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Exploring the Role of ChatGPT in Education from the Perspectives of Teacher Education Students

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Abstract

ChatGPT is a language model created by OpenAI, which has received a lot of attention in the world because of its theory of producing human-like answers based on advanced natural language processing. Its high growth in various areas, especially in the education system, is phenomenal, as it can have an effect on the modern trends in teaching and learning. This technology provides some favorable prospects to advance the traditional learning methods by making them more interactive, student-oriented, and dynamic. Teacher education learners view ChatGPT as a helpful learning tool that can be used to support lesson planning, content development, and academic guidance and acknowledge its possibilities of implementation in learning institutions. But, with these opportunities, ethical issues regarding the matter, academic integrity, over-reliance, and the effect of the matter on critical thinking and creativity have also appeared. This paper investigates the opportunities and issues related to the application of ChatGPT in education in the eyes of teacher education students. The methodology that was adopted was qualitative research, with semi-structured interviews as the data collection tool. The sample was used, which consists of 30 teacher education students who were chosen by convenience. Thematic analysis was used to analyze the data collected. The results indicate that the teacher education students consider ChatGPT to be an available and easy-to-use tool that facilitates individualized learning and student-centered education as well as pedagogical content creation. Simultaneously, serious issues were pointed out, such as the apprehension of authenticity, ethical application, loss of originality, and the necessity of the proper level of digital competence and professional training to make using ChatGPT responsible and effective in the teaching practice.

Keywords: Artificial Intelligence; Chatbot; ChatGPT in Education; Teacher Education Students; Digital Pedagogy; Opportunities; Challenges

1. Introduction

Recently, the world and human lives have been spinning around a digital explosion. The exceptional development of Artificial Intelligence (AI) has invaded all spheres of human activity, namely, healthcare, transportation systems, education, and entertainment. The term "AI" is several decades old, and it was named in the 1950s by one of the pioneers of AI, a computer scientist called John McCarthy (Hassani et al., 2020). AI is subject to generalization, typically referring to the creation of a computer application that mimics human intelligence, including reasoning, perception, decision-making, and natural language processing (Kahn and Winters, 2021). The industry of AI is large and evolving, which includes various technologies, including chatbots, ChatGPT, autonomous vehicles, image recognition systems, and machine learning algorithms. The conversational algorithms in the form of chatbots are not new to everyday life, and people usually use them in their online shopping, booking flights, purchasing movie tickets, and ordering food delivery services (Zemčik, 2019). "Chatbot" refers to a computer program designed to act as a virtual correspondent and can respond to messages sent by computer users (Definition of Chatbot | Dictionary.com). ELIZA, the earliest chatbot, was a brainchild of Alan Turing, who addressed the human-computer interaction (Adamopoulou and Moussiades, 2020).

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Boost Juice Australia has developed advanced chatbots over recent years by addressing the main shortcomings of traditional systems, especially in the areas of comprehension, the generation of natural language, and the processing of complex or unforeseen user inputs. Being an open AI language model, ChatGPT allegedly produced a high number of users around the world every month. Due to its natural language processing, as well as the ability to provide human-like responses, ChatGPT has grown in various spheres, although it is especially popular in the education system. The result is a new technology that can change the conventional methods of education and teaching and create more interactive and dynamic learning stages for students across the world. ChatGPT is viewed by many teachers and educators as a useful educational tool to facilitate teaching and learning activities in classrooms, and they take every possible chance to implement it in the educational system. Meanwhile, concerns about ethical issues and challenges associated with its use as an educational tool persist.

Here, teacher education students are critical as prospective teachers, and they need to be informed about the educational consequences of ChatGPT. It is significant to study their views, their beliefs, and their experiences, which will shape the proper implementation of AI technologies in the classroom in the future. In line with this, the current paper discusses the potential and the challenge of ChatGPT in education in the eyes of teacher education learners. It was based on the qualitative research approach with a semi-structured interview method of data collection among 30 teacher education students who were selected using a convenient sampling technique.

2. Brief Literature Review

2.1. ChatGPT: Overview

ChatGPT is an innovative and progressive AI technology created by OpenAI, based on the recent shifts in artificial intelligence and natural language processing (Dwivedi et al., 2023). Generative Pretrained Transformer (GPT) is an initially introduced language modeling model presented by OpenAI in 2018 (Ollivier et al., 2023). Following this, a series of GPT models were introduced, including GPT-1 and GPT-2, and then GPT-3 was released in 2020, and this was the first breakthrough in AI-oriented language generation (Dehouche, 2021). ChatGPT is a variation of the GPT-3 model, but it is analogous to chatbots and is intended to be used in conversations. It can be used to carry out an extensive number of activities, such as language translation, content creation, and chatbot development in different contexts (Javaid et al., 2023).

The other developed chatbot systems have also appeared, like BlenderBot, besides ChatGPT. Moreover, GPT-4, also known as LaMDA, is the latest release of the GPT family of OpenAI, which was released on March 14, 2023. The version showed significant improvements in the GPT-3.5 version, improving the overall performance and capabilities of ChatGPT and attracting the attention of many researchers and practitioners (O'Leary, 2023).

2.2. ChatGPT in Educational Context

The world of education is constantly changing due to the new technological changes, and OpenAI ChatGPT has become one of the major innovations in the modern education industry. ChatGPT has well over one billion users across the world, according to the available statistics as of March 2023 (Ruby, 2023). Its high rate of adoption is due to its features, which include accessibility, ease of use, the ability to interact in a conversational manner, multilingual support, and quick access to information, which made it very popular in different fields, especially education. ChatGPT has proved to be even more attractive in the area of higher education, as it has drawn the interest of teachers, researchers, and professionals who want to use it to identify a new innovative approach to contemporize educational activities (Baig and Yadegaridehkordi, 2024).

ChatGPT has an educational potential that consists in its ability to facilitate new methods of teaching, relieve student engagement and cooperation, improve learning experiences, and ensure experiential and practical learning. It also provides the avenue to enhance assessment habits by allowing instructors to come up with creative evaluation plans (Firat, 2023a). Moreover, big language models offer educational opportunities to learners and practitioners at all levels of learning, starting with elementary and ending with higher education (Kasneci et al., 2023). These advantages involve personalized and asynchronous teacher-supported learning and lesson planning, teacher professional development, and research and academic writing assistance. Chatbots like ChatGPT are especially popular among students because of the perceived benefits of the systems to improve learning experiences (Ngo, 2023; Stoehr et al., 2024), and a human-like interface is another aspect that encourages students to use chatbots (Shoufan, 2023). Therefore, numerous researchers expect ChatGPT to become a part of the education system in the nearest future (Mhlanga, 2023).

The application of ChatGPT in education also has a number of important issues, despite the broad potential of its application. Issues with AI-generated content reliability and accuracy, overreliance on automated systems, quality control, high energy usage, impact on the environment, privacy and data security, delays when responding to requests in real-time, misinformation, ethics, the digital divide, and intellectual property rights have been raised (Gordijn and Have, 2023; Ray, 2023; Lo, 2023). In the context of higher education, the threat of plagiarism is especially high; students can present artificial intelligence-generated assignments and do not have to think critically or be creative (Dehouche, 2021). To mitigate these issues, teachers can implement such preventive measures as paying close attention to academic work originality, checking sources and citations, teaching students about the real-life outcomes of plagiarism, using plagiarism-detection software, and ensuring that the use of AI-based tools like GPT-3 is properly used (Cotton et al., 2023).

Other pitfalls are the problem of multilingualism and fair access to AI technologies. Otherwise, the lack of suitable initiatives will likely result in the expansion of the digital divide and the further aggravation of the educational disparity on a global level (Kasneci et al., 2023). Studies also indicate that ChatGPT is not yet a mature product, and the main focus aspects are natural language, dialogue, speech, learning, and response (Baber et al., 2023). However, the research team at OpenAI is also trying to enhance the capabilities and reliability of ChatGPT to overcome the limitations that exist (Sohail et al., 2023).

Even though the use of artificial intelligence can be of substantial importance to any sphere of human life, numerous educators and educational institutions are not sufficiently ready to implement emerging technologies into effective teaching (Redecker, 2017a). A certain amount of different perceptions and experiences is reported by studies conducted in different countries, including Turkey, Sweden, Canada, and Australia, which investigated the perceptions of ChatGPT among students and scholars (Firat, 2023b). Even though the use of ChatGPT has been on the rise, a portion of students remains skeptical about its beneficial academic effects (Singh et al., 2023). With the growth of use of AI tools, schools and colleges should approach their implementation in assessment processes with caution in terms of ensuring that the process encourages the responsible use of these tools, without adversely affecting the ability of students to think critically and be creative (Maheshwari, 2024). There are still issues surrounding the validity and moral nature of AI-generated content. Additionally, some research indicates that the faculty personnel in Pakistan tend to have reservations about ChatGPT due to issues with scholarly dishonesty, coupled with recognizing its advantages when it comes to lesson planning and evaluation. These results point to the necessity of further training and education for university educators to enable them to make informed decisions when it comes to the effective usage of ChatGPT in the educational process (Iqbal et al., 2023).

2.3. Identified Research Gap in the Literature

Even though some research has continued to explore the views of students, teachers, and educators concerning the use of ChatGPT in various learning environments, the studies are still at an initial phase of development and are limited in nature. Specifically, limited studies concentrate on the views of teacher education students. Furthermore, one can observe that there is a notable absence of studies that could be focused on the opportunities and challenges of ChatGPT use in teacher education in the Indian context. Since teacher education students are future teachers who will be instrumental in incorporating the new technologies into the classroom practice, it would be important to know their opinions. This is the gap that the current study fills, as it discusses the perceptions of teacher education students regarding the opportunities and challenges of ChatGPT in education through a qualitative, semi-structured interview. The researcher formulated and provided twelve open-ended questions.

2.4. Purpose and Questions of the Research

The current research aims to comprehend how teacher education students perceive the opportunities and challenges associated with the application of ChatGPT in education. This was done with a semi-structured interview technique. The following questions were used to guide the study:

1. Have you ever used ChatGPT as an educational tool? If so, what was your experience like?
2. How do you see the utilization of ChatGPT in the education system?
3. How do you believe ChatGPT could be applied to make the teaching and learning process more effective?
4. What challenges do you foresee in using ChatGPT in the education system?
5. How do you think the use of ChatGPT will impact the role of teachers in the classroom?
6. What safeguards should be implemented to ensure ChatGPT is used ethically in education?

7. What are your thoughts on the potential of ChatGPT to personalize learning and meet the individual needs of students?
8. How can teacher educators be trained to effectively incorporate ChatGPT into their teaching strategies?
9. What are the weaknesses of ChatGPT as a learning resource for you?
10. What do you believe the future of ChatGPT in the education system would be?
11. How do you feel about ChatGPT as an educational tool? Is it positive, neutral, or negative?
12. Have you used ChatGPT in your academic life for assignments, lesson planning, or research-related work? If yes, how has ChatGPT been helpful to you as a teacher education student?

3. Method

The current research followed a qualitative methodology of investigating the perceptions of ChatGPT with the teacher education students in a thorough way. The semi-structured interview method was used to enable the participants to be free to express their opinion but also to establish consistency in the interviews.

3.1. Participants

The study used a convenient sampling technique to choose the study participants. The sample was composed of 30 students of teacher education who were selected in the districts of Khordha and Cuttack. The participants enrolled in the teacher education programs and were deemed to be appropriate for the study because of exposure to educational technologies and practices in academics.

3.2. Data Collection

Semi-structured interviews were used to collect data while interviewing the targeted participants. The interviews were tape-recorded upon the agreement of the interviewees to the recording to record the precise answers and to further analyze the answers in detail.

3.3. Data Analysis

Following completion of all interviews, thematic analysis was employed to analyze the qualitative data. The audio-recorded interviews were carefully reviewed, and the data were organized and analyzed question by question. Through this process, recurring patterns and meaningful themes were identified from the participants' responses, which helped in understanding teacher education students' perceptions of ChatGPT in education.

4. Results

The interviews were conducted with a total of 30 students of teacher education in the Khordha and Cuttack districts. Out of them, 19 students of teacher education (63.33%) stated that they had been using ChatGPT, and 10 students (33.33%) said that they were in the process of actively learning about its possibilities as a learning tool. In general, the students who had used ChatGPT talked about their experiences in a positive way. The interviews further discussed the opportunities and challenges of using ChatGPT in education. 11 teacher education students (36.67%) were unaware of ChatGPT and did not use it in education.

5. Discussion

5.1. Research Question 1: Have you ever used ChatGPT as an educational tool? If so, what was your experience like?

The results showed that 19 students of teacher education had used ChatGPT, and most of them had positive experiences. Such students indicated that ChatGPT allowed them to acquire information faster and offered ideas that their brains could not contemplate in the first instance, which meant that a specific level of intellectual activity was less necessary during a particular learning phase. Its appeal as a learning resource was due to its usability and speed of response. The same has been mentioned in previous literature that addresses the facilitating power of chatbots such as ChatGPT in studies and research-based activities (Khlaif et al., 2023; Sallam, 2023; AlZaabi et al., 2023).

Although these experiences are positive, it is important to note that some teacher education students have negative issues regarding the credibility and validity of the information produced by ChatGPT. These respondents reiterated the idea that although the tool is effective in acquiring initial ideas and advice, the data presented cannot be trusted absolutely and has to be confirmed. Such an ambivalent attitude highlights why ChatGPT should be critically engaged and used with care in the learning context.

5.2. Research Question 2: How do you see the utilization of ChatGPT in the education system?

The results show that few students of teacher education were fully aware of how ChatGPT may be used at various levels of the educational system. ChatGPT users who actively used the platform showed a specific interest in how the tool reacts to certain queries and valued that it can produce the natural language. Respondents admitted that such anthropomorphic reactions play a significant role in the usefulness of ChatGPT as an educational resource (Opara et al., 2023). Moreover, teacher education students also pointed out ChatGPT's applicability to content creation, its ability to generate new and diverse ideas, its suitability for providing instant solutions to academic problems, and its support for language learning.

Simultaneously, the participants brought up the issue of ChatGPT's constraints. Although it has been identified to have advantages, teacher education learners were still wary of its unlimited application in the academic application because of the challenges of reliability, accuracy, and proper usage. The same issues have been observed in the literature review of how ChatGPT is perceived in the education field, where both prospects and drawbacks were reported (Chellappa and Luximon, 2024). Moreover, the currently available literature indicates that even though generative AI applications, like ChatGPT, are becoming popular in education, there is no uniform evidence about students' attitudes towards them, even in such a field as design education (Arguello et al., 2024). These results substantiate the importance of doubting the application of ChatGPT in the education system, at least in the eyes of future educators.

5.3. Research Question 3: How do you believe ChatGPT could be applied to make the teaching and learning process more effective?

The students of teacher education viewed ChatGPT as an instrument that has a high potential of improving the process of teaching and learning in various ways. The participants hinted that ChatGPT would make a good pedagogical tool in assisting classroom teaching and learning activities outside of the classroom. They underlined that educators could plan teaching content and other learning resources with the help of ChatGPT and apply various teaching-learning techniques to actively involve students both in class and out of the classroom. The participants stated that the correct use of ChatGPT by students under the guidance of teachers can facilitate language learning, help with the assignments, and lead students towards problem-solving because of fostering the development of independent thinking instead of following the example.

Such impressions are consistent with the literature that recognizes ChatGPT as an assistive technology in supporting the teaching-learning process (ElSayary, 2024), which is a part of building a knowledge-based learning atmosphere. Nevertheless, students and teachers have faced issues with embracing the continual rise in digitalization in education. The same issues connected with the introduction of AI-based applications into the education process have also been described in the studies carried out in the United Arab Emirates (Baidoo-anu & Ansah, 2023; Ali et al., 2024). Despite ChatGPT's high pedagogical value, its successful implementation necessitates adequate guidance, digital preparedness, and instructional assistance, according to the results.

5.4. Research Question 4: What challenges do you foresee in using ChatGPT in the education system?

Although they have acknowledged the possible advantages of ChatGPT, students of teacher education showed a lot of concern about the challenges and restrictions connected to the application of this model in the education system. One of the main issues raised by the participants was the possibility of excessive dependence on ChatGPT, which they felt would suppress the ability of students to be creative and think independently and critically. The respondents stressed that unless students are properly trained in the proper use of ChatGPT, there is a high probability that students will merely copy AI-created material to do assignments and homework instead of undergoing a learning process (Adeshola and Adepoju, 2023).

The other significant issue that teacher education students have noted is associated with the problem of authenticity, reliability, and control over information produced by ChatGPT. The participants stated that, in certain cases, the tool has limited explanations, lacks sufficient depth, or does not deliver a clear response, whereas in other cases, bias and inaccuracies might be involved. Because there is no way to confirm AI material's authenticity, students considered ChatGPT an insufficient academic source. In addition, other participants cautioned that there are negative effects of

blind reliance on ChatGPT, which shadows the entire teaching-learning process, and overshadows the possible advantages (Farrokhnia et al., 2024).

These issues emphasize the essential importance of teachers in leading students to the path of responsible and productive use of ChatGPT. Students of teacher education stressed that effective training and instructional guidance are necessary to avoid inhibiting their natural thinking skills and creativity. Although the previous studies have proved that AI-based chatbots such as ChatGPT could be effective in developing critical thinking skills given the right circumstances (Essel et al., 2024; Suriano et al., 2025), the results of the current study indicate that these advantages would only be achieved with the help of mindful implementation and pedagogically adequate practices.

5.5. Research Question 5: How do you think the use of ChatGPT will impact the role of teachers in the classroom?

Students of teacher education were very emphatic about the technological role not being substituted by the teacher. They, however, expressed concerns that students will develop overreliance on ChatGPT to meet their educational requirements, especially when teachers become less responsive to students' concerns or their individual learning requirements in the classroom. Participants proposed the possibility that students might use ChatGPT instead of teachers even under the condition when some degree of support is also present, as the opportunity to access and receive such a vast amount of information and the ease of use that ChatGPT offers are too high.

Moreover, the students of teacher education mentioned that the anthropomorphic responses and the lack of cost make ChatGPT more likely to cause dependency among students instead of among their teachers. They stressed the fact that this change might change the old trend of teacher-student relations if not properly handled. Therefore, interviewees emphasized the need to make teachers aware, observant, and engaged during the process of learning. They also observed that teachers supply necessary emotional support, motivation, and moral guidance that is not possible through technological tools as compared to AI. These observations highlight the importance of the role of the teacher in ensuring a meaningful learning experience, despite the use of technology-based classrooms.

5.6. Research Question 6: What safeguards should be implemented to ensure ChatGPT is used ethically in education?

The students of teacher education were not that aware of the entire set of precautions necessary to make sure the ChatGPT is used ethically in the education system. Nonetheless, several respondents insisted on the role of teachers, who should actively monitor and cross-check the content produced by ChatGPT. They proposed that once the students provide the work or homework, they need to check whether this work is original and the students themselves are aware of the information and do not just repeat the answers that are made by AI.

Besides ethical aspects, teacher education students re-emphasized issues related to the challenges and limitations at large in the use of ChatGPT in education. The participants said that overreliance on ChatGPT would harm creativity in students and deteriorate their critical thinking skills. Having no appropriate training in the effective utilization of AI tools was a specific concern because it can lead to plagiarism of academic content (Adeshola and Adepoju, 2023). In addition to that, participants were concerned with the authenticity, accuracy, and reliability of information generated by ChatGPT. They found that the tool can occasionally give indiscreet explanations, ambiguous answers, or prejudiced and inaccurate data, and it has no built-in functionality to obtain content validity. Consequently, respondents emphasized that ChatGPT cannot be trusted as the only source of knowledge.

Another group of teacher education students warned that the terrible results of the teaching-learning process could be received when the ChatGPT is blindly utilized instead of educational benefits (Farrokhnia et al., 2024). They emphasized the importance of teachers providing proper guidance and training on the responsible and ethical use of ChatGPT. They proposed that this approach is essential to prevent the inhibition of students' inherent capacity for thought and creativity. Although it was found that AI-powered chatbots, such as ChatGPT, could be used to promote the development of critical thinking skills (Essel et al., 2024; Suriano et al., 2025), the participants stressed the importance of informed supervision and pedagogically valid integration in terms of ethical use.

5.7. Research Question 7: What are your thoughts on the potential of ChatGPT to personalize learning and meet the individual needs of students?

Students studying teacher education pointed out the issues surrounding the current high teacher-student ratio in classes, which in most cases hindered the capability of teachers to work with individual students. The uncertainties and problems with learning for some students may not be realized when including them in classroom teaching due to time

orientation and the high number of students involved. In this respect, the participants highlighted the opportunities offered by ChatGPT to facilitate individual learning. They also highlighted that ChatGPT may furnish customized doubt clarification where students are able to study at their own rhythm and in line with their learning requirements.

Participants also added that ChatGPT provides a non-threatening learning experience, especially to students who might feel scared or intimidated posing questions in a classroom-style setting. Through communication with ChatGPT, students can openly share their questions without fear of judgment. Furthermore, students of teacher education recognized that ChatGPT enables learners to select the preferred learning style, thus supporting the learning preferences of various learners. These results indicate that ChatGPT can potentially be used to supplement classroom instruction through personalized learning and individual learner differences, provided that it is applied properly.

5.8. Research Question 8: How can teacher educators be trained to effectively incorporate ChatGPT into their teaching strategies?

Students in teacher education also expressed concern over the fact that teacher educators did not seem well informed about the use of new technologies in education, specifically ChatGPT. The participants noted that a significant number of teacher educators still tend to use traditional teaching approaches based on chalk and boards as the primary ones, which can limit the successful implementation of the innovative digital tools in the classroom setting. In order to solve this problem, the participants insisted on the need to introduce systematic training programs to promote the digital skills of teacher educators.

Particularly, students of teacher education proposed that educational leaders would provide pre-service and in-service training programs that would be systematic for teacher educators. Such programs can comprise professional training, refresher training, and training by experts as well as online orientation programs at every stage of teacher training. Respondents said that offering such training would prepare teacher educators to use ChatGPT and other similar technologies in their instructional plans with the skill and confidence that they need. They also highlighted that proper training would assist in decreasing the fear of technological innovation and equip teachers as well as students for future educational needs.

5.9. Research Question 9: What are the weaknesses of ChatGPT as a learning resource to you?

Teachers' education students found a number of drawbacks to ChatGPT as a learning tool. One of the key issues raised was that ChatGPT operates entirely on a web-based platform, and even the free version depends on network connectivity. This reliance adds to the digital divide in the education system, thus restricting equal and quality access to education for students, especially in the under-resourced regions.

Participants also noted that ChatGPT cannot provide the latest information, and the timeliness of the content produced by the service is questionable. The participants also highlighted the issues of authenticity, ethical utilization, and trustworthiness of information. The students of teacher education observed that ChatGPT facilitates the natural language processing and conversational learning, yet the system must be inquired about by the users and lacks the emotional intelligence in communication. In turn, the overuse of ChatGPT will limit the cognitive growth and independent thinking of students. Also, the participants noted that ChatGPT tends to provide minimal information concerning the Indian context, particularly context-specific or localized educational information. Such restrictions denote that ChatGPT should be critically and cautiously used as a learning tool in the educational context.

5.10. Research Question 10: What do you believe the future of ChatGPT in the education system would be?

The students of teacher education mentioned that in case ChatGPT is improved and changed to overcome the existing drawbacks, it can revolutionize the education system at various levels. Respondents felt that ChatGPT was more likely to be used in the higher education segment than at the elementary level, where the system needs more academic autonomy. They felt that students of higher education are in a better position to utilize ChatGPT in a responsible manner to support academic learning, critique, and independent learning.

In addition, students of teacher education also highlighted that the future application of ChatGPT could greatly improve the opportunities of personalized learning, especially in the context of higher education, both in formal and non-formal learning. They proposed that under proper guidance and ethical regulation, ChatGPT could facilitate personalized learning processes, customized learning, and academic support on the basis of the needs of learners. Such opinions reflect some optimism about the future of ChatGPT in education, showing that it can change the course of things if used thoughtfully and responsibly.

5.11. Research Question 11: How do you feel about ChatGPT as an educational tool? Is it positive, neutral, or negative?

The results also show that most of the teacher education students showed a positive attitude towards ChatGPT as an educational device and showed satisfaction with the fact that it supports them in their academic activities. The respondents valued ChatGPT because it has a broad scope of information, is simple to use, and is readily accessible, which has led to their positive attitudes towards it as an educational tool. None of the respondents had a completely negative position regarding the application of ChatGPT to the educational process.

However, some teacher education students reported a neutral attitude, primarily due to their anxieties about the constraints and drawbacks of ChatGPT. These issues were associated with the problems of reliability, ethical application, and possible overdependence. If this technology and its drawbacks are further developed, students, educators, and scholars may find ChatGPT more acceptable and trustworthy. On the whole, the results can be characterized as rather optimistic, as students acknowledge the advantages and limitations of ChatGPT in learning.

5.12. Research Question 12: Have you used ChatGPT in your academic life for assignments, lesson planning, or research-related work? If yes, how has ChatGPT been helpful to you as a teacher education student?

ChatGPT is a relatively new trend in education and research, and most teacher education students indicated that they are still in an experimental stage regarding its academic use. Among the participants, those who had used ChatGPT reported employing it primarily for academic purposes such as assignment preparation, lesson planning, and research-related activities. Similar to earlier observations among research scholars, only a portion of students actively used ChatGPT for research-oriented tasks.

Teacher education students reported that ChatGPT was helpful in identifying related topics and studies, collecting preliminary literature, locating relevant references, and accessing additional resources to support the development of academic work. Participants also noted that ChatGPT assisted in generating ideas and gaining initial clarity on concepts. However, they emphasized that the tool was used mainly as a supportive aid rather than a replacement for independent academic thinking. These results indicate that although ChatGPT is being increasingly examined in academic settings, its application among teacher education students remains tentative and ancillary.

5.13. Educational Implications

The following are the educational implications of the study based on the above findings:

- The results support the significance of systematic training programs for teacher educators and teacher education students on the successful implementation of AI-powered tools, including ChatGPT, into the teaching-learning process.
- The paper highlights the necessity of the development of AI-based teaching practices and instructional tools due to the joint work of researchers, teacher educators, and specialists in the fields of artificial intelligence and education.
- It is also found that the problem of the digital divide in the education system exists. Consequently, learning institutions must implement proper strategies that help provide equal access to AI-related technologies for all learners, thereby lessening the obstacles to quality education.
- The research identifies such important aspects as AI-aided personalized learning and the suitability of AI tools at various educational levels and ethical issues regarding the use of AI. Such results demonstrate that future studies and practitioners should engage in more research to improve the understanding and management of AI integration in the educational field.

5.14. Limitations

It is important to note that the current research exhibits several limitations:

- Only 30 teacher education students in the Khordha and Cuttack districts were used in collecting the data, which could be a limiting factor in the generalization of findings.
- The data collection was performed using a semi-structured interview methodology that is based on self-reporting and can be influenced by other personal interpretations of the participants.
- The study was conducted using convenient sampling, and this may not be a complete representation of the general population of teacher education students.

6. Conclusion

ChatGPT is an influential and disruptive trend in the usage of artificial intelligence in many aspects, especially in education. Its high qualities, such as natural language processing, immediate access to information, and extensive accessibility, are positively received by a number of teacher education students, and they acknowledge the opportunities and challenges of using it as an educational tool. Nevertheless, the results indicate that many teacher education students are in the first phase of using ChatGPT and are hesitant to use the young AI-based technologies completely. Their worries about the possible adverse effects of ChatGPT on academic practices are part of larger anxieties about the lack of awareness and insufficient instructions on how it can be used in an academic environment in a controlled and beneficial manner.

The accelerated integration of ChatGPT, having acquired well over 100 million users in a few months upon its release, points to the state of a critical situation in the Indian context, where several users use the technology without the proper amount of knowledge or well-organized assistance. This poses significant questions regarding the consequences of widespread use of AI in education, particularly in terms of academic integrity, ethical concerns, and building skills of critical thinking. The results underscore the need for systematic education and training to promote the responsible use of AI tools in academia.

Some frameworks, self-assessment tools, and training programs have been created, both on the national and international levels, to help educators become more digitally competent (Redecker, 2017b). Living in the times when digital technologies are becoming almost ubiquitous, teachers start having more and more widespread and advanced competencies expected of them in order to help students move successfully towards digital literacy. The European Framework of the Digital Competence of Educators (DigCompEdu) is one of the frameworks that outline the fundamental areas of digital competence and offer systematized guidance on evaluating skills and identifying areas of professional growth and development. The pressing need here is to carry out awareness campaigns and training programs for teacher educators and other teacher education students across the board. These should be directed towards making sure that the future teachers have the knowledge, skills, and ethical consciousness required to assure that the new technological advances, such as ChatGPT, are effectively and responsibly implemented into the education system.

Compliance with Ethical Standards

Disclosure of Conflict of Interest

The author declares that there is no conflict of interest associated with this study.

Statement of Informed Consent

Informed consent was obtained from all individual participants included in the study.

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