AI & prompt engineering in higher education of Bangladesh: qualitative approach

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AI & Prompt Engineering in Higher Education of Bangladesh: Qualitative Approach

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Abstract— **Artificial intelligence (AI) is rapidly reshaping higher education globally, yet its role in Bangladeshi universities remains untapped. This study examines how both teachers and students perceive and practice prompt engineering the skill of instructing generative AI tools such as ChatGPT and Gemini. Using qualitative methods, five focus group discussions (FGDs) were conducted across different public and private universities, involving 19 participants. The discussions revealed a clear contrast where students described regular use of AI for assignments, summaries, coding, and idea generation, showing strong support for curricular integration at higher studies, while teachers expressed caution, raising concerns about plagiarism, overreliance, and the damage of critical thinking. Teachers emphasized the need for training, ethical codes, and institutional as well as national committees, whereas students highlighted barriers of access, awareness, and the absence of formal guidance. The findings illustrate that AI has already become a practical learning partner for students, while institutional readiness and faculty preparedness is not updated. The study contributes to debates on technology adoption in education by showing how generational and disciplinary differences shape attitudes. It concludes that this is not an endpoint but the start of a necessary conversation, calling for future research, policy innovation, and collaborative action to integrate AI and prompt engineering responsibly into higher education.**

Keywords - ***Artificial Intelligence (AI), prompt engineering, Higher Education, Bangladesh.***

I .INTRODUCTION

The Artificial intelligence (AI) AI is redefining higher education at global level. Generative AI tools like ChatGPT, Gemini, and Perplexity are altering not only how students embrace and interact with information but also what learning and teaching looks like in the classroom [3], [9]. These are tools that learners and educators must be engineered in a timely fashion prompt engineering, which is the ability to generate clear, meaningful instructions. This is increasingly now referred as a new type of digital literacy that will be necessary for the future of education and work [2], [13].

Studies have found that generative AI can enhance higher-order thinking/creativity and personalized learning in a thoughtful way if it is used properly [5], [10]. Prompt Engineering is not just question asking, it is making sense of the problem, being context aware, and their reflection on AI's answers [4]. Teachers are also trying out AI for lesson plans and tests and students are given an opportunity to have a more effective and interactive education [12]. However, challenges exist.

Too much dependence on AI could stifle creativity and widespread reports of plagiarism, misinformation and ethical issues are common [8], [1]. Without training, students and teachers could use AI as an abridgment, rather than a tool for more in-depth learning [6].

In Bangladesh, such discourse is still short of such analysis. Higher education institutions have embraced digital platforms, particularly in the wake of COVID-19, but very little is understood about how students and teachers are interacting with generative AI. While most reports are limited to digital access [11], [7] and policy, prompt engineering practices in the context of Bangladeshi classrooms have not yet been considered. This generates a critical lacuna: it is hard to prepare students for the requirements of an AI-enabled future without an understanding of these practices.

This paper tries to fill in that gap, conducting Focus

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Group Discussions (FGDs) with students and teachers of universities in Bangladesh. It discusses the prompt engineering spectrum from an academic perspective, identifying both opportunities and obstacles

Research Objectives:

1. To explore how students and educators in Bangladesh perceive and practice prompt engineering in higher education.
2. To identify opportunities and challenges associated with its integration in academic settings.
3. To provide evidence-based recommendations for curriculum design and policy reforms that prepare Bangladeshi universities for an AI-driven future.

II. METHODOLOGY

The study is designed as qualitative research to understand the developing role of prompt engineering at Bangladesh higher education. The fact is prompt engineering is still a recently- discovered, relatively little studied behavior, a qualitative methodology was the most suitable. While quantitative surveys can offer coverage but not depth, qualitative methods can help researchers to deepen their understanding of experiences, perceptions and practices (Creswell & Poth, 2018). The study was able to identify themes, challenges, and opportunities that are grounded in lived experience by engaging directly with participants to hear their stories.

A. Data Collection Method

Data collection The FGDs were the main source of data for the research. FGDs are an appropriate methodology for generating exploratory research data, particularly in new and under- researched areas of significance (Krueger & Casey, 2015). Group discussions create space for participants to think through, challenge and respond to each other's perspectives. This dynamic frequently results in insights that may not be apparent in individual interviews and positions FGDs to be a useful method for exploring the shared experiences of prompt engineering.

Five FGDs were done in total:

- Private University Teachers: 2 FGDs (of 3 participants per each FGD).
- 1 FGD with 3 teachers of Public University
- Private University Students: 1 FGD (5 participants).
- Public University Students: 1 FGD (5 participants).

Altogether, 19 participants were involved. Such distribution permitted us to compare experiences in regard to institutional typology (public or private) and role (teacher or student), thus encouraging diversity of viewpoints.

A. Sampling Strategy

The participants were selected based on purposive sampling. Teachers had to be currently engaged in undergraduate or graduate teaching, and have some experience with digital or AI- supported learning tools. Regarding students, respondents were selected from fields in which the use of generative AI tools has become more apparent, such as management, information systems and business studies. Here was no goal about statistical representativeness, but being satisfied that people were included meaningfully in the discussion.

This purposeful sampling of participants enriched the insights presented by incorporating teachers focusing on pedagogy and academic integrity, and students who are using generative AI as they engage daily with their academic work.

B. FGD Process

Duration of each FGD was between 30-40 mints. Sessions with participants took place via online. A semi-structured discussion guide was utilized to maintain comparability among sessions and provide flexibility for participant's individualized experiences. Key discussion areas included:

- Applications of generative AI tools in teaching, projects, and research.
- Knowledge and application of prompt engineering in the work of study.
- Beliefs in learning, creativity, and efficiency opportunities.
- Issues including ethical reservations, dependency and lack of training.
- Future role of immediate engineering in higher education.

Sessions were audio-recorded with the consent of participants. Field notes were recorded on a note pad to document non-verbal cues and contextual features. These notes were all later triangulated against the transcripts to increase confidence in data interpretations.

C. Data Analysis

Thematic analysis is a method often used in qualitative research to identify, analyze and report patterns within data (Braun & Clarke, 2006). The analysis followed these steps:

- Transcription: All FGDs were transcribed verbatim to preserve participants' voices.
- Initial coding: Transcripts were read multiple times and broken down into meaningful units of information.
- Theme development: Broader themes were

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generated by connecting categories across teacher and student groups.

- Interpretation: Themes were refined to highlight commonalities, differences, and the significance of prompt engineering in the Bangladeshi context.

This systematic procedure provided transparency and reproducibility in the process, but also allowed the research team to capture both collective patterns and individual insights.

D. Ethical Considerations-Ethical considerations ethical soundness was a concern in each step of the research process. The following procedures were adhered to:

- Informed Consent: All participants were informed about the purpose of the study, procedures and their rights. Verbal consent was obtained prior to participation. Participants were told they could opt out of the discussion at any time without penalty.
- Anonymity: To maintain confidentiality, the data contained no individual's names and institutional titles. Instead, they were assigned codes in the process of transcribing and analyzing the data.
- Privacy and security: All audio-recordings and transcripts were saved in secure, password protected folders accessible only to the research team. Data summaries and results were presented in composite format in order to ensure that individual participants could not be identified.
- Security of Data: Digital records were encrypted with password protection. The raw data used during the current study are available from the corresponding author upon reasonable request and only within the research team. Data will only be kept for academic purposes and data destruction will be performed after study completion according to ethical conduct guidelines.
- Respect and reflexivity: Discussion groups were conducted in a respectful manner, in which free expression was valued from the participants. Facilitator was neutral to enhance the participation and to avoid domination and subjugation of discussion on any issue.Such ethical procedures assured that participants' privacy, dignity, and trust were respected at all times during the research.

III. RESULTS

The results from the 5 FGDs show how teachers and students in Bangladesh are accommodating AI and redirect engineering into higher education. Every group brought unique, yet connected concerns shaped by their experiences in teaching and learning, discipline specific practices, and commonplace academic challenges. Those conversations not only underscored the ways people are already making use of AI tools, but they also exposed broader anxieties over academic honesty, creativity and the preparedness of institutions. Here, participant demographics including their reflections and free writing sample are presented for each group in the paragraphs below.

TABLE 1
GROUP 1: FGD-1 (PRIVATE UNIVERSITY)
[TEACHERS]

Designation	Code	Experience of Teaching in Higher Education
Assistant Professor	IDF01	14 years
Senior Lecturer	IDF02	13 years
Assistant Professor	IDF03	18 years

This group has three experienced private university faculty members with backgrounds in chemistry, medical anthropology, and marketing; they offered balanced but tentative views on AI and education.

IDF01 told her students that she occasionally checks ChatGPT while preparing for lectures, but she added: "*You can use AI for information gathering, but you have to say it in your own way.*

Word-for-word copying destroys analysis." Her language was open and cautious, welcoming AI as a tool, not a replacement for thought.

IDF02 expressed reluctance, stating that they lack a profound understanding and hence fail to guide students. "*I let them do it, but I can't teach them.*" By admitting he'd been out of touch, the teacher exemplified the digital divide that educators sometimes face due to their age.

Although more open to the technology, IDF03 set "conditions" for acceptance: "*We must not run out of AI-based technology. Never copy-past use it for ideas and concepts. And correct citation is crucial.*"

Curriculum integration divided the group. IDF01 and IDF02 strongly opposed formal AI implementation: "*If we embed AI in your studies, people no longer want to learn deeply*" IDF01 warned. For example, chemistry requires rote understanding of symbols and formulas. IDF03 was more flexible and said that integration may be beneficial if a qualifying committee designs the curriculum.

Overall Findings from the Discussion:

This team displayed a sense of cautiousness: They were

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AI users themselves, but they resisted adding it to the curriculum formally, without strong ethical protections and teacher training.

TABLE 2
GROUP 2: FGD-2 (PRIVATE UNIVERSITY) [TEACHERS]

Designation	Code	Experience of Teaching in Higher Education
Associate Professor	WES01	18 years
Lecturer	WES02	4 years
Lecturer	WES03	4 years

The group consisted of a senior professor alongside two younger lecturers who had expertise in mathematics and engineering. Each of the three was exploring AI, through different approaches.

WES01 said, "*I allow students to use AI in lab report discussions, but I always emphasize understanding first, not copy-pasting. Without understanding, it has no value*" Her focus on comprehension rather than quick fixes showcased her extensive experience as a dedicated educator.

WES02 expressed a mathematical viewpoint: "*AI can help us identify errors, but I suggest that you verify it yourself."* AI may not always be accurate. WES03 mentioned that "*Although AI could be beneficial for understanding theory concepts, I prefer not to promote mathematical thinking as it tends to make students lose their focus.*"

They were concerned, both as a group and as individuals, about misuse. They observed students turning in assignments generated by AI, showing not much interest in reviewing them. "*Plagiarism and unoriginal research are common right now*," WES01 said, predicting that the University Grants Commission (UGC) would object if integration of AI was formally proposed unless a proper structure and ethical codes are not followed.

Overall Findings from the Discussion:

This group acknowledged AI's inevitability but stressed originality, verification, and critical thinking. They demanded clear boundaries, teacher training, and institutional support before any curriculum reform could succeed.

TABLE 3
GROUP 3: FGD-3 (PUBLIC UNIVERSITY) [TEACHERS]

Designation	Code	Experience of Teaching in Higher Education
Professor	PUB01	18 years
Professor	PUB02	29 years
Professor	PUB03	10 years

This was a cast of three professors who had been teaching and publishing for decades. Their observations were colored by both their ambitions and their institutional difficulties.

PUB01 was effective: "*I use AI to prepare structures for assignments, or even travel schedules. But I forbid my senior students to use it in lab reports because it destroys their problem-solving skills.*" His comments showed an optimal balance of practicality and scholarly insight.

PUB02 clearly outlined his constraints: "*In my classes, up to 20% AI use is acceptable. More than that, I consider it harmful."* He also noted using AI for literature reviews and drafting outlines: "*It saves time and sparks new ideas, but cannot replace creativity*".

PUB03 introduced yet another layer of uncertainty. He explored outlines from ChatGPT, Gemini, and Jenni AI, yet he remained unconvinced: "*The job market in Bangladesh is less likely to require quick engineering skills … in another 10 years*." "*We shall not speed up if we're all speaking and have no training*."

Their discussion focused on the challenges: insufficient infrastructure, antiquated policies, and inadequate faculty training. PUB02 stated: "*We must be concerned about ethics and regulation; otherwise, it will lead to chaos*."

Overall Findings from the Discussion:

The professors recognized the value of AI as a useful tool, yet cautioned about the lack of preparedness within the institution. They agreed that training, plagiarism checks, and national-level committees were essential prior to broader implementation.

TABLE 4
GROUP 4: FGD-4 (PRIVATE UNIVERSITY) [STUDENTS]

Current Field of Study	Code	Current number of semester/year.
Business Administration	PRIVEX01	3rd year
Law	PRIVEX02	4th year
Computer Science & Engineering (CSE)	PRIVEX03	4th year
Pharmacy	PRIVEX04	3rd year
Media & Communication	PRIVEX05	3rd year

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This group of undergraduates viewed AI as a tool they engaged with regularly for their academic work.

PRIVEX01 openly expressed: "*I frequently utilize AI, particularly for my tasks like writing assignments and reports.*" It conserves time. PRIVEX02 presented a similarly understated application: "*In the legal field, resources are often hidden in archives, so AI provides limited assistance primarily through summaries.*" PRIVEX03 expressed even greater enthusiasm: "*In the field of computer science, prompt engineering is essential.*" It enhances coding efficiency directly.

However, differences became apparent in Pharmacy and Media. Pharmacy is primarily a lab-based discipline, which limits the applications of AI to mainly idea generation," stated PRIVEX04. PRIVEX05 shared her experience of attending a workshop that enhanced her understanding of responsible use: "*I'm not reliant on it but it means I don't start from scratch.*"

Many were self-taught, and almost all preferred integrated curricula, though they recognized that relevance would vary by discipline.

Overall Findings from the Discussion:

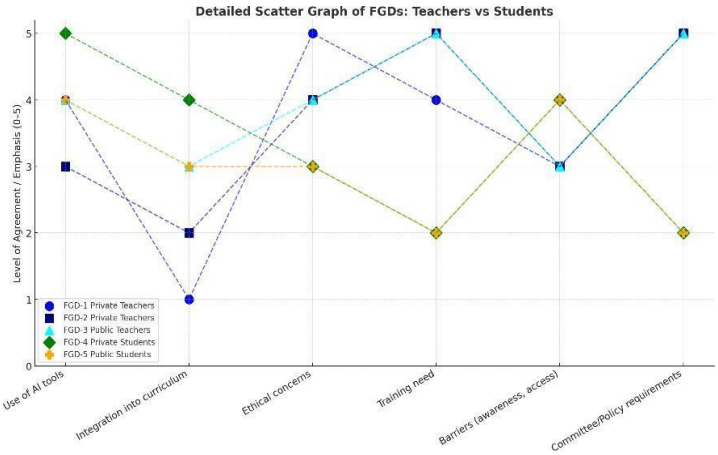
This group demonstrated enthusiasm with inconsistent application. Their support for curricular integration was evident; however, they identified deficiencies in awareness, training, and institutional resources.

TABLE 5
GROUP 5: FGD-5 (PUBLIC UNIVERSITY) [STUDENTS]

Current Field of Study	Code	Current number of semester/year.
Engineering	REXTER01	3rd year
Business Administration	REXTER02	4th year
Literature	REXTER03	3rd year
Law	REXTER04	2nd year
Social Sciences	REXTER05	3rd year

These were students representing public universities studying undergrad.

REXTER01 was more equivocal: "*I am neutral — I do not know if it is necessary for everyone.*" He was no impetuous English major, and his engineering mind made him cautious. REXTER02 dissented: "*In business, it's necessary as well.*" REXTER03, the literature student, connected AI with close reading: "*It helps us frame analysis and forces us to think in different ways.*"



The law student, REXTER04, was open minded: "*If it's properly designed AI could be useful for legal studies.*" REXTER05 was among its leading proponents: "*It would make us more ready for anything that comes in the future*."

Obstacles presented themselves: a lack of awareness, bad internet and little guidance. REXTER03 recommended that AI be taught as non-major; REXTER02 considered teachers should have training too.

Overall Findings from the Discussion:

This group articulated opinions shaped by their discipline. Although many recognized potential advantages, engineering students expressed uncertainty. Students emphasized the necessity for teacher training and the implementation of structured non-major courses.

Interdisciplinary Themes

1. All FGDs: The themes that emerged from all the five focus group discussions were as follows.
2. High and uneven adoption of AI: Tools such as ChatGPT and Gemini are used by most, but hardly anyone pays for premium versions.
3. Self-learning: There are few workshops; most of those present learned on their own.
4. Faculty's caution vs. students' enthusiasm: While professors fear plagiarism and the disappearance of the ability to think critically, students are enthusiast for integration.
5. But barriers are steep: There's little infrastructure, inadequate training and no institutional guidance for responsible adoption.
6. Ethical concerns: Almost all groups cited dangers of over dependence, plagiarism, and the loss of creativity.
7. Agreement over oversight: Strong committees, clear guidelines and discipline-specific approaches

perhaps as electives or non-major offerings.

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IV. RECOMMENDATIONS

From Teachers:

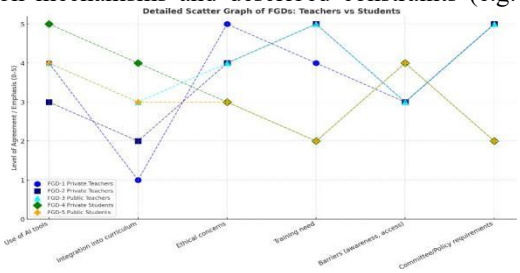
1. Setting up national and institutional committees for the promotion and proper integration of it.
2. Developing faculty professional-development programs in prompt engineering and ethics.
3. Developing discipline-specific policy to enable the arts, sciences and professional programs to apply it differently.
4. Implementing AI-detection, plagiarism checking tools more strictly in universities.
5. Promoting assignments for students which is rewarding enables critical thinking and creativity.

From Students:

1. Adding 'prompt engineering' courses to the curriculum perhaps as electives or non-major offerings.
2. Providing workshops, tutorials and teacher-directed instruction to increase knowledge.
3. Some AI tools for the institutions (e.g. access to free or discounted subscriptions).
4. Emphasizing responsible use paraphrasing, quoting and humanizing AI generated outputs.
5. Advocating for policies that promote innovation and integrity, with the key goal of AI supporting learning instead of replacing it

Fig-1: Scatter Graph defining the FGDs Teacher vs Students

The scatter plot diagram illustrates the results of five FGDs with teachers and students of Bangladeshi public and private universities to investigate perceptions on AI and prompt engineering in higher education. Teachers prioritized ethical dilemmas, teacher training opportunities and the importance of strong policy implications while generally not showing much support for direct curriculum integration; students expressed frequent use of AI features, were supportive toward integration mechanisms and described constraints (e.g. unawareness on how to work with AI). An illustration that draws a stark dichotomy between the wariness of teachers and the excitement for AI on the part of students is provided in our visualization.



V. DISCUSSIONS

The findings of this study, based on five FGDs with teachers and students from public and private universities in Bangladesh, highlights major tensions in the uptake of AI and prompt engineering at higher education level. These tensions are indicative of more general global discussions around how to balance innovation with academic integrity and the logistical difficulties of embedding rapidly developing technologies within existing educational frameworks.

From a practical perspective, the result shows that students are already heavily using AI-powered tools such as ChatGPT and Gemini for their day-to-day academic work. You can use them to summarize articles, brainstorm assignments, aid in coding or help prepare papers. This implies that AI is the de facto learning partner even if institutions do not formally accept the technology. The point being made here is for universities not to stand passively as AI takes a hold, but to rather direct that set of forces. Guided workshops, discipline-focused AI training and access to tools within the institution can help limit students' engagement as mere passive consumers who however learn to exercise and apply critical reflection on AI.

In contrast, teachers were somewhat more cautious or even resistant with their concerns about academic dishonesty, plagiarism and the threat to critical thinking. Their demands for ethical codes, faculty training and robust institutional committees highlight a real-world disparity: As students rush forward with A.I., many professors aren't equipped to meaningfully manage or understand it. This need-gap mismatch has implications for quality of instruction as well as learning outcomes. Implications for policy and practice the findings suggest that there is an urgent need for faculty development programs to prepare academic educators for providing students with responsible guidance, instead of failing to keep pace with the technological interaction of their students.

Theoretically, the paper adds to the literature on technology acceptance in education by unpacking how generation, discipline and institution inform teachers' AI attitudes. The hesitancy of teachers is in keeping with models of resistance to disruptive innovation whose perceived challenge to established pedagogy results in a postponement of implementation. Now, meanwhile, students' excitement represents a demand-driven model of change in education, wherein user practices (students self-learning through AI) force institutions to move. This differential implies that further theories of EDTECH would have to consider power imbalances between

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students and faculty, as well as disciplinary relevance (STEM vs. Humanities).

The research also charters out crucial directions for further study. First, longitudinal studies could explore how long-term exposure to AI tools influences critical thinking, creativity and the employability of learners in the context of Bangladesh. Second, by comparing findings across countries or regions one could examine if the prudent teacher–zealous student dichotomy is specific to Bangladesh only or generalized across countries elsewhere. Third, more quantitative studies may investigate how AI integration influences learning results, academic honesty and skill development thus resulting in evidence-based suggestions for course design.

Overall, this research highlights that AI in higher education is a bit of both; a challenge and an opportunity. Over all, for academics and practitioners is the reminder of the imperative to balance ethical protections with innovation in education so that AI supports rather than countenances the pedagogical mission. For theorists, the work suggests a necessity to view adoption dynamics in ways that will account for stakeholder roles and disciplinary contexts as well as changing institutional cultures. Finally, the responsible deployment of AI in higher education in Bangladesh will necessitate cooperation among students, educators and government authorities to situate AI as a tool that supports, rather than replaces, human creativity and critical thought.

VI. CONCLUSION

This study is not the end point, but a significant starting point of investigation in AI and prompt engineering in the Bangladesh higher education sector. Corralling both teachers' and students' voices, the study has shed light on two uneven realities of excitement and trepidation, showing how AI is already influencing academic practices even as it stokes concerns about ethics, critical thinking and institutional preparedness. These are numbers that establish, in a broad way, the space for talking about these themes, policy construction and pedagogical transformation but they are very preliminary.

This study can be taken further by future researchers in a number of ways. Future longitudinal research might consider examining the effects of continued use of AI on student learning styles and intellectual autonomy. Comparisons across ethnicities, disciplines, or cultural areas might clarify whether the enthusiasm–caution gap observed here is peculiar to Bangladesh or reflects a pattern of interest for our globe. Better, more data-driven research might delineate the tangible effects of integrating AI on performance, plagiarism rates or job readiness equipping institutions to develop evidence-based tactics themselves. Furthermore, an interdisciplinary approach integrating insights from education, computer science, sociology and ethical studies might enrich the analysis so that AI is not presented as a mere technical tool but as (literally) a social actor.

Ultimately, this study should be taken as a beginning, not an end. It calls on scholars, policy-makers and educators to meet the challenge of combining innovation with integrity, caution with creativity, regulation with freedom. As the age of AI shapes education, the next wave of studies will illuminate whether this tech tool really is a force that will deepen or diminish human learning. The discussion initiated in these FGDs is no more than the first rough draft of a future story an ongoing one which social scientists have an obligation to keep writing with imagination, discipline and account.

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