

AI in English Education: Insights from Social Science Students at the Tertiary Level in
Bangladesh

by

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A thesis submitted to the Department of English and Humanities in partial fulfilment of the
requirements for the degree of Master of Arts in English

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Declaration

It is hereby declared that

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Dedication

To my father (Samsul Alom), mother (Maheara Alo), wife (Saria Rahi), and sister (Sanzida Pinu).

Acknowledgements

All praise to the Great Allah for whom my thesis has been completed without any major interruption.

Abstract

This study investigates the role of Artificial Intelligence (AI) tools in enhancing English language learning among social science students at the tertiary level in Bangladesh. It addresses the challenges of limited access to personalized and interactive learning in traditional classrooms and explores whether AI tools like ChatGPT and Gemini can complement or replace conventional teaching methods. Using a qualitative approach, semi-structured interviews were conducted with ten students from diverse universities to capture their experiences and perceptions. Findings reveal that AI tools provide personalized lessons, instant feedback, and flexibility, significantly aiding vocabulary acquisition, grammar practice, and pronunciation improvement. However, participants noted limitations such as a lack of cultural relevance, emotional engagement, and real-life conversational support. The study concludes that AI tools are most effective as supplementary aids rather than replacements for human instructors. Recommendations include developing culturally adaptive AI systems and integrating offline functionalities to enhance accessibility for Bangladeshi learners.

Keywords: *Artificial Intelligence in Education, Social Science Students, English Language Learning, AI vs Traditional Teaching Methods*

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List of abbreviations

<i>AI</i>	Artificial Intelligence
<i>CALL</i>	Computer-Assisted Language Learning
<i>CTML</i>	Cognitive Theory of Multimedia Learning
<i>EFL</i>	English as a Foreign Language
<i>ESL</i>	English as a Second Language
<i>HEI</i>	Higher Education Institution
<i>L2</i>	Second Language
<i>NLP</i>	Natural Language Processing
<i>STEM</i>	Science, Technology, Engineering, and Mathematics
<i>TESOL</i>	Teaching English to Speakers of Other Languages
<i>TEFL</i>	Teaching English as a Foreign Language
<i>TOEFL</i>	Test of English as a Foreign Language
<i>LMS</i>	Learning Management System
<i>ESOL</i>	English for Speakers of Other Languages

Glossary

<i>Artificial Intelligence (AI)</i>	The simulation of human intelligence by machines, particularly computer systems, to perform tasks such as learning, problem-solving, and language processing.
<i>Computer-Assisted Language Learning (CALL)</i>	A field of study and practice that involves the use of technology, specifically computers, to facilitate and enhance language learning.
<i>Cognitive Theory of Multimedia Learning (CTML)</i>	A theory suggesting that learning is improved when information is presented through multiple formats, such as visual and auditory, in a balanced way.
<i>Empathetic Dialogue System</i>	An AI-based conversational tool designed to respond with empathy, providing feedback in a way that considers the emotional state and needs of the user.
<i>Feedback</i>	Information or responses given to students about their performance, often aimed at helping them improve skills or correct errors in language learning.
<i>Gamification</i>	The use of game-like elements (such as points, levels, or rewards) in non-game settings to enhance engagement and motivation, commonly applied in educational tools.

<i>Interactive Learning</i>	A method of learning that involves active engagement and two-way communication between the student and the learning material, often facilitated by AI tools.
<i>Natural Language Processing (NLP)</i>	A branch of AI focused on enabling computers to understand, interpret, and respond to human language in a natural way.
<i>Personalization</i>	The adaptation of learning content and methods to meet the unique needs, pace, and preferences of individual students, often achieved through AI technology.
<i>Social Science Students</i>	University students studying disciplines such as sociology, anthropology, psychology, and political science, often concerned with human behavior and social issues.
<i>Tertiary Level Education</i>	Education provided by universities and higher education institutions, generally after the completion of secondary school.
<i>Traditional Learning Methods</i>	Conventional approaches to education, such as classroom instruction, textbooks, and face-to-face teaching without advanced technology or AI tools.
<i>Adaptive Learning</i>	An educational method that uses AI to adjust the pace and type of learning content based on the learner's progress and needs.
<i>Feedback Loop</i>	A system where the output of a process is used as input to

improve or modify the process, often seen in AI-powered language tools providing real-time corrections.

Intelligent Tutoring System (ITS) A computer system that provides personalized instruction or feedback to learners, simulating a one-on-one tutor.

Ethical Considerations in AI Issues related to the responsible and fair use of AI, including data privacy, bias, and the cultural impact of AI tools.

Speech Recognition Technology AI technology that processes and interprets spoken language, enabling feedback on pronunciation and fluency.

Qualitative Data Non-numerical information collected through interviews or observations to understand perceptions, experiences, and opinions.

Quantitative Data Numerical data used to measure and analyze patterns, trends, or relationships in research.

Immersive Learning A learning approach where learners engage deeply through experiences such as simulations, role-playing, or cultural exposure.

Human-Centered Learning Design An educational approach focusing on the emotional, social, and cultural needs of learners in addition to their academic goals.

Language Acquisition The process of learning a language naturally or formally through study and practice.

Blended Learning

An educational approach that combines online digital media with traditional face-to-face classroom methods.

Chapter One: Introduction

The 21st century has brought big changes to education, mostly because of new technology. Today, tools like computers, apps, and Artificial intelligence (AI) are helping students and teachers in new ways. AI, in particular, has become very popular in education. Nearly half of U.S. teachers and K-12 students use ChatGPT weekly (Rosenbaum, 2024). It can make learning easier by giving students personalized lessons, helping them practice, and offering quick feedback. However, not everyone agrees on how helpful AI is. Some people are excited about it, while others worry about the challenges it brings. AI is also changing how students learn English. For instance, OpenAI's ChatGPT generates English conversation practice for students. ChatGPT is a chatbot that can respond, in a conversational manner, to students' questions or conversational exchanges. This has made it very popular among students internationally since its release. Another emerging by-product of its popularity is teachers using it in their lesson plans to make it more interactive.

Even though tools like ChatGPT are on the rise, we do not have enough insight into how students truly feel about using them. Especially university students of Bangladesh do have other ways around since technology is not easy for everyone. This group of students in particular may have mixed feelings about AI; after all, they tend to ponder its social implications. This study examines these students' perspectives of AI tools for English learning. It examines the benefits and challenges of employing A.I. and whether students believe it can complement or even replace traditional teaching methods. By examining their views, this study aims to enhance the use of AI in English education, particularly in Bangladesh.

1.1 Statement of the Problem

Education has evolved significantly with advanced technology today, particularly language education, as artificial intelligence (AI) reshapes how learners engage with language. Tools such as ChatGPT and Gemini allow English learners to practice speaking, writing and grammar in an interactive, personalized way. While the growing use of these tools worldwide is not in question, we know relatively little about students' — particularly social science students' — attitudes toward using AI in their education.

In Bangladesh, the context of uneven access to technology and resources presents specific challenges for the use of AI in education. Students in social sciences especially might have different experiences with AI since they think about ethics, culture, etc. Their opinions are important to understand because of this. Based on the research, there has been limited study on how university students in Bangladesh use and understand AI tools to learn English.

We do not really know how AI helps or challenges social science students in Bangladesh; there's no research. Without this knowledge, it is difficult to make focused improvements to AI tools or develop effective teaching methods for them. In this study, we will look to better understand their experiences – what supports them and the pain points they are facing. The research focuses on identifying the weaknesses of AI-based English learning, and aims to propose solutions to effective and engaging AI-based English learning for Bangladeshi students.

1.2 Purpose of the Study

This study aims to explore the perception of using Artificial Intelligence (AI) tools, namely ChatGPT, to learn English among social science students from Bangladesh. AI tools

are increasing in frequency inside education, but we do not know much at all about how students, particularly in nontechnical fields, perceive these tools or how they use them in their studies. This study explores whether or not students believe AI aids them in learning English, what pros and cons they face, and whether students view AI as a tool to coexist with or even replace teaching methods.

By learning about their experiences, this study aims to provide ideas for making AI tools better suited to students in Bangladesh. The goal is to help educators, policymakers, and developers create AI tools that are easier to use, more effective, and accessible for all students. This research will also contribute to a better understanding of how AI can support education in countries like Bangladesh.

1.3 Research Questions

The study addresses the following research questions:

1. What are social science students' perceptions of AI tools in English language learning?
2. What benefits and challenges do students experience using AI tools?
3. Do students view AI as enhancing or replacing traditional learning methods?

1.4 Research Gap

Wagen (2024) says that we need more research on using artificial intelligence (AI) in education right away. He thinks it is really important to study how AI works in specific areas, like teaching English, especially since there are not many studies about it yet. Teachers see AI as a valuable tool for improving English skills such as literacy, grammar, spelling, pronunciation, and vocabulary, and as a helpful supplement to overcome challenges in teaching English, especially in resource-scarce rural areas (Edmett et al., 2024). This study wants to help by giving new ideas on how AI can be used effectively to teach English in Bangladesh. The main goal of this study is to understand how AI can help university students

in Bangladesh improve their English skills. It focuses specifically on students who are studying social sciences. There are not many detailed studies about how AI is used in education in Bangladesh, especially in colleges and for learning English (Islam, 2024). Even though there might be some studies I have not seen, it is clear that we need to learn more about this area. As AI is being used more in education around the world, it is important to see how it works in places like Bangladesh. Most of the research on AI looks at its technical uses, especially in subjects like science and engineering, such as programming. Because of this, there is little information about how students in other fields, like social sciences, feel about using AI in their studies. Social science students might have different opinions about AI because they often think about its ethical and cultural effects. Also, not having easy access to technology might change how these students use AI tools to learn English.

This study wants to answer some important questions, such as:

- How do social science students feel about using AI to learn English?
- What benefits do they see in using AI for English learning?
- Do they think AI is a good addition to or a replacement for traditional English learning methods?

By exploring these questions, we hope to understand what social science students expect from AI and what benefits they find in using it to learn English. By focusing on these students' unique views, this research can help create AI tools that better match their backgrounds and learning styles. This will make AI-based English learning more effective and easier to use in Bangladesh. In the end, this study not only adds to the research but also meets a real need for AI tools that focus on students in English education.

1.5 Significance of the Study

This study looks at how social science students in Bangladesh feel about using AI to learn English at the university level. By focusing on a group that is often left out of AI

research, it helps us understand how AI affects students beyond just technical or science fields. Social science students often focus on critical thinking, ethics, and social issues, so they may have unique views and ways of using AI in their learning. The outcome of this study is useful for a few general groups. For teachers and curriculum developers, it offers a student-centered perspective that can inform how AI tools in English education are crafted and applied so that they are customized to cater to students' needs and approaches to learning. For policymakers and university administrators in Bangladesh, the research yields insights that inform the development of regulations and policies that promote the equitable and responsible use of AI, including matters of academic integrity, equal access to technology, and equitable resource distribution. This study, therefore, contributes to the global discourse on AI in education by providing a perspective from a developing country, Bangladesh, which is struggling with its own cultural and educational challenges. The findings from this study can inform similar work and AI applications elsewhere in comparable settings. By examining social science students, this paper emphasizes that different student experiences with AI need to be understood. It continues to connect technology and student-centred learning in English education, aiming to enable AI-supported learning to be fairer, more effective and more meaningful in Bangladesh and beyond.

1.6 Thesis Structure

To facilitate the coherence of the report we divided our thesis into five chapters. Chapter one introduces the study, discussing the significance of investigating how social science students in Bangladesh are using AI tools to learn English. Chapter 2 summarizes existing literature on AI in education, but argues that further research is required for Bangladesh. Chapter three presented the process of data collection and data analysis through the process of conducting interviews with students to gain insight into their experiences. Chapter Four provides a result and discussion of students' perceptions of AI, the

opportunities that students see, and the challenges they encounter, as revealed through these interviews. Chapter five ends the research with research findings, suggestions on how to improve AI tools in the educational area and future research suggestions.

Chapter Two: Literature Review

2.1 Introduction

2.1.1 Overview of AI in Education

The education sector is being revolutionized across the globe through the integration of Artificial Intelligence (AI), which is changing the interaction of students with the content and with their instructors (Ghnemat et al., 2022). Chatbots, virtual tutors, grammar checkers and adaptive learning platforms are just a few examples of AI-powered tools that are paving the way for innovative and personalized approaches to English language learning. To better assist diverse learner groups, these technologies offer real-time feedback, personalized vocabulary learning, and on-demand conversation support which can improve accessibility and engagement in language acquisition (Kavitha & Joshith, 2024). Gamification is another area that works well with this teaching style such as with the app Duolingo that provides this experience, and Grammarly that helps students in correcting and identifying grammar mistakes in their writing (Kazu & Kuvvetli, 2024).

On the other hand, most literature on AI in education is conducted in Western settings where infrastructures for technology are more developed (Nguyen et al., 2024). Although AI has shown strong promise in language learning, the role of AI language learning in countries like Bangladesh where access to technology remains limited is under-explored. In this chapter we explore opportunities and challenges of the use of AI as a means to support English language learners in the context of Bangladesh.

2.1.2 Importance of English Language Learning in Bangladesh

In Bangladesh, English is one of those second language that haunts those who can not speak. As a language of higher education and a means of communicating in key professional

areas - business and government - familiarity with English is vital (Aimen & Khadim, 2024). While this makes sense for a relatively fluent student, rural Bangladesh with its focus on rote learning has many students who have minimal speaking and writing competencies despite spending so many years learning English. The English proficiency gap between urban and rural students is also widened by lack of qualified teachers, number of resources in rural areas.

These hurdles can be partially overcome by employing AI tools which provide tailored lessons and instant feedback on demand for every individual learner. For example, apps such as English Mate and 10 Minute School are already using an interactive approach to help teach English in Bangladesh (Muntaha, 2025). But the lack of suitable artificial intelligence tools is holding back these languages, due to internet connectivity issues and their less relatable nature.

2.1.3 Purpose and Scope of the Chapter

This chapter shows how artificial intelligence can take English language education to a new level overcoming gaps of existing language teaching learning methods in Bangladesh. The paper focuses on whether AI tools can provide individualized learning opportunities for them by taking into consideration the contextual challenges of Bangladeshi learners. This discussion is based on the CTML (Mayer, 2005) and CALL (Thomas, 2012) theoretical frameworks. These frameworks show the potential benefits of multimedia representations and technological mediated methods to enhance language learning.

Also, towards the end of this chapter, I showcase shortcomings of tools for AI writing such as being designed by western-centric creators who are unaware of cultural contexts or the lack of adequate tools for Bengali-English code-switching. This chapter seeks to fill these

gaps, thereby contributing to a more inclusive evidence base for the development of effective AI solutions for English language education in Bangladesh.

This chapter introduces the need for the application of AI-based English education in Bangladesh including the scenario of English education in Bangladesh, the history of AI, its implementation in education, and its impact as well as the infrastructures and last but not the least cultural challenges needed to overcome to properly implement the AI-based English education in Bangladesh.

2.2 Theoretical Frameworks

2. 2.1 Cognitive Theory of Multimedia Learning (CTML)

2.2.1.1 Explanation of CTML: In 2005, Mayer introduced the Cognitive Theory of Multimedia Learning (CTML) which states that humans learn better when information is presented in both verbal and visual channels (as opposed to words alone). CTML theory rests on three essential assumptions: the dual-channel assumption, which states that humans process information through separate (and limited) auditory/verbal and visual/pictorial information processing channels; and the active processing assumption, which suggest that meaningful learning will occur only if learners actively select, organize, and integrate the information into informative mental models. CTML also emphasizes on minimizing unnecessary extra cognitive load in order for learners to focus on the most important information and to perform generative processing.

2.2.1.2 Application of CTML in English language learning: CTML thus provides a theory-based outline of how to construct AI-powered tools that use multimedia to tackle language learning. For instance, interactive videos with subtitles provide both auditory and visual input for the learner, allowing them to connect spoken language to meaning. In a

similar way, gamified platforms such as Duolingo utilize visual, auditory and written content to instruct vocabulary and grammar in an interactive way. All of these tools are CTML principles compliant as they include content in various formats and reduce cognitive load.

AI Similarly motivates practical experiences, enabling authentic situations such as chatting with students in a simulated-paced language practice format, layered with visual learners watching, assisting, and prompting visual cues in the conversation. These apps enhance both the enjoyment of language learning, as well as help learners process knowledge and apply it as a part of rules/methodologies underlined in these apps.

2.2.1.3 Relevance to Bangladeshi students: By minimizing conventional issues in English education of Bangladeshi students using the CTML-based AI tools Obsolete teaching methods and a lack of qualified instructors often leave many students resorting to rote memorization (Kong et al., 2024). Instead, AI tools that are rooted in CTML principles provide an alternative where interactive lessons can be delivered that promote active engagement and meaningful learning. Moreover, multimedia-based approaches can also untie physically the gaps between urban and rural learners by providing high-quality learning materials available to anyone. In Bangladesh, platforms such as 10 Minute School use multimedia content in their lessons to teach English, indicating a success for this method. By incorporating CTML principles, these tools have the potential to enhance the quality and equality of English education in Bangladesh.

2.2.2 Computer-Assisted Language Learning (CALL)

2.2.2.1 Explanation of CALL: CALL is any kind of technology that makes language acquisition more interactive or personalized. CALL was originally developed in the 1960s–1970s and has evolved through various stages: behavioristic CALL which was drill focused, communicative CALL which emphasized interaction and real-world language use,

and integrative CALL which combined multimedia and internet-based resources to play an immersive role in the learning environment (Thomas et al., 2012). Current Computer-Assisted Language Learning (CALL) integrate sophisticated technologies, like natural language processing (NLP), adaptive algorithms and gamification to motivate the learners and promote self-directed learning.

2.2.2.2 Evolution of CALL with AI tools: The growth of CALL nowadays can be attributed to wide uses of artificial intelligence. With this, AI-powered tools now offer adaptive feedback, practice conversations in real time, and learning paths that adapt to the learner. As an example, ChatGPT employs the use of NLP to mimic authentic dialogues so students can speak English more freely without judgement (Ali, 2020). Similarly, Grammarly examines the text input to provide personalized recommendations for enhancing grammar and writing style. EDEN is one of the examples of an empathetic dialog system which integrates Grammar Correction as well as Social Interactions to generate natural empathetic feedback to enhance the motivation and persistence of the learners (Li et al., 2024). However, these developments also facilitate a much more interactive and learner-centered approach to CALL than ever before, because the learner is now able to interact with the same LRS and be given instant feedback as they create the new language.

2.2.2.3 Examples and relevance to Bangladeshi students: Systemic Challenges in English Education in Bangladesh that can be solved by CALL Tools In traditional classrooms, this does not happen because there are not enough qualified teachers available and the learning methods are outdated and cannot meet the individual learning needs. This is where AI-powered CALL platforms come in to fill the gap by offering personalized lessons depending on the proficiency level of each student. One of the examples is that in Bangladesh, English Mate is already in practice to teach English in a very interactive way

(Muntaha, 2025). Besides urban students, these tools open several doors for rural students, who may not have access to such quality educational materials as well. CALL platforms have the potential to support bilingual learners at different spectra by integrating features to accommodate Bengali-English code-switching, which is a highly prevalent characteristic of everyday conversation in Bangladesh. This adaptability is especially important for catering to the specific language requirements of Bangladeshi learners, making AI-powered CALL highly relevant. Grounded in CTML and augmenting this theory with CALL technology, AI tools can revolutionize English education in Bangladesh. Thus, these frameworks cast light on multimedia-based approaches and adaptive technologies that tackle local problems while also promoting effective language learning experiences.

2.3 Evolution of AI in Educational Settings

2.3.1 Global Advancements in AI for Education

Artificial Intelligence (AI) is changing the tide of education and the way students learn and educators teach. AI is used to develop adaptive learning platform, intelligent tutoring system, and personalized learning tools across the globe. Utilizing data analytics and machine learning algorithms, these technologies are able to analyze students' performance, signal the gaps in understanding, and customize educational content according to individual needs (UNESCO, 2025). Adaptive learning tools like DreamBox Learning and Knewton adjust lesson difficulty in real-time according to a learner's progression, providing focused help to students (OECD 2025).

Additionally, accessibility in education is improving due to AI-powered assistive technologies provided for students with disabilities. For instance, students with hearing impairments or language barriers can engage more in classrooms through the use of speech-to-text software and real-time translation tools (UNESCO, 2025). VR (virtual

reality) and AR (augmented reality) applications are also being integrated into the classroom to bring immersive learning experiences that engage students like traditional methods cannot provide. Meanwhile, the recent uptake of generative AI tools such as ChatGPT worldwide has only multiplied our options for the world of learning. They offer real-time feedback, simulate conversation practice, and help with brainstorming ideas or editing text (Yu & Guo, 2023). Additionally, Edirisingha (2024) explains that, generative AI is being increasingly implemented in the development of interactive quizzes and simulations to foster more engaging and effective learning.

2.3.2 Examples of AI Tools

In recent times, various AI tools have become widely known due to their contributions to improving the learning process. For instance, Duolingo is an example of a practical application of gamification and natural language processing (NLP) for language learning. It personalizes lessons according to how a learner is performing so that learning a language becomes easier and more fun! Grammarly is a writing assistant that instantaneously provides feedback on grammar and style for students, enabling them to eliminate mistakes and make corrections that are appropriate for their stage of writing development (Grammarly, 2024).

One publication to leap to the future is ChatGPT which became an all-rounder for education. A CBT that answers questions, explains things, and simulates realistic conversations. Its interactivity makes it especially beneficial for language acquisition, or any other content that involves interacting with a stimulus (Rosenbaum., 2024). For example, Carnegie Learning provides intelligent tutoring systems with personalized feedback and resources for understanding difficult concepts. Such tools are examples of how AI meets the varied and unique needs of learners, by bringing personalized, focused and fun learning experiences closer to them.

2.3.3 Comparison Between Western and Non-Western Contexts

The role of AI in education exposes major divides between the Western and non-Western world. Policies on AI have already been adopted in many Western countries, but there is significantly less technological infrastructure than decentralized regions. AI-based technology is widely adopted in motions of education including schools and universities to customize learning experience, provide administrative support, and classroom management (UNESCO, 2025). More than two-thirds of secondary school students in high-income countries already use generative AI tools such as ChatGPT for school work (OECD, 2025)..

Meanwhile, non-Western countries have to deal with several hurdles, including lack of internet access, insufficient technological infrastructure, and cultural incompatibility of tools with American or European AI. This is because in countries such as Bangladesh, the connectivity needed to reach online platforms is not available in many rural areas (Okolo, 2023). Furthermore, a majority of AI tools are built on Western datasets that disregard linguistic diversity or cultural specifics. For example, Duolingo focuses on language patterns that assume standardized forms of language and may not help someone who often switches between Bengali and English.

Solving these imbalances means building AI systems grounded in local languages and contexts with culturally adaptive AI. They should also be supported by expanding access to technology in underserved areas through inexpensive devices and consistent internet access. Broadly speaking, AI has the potential to revolutionise education globally but, on the whole, is unevenly deployed both within and across regions. Closing this gap will take purposeful action in developing AI tools that cater to a wider audience and consider the varying challenges of non-Western learners.

2.4. Impact of AI on English Language Learning

2.4.1 Engagement and Motivation

The advent of AI has brought about a new level of interaction and personalization to the learning process which has led to an increased level of engagement and motivation in the process of English language learning. One of the significant features of several AI-powered platforms is gamification in learning — where gamified principles are applied to learning to make it more enjoyable by adding elements like challenges, rewards, and progress trackers similar to games. Gamification refers to the application of game-like elements to the design of tasks, such as the use of game-like exercises in Duolingo to teach vocabulary and grammar in which, completing a task earns the user points which keeps them engaged and motivated to practice regularly (Wulandari & Halim, 2024). Such an approach not only enhances the fun part of learning the language but helps the students retain their long-term motivation.

AI tools that provide real-time feedback is another important hub that keeps engagement alive. For example, services such as Grammarly offer real-time corrections as well as suggestions on how to improve writing in terms of grammar, style, and clarity (Grammarly 2024). By having many exercises and tests with immediate feedback, the learners can correct the mistakes when they arise — and this very act reinforces the rules of the language in question thanks to the act of doing your own learning work. ChatGPT and other conversational AI tools add to this motivation aspect since they simulate something quite close to a real conversation. These tools provide an opportunity for students to speak in English in a low-stakes environment, and receive personalized responses which act as conversation partners (Anjum et al., 2025). Conversational AI is an excellent tool for Bangladeshi students to practice any language and gain confidence, as most don't have many other opportunities to practice the language they are learning.

2.4.2 Accessibility and Customization

Incorporates Diverse Resources: AI has made English language learning more accessible by providing resources that cater to diverse learning needs. Suggestions: You could also consider alternatives to descriptive phrases (Do you really need to say adaptive platform?), more emotive language, etc. For example: Other, more traditional forms of instruction are often not designed to adapt to the different difficulty level a learner excels or lags behind — adaptive platforms such as English Mate quickly adapt lesson materials according to a student proficiency level (Qin, 2024). This provides students with the ability to move at the pace that works for them, revisit content they struggle with, and find more time to dedicate to their areas of weakness.

In a country like Bangladesh, where availability of competent English teachers is often restricted, AI tools can provide another option for educating oneself. Rural learners, who are typically isolated from traditional classroom instruction, can suddenly access high-quality learning materials through mobile apps and online platforms (Bhuiyan, 2024). For instance, 10 Minute School delivers engaging, smartphone-friendly lessons, merging urban and rural learners.

Yet Internet access is weak in Bangladesh and devices are expensive for most; these barriers to large-scale use persist. Affordable tech-based solutions and offline-compatible AI tools can be applied or made more accessible to underserved populations to address these challenges.

2.4.3 Skill Development

Since the initial release of AI tools, they have shown their skills in building important language skills like writing, speaking, and vocabulary acquisition. For example, websites like Grammarly offer comprehensive feedback on grammar, sentence structure, and word

choice and this significantly enhances writing skills (Huang et al., 2020). These tools help students hone their writing style and write more sophisticated papers by emphasizing certain mistakes and guiding towards solutions.

Conversational AI systems train learners to practice dialogue in real time and improve their speaking skills. ChatGPT and other tools that mimic human speech respond to user input in context, allowing students to work on pronunciation, fluency, and building confidence in conversation (Phuong, 2024). Such functionalities are extremely helpful to Bangladeshi students with no access to native English speakers or an English-speaking environment.

AI-based platforms further aid vocabulary acquisition through spaced repetition algorithms that aid in word retention. For example, Duolingo exposes learners to fresh vocabulary through the use of context, while repeating vocabulary they have learned previously at ideal times to consolidate memory recall (Fraidan & Almarri, 2024). This systematic approach allows learners to gradually develop strong base vocabulary over a period of time.

These AI tools provide specific help for mastering each language well in the middle of a bilingual environment for Bangladeshi students, where Bengali-English code-switching is a reality. AI encourages learners to apply their English skills in academics and the workplace by focusing on imparting practical abilities instead of cramming information.

2.5 Challenges and Limitations

2.5.1 Cultural Relevance

The cultural context of AI tools is one of the main problem of using AI in teaching English language in Bangladesh. In fact, the existing AI-backed learning platforms are mostly designed on Western-centric models, lack the understanding of cultures and

languages of the non-Western contexts (Hossain, 2024). In other words, things like Duolingo and Grammarly rely on a dataset that bunks up against English acquisition only through a standardized lens, ignoring regional language differences or common vernaculars that slant from the mean. Even though the communicative methods help, a few of these tools may not be culturally adjusted to supply the best fortunes of success to Bangladesh users, who may locate the content alien or irrelevant to their everyday lives.

The other major problem is non-inclusion of the Bengali-English code-switching, which is very common in Bangladesh. Although most Bangladeshi students code switch between Bengali and English, existing AI tools do not adequately support such bilingual conversations (Akhi & Arefin, 2024). This restriction makes these kinds of tools less usable to learners who require assistance switching between the two languages. Filling this need will take AI systems will need to be trained on bilingual datasets that are reflective of the unique ways of speaking and typing in Bangla and English that Bangladeshi users have created.

2.5.2 Technological Barriers

Another major problem for the mass use of AI tool in Bangladesh is the technological barrier. Yet, it is still a big challenge: as lack of internet connection, especially in the rural one (MAHMUD, 2025). Though urban areas have comparatively good connectivity, students in rural regions are left with no option except mobile data plans, that too expensive ones, because of poor broadband infrastructure. This digital divide feeds back into educational inequality, as students in remote areas cannot even reach online learning platforms much less enjoy the fruits of AI-driven resources.

Coupled with this is the inequitable access to devices. In Bangladesh, a substantial number of households do not yet possess the smartphones, tablets, or computers needed to

make use of the AI tools (Unb, 2020). Where devices exist, however, they may be shared amongst multiple family members, restricting their use for learning purposes. This kind of a technological limitation only brings up the demand for cost-effective devices and offline-based AI tools, which do not need a constant internet connection to function.

2.5.3 Ethical Concerns

There are also many ethical issues in relation to the use of AI in the education sector. The reliance on technology is one of these problems as it tends to result in decreased human interaction and development of essential language skills (EF Corporate Learning, 2024). Over-relying on AI tools to prepare for various exercises will result in students being unable to use the language off-the-cuff, or not engaging with cultural aspects through language learning. It fosters a passive environment, where students sit back and listen to the teacher rather than engage with the learning material.

Another key issue relates to privacy and data protection. AI systems are designed to extract massive amounts of data and offer personalized feedback, which immediately raises privacy concerns regarding the manner in which this data is being gathered, stored, used, and protected (L. Huang, 2023). Without proper safeguards, there is a risk that students might be exposed to privacy breaches or surveillance without consent. The concerns over this connection could be mitigated to some extent by being transparent about data collection practices and taking steps to secure the data being collected.

2.6. Opportunities for Improvement

2.6.1 Development of Culturally Adaptive AI Systems

Arguably, the most significant opportunity for AI in English language education in Bangladesh is the development of culturally adaptive AI systems. Because current AI tools largely represent Western languages and culture, they represent appropriate uses for local learners of Bangladeshi. Clars of Asian Connection for Bangladeshi

Connections Largely Clared Human Idol with Local Context (Kong, Zhigang, et al., 2024) AI systems should be trained on datasets that specifically incorporate the linguistic structure, cultural nuances, and bilingualism particular to Bangladesh (e.g. Bengali-English code-switching). For example, Duolingo can offer lessons framed to South Asian languages and frameworks to connect local users more (Khan et al., 2024).

Culturally adaptive AI systems could also mark up idioms, proverbs and other instances of culturally specific references to context formats to increase understanding and maintain engagement. With educational resources personalised to the cultural realities faced by students in Bangladesh, students would better connect with the content and be able to gain higher quality educational outcomes.

2.6.2 Strategies to Address Infrastructural Challenges

One of the hurdles in getting equal access to AI-enabled education tools in Bangladesh is infrastructural challenges. The lack of availability of the Internet and devices still are the major hindrances towards the acceptance of this change especially in the rural areas (Hossain et al.W, 2023). The need of the hour here is to create offline-compatible AI-Tools, to mitigate these challenges. For instance, apps that enable users to download lessons or practice modules for offline usage allow learning without interruptions where the internet connectivity is weak.

A different approach is using public-private partnerships to help offset the costs of devices and internet services for underserved populations. Government programs might also help make broadband infrastructure more accessible to rural areas or offer affordable digital literacy courses. Guidance on substantial investments in infrastructure, such as that of the Asian Development Bank, illustrate such a gap and present a relatively easy fix through

effective funding and policy interventions, including targeted interventions to minimize the digital divide (ADB, 2024).

In addition, implementing artificial intelligence in the current education systems — like that of government schools — can prove to be beneficial for having the maximum reach. Even in resource-deficient circumstances, students can experience personalized learning encounters by training teachers to implement such AI instruments when required.

2.6.3 Potential for Localized Content Creation

The other major opportunity for enhancing AI-powered language learning in Bangladesh is localized content development. AI tools in Bangladesh could be used to develop content that meet the needs of Bangladeshi learners. As an illustration, Bengali-English bilingual activities or culturally relevant examples for conversational practice could be added for relief of engagement and practicality learning (Mehjabeen, 2025).

In addition, AI-powered platforms could partner with local educators and linguists to create country-relevant curricula that comply with the national school standards. This could involve developing glossary lists of frequently-used terms in Bangladesh or writing specific details in writing prompts. Secondly, producing content specific to Bangladeshi learners can also focus on their unique struggles; maybe learning how to write formal English for academic content, prepped for writing a thesis, or everyday spoken English for work (formal or informal).

Localized content provides contextual relevance to AI tools while also ensuring that diverse learner demographics in urban and rural settings are also included in the conversation and benefit from the use of AI tools. These efforts could be the steps taken to place AI as the game-changer to narrow the education gap in Bangladesh. These

opportunities lead to a more contextualized and more inclusive form of English language education in Bangladesh – that is, if culturally-adaptive systems, infrastructural impediments, and locally-produced materials are given due consideration. Such enhancements would not only make AI tools more accessible, but also tailor them to the distinctive requirements of learners across Bangladesh, promoting equitable educational results across the country.

2.7 Conclusion

This review of literature illustrates far-reaching opportunities of applying Artificial Intelligence (AI) in English language contexts, especially focusing on Bangladesh. Tools like AI to power Duolingo, Grammarly, and ChatGPT can be used to increase engagement, learning personalization, and growth across writing, speaking, and vocabulary. Incorporating this understanding into theoretical frameworks such as Cognitive Theory of Multimedia Learning (CTML) and Computer-Assisted Language Learning (CALL) emphasizes how AI can enhance the effectiveness of second language acquisition through multimedia and adaptive environments.

However, there are still critical areas of research that are lacking. The majority of AI tools are built upon western contexts and values and fail to account for context and bias, and many even offer support for bilingual practices like Bengali-English code-switching which has yet to be seen. Moreover, infrastructural barriers like slow internet coverage and non-equable devices access work as an obstacle for the country to be fully equipped with AI in all rural places in Bangladesh. Ethical considerations, such as the risk of becoming overly dependent on technology and problems with data privacy, also need to be seriously addressed in order to ensure responsible integration of AI.

We recommend the development of culturally adaptive AI systems that address the unique cultural and linguistic needs of Bangladeshi learners as a direction for future research. Beyond that, professionals need to aim to develop tools that are capable of running without internet connection when necessary so that we can overcome burdens of infrastructure, but also to establish ethical guidelines that are able to safeguard the privacy and data of users while building a trust on AI based systems. In addition, focused content writing should be placed high-up on the agenda making AI tools more applicable for Bangladeshi students.

Culturally Responsive AI solutions can change the face of English language teaching and learning in Bangladesh, undoubtedly. Utilizing opportunities for improvement while addressing existing challenges, AI can help to represent students from diverse backgrounds, expand learning accessibility and empower learners with different socio-economic backgrounds. More importantly, this approach will not just facilitate English proficiency, but can also help to ensure educational equity and promote global competitiveness among Bangladeshi students.

Chapter Three: Methodology

A qualitative research design—that is consistent with conducting in-depth interviews in which the participants narrate how the social science students in Bangladesh are using AI tools to learn English at the tertiary level from their own voice. Given that this research aims for deep understanding of individuals through lived experiences, qualitative methodology was appropriate for this study, and this method will yield rich description of how users viewed the AI in their language learning experience.

3.1 Research Design

This qualitative study investigates the perceptions of Bangladeshi social science students regarding AI tools for English language learning. Moreover, its explorative nature.-The study investigated felt experiences of students as they use AI tools; thus, a qualitative approach is the best fit.- Qualitative research (Quantitative research-is a noun, whereas Qualitative-verb, an act, not a number (Creswell, 2013)) is more about depth rather than breadth and qualitative research is not always about findings or numbers, it is the depth of human understanding and feelings that are the purpose of flexibility or adaptation.

This research relies on semi-structured interviews as the main method of data collection. This approach provides some level of structure but leaves enough space for flexibility in the questioning process, allowing the researcher to go deeper into participants answers. Semi-structured interviews are a suitable method for this as they allow for focused exploration of individual perspectives, while still permitting in-depth narratives regarding students views and use of AI-based tools for their English learning. This systematization ensures that the data is thorough and flexible enough to accommodate patterns that emerge during the interviews.

Through qualitative methods, by interviews semi-structured, this research aims to build up a broad picture of the subject of the research i.e. impact of AI tools in English language learning among the social science students of Bangladesh. Not only does this design reflect the varied experiences of participants, but it also brings to light the greater significance of such integration in the context of language learning in the developing country.

3.2 Research Population and Sampling

Purposive sampling was applied in this study whereby participants from different disciplines of social science from various universities in Bangladesh were selected. Following the qualitative research approach that seeks to garner context specific understandings (Creswell, 2014) purposive sampling was appropriate as it would help to ensure representation in terms of academic backgrounds, level of fluency in English language and the context of institutes in which participants were affiliated.

It consisted of ten participants (5 male, 5 female) aged 21–24 from five universities: Dhaka University, Chittagong University, Feni University, BRAC University, and East West University. The participants came from Sociology, Political Science, Journalism, and English with English proficiency ranging from beginners to advanced.

The table below summarizes participant profiles:

Name	Age	Gender	University	Year of Study	Field of Study	Current Level of English Proficiency
Arif	23	Male	Dhaka University	3rd Year	Journalism and Mass Communication	Intermediate

Rahim	21	Male	University of Dhaka	2nd Year	Information Science and Library Management	Intermediate
Jui	22	Female	East West University	2nd Year	Sociology	Advanced
Tania	23	Female	North South University	3rd Year	English & Modern Languages	Advanced
Mehedi	22	Male	Dhaka University	3rd Year	Sociology	Beginner
Sumi	22	Female	Chittagong University	2nd Year	Political Science	Intermediate
Nusrat	24	Female	Feni University	4th Year	Department of English	Intermediate
Hasan	21	Male	Feni University	2nd Year	Department of English	Intermediate
Mitu	21	Female	Feni University	2nd Year	Department of English	Intermediate
Sakib	20	Male	BRAC University	1st Year	English and Humanities	Beginner

Table 1: Demographic and Academic Profile of Participants

We included students that were beginners, intermediates and advanced at English to capture a range of experiences with using AI tools. Novice learners (e.g., Mehedi, Sakib) used AI for basic vocabulary and grammar assistance, while intermediate learners (e.g., Sumi, Hasan) employed tools like ChatGPT for conversational practice. Exceptionally fluent and advanced learners (ex. Jui, Tania) needed more detailed qualitative feedback on their

academic writing and to improve their pronunciation. AI has the potential to handle varying difficulties of different stages of proficiency, such as basic skill learning and advanced fluency improvement (Studies, 2021). We incentivise these insights into how AI tools can be adapted to learners along the proficiency continuum in such resource-constrained settings as in Bangladesh.

3.3 Data Collection Methods

To collect detailed yet flexible data from participants, semi-structured interviews were used in this study. It is frequently used in qualitative research due to the capability to pose both open-ended and closed-ended questions while facilitating deeper responses (Creswell, 2013). This study included interviews, which exclusively focused on exploring AI tool use for English language learning among Bangladeshi social science students. Merriam and Tisdell (2016) identified this format as enabling the interviewer to ask follow-up questions based on the responses of the participants, so as to derive new ideas or topics that arose during the interviews.

Interviews were recorded (with the participants' permission) and lasted between 30 to 45 min. Subsequently, the recordings were transcribed to ensure all information was prevailed upon. The interview questions were made to reflect a few significant themes related to the use of AI tools for learning English, including the advantages and disadvantages of using AI tools for learning English, the students' comfortableness in using English AI tools, and their opinion on the comparison of AI tools with traditional methods of learning (Denzin & Lincoln, 2018).

Semi-structured interviews time due as this study aimed to investigate students personal experience and perspectives in their own words[14]. Considering how complicated this phenomenon is such as learning a language with AI tools, that each student can

undergo through their different context (Karatsareas, 2022). The first step was recording and transcribing them so that the researchers had a valid data source to analyze.

3.4 Data Analysis Techniques

The interviews for this study were recorded and transcribed in order to generate a comprehensive data set for analysis. We examined the data using thematic analysis, which is one of the most common approaches to qualitative research, that identifies and interprets patterns that emerge from the data (Creswell 2013). Such an approach was selected based upon the need for an orderly method of organizing and interpreting qualitative data, particularly when investigating individual perceptions as with using AI tools for language learning (Braun & Clarke, 2006). Applying thematic analysis enabled the researcher to derive valuable insights from the interviews, as well as provide a clear structure to delineate the results of the study. Through these themes, the study was able to achieve the research goals and provide further dynamic insights on the transformational impact on English education of social science students in Bangladesh due to the integration of AI tools (Denzin & Lincoln, 2018).

3.5 Ethical Considerations

This study is framed by ethical considerations to protect the rights of these participants. All participants gave informed consent, that is, they received an explanation of the study's objectives, the interview process and the importance of being able to refuse to participate in the study at any time without providing justification. To ensure anonymity and confidentiality, all identifying information that could potentially identify the data source was removed from final transcripts and reports. Ethics statement Finally, the study was approved by the Ethics Committee of BRAC University and all of the research activity complied with ethical standards.

3.6 Limitations of the Methodology

There are some limitations in this study, for instance only 10 participants involved in this study, due to limited resources and limited time it cannot go with larger populations, and this study focuses on only social science students in Bangladesh. However, while the semi-structured interview approach enabled detailed exploration, the push for honesty may have still prompted the participants to furnish socially desirable responses. Most importantly, the research is limited to social science students, so the conclusions may not hold across disciplines.

Chapter Four: Results & Discussion

4.1 Introduction

This paper examines the challenges of English language learning in Bangladesh faced by social science students and investigates the use of AI tools in this regard. The study uses qualitative methods, including participant interviews, and discusses its findings framed within Cognitive Theory of Multimedia Learning and Computer-Assisted Language Learning (CALL) frameworks.

4.2 Challenges in English Language Learning for Social Science Students in Bangladesh

4.2.1 Pronunciation Difficulties

Many participants found pronunciation to be a big challenge, especially with long or unfamiliar words. For example, Participant 8 said,

If a word has more than 7–9 letters, I sometimes get stuck and can not pronounce it clearly.

Because of this, they often avoided using these words in conversations, which slowed down their vocabulary growth and made them less confident when speaking. Participant 1 also talked about struggling with sounds that do not exist in their native language but explained that practicing regularly and being exposed to English helped them improve over time:

At first, it was difficult to figure out grammar and pronunciation. But with time, practice, and exposure, everything changed massively.

The Cognitive Theory of Multimedia Learning (CTML) explains that this problem occurs because learners have a limited processing capability for sounds without any visual assistance. This is where AI tools have a solution or can play a role, as the AI tools can

provide audio feedback along with visual aids, such as visualizations representing the syllable breakage of the spoken word or mouth movement animations. As an example: learners can understand and pronounce words better when connected sounds to visuals by using speech recognition software.

The Computer-Assisted Language Learning (CALL) approach also emphasizes the need for practice when it comes to improving pronunciation. CALL tools typically consist of drill and practice tasks and provide immediate communication. When it comes to tricky sounds, AI-powered tools can truly set up real-life scenarios where learners need to say specific words and phrases repetitively, enabling them to become more fluent and confident in the art of speaking.

4.2.2 Vocabulary Acquisition

Acquiring and retaining vocabulary was another key challenge identified by participants, particularly in fast-paced conversational contexts. Participant 5 described their struggle to keep up with rapid speech and understand spoken English:

My biggest problem was keeping pace with rapid conversations and understanding spoken English. It was overwhelming in the beginning.

To overcome this issue, they turned to media resources like movies and podcasts, which helped them adapt to different accents and conversational speeds. Conversely, Participant 1 highlighted the efficiency of AI tools in supporting vocabulary building:

I use AI tools for vocabulary building and practicing pronunciation. It was their efficiency and ability to track my progress that attracted me to them.

CTML's modality principle elucidates that presenting vocabulary through both auditory (e.g., example pronunciation) and visual (e.g., contextual images to supplement vocabulary meaning) channels lessens cognitive load and improves retention. That is why, for example, tools like duolingo use this principle too — text based vocabulary activity followed by audio — an engaging way to read and learn.

Similarly, the communicative phase of CALL encourages meaningful communicative interaction rather than practice through repetitions (Bokaie, 2021). Thanks to AI tools, learners are mixed in dialogues, through conversational and gamified interactions with the vocabulary in action. Besides strengthening retention, these are fun ways to learn as well.

4.2.3 Listening Skills

Listening comprehension was a big challenge for participants, especially when they had to deal with fast speech or unfamiliar accents. Participant 5 talked about how hard it was to understand native speakers who spoke quickly but said that using media like podcasts helped them improve over time:

Understanding fast English was very tough at first, but watching movies and listening to podcasts really helped improve my comprehension over time.

Although media such as this provided them robust practice, subjects observed that much labor was required before they experienced effective improvement. The Cognitive Theory of Multimedia Learning (CTML) also provides general advice which says people learn more deeply from multimedia when words are in sync with the images. AI tools that leverage this concept (e.g. interactive videos with subtitles) can combine listening with

understanding of actionable meanings. Subtitles provide a kind of reference point for those struggling to keep pace with the rapid-fire articulation.

Similarly, the Computer-Assisted Language Learning (CALL) supports an approach based on the use of multi-modality resources to create authentic learning environments. Podcasting or virtual simulations are some of the AI tools that can introduce learners to various accents or speaking styles and provide immediate feedback on specific areas or issues where they feel uncomfortable.

4.2.4 Cultural Context Understanding

Students in our study found it challenging to grasp cultural nuances and use English appropriately in different contexts, especially when discussing local issues. This difficulty shows how important cultural understanding is when learning a language. Participant 1 highlighted this challenge, saying:

AI does not carry the cultural experiences and emotions that teachers may.

As this quote demonstrates, AI writing tools may be able to teach grammar and vocabulary, but they might lack the culturally diverse nuances that human teachers are able to provide.

One such approach, the CALL (Computer-Assisted Language Learning) approach, teaches that cultural content should be an integral part of language learning tools. For instance, an English learning app can have stories or examples from Bangladeshi culture. This would indeed serve the purpose of teaching students how to tell their own experiences of cultures in English. Cognitive Theory of Multimedia Learning (CTML) — according to this theory, students better learn when they relate newly gained information to what they already know. For instance, Participant 5 gave the example of this:

They throw case studies and theoretical arguments at me and demand that I reason them out. (I am talking about the AI platforms.) Looking at a specific political structure, say a world-simulated environment generated by AI, allowed me to bring theory into practice.

This demonstrates how the use of known contexts can support the students to better learn and use the new language. Here however, AI tools are still behind. As Participant 1 noted:

When I touch on local sociological issues, AI cannot grasp the cultural background of Bangladesh. The feedback is almost always this generic crap that does not relate to my examples in any way.

It also suggests the necessity of language learning tools that acknowledge prior knowledge but also integrate local socio-cultural contexts to better support learners of English to express their lived experiences and perspectives more fully.

4.2.5 Key Insight

For students learning EFL (English as a Foreign Language) outside of an environment where it is native, pronunciation problems, building vocabulary, and listening comprehension are lurking challenges. These challenges highlight the need for adaptive personalized learning tools that can cater to individual learner needs as well as enable targeted help for individual skills.

AI application tools with CTML background can assist learning by taking advantage of multimedia attributes to simplify learning and reduce cognitive load, and stimulate active learning. Meanwhile Computer-Assisted Language Learning (CALL) approaches demonstrate how adaptive technologies can respond to these challenges by providing learners with structured learning experiences that are both individualised and flexible. But as

the following sections will outline, it is only when these tools complement established education methods and meet learners where they are emotionally and culturally that they will be successful.

4.3 AI Tools' Impact on Language Learning

4.3.1 Advantages

Artificial Intelligence tools have changed the learning paradigm for English language to students for social science discipline. One of the main advantages is personalization, which means that these tools can adapt to each student's individual needs.

4.3.1.1 Personalization: Individualized learning experience is possible through AI tools. That is because everyone absorbs knowledge in different ways, and this is super useful. Participant 5 explained:

By focusing on my weaknesses, it seems more personalized to me and effective for learning.

This personalization, partly corresponds with Cognitive Theory of Multimedia Learning (CTML). Focusing on Weak Areas AI tools ensure minimal cognitive overload by focusing on weak spots so that, students pay attention only to what is important.

It also implies that if a pupil is having trouble with vocabulary or grammar mistakes, then the AI tools can assist in those areas as and when needed which makes learning much more effective. If, say, a student frequently gets some words wrong, an AI tool can offer additional practice on those words until the student becomes more comfortable with them. It corresponds to the principle of adaptiveness of CALL, when learning adapted to each student according to his/her speed and other requirements.

Since many classes in schools and colleges are overbooked, this sort of personalized attention is not something we can always get. The CALL framework places emphasis on technology being able to deliver customized instruction en masse, something that is hard to replicate using traditional methods. AI tools can also assimilate performance over time. Participant 1 noted:

AI helps save time by providing instant feedback on essay drafts.

Moreover, this immediate feedback helps learners become aware of their mistakes at the same time and rectify them accordingly. Students are able to see their mistakes and correct them on the spot rather than waiting for some teacher to grade an assignment, which expedites learning. This is consistent with CTML's second principle, immediate confirmation of feedback, which states that immediate feedback can increase learning by allowing students to correct misconceptions.

4.3.1.2 Efficiency: AI tools are super fast at helping students learn English. They give quick answers and explanations, which makes learning happen much faster than old-school methods. Participant 1 said it best:

The biggest positive is the speed at which AI accelerates the learning process by providing immediate answers and explanations. It is much more efficient than traditional methods.

This quick feedback is really important in how we learn. The Cognitive Theory of Multimedia Learning (CTML) tells us that when we get information right away, it helps us understand and remember things better. It is like when you are playing a video game and you know right away if you made the right move or not. This immediate feedback helps you learn the game faster.

In language learning, this quick response from AI tools means students can correct their mistakes instantly. Participant 5 shared an example:

AI platforms challenge me with case studies and theoretical debates that require me to apply my knowledge critically. For example, analyzing a political framework through an AI-generated simulation helped me connect theory with practice.

This shows how AI tools not only give quick feedback but also help students use what they have learned in real-life situations.

The Computer-Assisted Language Learning (CALL) approach also talks about how important it is to practice a lot when learning a language. AI tools make this easier because they are always available. You do not have to wait for class or for a teacher to check your work. As Participant 1 mentioned:

AI saves time by giving immediate corrections on my essay drafts. It points out grammatical errors while also suggesting better ways to phrase my arguments.

This means students can practice more often and get help whenever they need it, which helps them improve faster.

4.3.1.3 Accessibility: AI tools are making it easier for everyone to learn English, even if they live far from big cities or do not have a lot of money. This is especially great for students in rural areas who might not have access to fancy schools or expensive tutors. Participant 6 shared their experience:

Apps like Gemini Live allow me to learn academic English even though I live far from urban centers. The interactive lessons make it easier for me to understand theories in sociology.

This is what we call “democratizing” education - it means making good learning stuff available to everyone, not just a lucky few.

The Computer-Assisted Language Learning (CALL) approach talks about how important it is to use technology to make learning accessible to more people. AI tools do this by being available on smartphones or computers, which many people have access to nowadays. It is like having a teacher in your pocket!

The Computer-Assisted Language Learning (CALL) approach discusses the critical role of technology in expanding access to learn (Fischer, 2013). AI brings accessibility through this process, being available on phones or computers — both of which nearly everyone uses everyday in this day and age. You literally have a teacher in your pocket!

According to the Cognitive Theory of Multimedia Learning (CTML), people are more likely to learn when they receive information in a different modality such as pictures, sounds and words. AI tools are great at this. Videos, audio clips, and interactive exercises are often included in these courses to assist students in learning. This diversity makes it easier for students to comprehend as well as recollect things. Participant 8 mentioned how this works:

AI tools like ChatGPT introduce me to academic terms I would not have encountered otherwise. It not only provides definitions but also shows how to use these words in sociological or political contexts, which makes my essays more professional.

This shows how AI tools can give students access to advanced learning materials they might not find in their local schools or libraries.

Another cool thing about AI tools is that they can work offline too. This is super helpful for students who might not have reliable internet all the time. Participant 5 explained:

While repetition helps me remember key concepts, it becomes monotonous after a while because there is no creativity or variation in the tasks.

This feedback shows that while AI tools are great for accessibility, they still need to be improved to keep learning fun and interesting.

In summary, AI tools are making quality English learning materials available to more students, especially those in rural areas. They use different ways of teaching (like CTML suggests) and make learning possible anywhere, anytime (which is a big part of CALL). This means more students have the chance to improve their English, no matter where they live or how much money they have.

4.3.1.4 Human Instructors' Irreplaceable Roles: Even though AI tools have many advantages, participants emphasized the unique importance of human instructors in building cultural understanding and emotional confidence. Participant 8 explained,

Public speaking with a teacher removes nervousness—AI cannot replicate this.

Human instructors bring cultural knowledge and emotional connection into the learning process, which are essential for mastering conversational skills and understanding how language is used in real-life situations.

The Cognitive Theory of Multimedia Learning (CTML) argues that students learn best when lessons are tailored to their cultural backgrounds, an area where human professors excel but AI tools fail to meet expectations. For instance, teachers can select examples of idiomatic expressions that are more culturally and contextually relevant to their students' lives, allowing them to better understand and avoid complicated social pitfalls. Meaningful interaction is also stressed in the CALL framework (Computer-Assisted Language Learning). This is authenticity engineered by human instructors conducting live

discussions, debates, and group activities for nurturing confidence and social skills among students. While AI tools depend on chatbots or pre-written scenarios, Teachers can customize their teaching in real-time to match the emotions or individual needs of students during lessons.

4.3.2 Limitations

While AI tools are super helpful for learning English, they are not perfect. There are some things they can not do as well as human teachers.

4.3.2.1 Lack of Cultural Context: One big problem is that AI tools do not always understand the cultural background of students. This means they might not get why certain words or phrases are important in different cultures. Participant 1 pointed this out:

AI lacks teachers' cultural awareness.

This is a big deal because language is not just about words - it is also about understanding the culture behind those words. The Computer-Assisted Language Learning (CALL) approach tells us that learning a language should include learning about the culture too. But AI tools are not great at this yet. For example, if you are trying to explain a Bangladeshi festival in English, an AI might not understand why certain traditions are important. A human teacher would probably get it better.

4.3.2.2 Absence of Emotional Connection: Another limitation is that AI tools can not give emotional support like human teachers can. Participant 8 explained this well:

Real interaction eliminates nervousness—something AI can not do.

This relates to the Cognitive Theory of Multimedia Learning (CTML), which says that how we feel affects how well we learn. When we are nervous or unsure, it is harder to learn.

Human teachers can notice if we are feeling nervous and help us feel better, but AI tools can not do this yet.

Participant 1 also mentioned:

When I practice debates or discussions with AI, it feels robotic and lacks the emotional feedback I get from real teachers or classmates. This makes it harder for me to build confidence.

This also indicates that although AI tools might be useful for practice, they cannot be greater than the motivation and uplift we get from other human beings.

Students should be able to direct their own learning while engaging in meaningful communication, according to the CALL approach. AI tools can build out practice conversations, but they can not replicate the natural back and forth that happens in real human conversation.

In conclusion, AI tools are years ahead of us in some scenarios, and lagging in others. They do not comprehend cultural context and do not have the ability to empathize or provide emotional support as humans. These are key aspects of a language that are stressed by CTML and CALL approaches to learning. Thus, AI tools are excellent in themselves, yet their meioramiento lies in operando with teachers that can bridge these gaps.

4.4 Recommendations for Improvement

Drawing on the results of this study, several recommendations are made to make AI tools create more effective tools for learning of English for social science students of Bangladesh. The following recommendations are intended to solve these issues identified in the research while maintaining the strengths of AI tools. These changes can draw on thought

processes held in the Cognitive Theory of Multimedia Learning (CTML) and Computer-Assisted Language Learning (CALL) frameworks to promote more useful, equitable, and student-centered AI applications.

4.4.1 Cultural Adaptation

AI tools should be designed to include culturally relevant content that reflects Bengali-English code-switching and local contexts. Learning a language is not only about knowing grammar and vocabulary but also about understanding cultural and social meanings. Participant 1 mentioned,

AI does not always have the cultural backgrounds or emotions that teachers do.

To address this issue, AI systems could add lessons that include local idioms, expressions, and situations that are important in Bangladeshi culture.

This brings us to the personalization principle as defined in the Cognitive Theory of Multimedia Learning (CTML), which is about developing content that is consistent with learners' cultural identities which makes the learning more interesting and memorable. Likewise, the Computer-Assisted Language Learning (CALL) framework emphasizes the need for culturally appropriate materials to make lessons more relevant and meaningful. For example, AI tools could simulate real-world situations such as a walk through a street of a local market or going to a local neighborhood event. It will enable the student to relate with what he/she learns in terms of language and more general experience, to the real world and the learning would be more effective as well as engaging.

4.4.2 Multimedia Integration

AI tools should feature multimedia learning resources, such as podcasts, videos, or interactive simulations to increase the motivation and enjoyment of the learning process.

Participant 5 mentioned,

Over the years, movies and podcasts helped me a lot to boost my comprehension.

Multimedia content to hear varying accents, speech speeds and contexts that gradually build success in listening comprehension among students.

This is also what the modality principle from the Cognitive Theory of Multimedia Learning (CTML) says – if students have to scan the information about the same topic within visuals and sounds, they learn more efficiently due to ease of understanding and retention of information (Mayer et al., 2006). Multimedia resources for social science students might mean case studies presented through video, or a podcast on a debate about a sociological theory or political debate. This integrative phase of CALL is enriched by multimedia in its own right where various types of learning situations are provided to cater for the requirements of different kinds of learners making an environment which is being called as immersive learning environments [22].

4.4.3 Advanced Speech Recognition

Enhancing speech recognition systems is both vital and challenging in order to appropriately resolve pronunciation issues as perceived by learners from different language backgrounds. As an example, Participant 8 mentioned their challenge with longer words, noting,

Because if the word has more than 7–9 letters, I automatically freeze and do not pronounce it right.

THIS requires AI tools that utilize superior speech recognition algorithms capable of discerning regional accents and providing comprehensive feedback on pronunciation errors.

Cognitive Theory of Multimedia Learning (CTML) and its dual-channel principle, lets students combine auditory feedback with implicit information, such as phonetic transcriptions, in order to improve their comprehension and production of challenging sounds. As mentioned in behavioristic CALL, a practice accompanied by instant feedback is a good way to improve pronunciation (Higgins, 2012; Mínguez & Méndez García, 2010). Next-generation speech recognition systems could even recreate real-life dialogues, providing personalized feedback tailored to the unique needs of the learner.

4.4.4 Emotion-Aware AI

When students are talking to their AI tools, it is important to help the students gain conversational confidence, AI tools should aim to do that as well by ensuring the tools have features to note emotional recognition and respond to it. Participant 8 mentioned,

Interactive ability is something that get rid of nervousness — that AI will never gives us.

While AI can never replace human interaction fully, it can designed to provide constructive feedback and design practice sessions as though one were engaging in face to face conversations.

This principle of active processing in CTML fits with using emotion-aware AI, which supports different forms of realistic practice through language skills. For instance, virtual role-playing scenarios could provide students with a low-stakes opportunity to practice

public speaking or debating so they are not as intimidated when they have to do it in-person. In the same vein, CALL has a communicative phase which argues, based on the assumption that confident and fluent communicators must go beyond mere feature-based understanding and be capable of meaningful interaction (Volume 1, p. 132).

4.5 Future Directions

This is an exciting possibility as the findings of this study could improve the use of AI tools for learning English. Those enhancements center around a few big issues — like lacking infrastructure, and discovering ways for AI to collaborate with teachers in new ways. It aims to make education powered by AI more affordable, customized, efficient and effective, and making the most opportunities available for students in Bangladesh.

4.5.1 Offline AI Tools

A major hurdle is developing offline AI tools to address internet issues in rural communities. In Bangladesh, where even metropolitan areas are devoid of internet connection, many students, especially, from rural areas, face difficulty in accessing the internet, making it near impossible for them to employ AI-powered learning platforms into their practices. In order to assist, offline tools enable students to save lessons, exercises, and even audiovisual content they can use in and out without the internet. Apps like Duolingo and Rosetta Stone already have offline modes that allow learners to study without needing an active internet connection, for example.

This thought aligns with global trends that demonstrate the impact offline education technology can have in rural communities. Research has found that offline tools can enhance learning when students have consistent access to quality content, irrespective of being online or not. Ideal AI tools for education in Bangladesh should also be developed offline so that all students can have equal access to quality learning resources, making education fairer. It

will narrow the gap between the urban students and the rural students while proving inclusivity in education.

4.5.2 Teacher-AI Collaboration

Developing the notion of Teacher AI partners — bringing together teachers and AI systems to design customized learning experiences — is another exciting concept. By analyzing student performance data using AI tools, teachers can identify the learning gaps that students are struggling with and adapt their teaching strategies based on those needs. AI systems can report about the weaknesses and strengths of the students in real-time which could help teachers to focus more on the specific areas.

As one of our participant summarized it the best — AI can offer very good structured lessons but does not have the psychological or cultural competence that the humans in the classroom possess (Participant 1). Leveraging AI can create a model which combines the power of efficiency with expert teachers, where teachers refine and calibrate AI produced content to fit precise learning objectives. Combining the strengths of teachers and AI can help make classrooms even more interesting to learn and have a better learning outcome. Teachers, for example, can use AI platforms for skill-building practice while using live classes for critical thinking and cultural commonality.

Chapter Five: Conclusion

This paper examined the experiences of social science students in Bangladesh with regard to AI tools for learning English. The research investigated how effective the tools were in improving student performance and the difficulties students faced when using assessment tools. When I first started this research, there appeared to be little research on how Bangladeshi students use AI for English learning, perhaps with the caveat that the research would have been easier to find if there had been such research at all, particularly for social science students who tend to struggle when presented with complex academic language and critical thinking tasks. This study aimed to address that gap by speaking directly to students and hearing them.

AI tools are shown to be exceedingly useful for a myriad of purposes as demonstrated with the results. They speed up the process of learning by providing immediate feedback, supporting grammar and vocabulary practices, and enhancing pronunciation. They appreciated the ability of AI tools to tailor to their strengths and weaknesses by offering unique lessons. That said, the study did also discover a few issues. The nuances of cultural background or emotional tone – those subtle elements nearly appendages of any real-life conversation – easily fall through the cracks of AI tools. A large number of the learners said they still required human teachers for (i) giving guidance and building confidence and (ii) understanding cultural contexts.

This research matter because it demonstrates AI to complement traditional methods of instruction. AI tools can work very well for technical skills such as grammar and vocabulary, but the human connection and cultural understanding a teacher can provide is irreplaceable. So, when AI is blended with teaching, students achieve the best of both worlds: the ability to learn and develop remotely in a time-efficient manner and still access human interaction.

It such would also be beneficial for AI tools to redesigned to better serves Bangladeshi students as proved in this study. Incorporating local culture and language practices, like Bengali-English code-switching, into these tools would make them more relatable and useful for the community. Develop offline alternatives so that those rural students with not Internet connection could take advantage of all those new techniques.

To conclude, this study identifies the role of AI tools in enhancing English language education in Bangladesh with remarkable implications as well as the imperfections to be rectified. It addresses an under-explored research area by specifically considering students from the social sciences and their distinctive experiences. Focusing on these issues, both educators and developers can build improved AI technologies that cater to the needs of every learner, hence making education from Bangladesh more inclusive and feasible.

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Chapter Seven: Appendix

Appendix A

Interview Questions

Part 1: Demographic Information

- Age:
- Gender:
- University:
- Year of Study:
- Field of Study (Social Sciences):

Part 2: Background and Initial Engagement

- Could you describe your current experience with English language learning and any specific challenges you've faced?
- How do you currently use AI tools (if at all) for learning English, and what first attracted you to these tools?

Part 3: Critical Perceptions of AI in English Learning

- When you think about using AI for English language learning, what are some positive or negative impacts that come to mind? How have these impressions changed over time, if at all?
- In what ways do you feel AI is (or is not) effective in supporting language learning? Do you think these perceptions might differ for students in other fields?
- Reflecting on your own experience, would you say your attitude toward AI in English learning has evolved? If so, what factors influenced this shift?

Part 4: In-Depth Benefits and Limitations of AI Tools

- Can you describe specific instances where an AI tool has helped you improve your English skills? How did this experience differ from traditional learning methods?
- Do you feel AI tools address your unique needs as a social science (Subject Specific) student? Are there features or capabilities that you find particularly beneficial or lacking?
- What aspects of AI tools (such as customization, accessibility, feedback, etc.) do you find most supportive for learning English? Are there any limitations that stand out to you?

Part 5: AI's Role as a Complement or Alternative to Traditional Learning

- In what situations do you feel AI could serve as a replacement for traditional methods, if at all? What might be gained or lost in this shift?
- How do you perceive the differences in feedback and guidance from AI tools compared to teachers or traditional materials? Do you feel AI provides enough context, cultural insights, or emotional support?

Part 6: Reflective Insights and Future Recommendations

- What challenges or frustrations have you encountered with AI tools for language learning, particularly in terms of usability, cultural relevance, or personal engagement?
- How do you think AI tools in English learning could be improved to better meet your academic goals and personal needs? Are there specific functionalities or design changes you would suggest?
- Looking at your overall experience, how would you summarize the value or impact of AI on your language learning journey? In your view, what role should AI ideally play in the future of language education for social science (Subject Specific) students?

Appendix B

Consent form

I agree to be a participant in this interview for a research work called “AI in English Education: Insights from Social Science Students at the Tertiary Level in Bangladesh”. With my consent, this interview is being recorded. All the statements can be used in that research work and I have the authority to know how the statements are being used. If further, the interviewer needs more information, I will provide it.

Name –

Sign –

Date –