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Perceptions of Undergraduate Arts Students of Nagaland Towards the Use of Chatbots in Education

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Abstract:
With the growth in the usage of technological tools, we witness the rise in the use of AI Chatbots in educational sector. Both teachers and students seemed to have mixed responses towards the use of chatbots in learning. And therefore, this study was undertaken to know the perceptions of undergraduate students towards chatbots. The sample of the study consisted of 400 undergraduate arts students in Nagaland selected through multi-stage random sampling. The findings indicated positive average level of perceptions of students towards chatbot. The results indicated male students have higher positive perceptions level towards chatbots than the female students; however, no significant difference was found with respect to type of management and academic level.

Keywords: Chatbots, Undergraduate Arts Students, Gender, Management, Academic Level

1. Introduction

The 21st century has experienced a rapidly changing landscape in educational practices largely due to advancement in technology such as Artificial Intelligence (AI). With the growing popularity of AI amongst different sectors, we see the growth of AI based Chatbots. A chatbot is a software program that uses user input to simulate human-like interactions (Chinonso et al. 35). Chatbots are programs that simulate human conversation, allowing humans to interact with digital devices as if they are communicating with a real person (Shoufan, 2023). Examples of Chatbots includes ChatGPT, YouChat, Open AI Playground, Socratic, ChatSonic, Bard AI, DialoGPT and CoPilot etc. Today, we witness its growing popularity in the education sector with its high potential for enhancing academic performance and equipping instructors with the resources necessary for individualized instruction (Muñoz et al., 2023).

Chatbot technology has the potential to provide quick and personalized services to everyone in the sector, including institutional employees and students (Okonkwo & Ade- Ibijola, 2021). Malmström et al. (2023) conducted a survey on Chatbots and other AI for learning among university students in Sweden. The study found that AI chatbots was used by students as self-studying tools, in accessing information and further explanations, receiving answers to queries, making summaries of lectures and readings, and improving academic writing performance and tackling problems in real-time. Munoz et al.

(2023) found in their study that ChatGPT gave students a sense of empowerment and increased engagement. Kumar (2021) found positive impact of educational chatbots on the learning performance and teamwork of students; however, other outcomes such as the need for cognition, motivational belief, creative self-efficacy, and perception of learning did not reflect significant differences between both groups. With the type of potentiality that these Chatbots possessed, its conversational skill and accuracy are worth recognizing.

Studies indicated benefits of chatbots in providing personalized tutoring and feedback to students based on their individual learning needs and progress, grading student essays, translating educational materials into different languages, making them more accessible to a wider audience, creating interactive learning experiences and adaptive learning systems that helped teachers adjust their teaching methods based on a student's progress and performance (Baidoo-Anu & Ansah, 2023). Studies also found that ChatGPT had the potential to give students a sense of empowerment and increased engagement and increased their engagement and motivation in the learning process especially in reading and writing (Munoz et al., 2023); and supported their self-paced learning (Chinonso et al., 2023).

While there are many potential benefits of using Chatbots, concerns about the advancement and influence of AI on teaching and learning – most recently in relation to chatbots like ChatGPT – have also been raised by stakeholders. Research conducted by Igbal et al. (2022) reported teachers' negative attitude towards ChatGPT in terms of cheating, class intrusion, inability to add value to the learning process, chances of cheating and plagiarism, and lack of teacher support for using ChatGPT as an educational tool; however, the study also found ChatGPT to be useful in providing automated feedback to students and allowing teachers more time to focus on other tasks, increasing engagement and motivation among students.

Studies indicated that AI assisted Chatbots lacked human assistance, in cases where the Chabot was unable to answer complex and/or personal questions or cases where students preferred human contact, failure to provide explanations tailored to students' individual needs and misconceptions, inability to accurately grade students essays, risk of limiting the creativity and originality of the responses, highly dependency on the quality and quantity of the data input, inability to understand context and situation, which can lead to inappropriate or irrelevant responses, limited ability to personalize instruction, privacy and data security (Baidoo-Anu & Ansah, 2023; Lopez & Qamber, 2022); limitations of giving erroneous or illogical responses, sensitivity to changes in input phrase (Chinonso et al., 2023); and students' reservation in using chatbot in regular class time (Bii et al., 2013).

The extraordinary abilities of Chatbots like ChatGPT to perform complex tasks within the field of education has caused mixed feelings among educators as this advancement in AI seems to revolutionize existing educational praxis (Baidoo-Anu & Ansah, 2023). Liu's (2023) survey on Chinese University Students' attitudes and perceptions in learning English using ChatGPT revealed students' positive attitude towards the use of ChatGPT as an effective tool to support them in learning English such as in developing reading and writing abilities and exploring more learning opportunities. However, the study also showed mixed response towards the issue of plagiarism, information leakage and inaccurate responses.

According to the research conducted by Chan and Hu (2023) and Okonkwo and Ade-Ibijola (2021), students were found to have positive attitude towards GenAI in teaching and learning and its potential to personalise learning support, assist writing and brainstorming, research and analysis capabilities;

however, concerns about accuracy, privacy, ethical issues, and the impact on personal development, career prospects, and societal values were also expressed.

Shoufan (2023) reported about students' admiration of the capabilities of ChatGPT and its human-like interface which aroused their interest and motivation; in addition, they also found it easy to use in getting well-structured responses and good explanations. However, the study also revealed lack of inaccurate response from the chatbot and the need for good background knowledge to interact with the chatbot.

The findings of Essel et al. (2022) revealed that students who interacted with the chatbot performed better than students in the control cohort who interacted with the course instructor; it also revealed students' satisfaction with the instantaneous feedback received from chatbots at different times, without any delays in the interaction process; however, they also found it could not carry out in-depth learning and the human element was missing.

Therefore, with the growth in usage and influence of AI assisted Chatbots, there is a need to understand students' perceptions towards using Chatbots in learning process in Nagaland as well. Also since not much research has been conducted in Nagaland, in order to understand the crux of Chatbots in education and its perception by learners to aid their learning, the researchers found it important to explore the level of perceptions towards Chatbots and its implications for teaching and learning in education. Having an understanding of the perceptions of undergraduate students about chatbots will help institutions and educators to look into the possibilities of integrating these AI tools into the learning process, open up avenues to plan and strategize the use of Chatbots in the field of Education.

2. Objectives of the Study

1. To know the level of familiarity of Chatbots among the Undergraduate Arts students.
2. To know the level of familiarity of Chatbot applications among the Undergraduate Arts students
3. To know the perception level of Undergraduate Arts students towards Chatbots.
4. To study the difference in the perceptions of Undergraduate Arts students towards Chatbots on the basis of gender, management and academic level.

3. Hypotheses of the Study

1. There is no significant difference between the perceptions of female and male Undergraduate Arts students towards Chatbots.
2. There is no significant difference between the perceptions of private and government Undergraduate Arts students towards Chatbots.
3. There is no significant difference among the Undergraduate Arts students' perceptions towards Chatbots with respect to academic level.

4. Delimitation of the Study

The present study is confined to 400 Undergraduate Arts students studying in the Colleges of during the academic year 2023-2024 in Nagaland only.

5. Methodology of the Study

5.1.Methods of Research

The study intended to determine the Undergraduate Arts students' level of perception towards Chatbots

in education using the descriptive survey method.

5.2.Population and Sample

The population for this study consisted of the Undergraduate students studying Arts stream in Nagaland state. The study sample consisted of 400 samples collected through multi-stage random sampling from the three districts -Kohima, Dimapur and Mokokchung.

5.3.Tool for the study

The respondents were asked to fill up a personal data form in order to seek information about them like Gender, academic level, type of management, familiarity of Chatbots and usage level. The researchers self-developed a research tool for this study- Students' Perception Scale on Chatbots comprising of 14 statements with four components such as, Intention (2 items), Ease of Use (2 items), Attitude (4 items), Usefulness (4 items) and privacy and security (2 items). All the statement items were set against a five-point rating from 1 (strongly disagree) to 5 (strongly agree) and therefore, the composite scale has a maximum score of 70. The reliability of the tool was established by employing Cronbach Alpha, the value obtained was 0.84 indicating internal consistency of the tool and split-half method where the reliability of the tool was estimated by the Spearman-Brown Co-efficient value which was found to be 0.91.

6. Data Analysis and Interpretation

The data of the study were analysed quantitatively with the help of SPSS in the light of the objectives and the outcomes were tabulated. The survey consists of 14 items.

Table 1: Analysis of items

Dimension	Statements	Mean	S.D.
Intention	1. I would like to learn more about the use of chatbots in learning.	3.46	0.91
	2. I would like to use chatbots for more in-depth learning in the future.	3.53	0.92
Ease of Use	3. I feel chatbots are easy to use.	3.44	1.02
	4. I find chatbots user friendly.	3.34	0.97
Attitude	5. Use of chatbots motivates me to learn concepts much better.	3.41	1.06
	6. Chatbots helps to arouse my interest in learning.	3.29	0.94
	7. Chatbots helps me to get detailed explanations to my queries.	3.04	0.87
	8. Chatbots enables me to learn at my own pace.	3.06	0.92
Usefulness	9. I use chatbots for quick access of information.	3.39	0.84
	10. I use chatbots to clarify and supplement my doubts.	3.30	0.85
	11. I use chatbots while writing assignments, projects and seminars.	3.38	0.90
	12. I use chatbots to assist my learning.	3.09	1.00
Privacy & Security	13. It is quite safe to use chatbots in learning.	2.88	0.91
	14. I feel my information will remain intact in using chatbots.	2.98	0.96

The highest means for items 1 and 2 in Table 1 demonstrate that students have the high intention to use chatbots in their learning process. It can also be observed that students find it simple and easy to use; and are positive towards the use of chatbots in education as motivating and interesting tools for learning purposes.

Table 2: Socio-Demographic details of Respondents

Variables		**Responses**	
		Frequency	**Percentage**
Gender	Female	239	59.75
	Male	161	40.25
Management	Private	162	40.5
	Government	238	59.5
Academic level	1st semester	160	40
	2nd semester	134	33.5
	3rd Semester	106	26.5
Total		**400**	**100**

Table 2 shows the total number of respondents in this study is 400. Participant gender distribution showed more female respondents, i.e. 59.75% than males (40.25%). The results also revealed that majority of the respondents (59.5%) comprised of undergraduate students studying in government institutions and 40.5% comprised of students studying in private institutions. Academic level of the respondents revealed that 1st Semester (40%), 2nd Semester was 33.5% and 3rd Semester (26.5%).

Objective 1: To know the level of familiarity of Chatbots among Undergraduate Arts students.

Table 3: Analysis of the sample regarding the level of familiarity of Chatbots among Undergraduate Arts students

Familiarity of Chatbot	**No. of respondents**	**Percentage**
Familiar and used it often	36	9
Familiar and used it sometimes	139	34.75
Familiar but rarely used it	149	37.25
Familiar but never used it	76	19
Total	400	100%

Table 3 presents the sample distribution regarding the familiarity of Chatbot in undergraduate arts students; majority of the respondents (37.25%) were familiar with Chatbots and used it occasionally and only 9% were found to have regularly used the Chatbots. Whereas, though 34.75% were familiar with Chatbots but rarely used it; and 19% were less familiar but never used it.

Objective 2: To know the level of familiarity of Chatbot applications among Undergraduate Arts students

Table 4: Analysis of the sample regarding the level of familiarity of Chatbot applications among Undergraduate Arts students

Familiarity of Chatbot Applications	**No. of Respondents**	**Percentage**
ChatGPT	211	52.75

YouChat	93	23.25
Open AI Playground	38	9.5
Socratic	37	9.25
Bing AI	36	9

From table 4, it can be observed that students are familiar with one or the other types of Chatbots. The results shows majority of the respondents (52.75%) were familiar with the use of ChatGPT; 23.25% were familiar with the use of YouChat; Open AI Playground (9.5%) followed by 9.25% with Socratic and 9% with Bing AI.

Objective 3: To know the perception level of Undergraduate Arts students towards the use of Chatbots in education

Table 5: Frequency and percentage distribution for overall perceptions towards the use of Chatbots in education scores among Undergraduate Arts students in Nagaland

Sl. no.	Class Interval	Frequency	Cumulative frequency	Percentage
1.	**61-70**	6	6	1.5
2.	**51-60**	98	104	24.5
3.	**41-50**	224	328	56
4.	**31-40**	58	386	14.5
5.	**21-30**	12	398	3
6.	**20 & below**	2	400	0.5
Total		400		100

Table 5 shows the perception scores of undergraduate arts students of Nagaland towards the use of Chatbots in education. It can be observed that out of 400 respondents, 1.5% scored in the highest range 61-70 and 0.5% in the lowest range of 20 & below; and majority of the respondents (56%) scored in the average range of 41-50. This implies that majority of the undergraduate arts students of have positively average level of perceptions towards the use of Chatbots in education.

Objective 4: To study the difference in the perceptions of Undergraduate Arts students towards the use of Chatbots in education on the basis of gender, management and academic level.

H_{01}: There is no significant difference between the perceptions of female and male Undergraduate Arts students towards the use of Chatbots in education.

Table 6: Result of t-test in respect of perceptions of female and male Undergraduate Arts students towards the use of Chatbots in education

Academic level	N	Mean	S.D.	df	t	S/NS
Female	239	44.95	7.52	398	2.027	S*
Male	161	46.47	7.21			

**At 0.05 level of significance*

Table 6 showed the mean scores of the perceptions of female Undergraduate Arts students towards the use of Chatbots in education is 44.95 and of male undergraduate students is 46.47. This indicates the difference of mean score of 1.52 which is in favour of male undergraduate students and showing their higher positive perceptions towards the use of Chatbots in education than female. The observed t-value =2.027 is higher than the table value (1.96) with 398 df at 0.05 level of significance. It indicates that there is a significant difference in the perceptions of female and male undergraduate arts students

towards the use of Chatbots in education. The stated null hypothesis, "there is no significant difference between the perceptions of female and male Undergraduate Arts students towards the use of Chatbots in education" is not accepted. Thus, the result revealed that the male undergraduate students have higher positive perception towards the use of Chatbots in education than the female undergraduate students.

H_{02}: There is no significant difference between the perceptions of private and government Undergraduate Arts students towards the use of Chatbots in education

Table 7: Result of t-test in respect of perceptions of private and government Undergraduate Arts students towards the use of Chatbots in education

Management	N	Mean	S.D.	df	t	S/NS
Private	162	45.65	7.02	398	0.213	NS*
Government	238	45.50	7.70			

**At 0.05 level of significance*

Table 7 showed the mean scores of the perceptions of private undergraduate Arts students towards the use of Chatbots in education is 45.65 and of government undergraduate students is 45.50. This indicates a slight difference of mean score of 0.15 which is insignificant as it can be observed from Table 7 that the observed t-value =0.213 is lesser than the table value (1.96) with 398 df at 0.05 level of significance. It indicates that there is no significant difference in the perceptions of private and government undergraduate students towards the use of Chatbots in education. The stated null hypothesis, "there is no significant difference between the perceptions of female and male Undergraduate Arts students towards the use of Chatbots in education" is accepted. Thus, the result revealed that the perceptions towards the use of Chatbots in education between private and government Undergraduate Arts students are same.

H_{03}: There is no significant difference among the Undergraduate Arts students' perception towards the use of Chatbots in education with respect to academic level.

Table 8

Result of the F-test for the significant difference among the Undergraduate Arts students' perceptions towards the use of Chatbots in education with respect to academic level.

Source of Variance	Sum of Squares	df	Mean Square	F	S/NS
Between Groups	160.74	2	80.37	1.462	NS*
Within Groups	21829.82	397	54.987		
Total	21990.56	399			

**At 0.05 level of significance*

Table-8 shows that the calculated value of F is 1.462 for df=2 and 397, which is lesser than the table value of 3.02 at 0.05 level of significance. Hence, we cannot reject the null hypothesis that, "there is no significant difference among the undergraduate arts students' perceptions towards the use of Chatbots in education with respect to academic level." We may, therefore, conclude that there is no significant difference among the Undergraduate Arts students' perceptions towards the use of Chatbots in education with reference to academic level in Nagaland.

7. Discussion

The findings of the study showed majority of the respondents i.e. 54.75% were familiar with the use of ChatGPT. This may be due to easy access, simple interface usage, relevant and precise response of

ChatGPT (Shoufan, 2023). The study also showed majority of the undergraduate arts students to have positive and average perceptions towards the use of Chatbots in education. This is consistent with the findings of Liu (2023), Malstrom et al. (2023), Essel et al. (2022) and Bii et al. (2013) but is contradictory to the findings of Igbal et al. (2022). This may imply that most of the students might not be very much aware about the possibilities that Chatbot applications can offer for educational purposes such as accessing tailored information, quick access to information, interactive features of providing motivation and engagement and immediate support (Okonkwo & Ade-Ibijola, 2021). It may also be due to occasional use of chatbots as only 9% were found to regularly use it and majority of the students used it from occasionally. Other probable reasons could be lack of guidance, confidence, digital competence, lack of opportunities, lack of technological infrastructure, and access to devices, data and information. Findings on the perceptions of undergraduate Arts students' towards the use of Chatbots in education with reference to gender was found to have significant difference in which male Undergraduates Arts students had higher favourable perceptions towards the use of Chatbots in education. This may be due to lower frequency and less intensive usage of internet services which brings about a gender gap in meaningful digital use, which limits girl's access to the full range of opportunities offered by digital (UNICEF, n.d.). The study also revealed no significant differences in the undergraduate Arts students' perceptions towards the use of Chatbots in education with reference to management and academic level. This imply that the technological skills and competencies, access to technological tools and internet services and as such Chatbots for educational purposes may not vary much across the sections of students irrespective of their academic class level and type of management.

8. Educational Implications

This study has valuable implications on the educational system in integrating the use of Chatbots in education:

1. Institutions should provide open avenues to adopt blended learning and organize training for sound usage of latest technological tools and apps for teachers and students across the state to improve their digital skills and competencies.
2. Students and teachers irrespective of gender should be provided equal opportunities and facilities to access digital services.
3. Students and teachers should make efforts towards meaningful use of internet services for educational and professional development purposes.
4. Teachers should make efforts to update their knowledge and competencies on integration of new technological tools effectively in the teaching and learning process so that they can imbibe in the learners the uses and benefits of modern technology.
5. Efforts should be made towards understanding the use of Chatbots and its implications and challenges in the educational system.
6. Further research may be carried out to understand the perception and use of Chatbots among teachers in Higher Education Institutions.

9. Conclusion

The study investigated the perception level towards the use of Chatbots in education among the Undergraduate Arts students. The findings of this study revealed that the Undergraduate Arts students have positive average perceptions towards the use of Chatbots in education. The results also revealed

significant difference among the Undergraduate Arts students' perceptions towards chatbots with reference to gender; however, no significant difference was found with reference to management and academic level. This research has significant educational implications related to the use of Chatbots for students' learning. Both teachers and students in Higher Education irrespective of gender, management, stream or disciplines should update themselves with the possibilities of new technological tools and developments in the field of teaching and learning and also for professional development of teachers.

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