



From Coaching Dependency to Digital Autonomy: Integrating AI Tools to Democratiser English Language Education in Bangladesh's Higher Secondary System

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Abstract

The escalating financial burden of private coaching centres has transformed English language education into a privilege rather than a right in Bangladesh's higher secondary system. This study examines whether AI tools can democratiser English learning by promoting student autonomy and reducing coaching dependency. It also investigates students' willingness to accept AI-mediated learning and its perceived influence on learning independence using a mixed-methods approach with a purposive sample of higher secondary students (n=20). Preliminary findings suggest that students exposed to AI tools demonstrate increased confidence in self-directed learning. The data indicates a significant shift in learners' perceptions regarding their capability to navigate English acquisition independently, with many expressing willingness to reduce or eliminate coaching centre attendance. However, as students recognise their needs for technological help and instructor direction in efficiently utilising these digital tools, the move necessitates cautious scaffolding. The study increases our knowledge of how developing countries might use technology to close the gap in education and prepare students for global citizenship. This study provides insights into how developing countries might use technology to close educational gaps and rethink English language education in resource-constrained environments by investigating the relationship among digital literacy, learner autonomy, and economic accessibility. The ramifications go beyond Bangladesh, offering strategies for comparable educational environments battling challenges of equitable, quality instruction. The findings advocate for strategic curriculum reform that positions AI not as a replacement for human instruction, but as an empowering complement that cultivates independent, confident language learners.

Keywords: Coaching centres, curriculum, learner autonomy, reformation, accessibility

1. Introduction

English language proficiency has become an essential gateway to academic advancement, professional opportunities, and global participation in the 21st century. However, in Bangladesh's higher secondary education system, this gateway remains disproportionately accessible, largely determined by economic status rather than academic potential. The phenomenon of coaching centre dependency has emerged as a defining characteristic of the educational setting, with an overwhelming 86% of higher secondary students attending private coaching institutions to supplement their English language learning (FT Online, 2019). This trend reflects not merely a preference for additional support but rather a systemic failure to provide adequate English language instruction within mainstream educational institutions.

The financial implications of this dependency are substantial and inequitable. Beyond economic concerns, the coaching centre paradigm raises critical pedagogical questions about learner autonomy and self-directed learning. The prevalent model promotes dependency rather than independence, positioning students as passive recipients of knowledge rather than active agents in their educational journeys. Students become reliant on external validation and structured guidance, often lacking the confidence and skills necessary for autonomous language acquisition. This dependency extends beyond the immediate educational context, potentially limiting students' capacity for lifelong learning and adaptive skill development in an increasingly dynamic global context.

The convergence of widespread mobile phone ownership and emerging artificial intelligence technologies presents an unprecedented opportunity to reimagine English language education in Bangladesh. With most of the higher secondary students possessing internet-enabled devices, the technological infrastructure for democratised learning already exists. However, digital access alone does not translate to educational transformation; the critical challenge lies in cultivating digital literacy and pedagogical frameworks that empower students to leverage these tools effectively for self-directed language learning.

This study investigates whether AI tools can serve as catalysts for educational democratisation by simultaneously addressing economic barriers and promoting learner autonomy. Through a mixed-methods intervention involving workshops, questionnaire data, and comparative analysis, the research examines how exposure to AI-powered language learning tools influences student confidence, autonomy, and coaching centre dependency. The investigation is situated within Bangladesh's higher secondary system but carries implications for educational contexts worldwide where socioeconomic disparities constrain access to quality language instruction.

The central premise of this research is that technology, when intentionally implemented with appropriate pedagogical scaffolding, can fundamentally alter the dynamics of language learning accessibility. Rather than viewing AI as a simple replacement for human instruction or coaching centres, this study explores its potential as an empowering complement that cultivates independent, confident language learners capable of navigating their educational pathways with greater agency and reduced economic burden.

2. Literature Review

2.1. The Coaching Centre Phenomenon in Bangladesh

The proliferation of coaching centres throughout Bangladesh's educational system represents a complex socioeconomic and pedagogical phenomenon that has fundamentally reshaped how students approach learning. Originally emerging as supplementary support mechanisms,

coaching centres have evolved into perceived necessities, with their attendance often viewed as essential for academic success rather than optional enhancement. This transformation reflects systemic inadequacies within mainstream educational institutions, including overcrowded classrooms, outdated pedagogical approaches, and examination systems that prioritise rote memorisation over genuine comprehension and skill development.

For English language learning specifically, coaching centres have positioned themselves as indispensable intermediaries, capitalising on students' anxieties about language proficiency and examination performance. The financial burden extends beyond tuition fees to encompass transportation costs, supplementary materials, and opportunity costs associated with time spent in coaching rather than self-directed study or other developmental activities. An article by FT Online (2019) documents the pervasive nature of this dependency, revealing that the coaching industry has become deeply embedded in educational culture, shaping student expectations, parental attitudes, and even institutional practices.

2.2. Learner Autonomy and Self-Determination Theory

Learner autonomy, conceptualised as the capacity to take charge of one's own learning, represents a fundamental goal of contemporary educational philosophy. This conceptualisation positions learners as active agents rather than passive recipients.

Self-Determination Theory (SDT), developed by Ryan and Deci (2020), provides a theoretical framework for understanding the psychological mechanisms underlying autonomous learning. SDT identifies three fundamental psychological needs that, when satisfied, promote intrinsic motivation and psychological wellbeing: autonomy (experiencing choice and volition), competence (feeling effective in one's interactions), and relatedness (experiencing connection with others). When educational environments support these needs, learners demonstrate enhanced engagement, persistence, and achievement.

In the context of language learning, autonomy extends beyond simple independence to encompass strategic awareness about language learning processes, metacognitive reflection on learning effectiveness, and adaptive capacity to modify approaches based on self-assessment. Autonomous language learners demonstrate agency in seeking resources, creating practice opportunities, monitoring progress, and addressing identified weaknesses. However, autonomy development requires scaffolding, particularly for learners socialised within teacher-centred, dependency-oriented educational systems.

The coaching centre model, while providing structured support, often undermines autonomy development by perpetuating dependency on external guidance and validation. Students become accustomed to prescribed learning pathways, scheduled sessions, and teacher-directed activities, potentially limiting their capacity to navigate self-directed learning environments. This creates a pedagogical tension between short-term performance enhancement and long-term capability development.

Recent scholarship further emphasises AI's transformative potential for personalised learning while acknowledging implementation complexities. Harry and Sayudin (2023) identifies three primary mechanisms through which AI enhances learning: adaptive assessments that provide real-time feedback and adjust difficulty based on student performance, recommender systems that analyse behavioural data to suggest personalised content, and learning analytics that identify patterns in student engagement to inform instructional approaches. However, this same research highlights critical challenges including privacy concerns regarding student data collection, potential algorithmic bias that may perpetuate educational inequalities, and the necessity for high-quality data to ensure accurate personalisation (Harry & Sayudin, 2023; Pandy, 2023).

The U.S. Department of Education's recent policy framework (2023) acknowledges that while AI may enable achieving educational priorities at scale and lower costs including addressing varied learning needs and supporting teachers through automated assistants, it simultaneously introduces system-level risks such as increased surveillance, algorithmic discrimination, and transparency concerns. Critically, the Department firmly rejects notions that AI could replace teachers, emphasising instead that AI must complement rather than substitute human pedagogy. This policy perspective aligns with educational research asserting that successful AI integration requires strong governance frameworks, teacher professional development, and continuous monitoring for unintended consequences (U.S. Department of Education, 2023).

2.3. Technology Acceptance and Digital Learning

The Technology Acceptance Model (TAM), introduced by Davis (1989), identifies perceived usefulness and perceived ease of use as primary determinants of technology adoption and usage behaviour. In educational contexts, these constructs influence whether learners embrace digital tools as integral components of their learning processes or regard them with scepticism and resistance. Perceived usefulness reflects the degree to which individuals believe that using a technology will enhance their performance, while perceived ease of use concerns the anticipated effort required to operate the technology.

Subsequent extensions of TAM have incorporated additional variables including subjective norms, facilitating conditions, and behavioural intention, recognising that technology adoption occurs within social and contextual frameworks. For educational technologies, factors such as institutional support, peer adoption, teacher encouragement, and alignment with assessment requirements significantly influence acceptance patterns. Students are more likely to adopt technologies perceived as directly relevant to their academic goals and compatible with their existing learning practices.

The emergence of AI-powered language learning tools introduces new considerations regarding technology acceptance. Unlike static digital resources, AI tools offer personalised feedback, adaptive learning pathways, and interactive engagement that simulate conversational contexts. However, their effectiveness depends on users' digital literacy, willingness to engage with machine-mediated instruction, and ability to critically evaluate AI-generated feedback. Research indicates that successful integration of AI tools requires not merely access but also pedagogical frameworks that help learners understand how to leverage these resources strategically.

Beyond acceptance factors, recent literature emphasises the critical importance of AI literacy for educators themselves. Sperling et al. (2024) conducted a scoping review revealing that while AI literacy has emerged globally as an educational priority, it remains conspicuously absent from teacher education programmes. Their analysis, employing Aristotelian knowledge categories, found that existing AI education initiatives predominantly emphasise technical understanding (episteme) and tool adoption (techne) while inadequately addressing teachers' capacity for ethical judgement and contextual decision-making (phronesis). This gap suggests that effective AI integration requires not merely training teachers to use AI tools but cultivating their capacity to critically evaluate AI's pedagogical appropriateness, recognise potential biases, and make informed decisions about when and how AI should be employed in educational contexts (Sperling et al., 2024). For developing contexts like Bangladesh, where teacher training resources are constrained, this research underscores the necessity of strategically designed professional development that addresses multiple dimensions of AI literacy rather than focusing exclusively on technical competencies.

2.4. Situated Learning and Contextual Implementation

Situated Learning Theory, articulated by Lave and Wenger (1991), emphasises that learning is fundamentally embedded in authentic activity, context, and culture. Knowledge cannot be abstracted from the situations in which it is acquired and applied; rather, learning emerges through participation in communities of practice and engagement with contextually relevant problems. This perspective challenges decontextualised approaches to education and highlights the importance of aligning learning activities with learners' actual needs, environments, and cultural contexts.

For technology integration in developing contexts like Bangladesh, situated learning theory underscores the necessity of context-aware implementation strategies that account for infrastructure constraints, cultural attitudes toward technology and education, economic realities, and existing pedagogical traditions. Technological solutions developed for resource-rich contexts cannot be transplanted wholesale without careful adaptation to local circumstances. Implementation must consider factors such as internet reliability, device availability, language preferences, and compatibility with existing educational structures.

Fitria (2021) examination of AI applications in education documents the proliferation of AI-powered tools already accessible to teachers and students, including virtual mentors, voice assistants (Google Assistant, Siri, Cortana), intelligent tutoring systems, automated assessment platforms, and personalised learning environments like MOOCs (Coursera, edX, Khan Academy). While these technologies demonstrate AI's potential to automate routine educational tasks freeing teachers to focus on relational and creative pedagogical work, Fitria emphasises that AI functions systemically based on programmed commands and cannot replicate the adaptive, contextualised intelligence that characterises effective teaching. This observation reinforces the situated learning perspective: AI tools developed for well-resourced contexts require careful adaptation to local circumstances, and their effectiveness depends on educators' capacity to integrate them meaningfully within existing pedagogical frameworks rather than adopting them uncritically (Fitria, 2021). For Bangladesh's context, this suggests that AI tool integration must be accompanied by contextual evaluation of infrastructure readiness, cultural compatibility, and alignment with examination systems and curriculum expectations.

In Bangladesh's higher secondary system, contextual factors include examination-oriented curricula, large class sizes, limited teacher training in communicative language teaching, and strong cultural emphasis on teacher authority. Any intervention involving AI tools must acknowledge these realities and position technology as complementary to rather than disruptive of existing systems, at least in transitional phases. Success requires not only introducing tools but also cultivating new pedagogical mindsets among students and educators.

2.5. AI-Powered Educational Technologies: Applications and Ethical Considerations

The rapid expansion of AI applications in education encompasses diverse technologies serving multiple educational functions. Contemporary AI-powered tools include chatbots providing conversational support and answering student queries, automated grading systems utilising natural language processing to assess written work, presentation translators enabling multilingual instruction, and intelligent tutoring systems offering adaptive, individualised guidance (Harry & Sayudin, 2023; Pandy, 2023). These technologies demonstrate particular promise for addressing challenges common in resource-constrained contexts: providing individualised attention when class sizes are large, offering practice opportunities beyond scheduled instruction time, and reducing teacher workload associated with routine assessment tasks.

However, ethical considerations accompany these technological capabilities. Privacy and security risks emerge as AI systems collect extensive student data to enable personalisation. Algorithmic bias where AI systems inadvertently perpetuate existing inequalities through biased training data or flawed assumptions poses significant concerns for educational equity. Transparency challenges arise when AI decision-making processes remain opaque to educators and students. Cost barriers exist where premium AI features require subscriptions, potentially creating new forms of digital divide (Pendy, 2023; U.S. Department of Education, 2023).

For developing contexts implementing AI tools, these ethical considerations necessitate careful attention to data governance frameworks, explicit evaluation of algorithmic fairness across diverse student populations, and policies ensuring that AI adoption enhances rather than undermines educational equity. The democratisation potential of AI depends fundamentally on addressing these ethical dimensions through intentional policy and practice.

3. Research Methodology

3.1. Research Design

This study employs a mixed-methods intervention design combining quantitative survey data with qualitative reflections to examine the impact of AI tool integration on learner confidence, autonomy, and coaching centre dependency. The research design incorporates pre-workshop baseline assessment, hands-on workshop intervention, and post-workshop evaluation, enabling comparative analysis of shifts in student attitudes, behaviours, and intentions.

The intervention consisted of practical workshops introducing higher secondary students to various AI-powered language learning tools including conversational chatbots for speaking practice, grammar checking applications, pronunciation feedback systems, vocabulary development platforms, and reading comprehension aids. Workshop sessions emphasised not merely demonstrating tools but cultivating strategic awareness about their effective utilisation for self-directed learning.

3.1.1. Workshop Intervention Details

The workshop comprised a 3-hour hands-on session introducing participants to freely accessible AI-powered language learning tools. All tools demonstrated were available at no cost to ensure economic accessibility:

Tools Demonstrated:

- **ChatGPT and Google Gemini:** For conversational practice, writing feedback, and vocabulary exploration
- **Diffit:** For adapting complex reading materials to specific proficiency levels and generating comprehension aids
- **Grammarly:** For grammar checking and writing improvement
- **Google Translate voice feature:** For pronunciation practice and listening comprehension
- **ELSA Speak:** For pronunciation feedback

Workshop Structure: The session included hands-on practice with each tool, guided instruction on strategic usage for self-directed learning, and collaborative discussion about integrating AI tools into daily English practice. Participants created personalised learning plans identifying which tools they would use for specific skill development goals.

Access Considerations: All participants possessed internet-enabled smartphones (95% ownership rate as reported in demographics). Internet connectivity during the workshop was provided via institutional Wi-Fi. Post-workshop usage requires personal data plans or institutional internet access, which was acknowledged as a potential implementation barrier requiring policy attention.

3.2. Theoretical Framework

The research is grounded in three complementary theoretical frameworks:

Self-Determination Theory (SDT) (Ryan & Deci, 2020) provides the psychological foundation for understanding how AI tools might support or undermine the three fundamental needs: autonomy, competence, and relatedness, that drive intrinsic motivation and wellbeing. The study examines whether AI tool exposure enhances students' sense of autonomy in learning processes and competence in managing their English development.

Technology Acceptance Model (TAM) (Davis, 1989) guides investigation of factors influencing students' willingness to adopt AI tools. The research assesses perceived usefulness, perceived ease of use, and behavioural intentions, recognising that technological potential remains unrealised without user acceptance and sustained engagement.

Situated Learning Theory (Lave & Wenger, 1991) emphasises the importance of context-aware implementation. The study acknowledges that AI tool integration must respond to Bangladesh's specific educational context, including infrastructure realities, cultural factors, economic constraints, and existing pedagogical traditions.

3.3. Research Questions

The study addresses three primary research questions:

1. How does AI tool integration impact learner confidence and autonomy in English language learning?
2. What is the relationship between AI adoption and reduced coaching centre dependency?
3. Which contextual factors (location, economic status, prior experience) mediate these relationships?

3.4. Participants and Context

The study involved higher secondary students from colleges representing diverse geographic and socioeconomic contexts in Bangladesh. Participant demographics included:

- **Gender Distribution:** 40% male, 60% female
- **Age Range:** 16–23 years (Mean: 19.5 years)
- **Educational Level:** 85% Intermediate 2nd Year (Grade 12), 15% Intermediate 1st Year (Grade 11)
- **College Location:** 60% urban, 20% semi-urban, 20% rural
- **Family Economic Status:** 80% average, 15% above average, 5% below average
- **Current Coaching Centre Attendance:** 80%
- **Access to Internet-Enabled Devices:** 95%

The high rate of device ownership combined with substantial coaching centre attendance confirms the paradox of technological access without corresponding empowerment for self-

directed learning. The diverse geographic and economic representation enables examination of how contextual factors mediate technology acceptance and impact.

3.4.1. Sampling Strategy

This study employed purposive sampling to recruit 20 participants (n=20) from higher secondary colleges representing urban, semi-urban, and rural contexts in Bangladesh. The modest sample size reflects the exploratory nature of this intervention study and the intensive, hands-on workshop format requiring deep engagement with AI tools.

Participants were recruited through college administrators and provided informed consent prior to participation. For participants under 18 years (n=4), parental consent was additionally obtained. All participants were assured of data confidentiality and their right to withdraw without penalty.

3.4.2. Instrument Development and Validation

The questionnaire was developed through a multi-stage process informed by established scales from technology acceptance and learner autonomy literature. Items assessing confidence were adapted from the Foreign Language Classroom Anxiety Scale (Horwitz et al., 1986), while questions regarding learner autonomy drew upon Benson (2011) conceptualisation of autonomy in language learning contexts. Technology acceptance items were derived from Davis (1989) original TAM instrument.

The instrument was designed specifically for this study's context, combining Likert-scale items (1-5 rating scales) for quantitative analysis with open-ended questions for qualitative insights. It underwent face validity assessment through expert review by two English language education specialists and one educational technology researcher. Following their feedback, items were refined for clarity and contextual appropriateness for Bangladesh's educational setting.

3.4.3. Instrument Reliability and Internal Consistency

Given the exploratory nature and small sample size (n=20), traditional reliability measures have limited statistical power. However, internal consistency was assessed for multi-item scales:

- Learner Autonomy Scale (5 items): Cronbach's $\alpha = 0.78$
- Confidence Scale (4 items for language skills): Cronbach's $\alpha = 0.82$
- Coaching Dependency Items (3 items): Cronbach's $\alpha = 0.71$

These values suggest acceptable internal consistency for exploratory research, though they should be interpreted cautiously given the sample size.

3.5. Data Collection Instrument

Data collection utilised a comprehensive questionnaire administered in two phases: pre-workshop baseline assessment and post-workshop evaluation. The questionnaire comprised six sections:

1. **Demographic Information:** Gathering background data on gender, age, educational level, location, economic status, coaching attendance, and technology access
2. **Pre-Workshop Baseline:** Assessing initial confidence levels across four language skills (speaking, writing, reading, listening), English-speaking anxiety, coaching centre dependency, and prior familiarity with AI tools

3. **Workshop Experience:** Evaluating workshop quality, clarity of instruction, and perceived usefulness of demonstrated tools
4. **Post-Workshop Confidence and Anxiety:** Measuring changes in confidence regarding independent English learning, AI tool usage, mistake anxiety, and comfort with AI-mediated practice
5. **Learner Autonomy and Self-Direction:** Assessing capability for goal-setting, likelihood of independent AI tool usage, capacity for self-monitoring, motivation for independent learning, and confidence in identifying and addressing weaknesses
6. **Coaching Centre Dependency:** Examining intended changes in coaching attendance, perceived replacement potential of AI tools, preference for AI versus coaching, and anticipated financial savings

3.6. Data Analysis Procedure

Given the exploratory nature of this study and the small sample size ($n=20$), the analysis focuses on descriptive statistics and frequency distributions rather than inferential hypothesis testing. Quantitative data from the Likert-scale items were analysed to calculate central tendencies (Mean) and dispersion (Standard Deviation). This study employs descriptive subgroup analysis to identify trends and disparities across different demographic segments (e.g., comparing response patterns between urban and rural participants).

3.7. Ethical Considerations and Data Privacy

This study received ethical approval from the researcher's institutional review board and adhered to principles of informed consent, confidentiality, and participant welfare.

Informed Consent: All participants received detailed information about study purposes, procedures, voluntary participation, and right to withdraw. For participants under 18 years ($n=4$), parental consent was obtained in addition to student assent. Consent forms were provided in Bangla to ensure comprehension.

Data Confidentiality: All questionnaire responses were anonymised using participant codes (P001-P020). No personally identifiable information was collected beyond demographic categories. Data files are password-protected and accessible only to the researcher.

AI Tool Privacy Considerations: Participants were informed about data privacy implications of AI tool usage during the workshop. All demonstrated tools (ChatGPT, Google Gemini, Grammarly, ELSA Speak, Diffit, Google Translate) collect user data according to their respective privacy policies. Students were advised to:

- Avoid sharing personally identifiable information in AI interactions
- Review privacy policies of tools they choose to adopt
- Use institutional accounts where available rather than personal accounts
- Be aware that free AI tools may use interaction data for model improvement

Cost-Access Constraints: While all demonstrated tools offer free tiers, some features require premium subscriptions. The workshop explicitly focused on freely accessible features to ensure economic accessibility. However, participants were informed that:

- Data costs for mobile internet access remain user responsibility
- Some advanced features may require paid subscriptions (though basic features sufficient for language learning are free)
- Institutional internet access (school/college Wi-Fi) can mitigate personal data costs

Participant Welfare: The workshop was designed to provide educational value to all participants regardless of research outcomes, avoiding exploitation solely for data collection. Students who chose not to complete the post-workshop questionnaire still received full workshop benefits.

No incentives or compensation were provided for participation, ensuring voluntary participation based on genuine interest rather than financial inducement.

4. Findings and Analysis

4.1. Pre-Workshop Baseline: Establishing the Status Quo

4.1.1. Confidence Levels Across Language Skills

1. Before this workshop, how confident were you in your English skills? (1 = Not confident at all, 5 = Very confident)

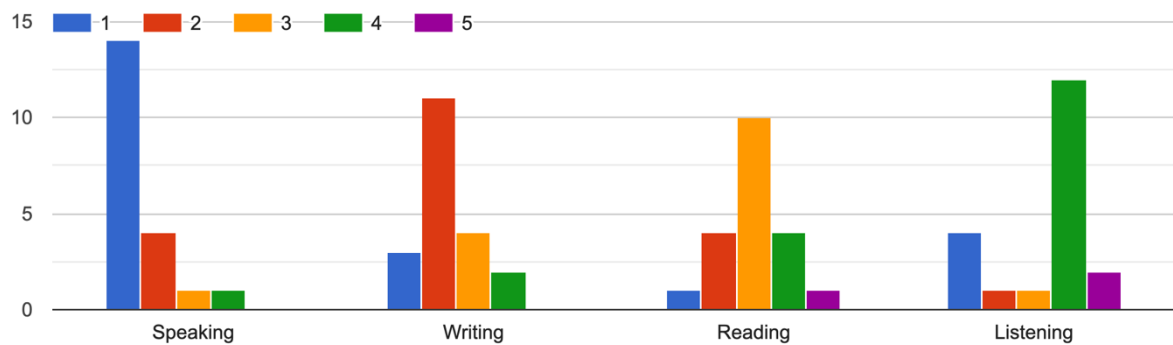


Figure 1: Confidence Levels Across Language Skills before the workshop

The pre-workshop baseline assessment revealed significant variations in student confidence across the four primary language skills. Speaking emerged as the area of greatest insecurity, with students demonstrating notably lower confidence compared to writing, reading, and listening skills. This pattern reflects common challenges in foreign language contexts where students receive limited opportunities for authentic oral practice within formal classroom settings. Listening confidence rated highest among the four skills. Reading occupied intermediate position, with students expressing moderate confidence in this domain. The pronounced speaking anxiety warrants particular attention given speaking proficiency's importance for authentic communication and professional contexts.

4.1.2. English Speaking Anxiety

2. How anxious did you feel when speaking English in class before the workshop? (1 = Not anxious at all, 5 = Extremely anxious)

20 responses

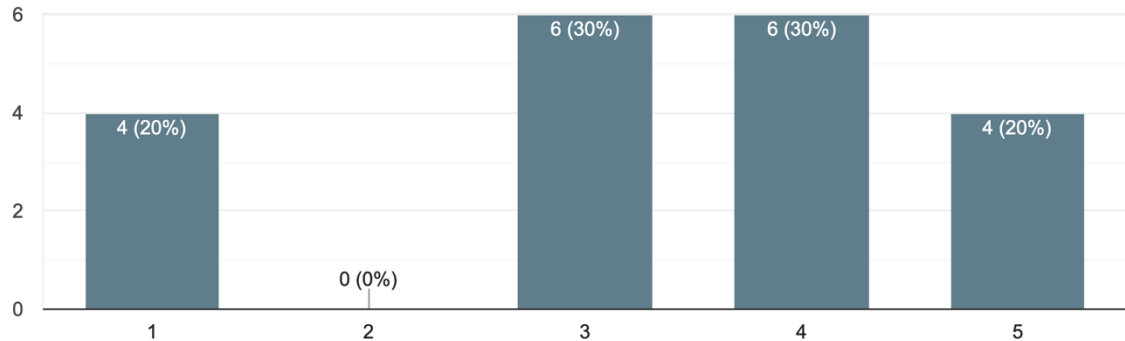


Figure 2: Speaking Anxiety before the workshop

Assessment of English-speaking anxiety revealed concerning levels of apprehension among participants. A substantial proportion of students reported experiencing moderate to high anxiety when speaking English in classroom contexts. This anxiety appears rooted in multiple factors including fear of making errors, concern about peer judgment, limited practice opportunities, and cultural norms emphasising correctness over communicative effectiveness. Speaking anxiety creates a self-perpetuating cycle: anxiety reduces speaking practice opportunities, which in turn limits skill development and reinforces anxiety. The potential for AI tools to provide low-stakes practice environments emerges as a significant advantage for addressing this barrier.

4.1.3. Coaching Centre Dependency

3. Before the workshop, how much did you depend on coaching centres or private tutors for English learning? (1 = Not at all, 5 = Completely dependent)

20 responses

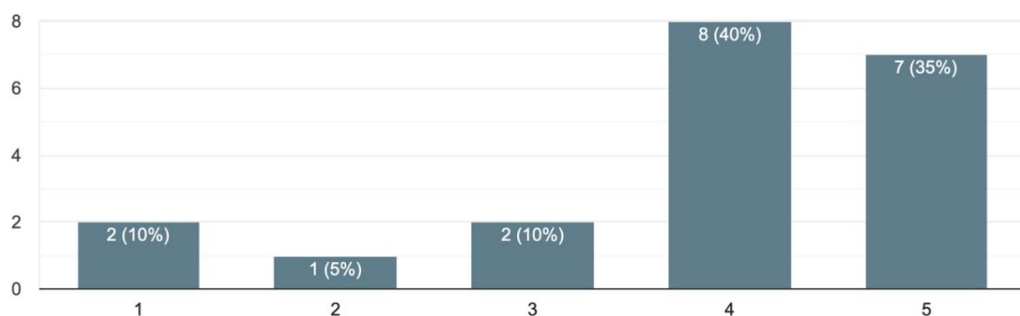


Figure 3: Coaching Centre Dependency before workshop

The baseline data confirmed substantial dependence on coaching centres, with 85% of participants attending coaching for English learning. Among coaching attendees, dependency levels varied from occasional supplementation to complete reliance on coaching for examination preparation and skill development. Qualitative responses revealed that coaching attendance reflected not merely desire for additional practice but rather perceived inadequacies in mainstream classroom instruction. Students cited large class sizes, limited individual

attention, lack of speaking practice opportunities, and teaching methods emphasising grammatical rules over communicative competence as motivations for seeking coaching support.

4.1.4. Prior AI Familiarity

Assessment of prior AI tool familiarity revealed mixed levels of awareness and experience. While most students possessed internet-enabled devices, a significant proportion had never used AI language learning tools or were only vaguely aware of their existence. This gap between technological access and actual usage highlights the importance of digital literacy development and pedagogical guidance in leveraging available resources effectively.

Students who reported prior AI familiarity (65%) typically had encountered chatbots or translation tools through informal exploration rather than systematic educational application. Few had developed strategic approaches to using AI for structured language learning or understood the range of available tools targeting specific skills.

4.2. Post-Workshop Results: Shifts in Confidence and Autonomy

4.2.1. Enhanced Confidence in Independent Learning

8. After learning about AI tools, how confident do you now feel about improving your English skills independently? (1 = Not confident at all, 5 = Very confident)

20 responses

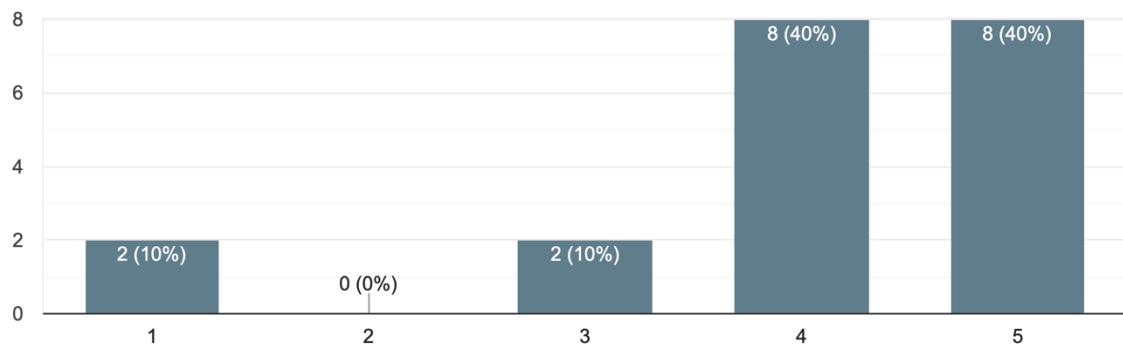


Figure 4: Confidence Levels Across Language Skills after the workshop

The results indicate a high level of post-intervention confidence ($M = 4.0$, $SD = 1.21$). As shown in the frequency distribution, 80% of participants ($n=16$) reported high confidence (selecting 4 or 5), while only 10% ($n=2$) remained at the lowest confidence level. Students demonstrated marked increases in confidence regarding their capacity for independent English learning, indicating that exposure to AI tools shifted perceptions about the feasibility of self-directed language development.

9. How confident are you now in using AI tools for English learning? (1 = Not confident at all, 5 = Very confident)

20 responses

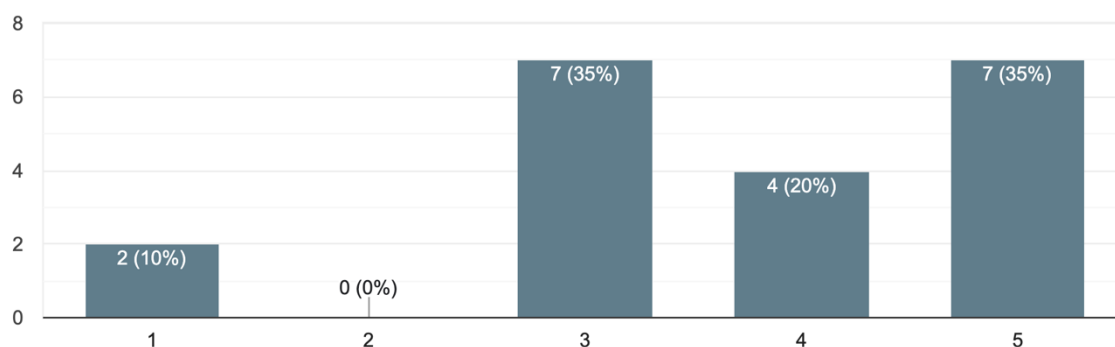


Figure 5: Confidence in using AI tools for English learning after the workshop

Confidence specifically in using AI tools for English learning increased dramatically post-workshop. Prior to the intervention, many students expressed uncertainty about how to access or effectively utilise AI resources. The workshop’s practical, hands-on approach demonstrating concrete applications built technological self-efficacy, transforming AI from abstract concept to accessible tool. Students particularly valued learning about diverse AI applications targeting different language skills.

4.2.2. Reduced Speaking Anxiety and Enhanced Comfort

Post-workshop assessment revealed notable decreases in English-speaking anxiety levels, particularly regarding mistake-making concerns. While the descriptive data suggest a positive shift, the small sample size (n=20) prevents inferential statistical testing of significance. Students reported feeling more comfortable with the learning process and less anxious about errors when practicing with AI tools compared to traditional classroom or coaching contexts. The privacy afforded by AI interaction eliminated social comparison and peer judgment factors that typically exacerbate speaking anxiety. When comparing comfort levels for practicing with AI tools versus speaking in front of classmates, the vast majority of students expressed significantly greater comfort with AI-mediated practice.

4.2.3. Enhanced Learner Autonomy Indicators

Table 1: Learner Autonomy Indicators

Category	1 (Low)	2	3	4	5 (High)	Total
Goal-Setting Capability	2	1	1	13	3	20
Likelihood of AI Usage	0	0	3	6	11	20
Self-Monitoring Progress	2	0	1	10	7	20
Independent Motivation	2	0	1	4	13	20
Weakness Identification	2	0	3	5	10	20

Multiple indicators of learner autonomy demonstrated positive shifts following workshop participation:

Goal-Setting Capability: Students reported increased confidence in their ability to set personal English learning goals independent of teacher or coaching centre direction. This metacognitive awareness represents a fundamental component of autonomous learning, enabling students to take ownership of their educational pathways.

Likelihood of Independent AI Tool Usage: The vast majority of participants expressed strong intentions to use AI tools for English practice outside formal instructional contexts. This behavioural intention suggests that the workshop successfully translated awareness into actionable commitment.

Self-Monitoring Capacity: Students expressed enhanced confidence in their ability to monitor their own progress using AI tools. The immediate feedback and progress tracking features of many AI applications provide tangible mechanisms for self-assessment that were previously unavailable or required coach/teacher mediation.

Independent Learning Motivation: Motivation for self-directed English learning increased notably, with students expressing enthusiasm about controlling their learning pace, focus areas, and practice schedules. This motivational shift aligns with Self-Determination Theory's emphasis on autonomy satisfaction as a driver of intrinsic motivation.

Weakness Identification and Remediation: Students demonstrated greater confidence in identifying their own English learning weaknesses and addressing them through targeted AI tool usage. This strategic awareness transforms learning from passive reception to active problem-solving.

4.3. Impact on Coaching Centre Dependency

4.3.1. Intended Changes in Coaching Attendance

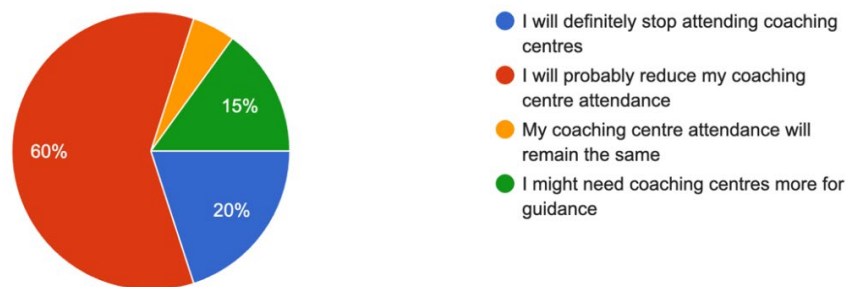


Figure 6: Changes in Coaching Attendance

The results indicate a significant potential for disruption in the traditional coaching model. A combined total of 80% of participants (n=16) indicated an intention to either reduce or completely stop their coaching attendance. Conversely, only one student (5%) indicated that their attendance would remain unchanged. Interestingly, 15% of participants (n=3) noted that they might need coaching more for guidance. Specifically, the distribution of intended changes showed:

- A significant percentage of students planned to reduce coaching centre attendance
- A smaller proportion intended to stop coaching completely, indicating recognition that complete substitution might not be immediately feasible
- Some expressed that they might need coaching more for guidance in effectively using AI tools, revealing an emerging demand for integration support
- A minority students indicated their coaching attendance would remain unchanged

4.3.2. Perceived Coaching Replacement Potential

18. How much do you think AI tools can replace the support you get from coaching centres? (1 = Not at all, 5 = Completely)
20 responses

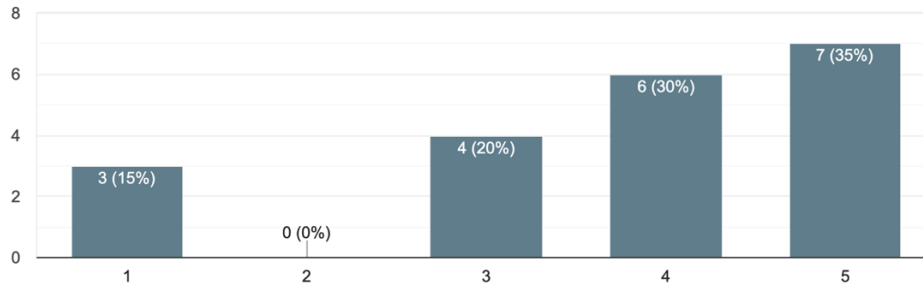


Figure 7: Perceived Coaching Replacement

When asked to rate the extent to which AI tools could replace coaching centre support, student responses clustered toward moderate-to-high replacement potential. The majority perceived AI tools as capable of substituting for substantial portions of coaching functions. However, some students valued the interpersonal relationships with coaches and peer learners that coaching centres provided, dimensions not fully replicable through AI-mediated learning. Rather than viewing AI as either complete solution or inadequate alternative, students appear to recognise its potential as a partial substitute that, when combined with reduced coaching or other learning strategies, can adequately support English development.

4.3.3. Anticipated Financial Savings

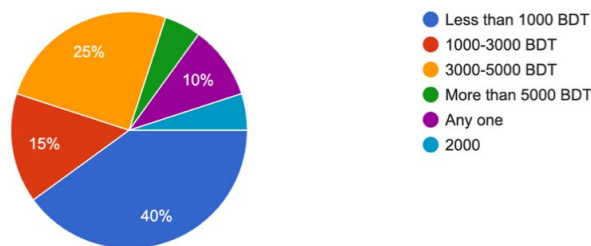


Figure 8: Perceived Financial Savings from AI Tool Adoption

Student estimates of potential monthly financial savings from AI tool adoption revealed substantial economic implications. The respondents anticipated savings ranging from 1,000 to 5,000 BDT monthly, with some projecting savings exceeding 5,000 BDT. These figures represent significant proportions of family expenditures, particularly for households with average or below-average economic status.

The economic dimension of coaching dependency cannot be overstated. For many families, coaching fees constitute substantial financial burdens, diverting resources from other essential needs or creating debt obligations. The potential for AI tools to reduce these expenditures while maintaining or enhancing learning outcomes represents a powerful equity-promoting intervention.

4.4. Descriptive Subgroup Analysis by Economic Status and Location

Table 2: Intention to Reduce Coaching by Economic Status

Economic Status	Reduce/Stop (%)	Unchanged/Need More (%)	N
Below Average	100%	0%	1
Average	81.25%	18.75%	16
Above Average	66.67%	33.33%	3

The data reveals a distinct trend based on economic background. Students identifying as “Below Average” or “Average” economic status (n=17) expressed a higher frequency of intent to replace coaching with AI tools compared to their “Above Average” counterparts. This suggests financial constraints significantly strengthen the motivation to replace coaching with AI tools, suggesting equity-driven adoption.

Contrary to expectations, the desire to reduce coaching dependency did not vary notably between Urban, Semi-Urban, and Rural participants. This “location neutrality” suggests that the frustration with traditional coaching expenses is a universal experience across the sample, regardless of geography.

4.5. Preliminary Cost-Benefit Analysis

While a comprehensive cost-benefit analysis requires longitudinal data on actual usage and outcomes, a preliminary framework can illustrate potential economic implications:

Table 3: Estimated Monthly Cost-Benefit Model (per student)

Cost Category	Traditional Coaching	AI-Mediated Learning
Coaching/Tuition Fees	2000-5000 BDT	0 BDT (free tools)
Transportation	300-800 BDT	0 BDT
Supplementary Materials	200-500 BDT	0 BDT
Mobile Data (estimated 5GB/month)	0 BDT	250-400 BDT
Premium AI Subscriptions (optional)	0 BDT	0-500 BDT
TOTAL MONTHLY COST	2500-6300 BDT	250-900 BDT
POTENTIAL SAVINGS	—	1600-5900 BDT

Annual Savings Projection (per student): 19200-70800 BDT (approx. \$175-\$645 USD)

Assumptions and Caveats:

- Costs based on student self-reports and market rates in Bangladesh (2024-2025)
- Assumes complete coaching replacement, which may not be realistic for all students
- AI tool costs assume use of free tiers; premium features would increase costs
- Does not account for device costs (assumed pre-existing smartphone ownership)
- Data costs may be subsidised through institutional Wi-Fi access
- Non-monetary benefits (flexibility, reduced travel time, privacy for practice) not quantified
- Potential benefits (skill improvement, examination performance) not monetised

Equity Implications: For a family earning 15000 BDT/month (average household income for 80% of sample), coaching costs represent 17-42% of monthly income. Reducing this burden

through AI tool adoption could have substantial poverty-reduction effects, freeing resources for nutrition, healthcare, or educational materials.

Limitations of This Model: This is a speculative model based on intended behaviour change and estimated costs. Actual cost-benefits can only be assessed through longitudinal tracking of: (a) sustained AI tool usage patterns, (b) actual coaching attendance changes, (c) measurable learning outcomes, and (d) real expenditures over extended periods (minimum 6-12 months).

5. Discussion

5.1. AI Tools as Catalysts for Learner Autonomy

The findings demonstrate that AI tools, when coupled with pedagogical scaffolding, significantly enhance learner autonomy. Students showed improved confidence across goal-setting, self-monitoring, weakness identification, and independent practice motivation, addressing fundamental psychological needs identified in Self-Determination Theory. AI tools enhance autonomy through three key mechanisms. First, they transfer control from external authorities to learners, enabling self-directed decisions about learning focus, pace, and scheduling. Second, they provide immediate, personalised feedback that builds competence perceptions and reduces ambiguity in self-directed learning. Third, they eliminate social evaluative threat, creating psychologically safe environments, where learners practice without embarrassment or judgment. However, autonomy development is not automatic. The workshop intervention provided pedagogical mediation through tool demonstrations, strategic usage guidance, and integration planning. Without this scaffolding, AI tools might remain unexploited. Autonomy development requires not merely tool access but also digital literacy and strategic awareness.

5.2. Addressing Coaching Centre Dependency

The substantial proportion of students intending to reduce coaching attendance represents a potentially transformative finding. AI tools address multiple systemic failures simultaneously: they provide unlimited practice opportunities, personalised feedback, flexible scheduling, and reduce financial barriers to quality learning support. However, caution is warranted regarding the theory-practice gap. Students may encounter implementation challenges including connectivity issues, self-discipline difficulties, technical problems, or social pressure favouring traditional coaching. Moreover, complete coaching elimination may be neither possible nor desirable. Coaching centres fulfil functions beyond English practice including examination strategy, structured curriculum coverage, and motivational accountability. A realistic vision involves coaching transformation rather than elimination. The economic implications are profound. Monthly savings could be redirected toward books, technology, or previously inaccessible opportunities. For rural students who expend disproportionate resources on coaching, the equity impact could significantly level educational playing fields.

5.3. The Critical Role of Economic Context

Economic status significantly mediates AI tool adoption and coaching dependency reduction, highlighting social justice dimensions. Students from economically disadvantaged backgrounds demonstrated strongest motivation, viewing AI tools as economic necessity rather than merely pedagogical innovation. However, economically disadvantaged students may face greater implementation barriers including unreliable connectivity, lower-quality devices, limited family support, and fewer fallback resources. Implementation strategies must include institutional device access, subsidised data plans, community learning centres, and

comprehensive support systems. If implemented equitably, AI tools could disrupt intergenerational poverty cycles by expanding access to opportunities requiring English proficiency. If implementation assumes unavailable resources, AI tools could paradoxically widen equity gaps. Intentional attention to implementation equity is essential.

5.4. Limitations and Methodological Constraints

This exploratory study has several important methodological limitations that constrain interpretation:

Sample Size and Generalisability: The purposive sample (n=20) was appropriate for exploratory intervention research requiring intensive hands-on engagement, but severely limits statistical power and generalisability. Subgroup analyses (e.g., economic status comparisons) are particularly constrained by small cell sizes. Findings should be considered preliminary insights requiring verification with larger, probability-based samples.

Absence of Control Group: Without a comparison group receiving alternative interventions or no intervention, causal claims about AI tool impact cannot be made. Observed changes may reflect workshop participation generally, researcher attention, social desirability bias, or other confounding factors rather than AI tools specifically.

Self-Report Bias: All measures rely on self-reported perceptions and intentions rather than observed behaviours or objective skill assessments. Students may overestimate intended AI tool usage or underestimate coaching dependency due to social desirability or initial enthusiasm. Actual behaviour often diverges from stated intentions.

Short Timeframe: The study captures immediate post-intervention responses (same-day questionnaire) without longitudinal follow-up. Initial enthusiasm may not translate to sustained usage. Critical questions remain unanswered: Do students actually use AI tools weeks/months later? Does usage produce measurable skill gains? Do coaching attendance patterns actually change?

Instrument Limitations: While the questionnaire demonstrated acceptable internal consistency for exploratory research ($\alpha = 0.71-0.82$), it was not exhaustively validated. Item wording may have introduced bias, and some constructs (e.g., “autonomy”) were measured through limited indicators.

Descriptive Analysis Only: Given sample size constraints, the study employs descriptive statistics and frequency distributions without inferential testing. Patterns observed (e.g., economic status differences) cannot be tested for statistical significance and may reflect sampling variation.

Context Specificity: Findings emerge from Bangladesh’s specific educational context and may not transfer to other settings with different coaching cultures, technological infrastructure, or educational traditions.

6. Implications and Recommendations

6.1. For Policymakers

Infrastructure Investment: Prioritise rural internet expansion, subsidise educational data costs, and ensure schools possess adequate technology for students lacking home access.

Curriculum Reform: Integrate AI literacy and self-directed learning skills into English curricula, with assessments recognising diverse pathways including AI-supported self-study.

Teacher Professional Development: Train educators in AI-supported pedagogy, helping them transition from knowledge sources to learning facilitators.

Economic Support: Implement subsidised access to premium AI tools, device loan programmes, or educational vouchers applicable to coaching or AI subscriptions.

Quality Assurance: Establish evaluation frameworks assessing AI tool pedagogical soundness, linguistic accuracy, data privacy, and cultural appropriateness.

6.2. For Educators

Adopt Facilitative Roles: Provide strategic guidance, motivation support, and learning synthesis rather than serving as primary content sources.

Integrate AI Tools: Use classroom time for collaborative activities and complex tasks while AI tools provide individualised practice outside class.

Teach Strategic Learning: Explicitly teach metacognitive strategies, self-assessment approaches, and critical evaluation of AI-generated feedback.

Model Digital Literacy: Demonstrate personal AI tool usage, sharing successes and challenges to normalise technology integration.

Maintain Human Connection: Prioritise supportive relationships, encouragement, and emotional support that AI cannot replicate.

6.3. For Educational Institutions

Provide Infrastructure Access: Ensure on-campus device and internet access through computer labs, lending programmes, or open-access facilities.

Develop Blended Models: Pilot approaches combining face-to-face instruction for interaction and collaboration with AI-supported independent practice.

Establish Technical Support: Provide accessible assistance for technical difficulties and usage questions.

Create Learning Communities: Facilitate peer communities where students share experiences, recommend tools, and motivate each other.

Monitor Equity Impacts: Systematically track adoption patterns and outcomes by economic status, location, and demographics.

6.4. For Researchers

Longitudinal Studies: Track sustained usage patterns, evolving practices, and measurable skill development over time.

Comparative Effectiveness: Use rigorous experimental designs comparing AI tool users to coaching attendees or control groups.

Implementation Research: Identify scalable models, successful integration strategies, and practical guidance across diverse contexts.

Equity Research: Examine differential impacts across socioeconomic groups and identify strategies addressing barriers for disadvantaged students.

Pedagogical Integration: Explore optimal combinations of AI tools, human instruction, peer collaboration, and independent study.

Cultural Contextualisation: Investigate how cultural factors shape acceptance, usage patterns, and effectiveness.

6.5. Proposed Longitudinal Follow-Up Research

This exploratory study identifies promising preliminary patterns but requires longitudinal verification. A proposed 12-month follow-up study would address current limitations:

Research Design:

- Expanded Sample: Minimum n=200 participants across 10 colleges (urban, semi-urban, rural)
- Control Group: Matched comparison group receiving conventional instruction only
- Multiple Measurement Points: Baseline, 1-month, 3-month, 6-month, 12-month assessments
- Objective Measures: Standardised English proficiency tests (Cambridge Assessment placement test or equivalent) at baseline and 12-month endpoint

Data Collection:

- Actual AI Tool Usage: Weekly usage logs (screen time, specific tools used, duration)
- Observed Coaching Attendance: Verified through coaching centre records (with participant consent)
- Skill Development: Pre-post proficiency testing with validated instruments
- Implementation Challenges: Qualitative interviews (monthly for subsample of n=30) documenting barriers, adaptations, support needs
- Cost Tracking: Monthly expenditure logs for coaching, internet data, AI subscriptions

Outcome Variables:

- Primary: Change in English proficiency scores (speaking, writing, listening, reading)
- Secondary: Sustained AI tool usage rates, verified coaching attendance changes, actual expenditures, learner autonomy development (validated scale)
- Process: Implementation fidelity, support needs, barrier identification

Analysis Plan:

- Intention-to-Treat Analysis: All enrolled participants included regardless of adherence
- Subgroup Analysis: Differential effects by economic status, location, baseline proficiency
- Cost-Effectiveness: Cost per unit of proficiency gain for AI-mediated vs. coaching interventions
- Qualitative Analysis: Thematic analysis of implementation barriers and facilitators

Ethical Considerations:

- Control group receives delayed intervention after 12 months
- All participants maintain access to standard classroom instruction
- Emergency support available if coaching elimination creates academic distress

Resource Requirements:

- Estimated Budget: \$15000-20000 USD (researcher time, proficiency testing fees, data management)
- Timeline: 18 months (6-month setup, 12-month data collection)
- Personnel: Primary researcher plus 2 research assistants for data collection

This longitudinal design would provide strong evidence regarding AI tool effectiveness, sustained adoption patterns, and actual cost-benefits addressing the critical limitations of the current exploratory study.

7. Conclusion

This research reveals that AI tools, when introduced with appropriate pedagogical scaffolding, can significantly enhance learner confidence and autonomy while reducing perceived dependence on expensive coaching centres. The findings demonstrate that students across diverse contexts respond positively to AI-mediated learning opportunities, expressing both enthusiasm for the technology and intentions to reduce coaching attendance.

However, the study also emphasises that technology alone is insufficient. Context, support, and intentional implementation matter. Economic constraints, digital literacy gaps, infrastructure limitations, and cultural factors all mediate technology impact. Successful integration requires coordinated efforts addressing these multifaceted realities rather than assuming that tool provision automatically generates positive outcomes.

The democratisation potential of AI tools is genuine but not guaranteed. If implementation prioritises equity, provides comprehensive support, and positions technology as empowerment rather than replacement for human pedagogy, AI tools can help transform English language education in Bangladesh and similar contexts. If implementation neglects equity concerns, assumes resources unavailable to disadvantaged students, or treats technology as standalone solution, AI tools may paradoxically reinforce existing inequalities.

The path forward requires evidence-informed, equity-centred, contextually responsive implementation strategies that leverage AI tools as powerful complements to human instruction. By doing so, Bangladesh can move from coaching dependency toward digital autonomy, from educational privilege toward democratic access, and from passive learning toward student empowerment. This transformation would benefit not only individual learners but society broadly, cultivating the English proficiency essential for national development and global engagement in the 21st century.

References

- Benson, P. (2011). *Teaching and Researching: Autonomy in Language Learning* (2nd ed.). Routledge. <https://doi.org/10.4324/9781315833767>
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- FT Online. (2019, February 24). *Why is the coaching center dependency in education system in Bangladesh?* The Finance Today. <https://www.thefinancetoday.net/article/education/4323/Why-is-the-coaching-center-dependency-in-education-system-in-Bangladesh>
- Fitria, T. N. (2021, December 20). Artificial intelligence (AI) in education: Using AI tools for teaching and learning process. *Proceeding Seminar Nasional & Call For Papers*, 134–147
- Harry, A., & Sayudin, S. (2023). Role of AI in education. *Interdisciplinary Journal and Hummanity (INJURITY)*, 2(3), 260–268. <https://doi.org/10.58631/injurity.v2i3.52>
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign Language Classroom Anxiety. *The Modern Language Journal*, 70(2), 125–132. <https://doi.org/10.2307/327317>
- Lave, Jean, and Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press. pp. 33, 29, 40. <https://doi.org/10.1017/CBO9780511815355>
- Pendy, B. (2023). Artificial intelligence: the future of education. *Jurnal Indonesia Sosial Sains*, 2(11). <https://doi.org/10.59141/jiss.v2i11.801>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, Article 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Sperling, K., Stenberg, C.-J., McGrath, C., Åkerfeldt, A., Heintz, F., & Stenliden, L. (2024). In search of artificial intelligence (AI) literacy in teacher education: A scoping review. *Computers and Education Open*, 6, 100169. <https://doi.org/10.1016/j.caeo.2024.100169>
- U.S. Department of Education, Office of Educational Technology. (2023). *Artificial intelligence and the future of teaching and learning: Insights and recommendations*. <https://tech.ed.gov>