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AI Chatbots in Education: Exploring Teachers' Attitude and Preparedness in the Digital Era

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***Abstract*— As AI chatbots are increasingly used in education, understanding teachers' attitudes and preparedness toward them becomes very crucial. This study focuses on teachers' attitudes and preparedness toward AI chatbots in education, given their increasing role in instructional and administrative capacities. The aim of the study was to examine teachers' attitude towards AI chatbots, find out whether there is any difference in attitude towards AI chatbots on the basis of gender and teaching level, and also assess teachers' preparedness to embrace AI chatbots in education. A descriptive survey method was used in this study. All teachers from primary, secondary, and higher levels of education in the Nadia district was the population of this study. To select a sample of 356 teachers, simple random sampling technique was used, and data were collected by using a structured questionnaire with 40 closed-ended items, 20 on attitude and 20 on preparedness. While a generally positive attitude towards AI chatbots was found across teachers, a noticeable difference in preparedness came out depending on their level of teaching. The research suggests that teachers need more training, better access to technology, and additional professional development programs to get better at and be more confident in using AI chatbots.**

***Keywords*— AI chatbot; Teachers; Attitude; Preparedness; Digital era.**

I. INTRODUCTION

Educational technology has advanced greatly over the past few decades, influencing how teaching and learning take place in modern classrooms. From typical chalk-and-board approaches to the rise of computers, the internet, and, most recently, artificial intelligence (AI), every development has created new opportunities and challenges. Initially, technology in education included projectors, television broadcasts, and audio-visual aides. Over time, this evolved into computer-based learning, online courses, and digital resources. Today, artificial intelligence (AI) has emerged as a strong instrument with the potential to transform education in ways that were once unimaginable (Iqbal, N. et al. 2022).

Artificial intelligence (AI) tools such as ChatGPT and Google Gemini become more and more important in education, giving individualized instruction, automating office tasks, and providing immediate responses (Bozic, V and Poola, I. 2023). These tools can help teachers simplify complex tasks, provide insights into student performance, and even generate attractive lesson plans (Zayoud, M. et al. 2023). However, the use of AI has positive as well as negative impacts on teachers. On the positive side, AI can minimize workload by automating repetitive processes, allowing more time for effective student teacher interaction (Khare, A., and Dixit, N. 2023). It can also help improve teaching strategies using insight-based data on learner success or preferences. The cons of using AI in education are there are certain worries that it will make the teachers very dependent on technology. Some teachers may get apprehensive due to growing use of AI, feeling that it may take over certain parts of their job. To ensure Ai becomes a useful tool to them, teachers must accept it with open minds and join efforts for its appropriate and effective use in education (Kılınç, S. 2023). Teachers should not consider AI as a threat but a part that may improve their teaching when used correctly. Teachers should use AI mindfully, making sure it does not take over critical thinking, creativity and empathy in the classroom. Teachers should use AI purposely and consciously to ensure that in education the human element will remain essential.

A. What is AI Chatbot

Artificial Intelligence Chatbot is a software application that engages in conversation using a chat interface (Banu & Patil, 2020). It uses AI technologies which includes Natural Language Processing (NPL), Machine Learning (ML), and more to understand and respond meaningfully to user inputs (Ram & Verma, 2023). NLP decodes human text or speech, whereas ML gives chatbots abilities to learn and enhance their response over the course of time. AI chatbots are capable of doing multiple tasks. They can help students with asking questions, explanation, exam preparation.

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They can also assist teachers with lesson planning, grading, administrative tasks and more (Pantelić et al., 2023). They are valuable assets because they are available 24/7, save time, and provide the same answer each time. For instance, ChatGPT is used for querying in conversational language, Google Bard for generating detailed responses and voice assistants like Siri and Alexa to automate tasks. As AI grows, chatbots are becoming essential in education and more.

II. Background Of The Study

The use of artificial intelligence, has become more essential to our education system, particularly by the development of AI tools like chatbots (Batllori, 2023). Chatbots such as ChatGPT and Google Gemini are designed to act like human being by answering questions, providing information, and helping with repetitive and multiple tasks (Singh and Rautela, 2022). As technology advances, these AI tools become more popular (Wilkinson, 2023). These AI tools are continuously increasing their capacity to communicate with people. AI chatbots are growing rapidly and it already become effective as an educational tool (Sandu and Gide, 2019). Chatbots can benefit both student and teacher by personalized lessons, provide educational materials, and help with tasks like assessing and answering student questions (Mendoza et al., 2020). AI chatbot is an opportunity to boost effectiveness in teaching (Tawil-Souri, 2023). As artificial intelligence develops, it has gained the potential to enhance students' learning techniques (Chang et al., 2022). Chatbots can help learners at any time, allow them to learn with their own pace and reduce the workload of teachers (Nikou and Chang, 2023). However, teachers have to be prepared to apply AI tools like chatbots in the educational setting (Rakovac Bekes and Galzina, 2023). Teachers should acquire necessary technological skills, learn how to use AI, and they also need to be confident with the tool in their teaching environments (Flogie and Vicic Krabonja, 2023). On the other side, few teachers are concerned with how AI can affect their responsibilities and harm their relationships with students, and express concerns about data security (Jong, 2022).

III. Review Of Related Literature

Education has received significant attention from the academic sector regarding the possible use of AI-powered chatbots like ChatGPT.

Educators' attitude, preparedness, and concerns about using artificial intelligence: A meta-analysis. Iqbal (2023) examined how educators feel about ChatGPT through the lens of TAM. Teachers were reluctant according to the study. This is because they were worried about integrity matters. However, they did say that ChatGPT can help them with lesson planning and assessment. According to Hao (2023), ChatGPT should not be banned in academia as it has advantages and risks but should be integrated responsibly. In Nguyen (2024), university teachers' perceptions of ChatGPT for language teaching and assessment were explored. The teachers found the tool useful in teaching but raised concern about its appropriateness in assessment and impact on teaching practices. The author called for teacher training. A review of artificial intelligence in education has been conducted by Adiguzel, Kaya, and Cansu (2023). They specifically focused on benefits and ethical challenges. Moreover, they stressed the need for responsible implementation of artificial intelligence tools for education. According to Docter et al. (2024), integrating AI and VR will improve teachers' skills in managing classrooms due to the use of classroom management simulation based on VR-AI. Al-Mughairi and Bhaskar (2024) looked at which factors drive educators to use ChatGPT tech. They found things that drive them (like it makes life easier) and things that stop them (like it is not reliable and not good for privacy). A paper by Halaweh (2023) focused on teachers' concerns and benefits of ChatGPT integration. The researchers recommended a further study on responsible AI implementation for teaching. Mhlanga (2023) tackled the issue of using ChatGPT ethically. He believes there are many problems like data privacy, misinformation, and dependency on AI, which must be dealt with. He calls for ethical frameworks and teacher training. In a literature review, Baidoo-Anu (2023) assesses the benefits of ChatGPT. The authors observe that ChatGPT can personalize learning. The authors also highlight concerns of misinformation and data biases. The authors advocate for collaboration among stakeholders. Maphoto et al. (2024) looked at how AI affects the quality of students' writing in distance education. They found that while it helps, it also raises issues of academic integrity and too much reliance on technology. In short, the literature reviewed shows that while chatbots can usher in a new era of communication and learning in educational contexts. This literature review led to the emergence of following research questions:

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1. What is the level of teachers' attitudes towards using AI chatbots in education?
2. Is there any significant difference in teachers' attitudes towards AI chatbots in education based on their gender and level of teaching?
3. What is the level of teachers' preparedness for integrating AI chatbots in education?
4. Is there any significant difference in teachers' preparedness towards AI chatbots in education based on their gender and level of teaching?

IV. Objectives

1. To study teachers' Attitude level towards AI Chat Bot in Education.
2. To find out the Difference of teachers' Attitude towards AI Chat Bot in Education as per their gender and level of teaching.
3. To study teachers' Preparedness level About AI Chat Bot in Education.
4. To find out the Difference of Teachers Preparedness About AI Chat Bot in Education teachers' as per their level of teaching.

V. Hypotheses

1. There is no significant difference between the mean score of teachers' attitudes toward AI Chat Bot in Education as per their gender and level of teaching.
2. There is no significant difference between the mean score of teachers' preparedness toward AI Chat Bot in Education as per their gender and level of teaching.

VI. Methodology

For assessment of teachers' attitudes and preparedness towards the use of AI chatbots in education system in Nadia district, present research used descriptive survey method. There were two types of variables in the study: the main variables are attitude and preparedness while the categorical variables are gender and level of teaching. The target population included all teachers from different levels (primary, secondary, and higher) in the Nadia district.

A total of 356 teachers, made up of 103 primary, 141 secondary, and 112 higher education teachers, were chosen using a probability-based simple random sampling method. Data were collected using a self-developed structured questionnaire with two sections: one for teachers' attitudes and the other for their preparedness for using AI chatbots in education. Both the sections had 20 closed-ended items to elicit objective responses and minimize the researcher's bias. The questionnaire was sent to the teachers via Google Forms to collect data smoothly.

VII. Data Analysis And Interpretation

The data on teachers' attitudes and their preparedness for using AI chatbots in education is analyzed and interpreted. The analysis finds major trends, insights and factors that are affecting their readiness for chatbots. In order to identify the patterns and trends, descriptive methods like frequency distribution, percentage analysis were used. While to find out the group difference inferential statistics like t-test was used. These techniques help in understanding what the data tells and how AI chatbot is helpful in education.

VIII. Levels Of Attitude Of Teachers Toward The Use Of Chat Bot In Education

The collected data were analyzed using frequency distribution and percentage analysis, and the results are presented in Table 1.

TABLE I
Showing the Level of Attitude of Teachers Toward the Use of Chat Bot in Education

Level of Attitude	Primary (N=103)		Secondary (N=141)		Higher Education (N=112)	
	f	%	f	%	f	%
Favorable	44	42.72	57	40.42	37	33.04
Moderately favorable	34	33.01	53	37.59	43	38.39
Unfavorable	25	24.27	31	21.99	32	28.57

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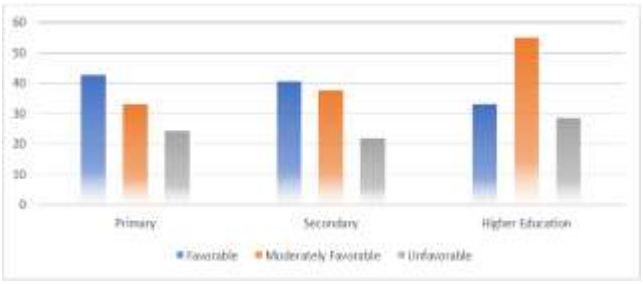

FIGURE I Showing the Level of Percentage of Teacher's Attitude Toward the Use of AI Chat Bot in Education

Table 1 as well as Figure 1 indicate the Attitude level of teachers toward the use of chat bot in education. From the Table 1, it is evident that the 42.72 percent of primary teachers have a favorable, 33.01 percent teachers have moderately favorable and 24.27 percent have unfavorable level of attitude. Whereas 40.42 percent of secondary teachers have favorable attitude, 37.59 percent have moderately favorable attitude and 21.99 percent have unfavorable level of attitude. In the case of higher education 33.04 percent teachers have favorable attitude, 38.39 percent teachers have moderately favorable attitude and 28.57 percent teacher have unfavorable attitude towards the use AI Chat Bot in education.

IX. Differences Of Attitude Of Teachers Based On Their Gender And Level Of Leaching

TABLE II
Showing the Difference of Attitude of Teachers Toward the Use of Chat Bot in Education

Variable	Group	N	Mean	SD	df	t	P	Remarks
Gender	Male	197	54.41	14.19	354	0.60	0.5498	Not Significant
	Female	159	53.48	15.13				
Level of teaching	Primary	103	54.31	14.51	242	0.55	0.5858	Not Significant
	Secondary	141	55.34	14.59				
	Secondary	141	55.34	14.59	251	1.8019	0.0728	Not Significant
	Higher Education	112	52.01	14.62				
	Primary	103	54.31	14.51	213	1.1570	0.2486	Not Significant
	Higher Education	112	52.01	14.62				

According to the table 2, the mean score of primary teachers' attitude toward the use of AI Chat Bot in education on the basis of gender was 54.41 for male and 53.48 for female. The t-test score was 0.5987 with p-value 0.5498 which was not significant at 0.05 level of significance. The findings showed that both male teachers and female teachers had similar attitude scores. Hence it is found that There is no significant difference between the mean score of teachers' attitudes toward the use of AI Chat Bot in Education as per their gender. Farther, the average score of primary and secondary teachers' attitude on the usage of AI Chat Bot in the education based on their level of teaching was 54.31 and 55.34 respectively. The value of t-test was 0.5456 with p-value 0.5858 which was insignificant at 0.05 level.

As shown by the t-test values, there is no statistically meaningful variation between the primary and secondary school teachers' attitudes toward the use of AI Chat Bot in education. Similarly, the mean score of teachers at the secondary level was 55.34 while the mean score of teachers at the higher education level was 52.01 on the basis of their level of teaching. The t-test result was 1.8019 with the p-value 0.0728, which was not significant at 0.05 level. As a result, it can be stated that the mean score of secondary and higher education teachers' attitude toward the use of AI Chat Bot in Education as per their level of teaching was not significantly different. Again, the average score was 54.31 for primary teachers and 52.01 for higher education teachers related to their attitude toward using AI Chat Bot in education as per their level of teaching.

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The t-test value was 1.1570 with the p-value 0.2486 which was not significant at 0.05 level of significance. Hence it is found that There is no significant difference between the mean score of primary and higher education teachers' attitudes toward the use of AI Chat Bot in Education as per their level of teaching.

X. Levels Of Preparedness Of Teachers Toward The Use Of Chat Bot In Education

TABLE III
Showing the Level of Preparedness of Teachers Toward the Use of Chat Bot in Education

Level of Experience	Primary (n=103)		Secondary (n=141)		Higher Education (n=112)	
	f	%	f	%	f	%
Favorable	49	47.57	46	32.62	44	39.29
Moderately favorable	39	37.86	61	43.26	50	44.64
Unfavorable	15	14.56	34	24.11	18	16.07

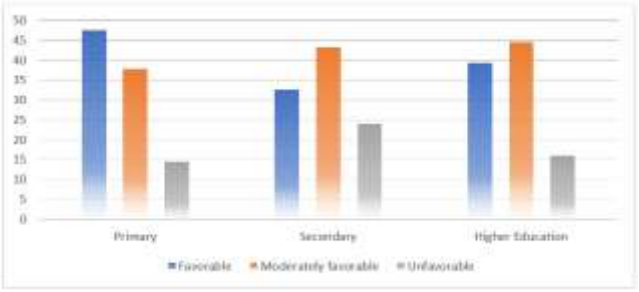

FIGURE II Showing the Level of Percentage of Teacher's Preparedness Toward the Use of AI Chat Bot in Education

Table 3 and Figure 2 show how prepared teachers are to use chatbots in education. Table 3 shows that 47.57 percent of primary teachers have a favorable; 37.86 percent have moderately favorable and 14.56 have an unfavorable level of preparedness. 32.62 percent of secondary teachers has a favorable preparedness toward the use of chat bots in education; 43.26 percent has a moderately unfavorable attitude and 24.11 percent of them has an unfavorable preparedness.

When it comes to higher education, 39.29 percent of teachers have a favorable preparedness, 44.64 percent of teachers have a moderately favorable preparedness, and 16.07 percent of teachers have an unfavorable preparedness toward the use of AI Chat Bot in education.

XI. Differences Of Preparedness Of Teachers Based On Their Gender And Level Of Leaching

TABLE IV
Showing the Difference of Preparedness of Teachers Toward the Use of Chat Bot in Education

Variable	Group	N	Mean	SD	df	t	P	Remarks
Gender	M	197	56.72	14.69	354	1.17	0.24	Not Significant
	F	159	54.90	14.53				
Level of teaching	Primary	103	57.89	14.28	242	2.39	0.02	Significant
	Secondary	141	53.36	14.90				
	Secondary	141	53.36	14.90	251	2.12	0.03	Significant
	Higher Education	112	57.29	14.26				
	Primary	103	57.89	14.28	213	0.31	0.76	Not Significant
	Higher Education	112	57.29	14.26				

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According to the table 4, the t-test reveals the male teachers' mean score being 56.72 which is higher than the 54.90 mean score of the female teachers regarding teachers' preparedness toward the use of AI Chat Bot in education. The t-test score was 1.1685, and the p-value is 0.2434, which is insignificant at 0.05 marks. So, it is found that There is no significant difference between the mean score of teachers' preparedness toward the use of AI Chat Bot in Education as per their gender. Furthermore, the mean score for primary teachers on preparedness for the use of AI chat bot in education was 57.89 whereas that for secondary teachers was 53.36. The t-test value at 2.3878 with p-value 0.0177 was significant at 0.05 level. Hence it is found that there is a significant difference between the mean score of primary and secondary teachers' preparedness toward the use of AI Chat Bot in Education as per their level of teaching. Likewise, secondary and higher education teachers' preparedness towards the use of AI Chat Bot in education on the basis of their level of teaching had mean scores of 53.36 and 57.29 respectively. The t-test value was 2.1206 with p-value 0.0349. this is significant at 0.05 level of significance So, the mean score of secondary and higher education teachers is different. And, there is a significant difference in the teachers' preparedness toward the use of AI Chat Bot in Education as per their level of teaching. The mean preparedness score of primary and higher education teachers was determined for the use of AI Chat Bot in education based on the level of education (teacher level). The mean was 57.89 and 57.29 respectively. The t-tests value was 0.3119 with the p-value 0.7554 not significant at 0.05 level of significance. So, it appears that there is no significant distinction regarding the mean score of primary and higher education teachers' preparedness in utilizing AI Chat Bot in education, according to their teaching level.

XII. Discussion And Recommendation

According to the findings of this study, teachers have a positive attitude towards the usage of AI chatbots. Teachers of different educational levels (primary, secondary, and Higher education) accept AI chatbots to a different degree. Most teachers have a positive attitude while a substantial number of respondents had a moderately favorable or unfavorable attitude which is considerable. These findings support earlier research by Iqbal (2023) and Nguyen (2024), which emphasized the advantages and worries surrounding the use of AI chatbots in educational settings.

Most primary teachers' (42.72%), secondary teachers' (40.42%), and higher education teachers' (33.04%) favorable attitude is significantly a high proportion of teachers. The findings indicate a marginally more positive outlook of primary and secondary instructors towards AI chatbots than higher education teachers. As per Iqbal (2023) and Hao (2023), AI chatbots help in lesson planning and assessment. The findings did indicate unfavorable attitude by some teachers reflecting concern on academic integrity and overreliance on technology. This concern was also noted by Hao (2023) and Mhlanga (2023). Based on the statistical analysis are not significant in any difference in attitude based on gender and level of teaching. This contrasts with Al-Mughairi and Bhaskar (2024), who saw motivating and inhibiting factors influencing school teachers' use of AI chatbots. The absence of a significant difference indicates that larger institutional factors (such as training and policy support) may have more influence than gender and/or teaching level. When it comes to preparedness, the study found that 47.57% of primary teachers are prepared, 32.62% of secondary teachers are prepared, and 39.29% of higher education teachers are prepared to use an AI chatbot in education. According to Docter et al. (2024), AI can help improve teacher training by supporting teacher autonomy and peer collaboration. However, Halaweh (2023) suggests more discussions and less speculation regarding the role of AI in classrooms. There are significant differences in preparedness between primary and secondary teachers and between secondary and higher education teachers that demonstrate prior exposure and institutional support are important as emphasized by Nguyen (2024). Nonetheless, Baidoo-Anu and Ansah (2023) stressed the need for concerted efforts of all the stakeholders like teachers, policymakers, and AI experts. Based on the results it can be stated that there are still gaps in preparedness between teachers at different levels. The data indicates that teacher training is important, however, the training may not be done for all teachers.

The study suggests, when using AI chatbots in education, teachers should get proper training to use them properly. The teachers must make use of AI chatbots for better communication skills and writing skills.

- Educational Institutions should set up training programs to improve teachers' understanding and use of AI chatbot in school.
- Teacher training programs should include practical training on the use of AI tools for lesson planning, classroom management, and personalization.

- Educational institutions must guarantee that all of their teachers have equal access to AI technologies and AI tools and resources.
- Incorporating AI chatbots into the curriculum must be standardized by policymakers and education boards.
- Schools must set up programs for professional development where teachers learn the emerging trends and uses of AI in education.
- Extra effort should go into creating user-friendly tools that can cater to a wide range of needs for teachers and students.
- When AI developers, teachers, and colleges work together, they can come up with solutions for any teaching problem related to AI.
- Educational institutions should develop policies that help in using AI tools responsibly, ensuring the privacy of user data, and equitable access.

XIII. Conclusion

The insights from this study are important with respect to the attitudes and preparedness of teachers with the use of AI chatbots. Although the study finds teachers' view of using AI chatbots was largely positive, many teachers also had concerns about issues like academic dishonesty, over-reliance and related to ethics. In comparison to secondary school teachers, the teachers at the primary and higher education level feel more ready to use AI chatbots. These results indicate that structured professional development programs, institutional support, and ethical guidelines are needed for effective and responsible use of the AI technologies in education. If implemented correctly and with trained teachers, AI chatbots can hold a great promise to improve teaching-learning processes. Further studies need to look at whether AI chatbots will change how teachers and students teach and learn. They also should study whether we need new policies for chatbots.

Declaration

We hereby declare that, to ensure clarity, coherence, and grammatical accuracy of this study, we have utilised language enhancement tools such as Paperpal, and Quillbot for grammar and sentence structure checks. These tools were used solely for linguistic refinement and did not influence the originality or integrity of the research work.

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