



Original Research

Educators' Perspectives on Integrating AI Tools in Educational Practices: Opportunities, Challenges, and Ethical Considerations

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Abstract: Artificial intelligence (AI) is rapidly transforming the academic landscape in the era of Education 4.0. This study scrutinizes educators' perspectives on integrating AI tools into academic practices. Following a mixed-methods approach and drawing upon the theoretical underpinnings of the Technology Acceptance Model (TAM), this research gathered data through semi-structured interviews and survey questionnaires involving fifty academics from diverse disciplines and universities across seven countries. The findings revealed diverse opinions regarding the roles of AI in education. While some academics highlighted the potential of AI tools to accelerate students' learning, others expressed concerns about the possible adverse effects of AI on students' study habits, morality, and creativity. In addition, the respondents raised concerns about various AI tools that potentially assumed various academic roles traditionally played by human educators. Furthermore, ethical issues—including privacy, security, accountability, and fairness—emerged as critical discussion points. The analytical findings of the study highlight the differences between the academic contexts of Bangladesh and that of other countries in this respect. It offers implications and recommendations for educational policies, practices, and research, underlining the importance of fostering awareness, teacher training, and government support to enable academics to adopt AI tools effectively and ethically in academic practices in Bangladeshi higher education, besides the wider applicability of some of the recommendations in other developing and least-developed countries with similar educational contexts.

Keywords: Artificial Intelligence (AI), AI Tools in Education, Future Education, Teacher Perception, Education 4.0

Introduction

Artificial intelligence (AI) refers to the ability of computers or robots to perform tasks similar to those performed by human beings. The way AI thinks, learns, and solves problems reflects human-like behavior. AI allows machines to perform operations that typically require human intelligence, such as learning, decision-making, and problem-solving, and it is driving the fourth industrial revolution by enhancing accessibility to teaching and learning (Laskowski and Tucci 2023; Ghafar et al. 2023). The age of Education 4.0 requires educators to be prepared to address the challenges of teaching Gen-Z effectively (Nasaruddin et al. 2024; Teichler 2024; World Economic Forum 2024). Furthermore, the future Industrial Revolution

5.0 will require educators, especially at the higher education level, to hone the skills to collaborate between humans and AI and achieve the ability to think beyond AI so that the AI tools do not control humans (Alharbi 2023; Leng et al. 2022; Rijwani et al. 2025). A new technology may bring both opportunities and inherent risks; hence, it is important for educational policymakers to assess both the benefits and potential risks of incorporating AI into education and ensure its responsible, effective, and ethical use in academic practices (European Commission 2022; U. S. Department of Education 2023).

Although several studies have examined the role of AI in education in other countries, there is still a considerable gap in the existing knowledge about how Bangladeshi academics consider the opportunities, challenges, and ethical aspects of the use of AI in higher education compared to the educators of other countries. To address the critical research gap, this research was designed to explore the perceptions of thirty-five educators in Bangladesh to compare with those of fifteen participants from other countries. Hence, this study investigated those academics' perceptions toward using AI tools in academic environments to identify factors that influence their opinions, address the benefits and challenges for academics, explore the ethical standpoint, and discover successful strategies for implementing AI tools in teaching and learning settings. The ultimate goal was to offer valuable insights that can guide educational policies and practices for more effective integration of AI tools into academic settings. The following research questions were addressed in the research to explore the aforementioned issues:

1. What are the positive aspects of using generative AI tools, according to academics?
2. What are the drawbacks of using generative AI tools, according to the educators?
3. What perceptions do academics have about the ethical issues regarding the use of AI tools in academic practices?
4. Is there any significant difference between the academic contexts in Bangladesh and other countries regarding the implementation of AI tools?

The findings regarding the fourth research question are analyzed in the overall discussion, analysis, and conclusion sections, unlike the presentations of the findings on the first three research questions, which are presented separately in the quantitative findings sections.

Literature Review

AI is the most impactful innovative technology of the modern age “that enables computers and machines to simulate human learning, comprehension, problem-solving, decision-making, creativity, and autonomy” (Stryker and Kavlakoglu 2024). The integration of AI tools in education is creating both potential and challenges for the educational stakeholders (U. S. Department of Education 2023). AI-generative tools, as stated by Ahmed et al. (2024), can enhance the personalized learning experience for students, ensuring student engagement.

Besides, the official report on the future of AI in education by the U. S. Department of Education (2023) and Vrågård et al. (2024) have recognized the potential for the growth of students' creativity and productivity along with tailored educational support that can lead the education system to an improved academic outcome. The evolution of AI has been so fast that "many current commercial AI systems developed for education, so-called Intelligent Tutoring Systems (ITS), focus on providing automated, adaptive and individualized instruction" (Holmes and Tuomi 2022, 543). For example, ChatGPT is an advanced generative AI tool that can be embraced and used to facilitate learning rather than avoided or feared (Renton 2023).

Several studies have argued that teachers are increasingly becoming more interested in incorporating AI into academic practices, such as the use of "AI-based facial recognition to proctor online exams," grade essays, detect plagiarism, and prepare materials or lesson plans (Foltz et al. 2013 quoted in Bearman et al. 2023, 369; Perez 2023).

In spite of having advantages, several significant drawbacks of using AI tools have been identified in recent times. According to Bostrom (2014), while AI offers many benefits, it also carries severe challenges in education, such as the replacement of human teachers, the reduction of human interaction, and the extra requirements of technological resources and abilities. Concerns regarding academic integrity are more important than anything else that should be taken into consideration (Ahmed et al. 2024).

Academics have raised concerns about AI's impact on students' mental health, identifying this as a major challenge in education related to AI (Morison 2023). Vrågård et al. (2024) have complemented Morison (2023) by adding that the excessive use of AI tools lessens students' critical thinking skills as well as problem-solving skills. In addition, issues related to the accuracy of AI outputs and data privacy impose serious challenges for both students and teachers (Chan and Hu 2023). Pramjeeth and Ramgovind (2024a) have also reported concerns about the stagnation of students' personal development and the lack of career readiness because of over-dependency on AI tools.

To address these adversities, teachers must clearly understand how AI-powered systems collect, store, and process data (Pardo and Siemens 2014). A lack of understanding of AI can lead to hesitation in using it for teaching (Nazaretsky et al. 2021, 2022). However, more research is needed to improve "human-AI interaction and collaboration" (U. S. National Science and Technology Council 2016 quoted in Popenici and Kerr 2017, 3). Decisions once based on human reflection are now automated, as the software can apply "thousands of rules and instructions in a fraction of a second" (Pasquale 2015 quoted in Popenici and Kerr 2017, 4).

Besides, there is a growing concern about the ethical issues of using generative AI tools in educational practices (Holmes and Porayska-Pomsta 2022; Pramjeeth and Ramgovind 2024b; Stryker and Kavlakoglu 2024; Swauger 2020; U. S. Department of Education 2023). They are mostly concerned with the need to ensure the responsible use of AI tools, maintain academic integrity, and preserve students' privacy (Pramjeeth and Ramgovind 2024b). The

discourse containing the concerns emphasizes the importance of establishing clear policies to guide and limit the use of AI tools in educational practices (Vrågård et al. 2024). Since generative AI has transformative potential, as suggested by Pramjeeth and Ramgovind (2024b), it is a must to navigate the ethical considerations thoughtfully in order to ensure a responsible academic environment. Since “the process of developing an AI system may lead to bias in how patterns are detected and unfairness in how decisions are automated,” educators have to play a crucial role in shaping how humans interact with machines like AI (U. S. Department of Education 2023, 1). Nevertheless, education remains “eminently a human-centric endeavor, not merely a technology-driven solution” (Popenici and Kerr 2017, 3). Hence, teachers have to adopt and adapt to AI-generative tools.

Methodology

A mixed-method approach was adopted to utilize both qualitative and quantitative techniques (Creswell and Creswell 2022). To determine the actual limitations of AI, the researchers conducted interviews with academics to gain insight into their actual experiences with AI tools, since they could not solely rely on quantitative methods. The participants were asked to complete the questionnaire through Google Forms with thirty-one items and attend semi-structured interviews and focus group discussions on the educators’ opinions about the benefits, drawbacks, ethical considerations, and required initiatives regarding the use of AI tools in academic contexts.

Theoretical Framework: Technology Acceptance Model (TAM)

The TAM was developed by Davis (1989). He presented “a theoretical context that could explain the relationship of attitudes-intention-behavior” based on the basis of the theory of reasoned action (Alfadda and Mahdi 2021, 886). The TAM includes “five variables: perceived ease of use, perceived usefulness, attitude toward use, behavioral intention to use, and actual use” (Alfadda and Mahdi 2021, 886).

The two most significant factors in this model are “perceived ease of use” and “perceived usefulness,” where the first factor emphasizes the belief that using the technology will require little effort, and the second factor is the perception that the technology improves job performance (Alfadda and Mahdi 2021, 886–887). The academics’ perceptions were investigated with the aforementioned factors and two other factors of “ethical concerns” and “negative impact” in mind to find answers to the selected research questions and to analyze the findings comparatively, presenting suggestions accordingly to the relevant bodies in Bangladesh and other countries with similar contexts.

Sampling

A total of fifty academics (see Appendix) were selected for this study following a convenience sampling approach. The participants from various public and private universities in the United

States, Canada, the United Kingdom, Norway, Australia, Saudi Arabia, and Bangladesh shared valuable insights and personal experiences relevant to our research topic. Thirty-five out of fifty academicians were from Bangladesh. Forty-one of them submitted the Google Forms, most of whom participated in the interviews, and nine others joined the focus group discussions.

Data Collection Tools

The tools used in the data collection included semi-structured interviews, audio recording, photography, and a questionnaire in Google Forms with thirty-one items across four sections. Some of the selected institutions were extensively visited to collect qualitative data. Semi-structured interviews were conducted and recorded in appropriate settings. The participants were interviewed in their mother tongue, Bangla. Formal and informal discussions were also conducted in Bengali to extract necessary information. Three research associates from those institutions helped the researchers in collecting data. The participants' use of AI tools in their teaching practice was extensively observed. Their perspectives on using AI in academia were also observed, noted in the field notes, and analyzed.

Data Analysis Procedure

The quantitative data was analyzed first in search of answers to the research questions at the first stage of data analysis. The responses were converted into pie charts, bar charts, and tables for analysis and visual presentation. In the second stage, the qualitative data, collected through interviews and focus group discussions, were analyzed in a modified model of six steps of the coding process according to Creswell and Creswell's (2022) qualitative data analysis procedure: organizing the collected data, transcribing the data from the audio and video recordings, analyzing the collected data manually, data coding, translating the collected data from Bengali to English, finding major themes, and doing thematic analysis. Finally, focusing on the four research questions, the quantitative and qualitative data were compared and analyzed to present the final data analysis and recommendations.

Findings

The findings of this study explored valuable and varied insights, perceptions, and experiences of academics from various universities, disciplines, and positions regarding the use of AI in education. The majority of respondents (60%) were from Arts and Humanities, followed by 28% from Engineering and Technology, and the rest from Business and Management, Pure Sciences, and Life Sciences. This distribution offers a glimpse into the academic diversity of our participants. Around 72% of respondents were male, and 28% were female. The teaching experience ranged from 1 to 20 years, providing a comprehensive perspective. Most participants fell within the 25–44 age range, with teaching experiences ranging from 3 to 15 years. Notably, the data showed a diverse range of experiences.

This comprehensive demographic data provides a foundation for understanding the backgrounds and profiles of academics participating in this research. The following steps involve delving deeper into their views on AI in teaching practices, examining potential benefits, concerns, and the ethical dimensions of AI integration in education.

Findings from Quantitative Data

Findings: Research Question 1

RQ 1: What are the positive aspects of using generative AI tools, according to academics?

The following findings analyze the academicians’ perspectives on the use of AI tools in the academic practices at the tertiary level. These findings will help us understand how much teachers know about AI, how they use the AI tools, and what they think about the applications of those tools.

The findings in Figures 1 and 2 show the familiarity of AI tools and their personal usage rate, which are related to three variables of the TAM: perceived ease of use, behavioral intention to use, and actual use. All academics reported that they were familiar with AI tools. An overwhelming 80.5% of academics acknowledged that they personally use AI tools, specifically ChatGPT, Squirrel AI, Grammarly, MATLAB, Weka, Turnitin, PlagScan, PlagX, Google Translate, QuillBot, Bing, etc., for educational purposes. These figures signify a strong positive attitude of majority of the participants toward AI integration into academic practices.

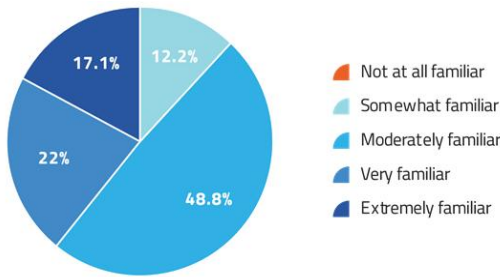


Figure 1: Familiarity with AI Tools

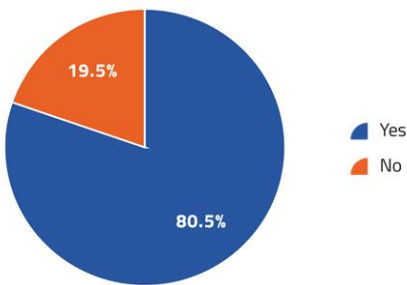


Figure 2: Personal Usage

Table 1 presents the purposes and ways the academicians use AI tools, showing data related to the TAM variable of “actual use.” Academics widely utilize AI tools in various ways, from generating educational content to checking for plagiarism. AI is being integrated dynamically into different aspects of teaching practices, indicating a wide range of applications for AI in the academic field. Only a few Bangladeshi teachers were found to use virtual AI teaching assistants and AI assignment evaluator tools.

Table 1: Purposes of AI Uses by Academics

<i>Purposes</i>	<i>Number of Participants</i>				
	<i>Never</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Often</i>	<i>Always</i>
Educational content generation	6	9	10	14	2
Plagiarism checking	12	3	9	8	9
Research assistance	11	9	15	3	3
Writing support (grammar/spelling, etc.)	4	5	11	10	11
Language teaching	11	8	10	3	9
Virtual teaching assistant	21	9	6	3	2
Assignment evaluation/assessment/test	16	5	13	5	2

Figure 3 argues that academics have positive attitudes toward the use of AI tools in academic activities, which directly deals with the TAM variables of attitude toward use and behavioral intention to use. A good number of academics, precisely 65.9%, hold a favorable view about using AI tools in education, while 26.8% remain neutral, and only 7.3% hold a negative perception. Hence, it is important to explore AI's role in academia in a balanced way.

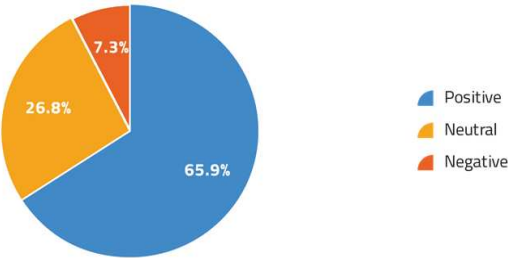


Figure 3: Overall Attitude Toward AI

AI can design personalized courses for students based on their strengths and weaknesses. Figure 4 shows that a good number of academics, precisely 35%, were concerned that if AI became the principal course designer, it would limit students' creativity. On the other hand, 15% believed that it would not affect the student's creativity. However, about 50% were not sure about it. The ambiguity of so many responses as "not sure" was cleared away by the qualitative data later on. The analysis of the findings argues that the educators are not well aware of the present situation, which causes them to be unsure of the current scenario.

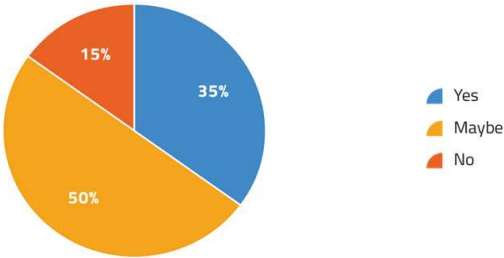


Figure 4: Concern About Limiting Students' Creativity

The participants were asked about their beliefs regarding the extent to which AI tools can enhance the efficiency of academics in various academic tasks. Figure 5 shows the findings that are relevant to the TAM variable of “perceived usefulness.” It depicts that a minority (9.8%) believed that AI tools do not enhance efficiency at all; 90% of them believed, from a slight to an extreme extent, that AI will enhance educator efficiency in various academic tasks.

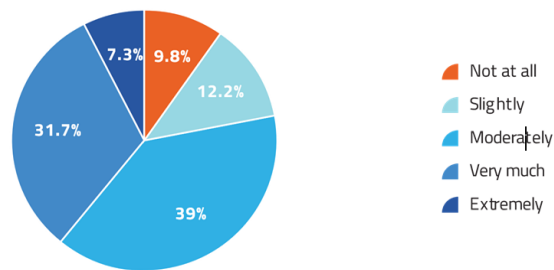


Figure 5: Belief About Enhancing Educators' Efficiency

Figure 6 shows that 51.2% of academics expressed minimal or no concern about potential job displacement due to AI integration. A significant number of academics were slightly or moderately concerned, and 7.3% were very concerned. It can be analyzed in this way that their perception of the intersection of AI and job security is complex, though most do not think AI will have too much of an impact on the job market. This finding can be taken either as perceived usefulness or trust at this point, or a lack of awareness of the teachers about the threat of losing their jobs due to the AI's increasing capacity to perform many duties that humans do now. The overall analysis of the quantitative and qualitative findings gives the answer at the end of the study.

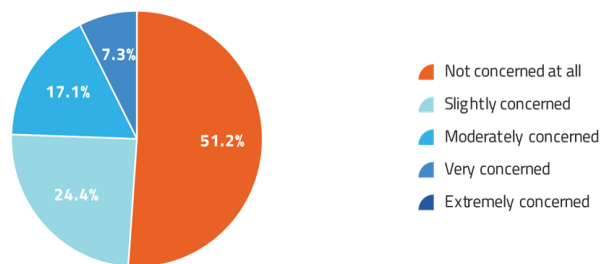


Figure 6: Concerns About Potential Job Displacement

Findings: Research Question 2

RQ 2: What are the drawbacks of using generative AI tools, according to the educators?

Based on the perceptions and experiences of academics, valuable insights have been gained regarding the advantages of incorporating AI tools into teaching practices. This analysis explains the benefits of utilizing AI tools in education. The research participants shared their

perceptions of AI’s influence on personalized learning in response to questions about the degree to which AI can improve learning experiences tailored to each student. Figure 7 demonstrates that 93% of the participants believed that AI would enhance the personalized learning experience for the students. It highlights AI’s ability to customize instruction to meet the needs of each student individually.

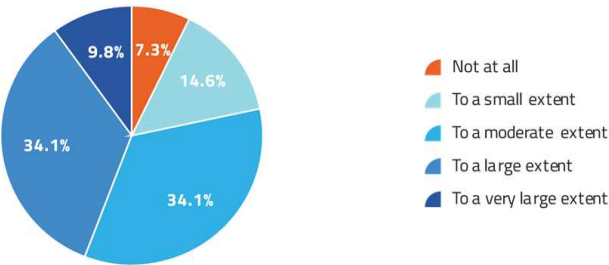


Figure 7: Belief About Enhancing Personalized Learning Experience for Students

Figure 8 represents AI’s role in providing timely and constructive feedback, which is related to the TAM variable of “perceived usefulness.” Notably, 65.9% expressed confidence in its moderate to very high effectiveness. This suggests a generally optimistic outlook on AI’s capacity to streamline and improve the feedback process.

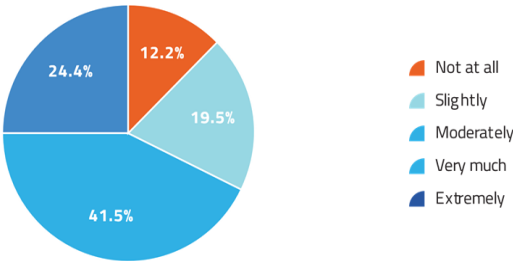


Figure 8: Belief About AI’s Role in Providing Timely and Constructive Feedback

The findings underscore the multifaceted benefits of AI tools in education, from personalized learning enhancements to streamlined feedback mechanisms. Academics generally perceive AI as a valuable support system, showcasing its potential to leave positive impacts on teaching practices and student outcomes.

Findings: Research Question 3

RQ 3: What perception do academics have about the ethical issues regarding the use of AI tools in academic practices?

The majority of the participants not only supported the positive sides of AI but also presented negative views about the high possibility of adoption of unfairness by the students in the assessment and deterioration in study habits due to the overuse or misuse of AI tools in

academic practices. In Figure 9, it is visible that many participants were concerned about AI’s implications in education. In total, 75.6% of academics showed concern about AI’s harmful impact on students’ study habits. The figure projects that AI tools might alter students’ learning behaviors and the dynamics of how students engage with and approach their studies. While 14.6% expressed concerns about AI’s impact on teaching, 39% were apprehensive about using AI in assessment and examination processes. Fairness in the educational process is a significant worry, with 61% expressing concerns about potential biases or inequities that could arise with the integration of AI into educational practices. Mental well-being is also identified as a potential drawback by 9.8% of respondents, highlighting the importance of considering the psychological impact of AI tools.

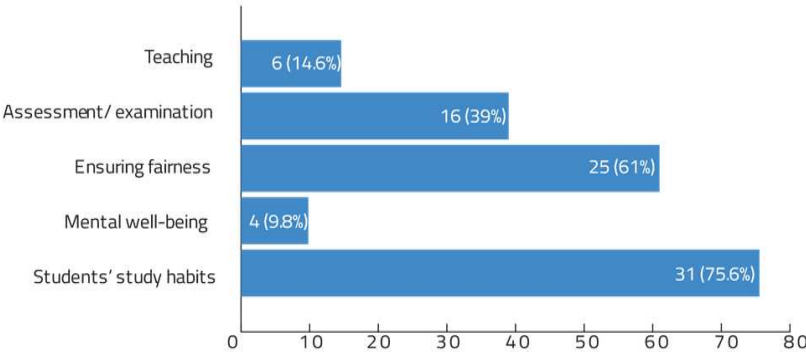


Figure 9: Anticipated Drawbacks of Widespread Adoption of AI in Education

Cheating and plagiarism are identified as formidable challenges. According to Figure 10, almost three-fourths of the academics acknowledged the potential threats posed by AI technologies in this context.

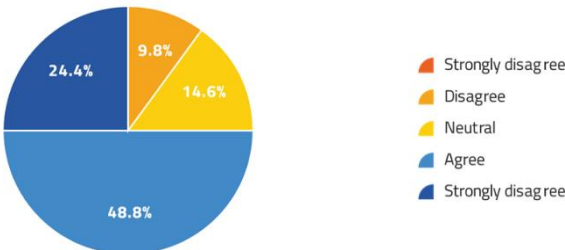


Figure 10: Addressing Cheating and Plagiarism

Opinions on the ethicality of AI tool usage have been shown in Figure 11: 42.5% of academics considered that using AI tools is ethical. However, 17.5% expressed reservations, and an additional 40% maintained a neutral stance, indicating diverse viewpoints regarding the ethical considerations that arise from the use of AI in the field of education.

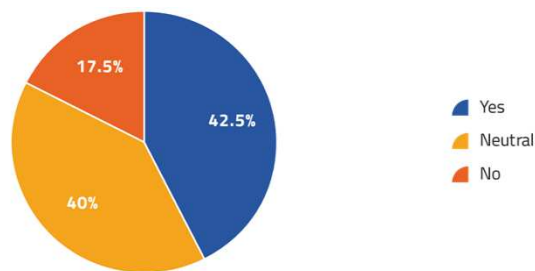


Figure 11: Ethical Considerations of Using AI Tools

It is found in Figure 12 that a significant number of participants (19.5%) needed more confidence about the ethical use of AI, considering issues like bias and privacy. However, 46.3% were hopeful. This variance suggests a need for further reassurance and clarity regarding ethical considerations.

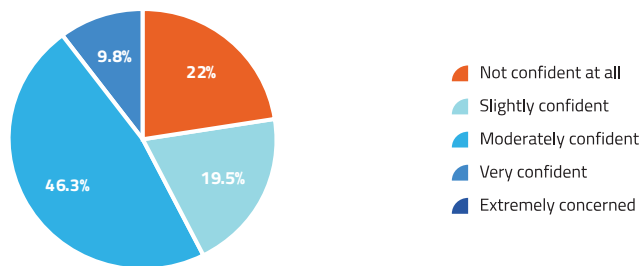


Figure 12: Confidence in Ethical AI Usage Considering Issues Like Bias and Privacy

As displayed in Figure 13, only 10% of the participants believed that there were sufficient regulations and guidelines. A significant number of participants (90%) believed that sufficient regulations and guidelines were not in place to ensure responsible AI use in education. This underscores the perceived necessity for robust regulatory frameworks.

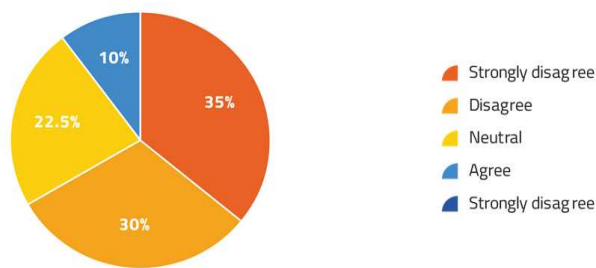


Figure 13: Having Regulations and Guidelines to Ensure Responsible Use of AI

Faculty Benefits from AI-Powered Tools

The following quantitative data demonstrates the teachers' opinions on the benefits of using AI tools.

- Information retrieval: 82% of academics acknowledged AI's assistance in finding relevant information.
- Creativity stimulation: 61% agreed that AI sparks creativity among academics.
- Idea generation: 58% recognized AI's role in generating new ideas and perspectives.
- Access to innovative tools: A significant 63% believed that AI provides academics with innovative tools for creating engaging teaching materials.
- Assignment evaluation: 49% acknowledged AI's assistance in evaluating student assignments.
- Plagiarism checking: 73% agreed that AI aided in checking plagiarism efficiently.

The Challenges That Teachers Face in Using AI Tools

The following analysis presents the challenges that teachers face in using AI tools.

- Accuracy: A little less than two-thirds of respondents agreed that AI systems might give inaccurate information or impractical recommendations.
- Necessity of manual editing: More than two-thirds of academicians suggested that AI tools' responses might need significant manual editing, reducing the efficiency of automation and natural language processing.
- Transparency issues or biases: Similarly, around two-thirds of them opined that it could be difficult to determine responsibility for errors or biases in data generated by AI, as its responses are not always transparent or explainable.
- Violation of intellectual property rights and misuse of AI: About two-thirds of the academicians thought that AI might generate responses that violate intellectual property rights and could be misused to create false information, leading to harm to individuals or society.
- Assurance of ethical concerns: The gravest concern, according to more than four-fifths of the academicians, was related to ethics and values, such as fairness, accountability, and transparency.

Finally, multiple concerns are identified by examining challenges and ethical considerations for faculty members in content generation. These include accuracy, practical recommendations, the necessity of manual editing, transparency issues, biases, intellectual property rights, potential misuse, and the assurance of ethical concerns. These challenges underscore the need for tailored approaches and support for faculty.

Findings from Qualitative Data

The qualitative data, collected through online and offline interviews and focus group discussions, presents diverse views about the integration of AI in academic practices. Besides exploring all other relevant themes, it particularly focuses on the significant differences

between most Bangladeshi academics and foreign academics to address Research Question 4: Is there any significant difference between the academic contexts in Bangladesh and other countries regarding the implementation of AI tools?

Academicians' Viewpoints

Most academics explore new technologies to make their teaching easier and more interesting for the students. Even those who prefer traditional methods of teaching realize they must enhance their technological skills to cope with the modern age. Most of them positively perceive AI integration in their academic tasks as it boosts their productivity. For example, a teacher from the CHJU (henceforth, all the university names are pseudonyms) said, "AI tools can be a great help for teachers who need to collect data quickly and efficiently, saving them time and making their tasks easier" (Ashraful, male, 43). Teachers commonly use AI tools such as Gemini, Google Assistant, ChatGPT, Bing, Google Translate, Copilot, GitHub, Otter.ai, Grammarly, Siri, Microsoft Lens, Replika, Tome, MATLAB, Weka, Zoom, Turnitin, PlagScan, and Plag X. However, ChatGPT is the most widely accepted support system. An educator from the USAT said, "I use only ChatGPT for my academic tasks" (Abid, male, 38). Another teacher from the CEUT said, "I find that searching on ChatGPT rather than Google gives me better results and is more beneficial for me" (Riyad, male, 27). To define ChatGPT, an academic from CHJU said, "Google and ChatGPT are different in their functions. While Google is a search engine, ChatGPT is a pre-trained model developed by OpenAI" (Huda, male, 42). They all benefit from using ChatGPT to gather information. When searching on Google, teachers need to check multiple sites to get proper knowledge about something, which is time-consuming. ChatGPT, on the other hand, gives more information in one place, saving academics time and energy. Academics also use other AI-generated tools to check students' assignments, check for plagiarism, create online quizzes, etc. They believe AI tools help them save time, enhance the quality of their teaching, and create an interesting learning environment for the students.

Benefits of Using AI in Education

Almost all of the participants believe that teachers can gain considerable benefits from AI, especially as it can enhance their teaching quality. An educator from the CHJU said,

I personally use AI as a support tool to assist with my writing. I take the information as a guideline and then search for more relevant information to add to my work, which makes my work even better. AI tools like ChatGPT, Grammarly, SQL AI, etc., can definitely improve teachers' performance. It is increasing teachers' productivity. (Ashraful, male, 43)

Though it is a controversial topic, a Bangladeshi female teacher stated, “ChatGPT helps teachers become more creative” (Mahfuza, female, 32). Similarly, an academic from the IDU elaborated that the AI tools like ChatGPT “help teachers in many ways, such as generating new ideas, improving teaching materials, and finding plagiarism” (Pranabananda, male, 43).

Teachers can use AI to create content or materials. “One can validate the information and rethink the existing concepts by using AI tools. It also adds some ideas to your framework, provides information, and supports your logical arguments. AI is also very beneficial for locating literature for new research,” said a teacher from the CNUCST (Kamal, male, 32).

In addition, AI can customize learning experiences by analyzing students’ needs. A science teacher argued for an important positive side in this regard: “Integrating AI tools in education can enhance personalized learning, provide instant feedback, streamline administrative tasks, and offer adaptive content, fostering a more efficient and tailored educational experience for students and academics alike” (Shuvo, male, 43).

Many educators’ workloads are too heavy in Bangladesh, which means they cannot give enough time for better teaching outcomes. In this case, AI helps them save time and utilize it to design better-quality materials and adopt more engaging teaching techniques. Hence, a teacher from the USU observedd, “AI tools can save time by filtering relevant information from the internet that is overloaded with unnecessary content” (Sumaiya, female, 33). AI tools are making teachers’ work more accessible and enhancing the quality of their writing by providing vast information under one roof. Likewise an educator from the CEUT stated, “I use AI tools mainly for better representation and insight of the topic taught in the class” (Ratul, male, 27).

Ensuring the consistency of students’ performance was previously challenging, but AI tools have made the task quite easier. In this regard, a teacher from the CHJU opined, “For quality control purposes and for checking the authenticity of the assignments of students, AI can help a lot” (Sikandar, male, 45). AI tools help teachers create multiple-choice questions and quizzes in seconds. It also simplifies tasks such as the students’ online attendance, including how long they stay in the online classes. With Grammarly, teachers can easily check students’ grammar mistakes in assignments, and if there is any plagiarism, they can also identify it. A teacher from the VCNU also presented a similar view: “Using AI tools saves teachers’ time and also encourages students to learn in an interesting way” (Benjamin, male, 37). The teaching environment can be more exciting and fun with the help of AI.

Negative Attitude Toward AI and Age

Though most teachers have positive attitudes toward AI, some teachers, especially those over 40 years old, are afraid of AI’s negative impact on the young generation. For example, a middle-aged educator argued that “it [AI] is harmful and distracting” (Nabid, male, 44). Some senior teachers believe that using AI may decrease students’ creativity. They just want to follow the traditional method in their teaching practices. For instance, one respondent highlighted the

unethical use of AI by commenting that “We, as teachers, tend to adopt a traditional way of teaching and want to stick to it. Teachers often become negative toward AI because they regularly see students copying content from AI without giving genuine effort” (Abid, male, 38). Another reason behind their negative attitude is caused by the generation of unreliable information by AI tools. In this matter, a participant presented his experience from Canada this way: “I do not want to use it yet since it produces much wrong output in my field” (Gabriel, male, 42). Another teacher from the AUD said, “ChatGPT produces false references that invalidate your argument in writing” (Safikul, male, 28). AI tools should be upgraded with more accurate information, which will help academics to use AI with more confidence.

Some of the Bangladeshi educators find themselves to be less knowledgeable and skilled than the Bangladeshi students at the tertiary level of education. As an academician commented, “The aged teachers cannot adopt new educational technologies as fast as the young university students” (Rezaul, male, 56).

Concerns of Academics

Due to the availability of AI-generated content on assignment tasks, the students are becoming lazy and cannot engage in learning properly. A teacher from the UCCB, Saudi Arabia, compared it this way: “AI tools are kind of a calculator. A student can take advantage of calculators to learn quickly or to do really difficult mathematics. Now, if a student always uses a calculator, he might fall behind because he is not learning calculation” (Khalid, male, 47). On the other hand, students who do not use a calculator may also fall behind because math will be difficult for them, and they will not be able to solve it.

Similarly, if the students completely depend on AI, this tendency may hinder their learning. At the same time, he added, “if the students totally leave it, they might fall behind in advanced education” (Khalid, male, 47).

Considering the negative influences of generative AI tools, many academics, mostly Bangladeshi educators, prefer traditional teaching methods over using AI technology in teaching platforms. A Bangladeshi educator observed, “When teachers used to teach manually in the past, students used to take notes and read books, and it used to help them gain knowledge. However, the AI tools make everything easy to get, which makes the students copy and paste that information instead of learning” (Shuvo, male, 43). Similarly, a teacher from the NMSLU said, “The students should not use it for academic writing such as preparing project reports, assignments, or theses” (Khairul, male, 39).

Teachers from all departments, in general, are very concerned about the growth of bad study habits in students nowadays. As they are not studying properly, they are not preparing themselves for the real world. When they graduate, they will have a certificate but will not have the proper knowledge and skills to cope in the industry.

Some academics also believe that excessive use of AI by both teachers and students may have very adverse outcomes. Hence, a teacher from the IDU opined, “Too much dependency on AI tools would limit teachers’ and students’ creativity and reading habits” (Pranabananda, male, 43). An academic teacher from the CHJU added, “Depending on AI only can make them lazy and can affect their futures” (Sikandar, male, 45). Another middle-aged teacher also stated similarly, “Though AI can save time, it may also reduce the creativity among teachers and students” (Ahsan, male, 43).

Ethical Use of AI

The majority of the respondents presented their concern about the unethical use of AI tools in this study. A Bangladeshi teacher shows deep concern about the ethics in higher education, “The chance of getting higher scores by unjust uses of AI tools inspires the students to neglect ethical concern, and it has become a fast-spreading virus harming the morality and values in students. An analysis of the data findings stresses that the moral devaluation is prevalent in all the countries” (Nabid, male, 44). In this regard, a teacher from the CHJU presented suggestive measures through an example:

When a student uses AI to generate their tasks, we can understand that as we teach them and already know their capabilities. So, the students should be trained about the ethical use of it. In our university, there is a course on law and ethics for the students in the Computer Science and Engineering (CSE) department, Electrical and Electronic Engineering (EEE) department, and other departments, which can enhance their understanding of ethical issues. (Huda, male, 42)

Likewise, an educator at the IDU proposed, “Sufficient regulations and guidelines should be in place to ensure ethical use of AI in education” (Pranabananda, male, 43).

Inadequate Understanding of AI Among Teachers

A lack of proper knowledge about using AI in education can be traced among teachers. An academic put it forward this way:

Before getting used to something, we tend to have an internal resistance; we cannot accept new things easily. The fear is preventing us from keeping pace with technological advancements. As teachers, we should try to gain knowledge about these things, and if it is positive, we should use it in our teaching process. (Shuvo, male, 43)

According to him, teachers from the schools of arts and social sciences and the schools of business at different universities, think that AI is a subject that should be known only by the CSE department. He added, “As AI is only relevant to the CSE department, the teachers of that

department would know better about it, and they would enjoy exploring and working with new technologies like AI" (Shuvo, male, 43). It can be stated on the basis of the analyzed data that the awareness of the benefits of using AI in the academic area among the university teachers should be raised to make their work easier and enhance the quality of education. If proper knowledge is provided, they believe that most teachers, who do not use AI tools and have negative attitudes toward these tools, will definitely use AI to improve their performance.

Teachers' Role in Preventing Students' Plagiarism

To prevent plagiarism, teachers must stay ahead of students by being vigilant and strategic. An analysis of the data findings emphasizes that Bangladeshi teachers, especially those with arts and humanities backgrounds, are found to be less equipped and trained to detect cheating in comparison to the teachers of other countries. However, it is observed that the engineering teachers are smarter than them in the use of technology. A teacher from an engineering department said, "To prevent plagiarism, I try to set my questions in a way that they cannot copy from anywhere, and they need to think and make an effort to do that task. Moreover, to set questions like this, ChatGPT helps me a lot" (Riyad, male, 27). Like him, teachers should design assignments for the students that require critical thinking and genuine effort. Teachers should remain more informed than their students regarding cutting-edge technology. As AI is an advanced technology, it has to be regulated using equally advanced skills. The respondent further added, "We need a reverse algorithm that can be used to check and control texts copied from any kind of AI-generated tool" (Riyad, male, 27).

Teachers' Recommendations

An educator from the AUSIB projected about the future of AI in education, "AI will definitely affect every sector in the future, but in education, how long and to what extent it will affect, only time can tell" (Ahsan, male, 43). Many academics do not employ AI because they lack sufficient knowledge about it. Teachers must be trained properly in using common AI tools and their benefits, possibilities, and negative sides. Hence, a teacher from the CEUT suggested that "they should be trained to use AI in their teaching to improve their productivity even more" (Ratul, male, 27). To enhance the learning experience of students, it is crucial to provide proper training and guidelines to teachers on the utilization of different AI tools.

Discussion and Analysis

The qualitative data findings addressed the gaps and overlooked aspects of the quantitative data. The qualitative data analysis showed several differences between the opinions of Bangladeshi university teachers and those of the university teachers from six other countries.

First, almost half of the thirty-five Bangladeshi educators were found to lack adequate knowledge and awareness about students' wide applications of AI tools in educational

activities, as they selected the option “not sure” about the impact of AI tools on students’ creativity. Second, many Bangladeshi academics showed strong negative perceptions about the use of AI tools by students, unlike most of the respondents from outside Bangladesh. For example, an arts faculty member commented, “I am sure that these apps are going to destroy the study habits of the students” (Rizvi, male, 47). Another professor argued, “The availability of generative AI tools like ChatGPT encourages students to commit academic forgery” (Fahim, male, 61). Again, a senior science teacher expressed concerns about AI replacing important human skills: “Many youngsters, who invested a lot of time and effort to master technical skills like doing graphic design, will become jobless now” (Khilji, male, 59). It may have harmful impacts on the mental well-being of the users.

However, there is a similarity between what the Bangladeshi teachers think about the use of AI tools in assessment and what previous studies suggest about it. The suggestion of previous studies was that concerned authorities should be aware of the algorithmic bias, racial injustice, and unfairness in the assessment by the AI tools while preparing policy and planning on the use of AI in the education system (Holmes and Porayska-Pomsta 2022; U. S. Department of Education 2023).

The most crucial finding of the study was that many Bangladeshi educators were unprepared to turn students into graduates to enable them to work in the era of the Fourth Industrial Revolution. They lack proper training and guidance on managing the challenges created by AI in their academic practices. In the opinion of a middle-aged female teacher who compared generations of young students and elderly teachers with each other, “The younger generation [i.e., students] is fast enough to beat the older generation [i.e., teachers] regarding the adoption of new technologies” (Yeasmin, female, 45). This crucial finding demands specific training programs for the educators, especially in Bangladesh.

According to most respondents, AI-powered chatbots like ChatGPT, which are designed to generate responses to prompt questions on the basis of available big data in the servers, have gained significant popularity among teachers, researchers, and students. AI has the potential to revolutionize how students learn. Teachers and researchers can significantly benefit from having personal consultants assist with analyzing and interpreting data from AI-powered educational tools, enabling them to assess their teaching methods by exploring the latest, informed, research-based guidelines to improve their teaching methods. However, AI-related training programs and interventions are essential to reduce biases regarding AI and improve decision-making processes.

Academics are incorporating effective educational platforms and technologies such as Google Forms, ChatGPT, Bing, Gemini, QuillBot, Grammarly, Paperpal, Turnitin, ZeroGPT, Nearpod, Copilot Education, Jenny AI, AI Question Paper Generator, Eklavya AI Proctoring, Tutor Me, Open AI, Kaltura, DocuExprt, Audiopen.ai, Thinkster Math, Gradescope, Yippity, Beautiful AI, SlidesAI.io, Descript, and Writely.ai.

Despite the limitations of this research, which was conducted in a limited number of universities due to the shortage of time and financial constraints, the findings in the study reveal the intricate challenges and ethical considerations involved in utilizing AI in education. The duration of the interviews and the number of questions varied due to different circumstances. The interviews' analysis highlights differences in opinions and preparedness between the local Bangladeshi teachers and the respondents from other countries, especially regarding the lack of preparedness to teach in this age of AI.

Unlike previous studies, the majority of the respondents in the quantitative data did not find AI negatively impacting students' creativity (as in Figure 4, 50% participants were unsure about its impact) and were not concerned about the negative impact of AI on job displacement. In contrast, the qualitative data explores that the foreign participants and the Bangladeshi academicians with foreign exposure and updated knowledge presented opposing views being very concerned about the psychological impact of the use of AI tools on mental well-being.

The most crucial finding of the study was explored through the contrastive analysis of the findings regarding the five TAM variables of "perceived ease of use," "perceived usefulness," "attitude toward use," "behavioral intention to use," and "actual use," along with two other variables, "ethical concern," and "negative impact." After comparing these quantitative findings with relevant qualitative data, it is evident that many Bangladeshi educators may lack awareness and knowledge of the inevitable impact of AI on socioeconomic contexts worldwide.

Conclusion and Recommendations

This research explored academics' varied views on integrating AI into their academic practices and how it can enhance or hinder the learning experiences. If the selected theoretical concepts of "perceived ease of use" and "perceived usefulness" from the aforementioned theory of TAM are taken into consideration, the Bangladeshi university teachers were found to show majorly two opposite perceptions about AI: although they are aware of the inevitable upcoming rapid positive and negative changes in the higher education level that AI would bring to the education arena, they are not sure how to deal with the complex challenges to sustain their profession roles. This duality proves their lack of knowledge, awareness, and adequate training to teach in this age of AI.

Since AI technologies are now extensively integrated into our daily lives, educational institutions are beginning to acknowledge their potential benefits. From personalized learning to more efficient administrative tasks, AI is rapidly becoming a crucial tool in education. It can save teachers' time and increase productivity, enabling them to focus more on other important responsibilities. The surge in the popularity of AI tools among students cannot be stopped. Rather, educators should update themselves by learning how to convince students to use the tools not as replacements for teachers but as complements to them to

prevent them from being misdirected in their knowledge acquisition. Most importantly, students should be inspired not to leave ethics and values behind in their pursuit of higher education. Otherwise, the malpractices of AI tools and the adoption of unfair means in examinations by the young generation would result in social and moral debasement in pursuit of materialistic achievements.

Many teachers expressed concerns about AI's negative impact on student creativity if deployed unethically. Furthermore, not all teachers possessed equal knowledge of AI tools, with younger teachers more likely to utilize them frequently. In contrast, senior teachers tend to be more cautious and concerned about AI's potential adverse effects on students. Though AI simplifies educational practices, it can hamper students' creativity. Teachers must design assignments that prevent students from solely relying on AI tools for copying and pasting. An overall analysis of the current research findings strongly suggests that the national educational policymakers in developing South Asian countries, such as Bangladesh, should integrate training modules into teacher-training programs to enhance the teachers' preparedness for the applications of AI tools in the pedagogy to upgrade the standard in the age of Education 4.0 and beyond.

Above all, a common argument is that all the teachers, irrespective of geographical location, have to pay more attention to the fast-changing higher education trends and self-develop themselves by learning how to control students' misuse of some AI tools because the young students are more tech-savvy than older teachers. Ultimately, AI should complement teachers' roles in facilitating students' growth and learning, focusing on fostering interpersonal relationships and emotional connections. Although AI can make education more convenient and efficient, it should not be considered a substitute for human teachers who play a vital role in assisting students to learn and grow.

In light of the research findings and analysis, the following recommendations are put forth for local and other institutions abroad with similar contexts:

- Educational institutions should host workshops, seminars, and advertisements centered around AI to raise awareness among teachers and students of the technology's ethical applications and advantages.
- Teachers should be able to design questions that require critical thinking and cannot be answered by the students simply by copying the generative AI (GenAI) tools' responses.
- Teachers should encourage students to use AI only as a supporting tool, in addition to teacher-recommended books and other sources as the primary materials.
- The teachers must attend training programs, online courses, and make sincere attempts to self-develop their AI competencies.
- Only some Bangladeshi universities now provide teachers with standard Learning Management Systems (LMS), such as Moodle, Canvas, or Google Classroom, to

ensure reliable and effective online learning experiences. A lot more government and private investment is strongly suggested to prepare the universities in this regard.

- Bangladesh University Grants Commission (UGC), which has been providing e-learning support through the Zoom app, which is not an LMS, should upgrade its policies and vision in this regard to address the challenges in the fourth industrial revolution during the age of Education 4.0. The concerned authorities, who have been spending millions of dollars on improving teaching quality and technology integration in education over the last two decades (Akhter et al. 2022), may also allocate funds to attract more young Bangladeshi ICT (Information and Communication Technology) experts with foreign university teaching experiences to join the national long-term educational planning and policymaking process and work collaboratively with local academicians.
- As suggested by respondents, respective government ministries should take the necessary steps to establish principles and regulations governing the use of AI in educational settings.

It is strongly suggested that educators, as humans, should not be controlled by machines like AI in the near future. Hence, teachers must know how to influence the learners to avoid bad study habits or misuse of AI tools. Learners' overuse of AI tools and negligence in following teachers' instructions may contribute to their inability to study deeply and regularly and eventually cause the failure of the traditional and formal education system, especially in countries like Bangladesh, where many teachers are conservative in embracing new changes. If the least-developed or developing countries like Bangladesh do not conduct further research on technology-driven pedagogy, the difference between these countries and the developed countries will grow faster and contribute further to the disparity and inequality in social and educational sectors worldwide.

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Informed Consent

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Conflict of Interest

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Appendix

Table A1: List of Research Participants

S. No.	Pseudonym	University Name (Coded)	Type of University	Academic Discipline	Gender	Age	Experience (Years)
1.	Robert	ICSU, USA	Public	Arts and Humanities	Male	40	14
2.	Khalid	UCCB, Saudi Arabia	Public	Arts and Humanities	Male	47	20
3.	Benjamin	VCNU, USA	Public	Life Sciences	Male	37	8
4.	Ibrahim	KUS, Saudi Arabia	Public	Arts and Humanities	Male	47	12
5.	Harry	ATU, Australia	Public	Engineering and Technology	Male	42	8
6.	Olivia	HFU, England	Private	Arts and Humanities	Female	38	7
7.	Nora	UUN, Norway	Public	Arts and Humanities	Female	41	13
8.	Sofie	CUB, England	Private	Arts and Humanities	Female	38	13
9.	William	BGU, USA	Public	Life Sciences	Male	40	5
10.	Mahbub	UHQ, Australia	Public	Arts and Humanities	Male	51	25
11.	Gabriel	UABC, Canada	Public	Arts and Humanities	Male	42	7
12.	Ishaak	BUG, USA	Private	Arts and Humanities	Male	27	5
13.	Safikul	AUD, USA	Public	Arts and Humanities	Male	28	2
14.	Dipin	BJHU, Bangladesh	Public	Pure Sciences	Male	42	14
15.	Shuvo	CEUT, Bangladesh	Public	Engineering and Technology	Male	43	18
16.	Ashraful	CHJU, Bangladesh	Public	Engineering and Technology	Male	43	20
17.	Mabrur	CHJU, Bangladesh	Public	Business and Management	Male	41	12
18.	Sikandar	CHJU, Bangladesh	Public	Engineering and Technology	Male	45	20
19.	Huda	CHJU, Bangladesh	Public	Engineering and Technology	Male	42	17
20.	Ratul	CEUT, Bangladesh	Public	Engineering and Technology	Male	27	3
21.	Iqbal	CHJU, Bangladesh	Public	Engineering and Technology	Male	27	3
22.	Riyad	CEUT, Bangladesh	Public	Engineering and Technology	Male	27	3
23.	Apon	CHJU, Bangladesh	Public	Engineering and Technology	Male	27	3
24.	Mahfuja	TJSU, Bangladesh	Public	Arts and Humanities	Female	32	6
25.	Asifuzza-man	GKU, Bangladesh	Public	Arts and Humanities	Male	27	1.5
26.	Moshiur	LCoU, Bangladesh	Public	Arts and Humanities	Male	43	18
27.	Khairul	NMSLU, Bangladesh	Private	Life Sciences	Male	39	14
28.	Mursalina	BRHFU, Bangladesh	Private	Arts and Humanities	Female	27	2
29.	Fahim	USAT, Bangladesh	Private	Engineering and Technology	Male	61	22
30.	Khilji	USAT, Bangladesh	Private	Engineering and Technology	Male	59	20
31.	Abida	USAT, Bangladesh	Private	Arts and Humanities	Female	38	12
32.	Aziza	USAT, Bangladesh	Private	Arts and Humanities	Female	26	1
33.	Nabid	IDU, Bangladesh	Private	Arts and Humanities	Male	44	18
34.	Pranabananda	IDU, Bangladesh	Private	Arts and Humanities	Male	43	15
35.	Ehatasham	LAAB, Bangladesh	Private	Arts and Humanities	Male	34	5
36.	Kamala	CNUCST, Bangladesh	Private	Arts and Humanities	Female	32	6
37.	Nahida	CDG, Bangladesh	Private	Arts and Humanities	Female	27	1.5
38.	Foysal	DCE, Bangladesh	Private	Arts and Humanities	Female	31	6
39.	Seraj	QU, Qatar	Private	Arts and Humanities	Male	26	1
40.	Yeasmin	USU, Bangladesh	Private	Arts and Humanities	Female	45	17
41.	Fatema	USU, Bangladesh	Private	Arts and Humanities	Female	27	2

42.	Humayan	USU, Bangladesh	Private	Pure Sciences	Male	38	12
43.	Lekha	USU, Bangladesh	Private	Engineering and Technology	Female	33	8
44.	Sumaiya	USU, Bangladesh	Private	Engineering and Technology	Female	33	8
45.	Ahsan	AUSIB, Bangladesh	Private	Arts and Humanities	Male	43	16
46.	Rezaul	UBI, Bangladesh	Private	Arts and Humanities	Male	56	30
47.	Ramjan	DSTU, Bangladesh	Public	Engineering and Technology	Male	35	10
48.	Ehtesham	AUD, Bangladesh	Public	Arts and Humanities	Male	45	18
49.	George	NU, UK	Public	Arts and Humanities	Male	40	12
50.	Rizvi	UFD, Bangladesh	Public	Arts and Humanities	Male	47	15

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