact of cognitive load on performance in engineering design. *Proceedings of the Design Society: Design Conference, 1*, 2761–2770. https://doi.org/10.1017/pds.2021.537

Zogheib, S. (2024a). Engineering students' performance in communication skills courses: Does attendance really matter? *Journal of Education and Learning, 13*(2), 130. https://doi.org/10.5539/jel.v13n2p130

Zogheib, S. (2024b). Enhancing learning experience: Engineering students' views on Google Classroom and academic achievement. *Journal of Information Technology Education: Research, 23*, Article 12. https://doi.org/10.28945/5286

Zogheib, S. (2024c). Technology integration in engineering education: Assessing Google Classroom's effectiveness in communication skills courses. *Technium Social Sciences Journal, 58*, 56–63. https://doi.org/10.47577/tssj.v58i1.10225