

The Paradox of Value and Avoidance: Computer Science Students' Willingness to Communicate in English

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Abstract

Willingness to communicate (WTC) in a second language is measured most commonly with quantitative designs, but the determinant factors of students' willingness or unwillingness to communicate cannot be fully explained by the results of such studies. Qualitative research, however, has the potential to provide a fuller grasp of this phenomenon, but a qualitative exploratory point of view is largely missing from literature. Based on this, the present study is a qualitative descriptive study, which aims to uncover the perceptions of Computer Science students regarding their learning of English-speaking skills at university level and the reasons why they are not willing to speak English in classes. Three constructs were used to frame this inquiry: English as a professional and global necessity, WTC as a dynamic construct, and anxiety as a barrier to communication. All these constructs contribute to the paradox of the high value placed on L2 and low motivation to use L2 by students. Sixteen students were interviewed using semi-structured interviews and the data analyzed thematically to give an in-depth knowledge about this issue. The findings show that learners' attitudes towards English are positive because of the professional and

global importance of English; and that learners' experiences of their learning process demonstrate the dynamic nature of language learning and WTC. However, anxiety is seen to be a huge development impediment. In addition, the main problem in the development of English language is not lack of awareness of its importance, but lack of confidence due to language anxiety in using English language in real-time communication.

Key words: Willingness to Communicate (WTC), English as a professional requirement, English as a global necessity, Language anxiety, WTC as a dynamic construct

1. Introduction

From the Webster (2023) dictionary, the definition of willingness is ‘the quality or state of being willing; free choice or consent of the will; freedom from reluctance; readiness of the mind to do or forbear.’ This basic concept of freedom and liberty of choice has been changed in the context of English Language Teaching (ELT) and more specifically, in the context of Willingness to Communicate (WTC). This is defined by MacIntyre et al (1998) as L2 acquisition that takes place when the learner is actively involved in a communicative task with a target group in a given context of the specific task. A willingness to communicate in a second language is a theme that permeates the teaching of languages in the classroom and has been identified as one of the most important problems that language teachers encounter in their profession. Hence, the study of willingness and the factors that affect willingness is regarded as one of important topics in the second language acquisition field.

English language has a privileged and far-reaching status in various aspects of modern life such as education (Yunus et al., 2023), job opportunities (Kemendibud, 2023), and business activity (Mohammad et al., 2018). In Computer Science, the ability in English language is almost essential to success in a computing-related career, because of the international and technical nature of the subject. Even though this recognized importance is recognized, the factors that affect learners' involvement in language-related activities in this field are not well known. Phan et al (2026) have found a gap between the communicative competency required in the software industry and the communicative competency taught in current curricula. Besides that, the term Willingness to Communicate is increasingly represented as a situational and changeable attribute, as opposed to a stable and static one (Yu and Ma, 2024). Moreover, language anxiety has been found to remain

after the best of classroom conditions are provided to language learners (Lin et al., 2025). To sum up, these factors have been shown to have adverse impacts on engineering students' technical presentations and communication skills (Mohammed et al., 2023). Overall, this body of research shows a distinct gap for a more comprehensive and sophisticated understanding of the Computer Science students in particular, whose future working lives rely heavily on their level of competence and confidence in using the English language.

2. Literature Review

2.1 English as a Technological and Global Necessity

The medium of language in which the technology (tech) industry globally functions is predominantly English. The programming languages' syntax is English-based; the technical documentation for client and users, including Software Requirement Specifications (SRS), System Architecture Design (SAD), Proposals, Frequently Asked Questions (FAQs), and open-source collaboration platforms, like GitHub and Stack Overflow are generally written in English (Bhuiyan, 2026). Generally, developers of different nationalities, residing in different parts of the world are part of the same team, working on the same project (Hodges & Seawright, 2023). Thus, for remote work and cross-border project collaboration, the importance of the English language cannot be ignored (Wang et al., 2025).

For a Computer Science student, the importance of the language is not only relevant to pass it as a course at the graduation level but also it significantly influences their career choices and paths. According to some recent needs-analysis studies from the field of science and technology, students themselves have reported that their proficiency in English language has a direct impact on their chances of employability, career growth, and active participation in professional and academic communities, not only in their countries but also globally (Ejigu et al., 2023; Furka, 2024). There have been studies that have examined the students' attitude towards learning the English language and have found that students consider it important due to the reason that it is the language of instruction for technical knowledge as well as it offers great practical benefits in the job market. Thus, students perceive a direct relationship between English proficiency and better career opportunities (Hidayat, 2024).

The curriculum for the Computer Science studies has traditionally recognized the competency in technical skills, like coding, algorithms, system designs over the soft skills especially language skills development. A systematic review reveals that computer science graduates are often found to be technically strong, but at the communication level and interpersonal skills level, they are considered as underdeveloped. This is the result of the gap between curriculum deliverables and industry requirements (Mohammed and Ozdamli, 2024). Other studies that are more industry-based testify that CS graduates are found to be struggling with written and oral communication tasks and the skill required to perform these tasks is quite essential for the project management; thus, this study recommends curriculum reforms with more emphasis on communication and collaboration skills (Simmons and Simmons, 2010; Patacsil and Tablatin, 2017).

Even though the tech industry ranks communication skills as an essential skill for the CS jobs, there is a structural mismatch between professional requirements and curricular support. Hence, in this situation, it is extremely important to understand CS students' perceptions of themselves regarding communication skills and reconcile this gap which is important as well as underexamined.

2.2 Willingness to Communicate: A Dynamic and Developmental Construct

Recognizing English language as a necessity does not automatically translate into active language engagement. To understand this idea, the concept of Willingness To Communicate (WTC) is introduced by McIntyre et al. (1998, p. 547) as 'a readiness to enter into discourse at a particular time with a specific person or persons, using a L2.' Critical analysis of WTC reveals the fact that it is not a constant or fixed trait rather it is a state that varies across contexts, interlocutors, and time, and this trait makes it a dynamic construct which is determined by interaction of enduring individual and situational differences.

This dynamic nature of WTC is a result of factors like, individual differences that include personality and motivation; and momentary situational factors like, topic, task type, and audience (Lin et al., 2025). Recent studies have confirmed that grit, growth mindset, and psychological speaking needs have a joint and dynamic impact on the WTC (Xu and Zhang, 2025). Another recent study found that foreign language enjoyment influences WTC via the path of growth mindset and grit. It argues that the idea of willingness emerges and maintains through

accumulating psychological resources instead of existing as a stable attribute (Yu and Ma, 2024). Likewise, another study of blended-learning indicated that grit, enjoyment, and boredom have a joint effect on WTC in both physical settings as well as online but in both settings this joint impact was found to differ due to difference in communicative setting (Bensalem et al., 2025).

In case of CS graduates, WTC is potentially formed by the transition between low-stakes context of English language classroom and the high-stakes of more impactful and serious professional contexts and international academic contexts. Thus, this developmental transition and change in trajectory cannot be measured and understood through one classroom case rather than it requires qualitative exploration.

2.3 Language Anxiety: Barrier to Communication

MacIntyre et al. (1998) explains L2 anxiety as the feeling of “worry and negative emotional reaction,” (p.27) that is stimulated when Second Language (L2) speakers engage in the learning process. Anxiety is identified as one of the frequently reported common apprehensions to the foreign and second language learning (Yu, 2024). L2 learners have been found to report quite commonly that they usually fear that they might make mistakes; they also fear the negative evaluation and remarks made by their classmates and the teacher; as well as these learners also face the fear of language accuracy and fluency in real time scenarios. These fears faced during class presentations or any oral communication activity functions as a barrier to the learners and apprehend their communication output and participation motivation.

A study with engineering undergraduates revealed that during technical class presentations students found to be consistently anxious and less confident. This study also reported that these learners faced the fear of making mistakes and had experienced less exposure to practice L2 outside their classroom that resulted in increased level of anxiety among them (Mohammed et al., 2023). There are some more recent studies too that have tried to establish the relationship between WTC and communicative anxiety. Lin et al (2025) discovered that foreign language anxiety negatively predicts classroom anxiety. This study also pointed out the fact that anxiety lessens learners’ willingness to participate and engage in communication activities even when the protective psychological resources offered by teacher, classroom environment and peers are present.

Critical analysis of these three variables suggest that CS students face a contradictory situation in terms of their WTC in their L2 classroom. Mostly these students possess full understanding of the significance of the English language; however, their willingness fluctuates, depending on the context and scenarios and it keeps evolving. Anxiety may also play an important role in decreasing their WTC no matter what they may think about the value of L2 in their academic and professional lives. Empirical studies in this field are heavily dependent on quantitative analysis which indicates a methodological limitation in the field of WTC (Leeming et al., 2024). Quantitative designs are suitable when the intent of the research is to establish relationships between variables. These studies face the limitation that they cannot answer the reasons, so the answers for why are missing. Even mixed-method studies have used qualitative semi-structured interviews to support the quantitative results, so these interviews function as supporting the primary quantitative data rather than exploring the real experiences and perceptions (Lin et al., 2025). In addition, there has been growing interest of researchers in the English for Specific Purpose (ESP) courses for engineering students; however, there is a relatively quite thin number of qualitative research on CS students, exploring their perception, willingness, and anxiety (Ivanova, 2026) as dynamic and evolving occurrences.

Thus, this paper is exploratory qualitative that aims to analyze CS students' perception regarding English language learning through three interrelated lenses. First, English is a professional and global necessity; second, WTC is a dynamic and a developmental construct, and lastly, anxiety is a barrier to communication.

This paper is set to explore and find the answer for the following research question: How do the students of Computer Science perceive their willingness to communicate (WTC) in English during the communication courses that are offered in the university degree program?

3. Methodology

Sixteen students from the Computer Science program of a well-established private university of Karachi were selected using purposive sampling technique. They were recruited for these activities using open-ended, semi-structured interview questions and they voluntarily participated in the study. The qualitative data gathered were analysed through the thematic analysis model established by Braun and Clarke (2006) which was a systematic and rigorous way of identifying, analysing

and interpreting patterns in the data. The information collected from the respondents was crucial in explaining the paradox of value perceived for ESP courses with student's willingness to communicate in ESP.

The confidentiality and anonymity of the respondents were ensured by assigning each one of them a unique alphanumeric code starting with "R" which denotes "Respondent" and the number following denotes the participant (R1 denotes Respondent 1, R2 denotes Respondent 2 and so on). After the interviews were completed, verbatim transcripts were created to be used as the basis for thematic analysis. From this process an initial set of codes were generated, and then shared with five experts in the field, all with connections to different higher education institutions. These experts went through a comprehensive verification process to determine the validity of the codes and ensure that each code reflects the construct it was designed to measure and is valid, accurate, and sincere.

4. Findings and Discussion

Semi-structured interviews were used to gather qualitative data to close the gap between industry needs and curricular shortcomings, as well as to learn about students' perception of their willingness to communicate so this gap could be filled in. This process involved 16 students and all were volunteers. Themes that emerged from the themes identified from the data are presented in this section.

4.1 English Communication as a Professional and Global Necessity

Based on Ahmed et al. (2021), p. 1, attitude can be defined as "somebody's thoughts or emotional state about something, especially as shown in their actions. According to recent research, there are some factors that determine the motivation to learn a language including a positive attitude and thus, it is concluded that positive attitude can be part of the motivation to learn a language (Rasool & Winke, 2019). On the other hand, if students see language learning as a compulsory duty, not a personal choice, their attitude towards L2 will be different, sometimes students will not have a positive attitude in learning the target language (Ahmed et al, 2021). One of the main determinants of Choice Motivation is attitude as pointed out by Dörnyei (2003).

Overall, the data indicated that students' attitudes towards English language communication were positive and pragmatic reasons for value of L2 learning were mentioned by many students. It was a good learning experience that R1 shared and how important it is: 'If you have a good idea but if you cannot present your idea well, if you don't have the skill then your idea is useless too!' Multilingualism was also seen as a positive instrument by participants. Students' positive attitude towards English as an L2 was shown in the future, 'it's not just about how you communicate or anything, you will be faced with people to sell yourself and your ideas in the future.'

Baker (1988), Gardner (1985) and Garrett (2010) have identified three components of attitude namely cognitive, affective and behavioural. The value of L2 was clearly understood by R4, 'it will help in future because it's a world level language... it's a need of time... And secondly, it is a world level language, so you should know how to communicate with the people; if you are a computer science student, you are supposed to deal with the clients.'

The attitude of the learners under observation were positive in cognitive aspect, knowing that learning L2 or English is very important for their future, they were motivated in learning L2 in various ways. 'In the future when I have to communicate in English, interviews etc, I will have to do it so I have to motivate myself to think in English because there are so many opportunities the language offers, especially as a computer science student because there is a lot of opportunity in the financial market, computer science. The worldwide accepted language is English, and most of them use English in their interview and communicating in meetings.'

Pupils' opinions were varied and clearly showed the value of, and importance for, the English language and its contribution to their futures and careers. R9 commented, "When it comes to communication and take advantage of opportunities, of course, then you need this language. CS opportunities are more abroad, in Pakistan there is work but communication and presentation is must to show your projects and avail opportunities for scalability.' R11 shared, 'English communication is a life skill...we all want to do job, good jobs and participate in life well and to achieve something...I think, English is a good opportunity for people to speak and interact with people who might not speak your first language, so English is that gateway that you can speak'. R12 also described English as 'the main mode of communication nowadays in business'; 'Both for getting good work opportunities after graduation and for work, you need good English.'

4.2 WTC as a Developmental and Dynamic Construct

The other theme that emerged from the qualitative data was related to students' perceptions of their own Willingness to Communicate. Several students identified with WTC was not a static part of one's personality, but a developmental, evolving process. One of the commonalities reported by these participants is that their ease of speaking the second language gradually changed over time, and that this change took place as a result of continuous and repeated involvement in the classroom language use. The perspective of this view is that students' confidence in second language communication is not an inborn ability but it is built up with time as they are repeatedly exposed to communicative activities such as presentation, speeches and group discussion. The students who thought that they were shy and did not like to talk in front of their classmates at the start of the semester, said that they had improved themselves a little in public speaking by the end of the semester. R2 revealing that 'this change was nothing but, I started to feel confident.' R7 was not the only one who didn't like it in the beginning but liked it when he understood its value, 'I didn't like it at first, but when I understood its value, I liked it and also came into play. This was an evolutionary process as R7 explained, 'Then I began to practice, practice, practice and now at least I can say something there.'

R14 reported having a similar experience of transformation, and emphasized that repetitive communication tasks were particularly useful for this respondent as it helped him to feel more confident, and he was no longer shy. In contrast, R12 saw the whole thing as a way to improve on their personal weaknesses, and had this realization, 'I was interested in the fact that I was nervous,' and transformed it into a way to grow, 'I wanted to challenge myself.'

The need for repetitive communication tasks to help reduce communication apprehension and increase confidence was reiterated. R16 appreciated the motivational aspect of the course, 'again, in EW class, I got the motivation of doing presentations. These students were not at any point 'naturally willing' or 'naturally unwilling' to communicate, but rather saw WTC as something which developed over time and was informed by an awareness of how they communicate and what they successfully communicate.

The results from the interview shows that iterative practice is a major part in enhancing students' communicative competence, making the students more self-confident and reducing the students'

communication anxiety. From the data, it is inferred that opportunities for practicing was the factor that contributed to improvement, more often than any natural linguistic ability. Some of the respondents revealed that every time they repeated the presentation they gradually became more confident and comfortable, because they had passed the stage fright and nervousness. The communicative development was thus a dynamic process, not only in terms of gaining confidence in the classroom but also in terms of gaining personal and professional readiness. Students were also more confident and willing to communicate with other audiences that they did not know, in response to the communicative needs of the workplace in the future. This theme emphasised the need for repetition in the communication task and the ways in which it can help to increase confidence, decrease fear and increase the willingness to communicate in English.

The results also corroborate the definition of Willingness to Communicate as a situational concept given by MacIntyre et al. (1998), that is, that it is not a personality trait, but rather shaped by social, psychological and contextual factors. This model suggests that communicative willingness is variable, depending on the learner's change of confidence, communicative competence, motivation, anxiety and communicative context. This framework is supported by the qualitative data, which included students' accounts of their change from cautious to more willing to speak in the classroom, a change that was fostered by their continued participation in the classroom setting but slowly reduced their anxieties, increased their motivation, and enhanced their learning.

The results are also in line with the Dynamic Systems Theory developed by Larsen-Freeman and Cameron (2008) which suggests that L2 acquisition is a nonlinear and continual learning process that results from the interplay of many factors related to learners and to the learning environment. This is evident in students' reflections of how their willingness to communicate has increased as they repeatedly engage in, reflect on, feedback upon and rehearse texts.

4.3 Communication Anxiety and Barriers to Participation

The topic of anxiety and how anxiety affects the outcome of language learning is one of the most widely studied topics in the domain of language learning with emphasis on L2 speaking skill acquisition. There have been several studies on the correlation between anxiety and language acquisition, but few studies have focused on the sources of L2 anxiety. The aim of present study was to explore these causes on a deeper level in the context of Pakistani Computer Science

students. High levels of anxiety, high degree of inhibition, low self-esteem and lower level of motivation are some of the reasons that form an affective filter which becomes a mental barrier in the learning process according to Tran (2022). Some of the reasons for L2 learners' anxiety include low self-esteem which leads students to lose their confidence in their own language competence and sometimes classroom atmosphere and teachers' influence (Tran, 2022).

4.4 Fear of audience/ Fear of Perception of Others

Some students reported that they were reserved and quiet because their listeners might react to them, a result of which was attributed to the listener's reactions (Mobarak, 2020). The findings of this study are in accordance with the present study with some of the participants providing similar explanations for their language anxiety. I have been in all the uncomfortable situations that I have been in prior to this and when I go in front of all the students, it's about me and I start panicking. Others mentioned they weren't interested as they were introverted, R10 said, "Lack of confidence, not liked by many people.' Such responses reflect rather a more general lack of confidence and social fluency than linguistic incompetence, be it in vocabulary or in the knowledge of grammatical structures.

4.5 Past Experience

A few students also mentioned during the interviews that an event of trauma in their past, related to public speaking, was a significant factor to anxiety. Most of the respondents were first year students at the university; many had negative comments when they were at school or college. R6 said, 'I'm not that good of a presenter, I have that trauma.' In R1's case it was fear of the L2 and what happened in his past that led to that fear.

"When I go to stage and get blank there, and do not understand anything because this experience has happened with me when I was in college and their when I went for my speech on stage, I was completely blank ...students were teasing me too and that made me more anxious."

Pupils reported past experiences were summarized in two categories: those who mentioned using L2 unsuccessfully and indicating that this was still causing anxiety; and those who reported not getting enough exposure to L2 in their school experience, and therefore being too anxious to use English in any situation. 'Medium is the first thing,' said R8, 'I am not a O level, as such, the

background that I come from is an intermediate. This makes this a tough first of all medium.' It appears, therefore, that there are many sources of anxiety, some of which may be the past experiences with L2, a specific traumatic experience or lack of contact with L2 in general.

4.6 Stage Fright (Social Anxiety)

The other crucial source of communicative anxiety is stage fright, which is the anxiety students experience in the situations that may cause embarrassment (Ozdemir & Papi, 2022). R1 also confirmed Hussain et al. (2021) when he replied that 'even though his name was called, one of his friends asked him why he was shivering; he said a little bit even one of his friends indicated and he asked me that, why am I shivering?'

The majority of students also described how it caused mental blocks, and this fear of others seeing them speak in a foreign language interfered with their ability to speak coherently. 'I did not get black out when I got on stage but I am still scared of it,' said R2. Apart from the content, students' forgetfulness was accompanied by external evidence of anxiety that they were well aware of ;therefore, was even more challenging for them to use L2. R10 explained, 'I have stage fright so part I'm most concerned about is standing on stage rather than giving the speech.'

This anxiety is felt and manifested both physically and mentally. When students know that they feel anxious, this anxiety can worsen their fear of L2 speaking and often leads to panic that can have a negative effect on their performance. When R3 recounted this experience, 'if our hands are shaking, or is it shaking, or if we have cold sweats, or if we're on stage and something happens and we can't say the words right, then we get the mumbling, or all that is going on, subconsciously, we can say I have a fear that its not in my control.'

4.7 Fear of Language Errors

The findings of this study are congruent with Mobarak's (2020) results that anxious students are occupied with anxiety about making mistakes in language and the perfectionists-minded respondents are also anxious about making mistakes in language. For instance, 'I'm looking for perfection in everything said, when it's not perfect, then I'm not as confident,' said R6.

The students of Computer Science were high motivated learners and were afraid to make any mistakes, which in turn led to high level of anxiety in their speaking moments in the study. 'That's if I lose my flow of conversation,' said R4, 'when I'm on stage, it's like I want to say something, I know I want to say something but I'm losing my train of thought of what I want to say and when I get off the stage I realize that I should have said this.' The concern for perfection and the anxiety about failing the performance often worsened students' frustration and anxiety as R13 explained, 'When you're giving a presentation, the biggest worry you have is getting a panic attack and forgetting what you've prepared or stuttering.'

4.8 Language confidence

One of the factors of language anxiety is lack of competence/command of L2 (Safari et al., 2019). Learners' anxiety about language may be further complicated if they have doubts about their competency in making errors and performing inadequately in the target language. Pronunciation problems was an anxiety for R6, 'Sometimes I speak too fast, sometimes I forget, sometimes my pronunciation is not the correct one.' Another cause of anxiety, R9 explained, 'is grammatical weakness. If my grammar is not correct, people will make fun of me.' This feeling of being deficient often relates to pupils' previous language education at school and college. Interestingly, one-fourth reported that they did not learn as much English in their previous education system as they did in their classmates. Also, they had not been accustomed to making mistakes in English. 'When we were in intermediate, I didn't get to use a lot of English, so when I'm onstage I forget things and I also have problems with the language because I don't feel very confident in English.' Students also explained that they were not able to think spontaneously when called upon to present when English is a second language, and added that the fear of the situation made them think in Urdu first and then translate into English, 'I think in Urdu and try to translate in English and when we are called we do not have that much time, so we need to think first in Urdu, then translate into English; when we are called, there is a lot of nervousness.'

The same was said by R9 who said, 'The thing is I translate what I think from Urdu to English and I forget something, everyone looks at me and they are expecting from me that what is next, it is scary, when I forget, I am blank.'

The students were once used to memorising and reciting to overcome these linguistic problems and felt that this would lead to producing error-free texts without being embarrassed by other students. But many felt that too much dependence on rote learning ultimately had an impact on their self-confidence, instilling another fear in them – the fear of forgetting what they had learned. ‘I think it's the tension of having to write out the script, but if I think on my own and talk to the audience, it takes a lot of time, lessens my confidence and sometimes I get lost.’

The findings of this study corroborate with other previous studies that students develop anxiety in L2 classroom due to their lack of language proficiency (Mobarak 2020, Pabro-Maquidato 2021, MacIntyre et al. 2002). Interestingly, in the Pakistani context, the anxious and hesitant students could account for the origins of their anxiety and for most of them, these were traced to poor motivation and/or lack of interest in the L2, and also to the lack of exposure to the L2 at the prior levels of schooling, which were often delayed or weak. The students' linguistic self-confidence is the main factor for the students' participation in classroom activities (Munezane, 2013).

4.9 Knowledge Issues

Some students (a few) said that they don't know much or are not familiar with what they have to talk about in their second language, and this was another source of their anxiety. It is usually easier for learners to speak when the topic is one that they are familiar with or interested in, which was stated in R7's case as ‘If I don't have enough knowledge about the topic, I am most worried about.’ The findings from the present study support earlier studies made by Cao and Philp (2006), Cao (2011, 2014), and Pawlak and Wietelak (2015) that indicate the role of topic familiarity or knowledge in students' motivation and willingness to communicate. Learners show a greater readiness to communicate when they have more knowledge about a topic.

5. Conclusion

This study is exploratory, and its aim is to gain a thorough understanding of the perceptions of CS students toward second language (L2) learning and use. The study was conceptualized in three interconnected layers: English as a Global Language and a Professional Language, Willingness to Communicate (WTC) as a dynamic phenomenon, and as a persistent hindrance to communication, Anxiety. The findings from the qualitative data collected during this research indicate that the

attitude of the students of Computer Science towards the English language is positive and solid with a strong impression of the pragmatic use of the English language in their future profession. The results are aligned with the previous studies in the field, which also revealed positive attitudes of STEM students about English language course and their perceived usefulness in the workplace (Hidayat, 2024; Phan et al., 2026). Moreover, students' own stories of their language development journeys support the theoretical argument that willingness to communicate is not a fixed and static construct, but is shaped by situation, experience, and opportunity. In this evolutionary process, a growth mindset and resilience (also referred to as grit) on the part of students were identified as an important contributor to their communicative development (MacIntyre et al., 1998; Yu and Ma, 2024).

However, despite this promising trend, the process of language improvement, which is a process of change in the evolution of language, was always and very significantly undermined by anxiety among the CS students. Students reported that this anxiety had a number of interconnected causes: fear of being linguistically incompetent, fear of performing onstage, lack of prepared ideas at speaking time, negative experiences from previous public presentations, and fear of audience evaluation. This result is very similar to recent studies showing that language anxiety has measurable and negative effects on language learners' willingness to communicate (Lin et al., 2025). An integrated analysis of these results reveals that the main obstacle to L2 improvement among this group is not the lack of understanding of the value of the L2, but the continued discrepancy between the understanding of the value and the L2 learner's sense of security and confidence in using the L2 in real time. It has important and obvious pedagogical implications: that English language instruction specifically for Computer Science students may provide comparatively little benefit to the further reinforcement of students' confidence in the necessity of English; it may provide far more benefit by providing students with structured, low-stakes opportunities to rebuild communicative confidence; and it may provide far more benefit by providing students with opportunities that are well suited to directly and systematically addressing the specific sources of English communicative anxiety identified as part of this study.

6. Recommendation

This research is an exploratory qualitative study, therefore, the results of this research should be interpreted appropriately considering the limitations and boundaries of the study that was designed. Notably, the data for this study was gathered from the Computer Science students in one institution; therefore, future studies should aim to gather data from a wider cross-section of countries, curricula and different levels of exposure to English-medium instruction to offer a more comprehensive and complex picture of this L2 avoidance paradox. This study is invaluable to the better understanding and generalizability of the phenomenon because the students from varied educational, cultural and linguistic backgrounds may have varied underlying reasons for their communicative anxiety. Secondly, it is important to note that the data for this study were self-reported, retrospective accounts given by participants, which is prone to being influenced by participants' memory and may also be influenced by the tendency to frame their accounts into a coherent and self-advantageous structure instead of reflecting the moment-to-moment variation typical of L2 interactions. Given this constraint, future research is recommended to use a longitudinal or diary study design, in which the students' WTC would be better documented over the course of time and more in-depth investigations would be possible of the variables triggering and underlying the fluctuations in students' WTC as they occur in real-world classroom contexts.

References

- [1] Ahmed, S. A., Othman, B. J., Gardi, B., Sabir, B. Y., Ismael, N. B., Hamza, P. A., . . . Anwar, G. (2021). Students' attitudes towards learning English in the Kurdistan region of Iraq. *International Journal of English Literature and Social Sciences*, 6(3), 072–087.
- [2] Baker, M. (1988). Theta theory and the syntax of applicatives in Chichewa. *Natural Language & Linguistic Theory*, 6(3), 353–389.
- [3] Bensalem, E., Derakhshan, A., Alenazi, F. H., Thompson, A. S., & Harizi, R. (2025). Modeling the contribution of grit, enjoyment, and boredom to predict English as a foreign language students' willingness to communicate in a blended learning environment. *Perceptual and Motor Skills*, 132(1), 144–168.
- [4] Bhuiyan, M. H. M., Kumar, M. K. B., & Staicu, C. A. (2026). "Write in English, nobody understands your language here": A study of non-English trends in open-source repositories. *arXiv*. <https://doi.org/10.48550/arXiv.2602.19446>
- [5] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- [6] Cao, Y. (2011). Investigating situational willingness to communicate within second language classrooms from an ecological perspective. *System*, 39(4), 468–479.
- [7] Cao, Y. (2014). A sociocognitive perspective on second language classroom willingness to communicate. *TESOL Quarterly*, 48(4), 789–814.
- [8] Cao, Y., & Philp, J. (2006). Interactional context and willingness to communicate: A comparison of behavior in whole class, group and dyadic interaction. *System*, 34(4), 480–493.
- [9] Dörnyei, Z. (2009). *The psychology of second language acquisition*. Oxford University Press.
- [10] Ejigu, K. M., Anshu, A. H., & Selban, G. L. (2023). Academic English language needs assessment: The case of undergraduate engineering students at Hawassa University. *Journal of Curriculum and Teaching*, 12(4), 156–173.

- [11] Freeman, D. L., & Cameron, L. (2008). Research methodology on language development from a complex systems perspective. *The Modern Language Journal*, 92(2), 200–213.
- [12] Furka, I. (2024). English needs assessment survey for international students of technology at the Budapest University of Technology and Economics in Hungary. *Periodica Polytechnica Social and Management Sciences*, 32(1), 67–78.
- [13] Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. Edward Arnold.
- [14] Garrett, P. (2010). *Attitudes to language*. Cambridge University Press.
- [15] Hidayat, M. T. (2024). *English language proficiency and career opportunities: Perceptions of Indonesian university graduates*.
- [16] Hodges, A., & Seawright, L. (2023). Transnational technical communication: English as a business lingua franca in engineering workplaces. *Journal of Business and Technical Communication*.
- [17] Hussain, S. Q., Akhtar, N., Shabbir, N., Aslam, N., & Arshad, S. (2021). Causes and strategies to cope English language speaking anxiety in Pakistani university students. *Humanities & Social Sciences Reviews*, 9(3), 579–597.
- [18] Kemendikbud. (2023). *Karya anak bangsa siswa sekolah menengah kejuruan* [The nation's children work of vocational high school students]. <https://www.vokasi.kemdikbud.go.id/Karya-Anak-Bangsa/SekolahMenengah-Kejuruan>
- [19] Leeming, P., Vitta, J. P., Hiver, P., Hicks, D., McLean, S., & Nicklin, C. (2024). Willingness to communicate, speaking self-efficacy, and perceived communicative competence as predictors of second language spoken task production. *Language Learning*, 74(4), 917–949.
- [20] Lin, Y., Wang, B., Zhang, G., & Su, Y. (2025). The relations among foreign language anxiety, academic buoyancy and willingness to communicate in EFL classroom. *Frontiers in Psychology*, 16, Article 1634054.

- [21] MacIntyre, P. D., Clément, R., Dörnyei, Z., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal*, 82(4), 545–562.
- [22] Mobarak, K. (2020). Reasons for English language speaking anxiety among students in private universities of Bangladesh. *Journal of Education and Social Science*, 16, 35–40.
- [23] Mohamed, A. A., Radzuan, N. R. M., Fauzi, W., & Harbi, S. (2023). Anxiety could be a good sign: Understanding challenges in developing engineering graduates' technical oral presentation competencies. *International Journal of Language Education and Applied Linguistics*, 13(1), 29–44.
- [24] Mohammad, N., Masum, R., Ali, Z., & Baksh, K. (2018). Teaching practices of English language in the schools of Lasbela District, Pakistan. *International Journal of Experiential Learning & Case Studies*, 2(2), 34–39.
- [25] Mohammed, F. S., & Ozdamli, F. (2024). A systematic literature review of soft skills in information technology education. *Behavioral Sciences*, 14(10), Article 894.
- [26] Munezane, Y. (2013). Attitudes, affect and ideal L2 self as predictors of willingness to communicate. *EUROSLA Yearbook*, 13(1), 176–198.
- [27] Ozdemir, E., & Papi, M. (2022). Mindsets as sources of L2 speaking anxiety and self-confidence: The case of international teaching assistants in the US. *Innovation in Language Learning and Teaching*, 16(3), 234–248.
- [28] Pabro-Maquidato, I. M. (2021). The experience of English speaking anxiety and coping strategies: A transcendental phenomenological study. *International Journal of TESOL & Education*, 1(2), 45–64.
- [29] Patacsil, F. F., & Tablatin, C. L. S. (2017). Exploring the importance of soft and hard skills as perceived by IT internship students and industry: A gap analysis. *Journal of Technology and Science Education*, 7(3), 347–368.

- [30] Pawlak, M., & Mystkowska-Wiertelak, A. (2015). Investigating the dynamic nature of L2 willingness to communicate. *System*, 50, 1–9.
- [31] Phan, H., Kuzminykh, I., & Ghita, B. (2026). Understanding the skills gap between higher education institutions and the software engineering industry. In *Emerging trends in computer science and computer engineering education* (pp. 457–483). Springer Nature Switzerland.
- [32] Rasool, G., & Winke, P. (2019). Undergraduate students' motivation to learn and attitudes towards English in multilingual Pakistan: A look at shifts in English as a world language. *System*, 82, 50–62.
- [33] Safari Moghaddam, M., & Ghafournia, N. (2019). Elaboration on foreign language anxiety in L2 speaking: A study of Iranian EFL learners. *International Journal of Foreign Language Teaching and Research*, 7(26), 137–156.
- [34] Simmons, C. B., & Simmons, L. L. (2010). Gaps in the computer science curriculum: An exploratory study of industry professionals. *Journal of Computing Sciences in Colleges*, 25(5), 60–65.
- [35] Tran, T. T. L. (2022). An investigation into the causes of students' anxiety in learning English speaking skills. *International Journal of TESOL & Education*, 2(3), 183–196.
- [36] Wang, Y., Yue, Y., Wang, W., & Zhang, G. (2025). Uncovering non-native speakers' experiences in global software development teams—A Bourdieusian perspective. *Computer Supported Cooperative Work (CSCW)*, 34(1), 41–76.
- [37] Xu, J., & Zhang, Y. (2025). The roles of growth mindsets and psychological speaking needs in the relationships between grit and willingness to communicate among foreign language learners. *Asia Pacific Journal of Education*, 1–16.
- [38] Yu, Q. (2024). Foreign language anxiety research in System between 2004 and 2023: Looking back and looking forward. *Frontiers in Psychology*.

- [39] Yu, X., & Ma, J. (2024). Modelling the predictive effect of enjoyment on willingness to communicate in a foreign language: The chain mediating role of growth mindset and grit. *Journal of Multilingual and Multicultural Development*, 1–18.
- [40] Yunus, M., Efendi, E., Ronald, R., Ubaidillah, M. F., & Lee, H. Y. (2023). Willingness to communicate in English: An interview study with Indonesian vocational high school students. *Langkawi Journal of The Association for Arabic and English*, 9(1), 44–55.