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PERSPECTIVES OF STAKEHOLDERS ABOUT ARTIFICIAL INTELLIGENCE

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ABSTRACT

Artificial Intelligence (AI) is an emerging technology rapidly permeating various fields, including education. The integration of AI in education presents numerous challenges, with a primary concern being the reliance on technology, particularly in rural areas where technological infrastructure is lacking. To address this, it is essential to mandate technological aids in all schools to ensure equitable access. AI offers diverse and personalized learning experiences, potentially reducing the need for direct student-teacher interactions. This can positively impact student-teacher relationships by allowing more focused and meaningful engagements. However, for successful AI implementation, comprehensive teacher training and ongoing support are crucial. Teachers must be prepared to integrate AI tools innovatively while adhering to ethical considerations and ensuring technology access for all students. AI enhances critical thinking skills by providing varied learning perspectives, but there is a risk of promoting passive learning if students rely too heavily on readily available information. Maintaining a balance is essential to preserve student creativity. AI can effectively identify and address learning gaps, especially in underprivileged areas where it may substitute for human teachers. A significant barrier to AI adoption in education is teachers' lack of understanding of AI technology. To overcome this, state and national-level training programs should be organized. Privacy and data security concerns also necessitate ethical AI use. Teachers' reluctance to shift from traditional teaching methods can be mitigated through targeted training on AI tools and their innovative application in the teaching-learning process. While concerns about job displacement exist, AI is unlikely to replace teachers. Instead, it requires teachers to adapt to evolving technologies. Further research is needed to understand the long-term effects of AI on educational outcomes and its ethical implications. AI can support classroom management by automating routine administrative tasks, providing real-time insights into student behavior, and enhancing student engagement. This research aims to explore the multifaceted impact of AI in education and propose strategies for effective implementation and ethical use.

***KEYWORDS**: Artificial Intelligence in Education, Teacher Training, Ethical AI Use, Technological Access.*

Introduction

Over the past 10 to 20 years, office work has undergone a significant transformation, shifting from entirely manual processes to a heavy reliance on technology. By the late 1990s, computers began revolutionizing how we work, and today, technology is at the heart of virtually every aspect of our lives. One of the most impactful outcomes of this technological revolution is Artificial Intelligence (AI). With the integration of mobile phones and various applications into our daily routines, automation has started to take over tasks traditionally performed by humans across different industries.

In the education sector, AI is emerging not to replace teachers but to assist them in addressing the challenges of teaching and learning. AI offers innovative solutions that can be seamlessly integrated into the educational process. Essentially, AI involves the science of creating machines capable of simulating human thought processes, enabling technology to perform repetitive tasks and make intelligent decisions. In education, AI can be incredibly beneficial for both teachers and students in numerous ways. It can provide personalized instruction, act as a peer mentor, make the learning experience more engaging, and handle administrative tasks that would otherwise consume valuable time.

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For instance, AI can efficiently grade papers, integrate technologies like virtual reality and learning management systems (LMS) to enhance student engagement, and even facilitate peer tutoring through AI-powered robots.

However, to fully harness the potential of AI in education, comprehensive teacher training is essential. This paper explores the perspectives of various stakeholders on the integration of artificial intelligence into the educational landscape, highlighting the opportunities and challenges of this transformative technology.

Theoretical Background

Artificial Intelligence (AI) is the science of creating machines that can think and perform tasks similar to human beings. It is an evolving technology aimed at simulating human intelligence in machines, enabling them to learn, adapt, and make decisions. AI encompasses various subfields, including machine learning (ML) and deep learning, which allow systems to learn from data and adapt in novel ways.

John McCarthy, often regarded as the father of Artificial Intelligence, was an American computer scientist who coined the term "Artificial Intelligence." The primary goal of AI is to replicate human intelligence in machines, enabling them to understand, think, behave, and solve problems like humans. Today, AI applications are widely used to automate tasks, provide personalized recommendations, enhance communication, and improve decision-making.

AI enhances decision-making by analyzing vast amounts of data to identify patterns and trends that might be invisible to humans. Machine learning algorithms can process historical data and predict future outcomes, allowing businesses and individuals to make informed decisions quickly and accurately. Fei-Fei Li, a pioneer in modern AI, contributed significantly to the field with her work on big data, which was crucial for the deep learning breakthroughs of the early 2010s. In a notable development, a Poland-based company named Dictator appointed Mika, a female robot, as its CEO, making her the first AI robot to lead a global company.

The foundation of AI was laid between 1950 and 1956. In 1950, Alan Turing published his groundbreaking work "Computer Machinery and Intelligence," which introduced the Turing Test, a measure of a machine's ability to exhibit intelligent behavior. In 1952, Arthur Samuel, a computer scientist, developed a program that could independently learn and play checkers. By 1955, John McCarthy had organized a workshop at Dartmouth, where the term "Artificial Intelligence" was first used and gained popularity.

AI is a rapidly evolving technology that integrates human intelligence with machine learning. It not only automates repetitive tasks but also recognizes patterns, aids in decision-making, and enhances the efficiency and accuracy of various processes.

The concept of artificial intelligence has ancient roots, dating back to philosophers who pondered questions of life, intelligence, and automation. In ancient times, inventors created mechanical devices called 'automatons,' which could operate independently of human control.

AI holds significant potential in addressing some of the biggest challenges in education today. It can drive innovations in teaching and learning practices, accelerating progress toward achieving Sustainable Development Goal 4 (SDG4). In education, AI is applied to improve learning outcomes and support teachers in developing more effective educational practices. From automating assignment grading to creating tailored curriculums, AI offers numerous solutions for educational institutions.

Need of the Study

Artificial Intelligence (AI) is an emerging concept in the field of education, and research in this area is crucial for its effective implementation. AI has the potential to significantly impact education by fostering innovations in the teaching-learning process. However, as a relatively new concept, AI in education comes with both advantages and challenges. Therefore, it is essential to engage stakeholders in discussions about the role of AI in education. This research aims to fulfill that need.

Many educators are not yet familiar with AI tools or fully aware of the importance of AI in education. This study seeks to explore and analyze the perspectives of various stakeholders regarding AI. It will not only consider the different dimensions of AI but also work to raise awareness among teachers and other stakeholders about its significance. By examining both the positive and negative impacts of AI in education, this research will contribute to the development and responsible integration of AI in educational practices.

Importance of the Study

As AI continues to emerge as a transformative technology across various fields, its impact on education is becoming increasingly significant. This study aims to analyze the perspectives of stakeholders on AI in education, gathering diverse views on its application. By doing so, it will bring to light both the positive and negative impacts of AI in the educational sector.

The findings of this study will provide valuable insights into the views of teachers and other stakeholders, helping to identify challenges and potential issues associated with AI implementation in education. This research will also play a crucial role in raising awareness among educators about AI, introducing them to various AI tools that can enhance the teaching-learning process.

Moreover, the study will help identify the challenges of implementing AI in educational settings and propose solutions to address these challenges. It will enhance technological awareness among teachers, making them more comfortable with integrating AI into their classrooms. Additionally, this research will help assess the availability of the technical facilities required for effective AI implementation in education, ensuring that classrooms are adequately equipped for this technological advancement.

Objectives of the Study

The objectives of this research are as follows:

- To analyze the perspectives of stakeholders regarding Artificial Intelligence (AI) in education.
- To assess the importance and impact of AI within the educational field.

Research Methodology

The study aimed to analyze stakeholders' perspectives on Artificial Intelligence (AI) and its significance in the field of education. A descriptive survey method was employed for this research, utilizing a close-ended questionnaire administered through Google Forms. A total of 57 respondents participated in the survey, including teachers, teacher educators, students, NGO representatives, trainers, and assistant professors. Given the descriptive nature of the survey, data analysis was conducted using percentage and graphical methods. The findings derived from this analysis informed the study's conclusions.

Data Analysis and interpretations

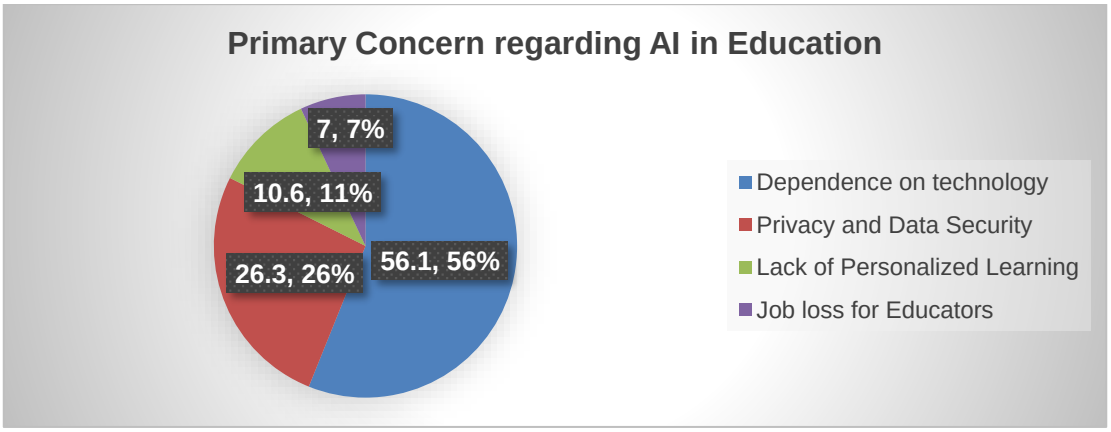
The data analysis has been done in two phases objective-wise

- **Phase 1**

Obj 1; To analyze stakeholders' perspectives about AI.

Table 1: Primary Concern Regarding the Use of AI in Education

1	Dependence on technology	56.1%
2	Privacy and Data Security	26.3%
3	Lack of Personalized Learning	10.6%
4	Job loss for Educators	7%



Graph 1

Observation

The pie chart titled "Primary Concern regarding AI in Education" illustrates the main concerns stakeholders have about the integration of Artificial Intelligence in the educational sector. The data is divided into four categories, each representing a specific concern and its corresponding percentage of respondents.

- **Dependence on Technology (56.1%)**

The largest portion of respondents, 56.1%, expressed concern about the increased dependence on technology. This indicates a significant apprehension that over-reliance on AI could undermine traditional teaching methods and human interaction.

- **Privacy and Data Security (26.3%)**

The second most prevalent concern, with 26.3% of the respondents, is related to privacy and data security. Stakeholders are worried about the potential risks of data breaches and the misuse of sensitive information collected through AI systems.

- **Lack of Personalized Learning (10.6%)**

10.6% of respondents are concerned that AI might fail to provide personalized learning experiences. They fear that AI-driven education could overlook individual student needs, leading to a one-size-fits-all approach.

- **Job Loss for Educators (7%)**

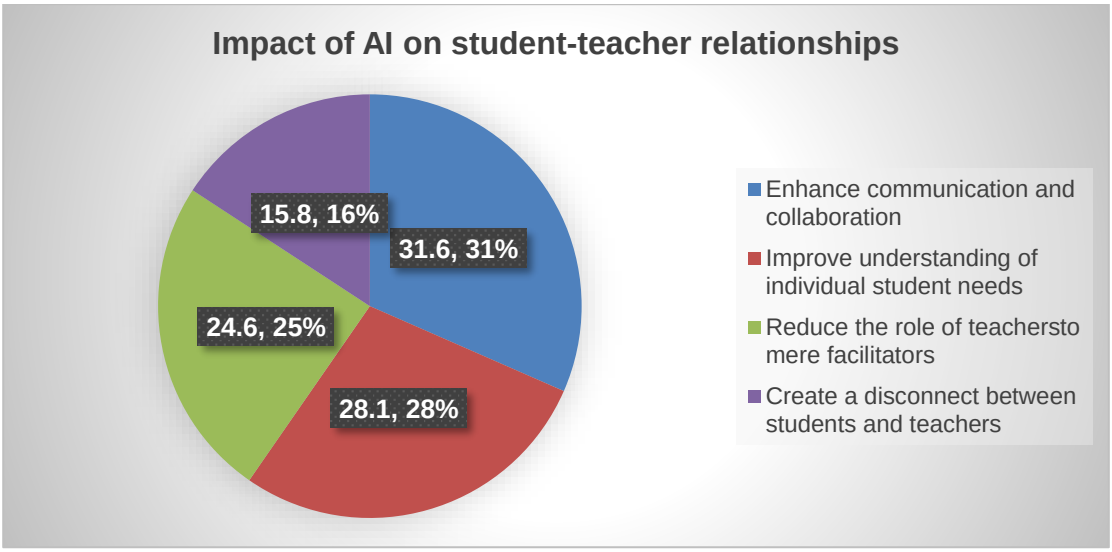
The smallest segment, 7%, is worried about job loss for educators. This reflects anxiety that AI might replace teaching jobs, leading to unemployment in the education sector.

Interpretation

The chart highlights that while AI offers significant opportunities for innovation in education, there are substantial concerns, primarily regarding the over-reliance on technology, privacy and data security issues, potential shortcomings in personalized learning, and the impact on employment for educators. These concerns need to be addressed to ensure the responsible and effective integration of AI in educational practices.

Table 2: Impact of AI on Student-Teacher Relationships

1	Enhance communication and collaboration	31.6%
2	Improve understanding of individual student needs	28.1%
3	Reduce the role of teachers to mere facilitators	24.6%
4	Create a disconnect between students and teachers	15.8%



Pie Chart 2

Observation

The pie chart-2 presents the perceived impact of AI on student-teacher relationships. It identifies four potential impacts:

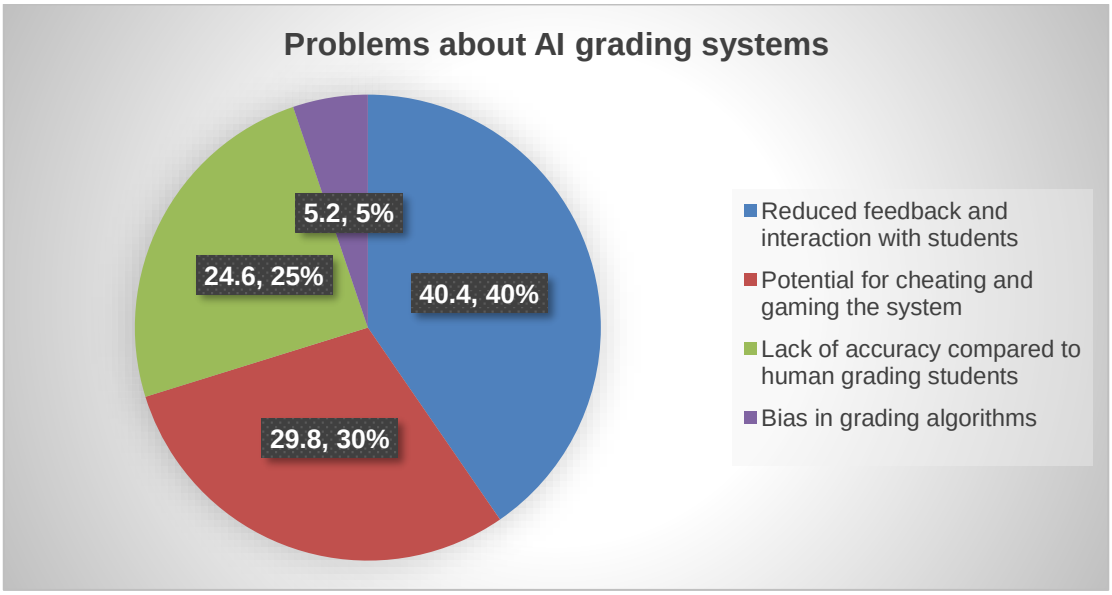
- **Positive Impacts**
  - **Enhanced communication and collaboration**: A significant portion (31.6%) of respondents believe that AI can improve communication and collaboration between students and teachers. This suggests that AI tools, such as online platforms and virtual classrooms, can facilitate more effective interactions.
  - **Improved understanding of individual student needs:** Another significant percentage (28.1%) of respondents believe that AI can help teachers better understand the individual needs of their students. This implies that AI-powered tools can provide personalized learning experiences and support.
- **Negative Impacts**
  - **Reduced role of teachers to mere facilitators**: A smaller percentage (24.6%) of respondents expressed concern that AI might reduce the role of teachers to mere facilitators. This suggests that some individuals worry about AI potentially replacing human interaction and expertise.
  - **Created a disconnect between students and teachers**: The smallest percentage (15.8%) of respondents believe that AI could create a disconnect between students and teachers. This indicates that there are concerns about AI potentially hindering the development of personal relationships and emotional connections.

Interpretation

Overall, the data suggests that while AI has the potential to enhance student-teacher relationships by improving communication, collaboration, and personalized learning, there are also concerns about its potential to reduce the human element and create a disconnect.

Table 3: Problems about AI Grading Systems

1	Reduced feedback and interaction with students	40.4%
2	Potential for cheating and gaming the system	29.8%
3	Lack of accuracy compared to human grading students	24.6%
4	Bias in grading algorithms	5.2%



Pie Chart 3

Observation

Based on the pie chart 3 the following observations drawn regarding the perceived problems with AI grading systems

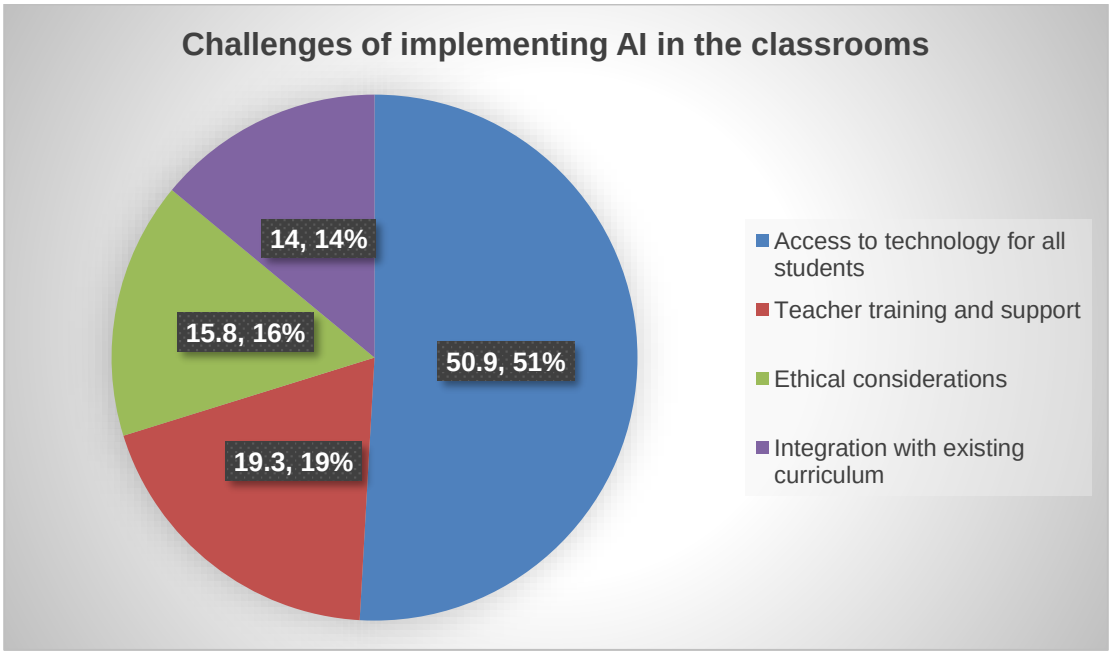
- **Potential for Cheating and Gaming the System**: This is the most significant concern, with 40.4% of respondents identifying it as a major issue. This suggests that there are concerns about students finding ways to manipulate AI grading systems to their advantage.
- **Lack of Accuracy Compared to Human Grading**: A significant percentage (29.8%) of respondents believe that AI grading systems may not be as accurate as human graders. This raises questions about the reliability of AI-generated assessments.
- **Reduced Feedback and Interaction with Students**: 24.6% of respondents expressed concerns about the potential for AI grading systems to reduce feedback and interaction between students and teachers. This suggests that AI grading may limit opportunities for personalized guidance and support.
- **Bias in Grading Algorithms**: The smallest percentage (5.2%) of respondents identified bias in grading algorithms as a problem. This indicates that there are concerns about the potential for AI systems to perpetuate or amplify existing biases in education.

Interpretation

The interpretation of these findings suggests that while AI grading systems can automate and streamline the assessment process, there are significant concerns about their accuracy, fairness, and potential to reduce the quality of student-teacher interactions. The most prominent concern is the potential for cheating and gaming the system, indicating a need for robust measures to prevent such issues. lack of accuracy compared to human grading and the potential for bias in grading algorithms raise questions about the reliability and fairness of AI-generated assessments.

Table 4: Challenges of Implementing AI in the Classrooms

1	Access to technology for all students	50.9%
2	Teacher training and support	19.3%
3	Ethical considerations	15.8%
4	Integration with existing curriculum	14%



Graph 4

Observation

The pie chart 4 illustrates the challenges faced in implementing AI in classrooms. The data is presented as percentages and is categorized into four main challenges:

- **Access to Technology for all Students:** This is the most significant challenge, accounting for 50.9% of the responses.
- **Teacher Training and Support:** This represents 19.3% of the challenges.
- **Ethical Considerations**: Ethical concerns make up 15.8% of the issues.
- **Integration with Existing Curriculum:** This is the least cited challenge, representing 14% of the responses.

Interpretation

Based on the data, the primary obstacle to AI implementation in classrooms is ensuring equitable access to technology for all students. This suggests that there is a digital divide that needs to be addressed before AI can be effectively integrated into education.

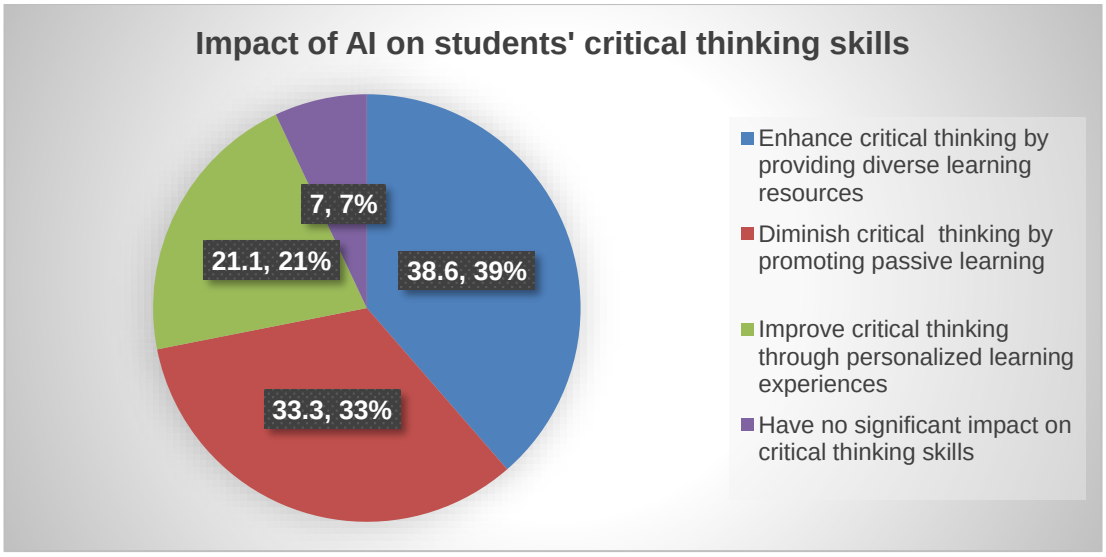
Teacher training and support are also crucial considerations. Educators need adequate preparation to effectively utilize AI tools and understand their potential benefits and limitations.

Ethical considerations, such as privacy, bias, and transparency, are important factors to address to ensure responsible AI implementation.

The relatively lower percentage for "Integration with existing curriculum" indicates that while it is a challenge, it may be less pressing compared to the other factors.

Table 5: Impact of AI on Students' Critical Thinking Skills

1	Enhance critical thinking by providing diverse learning resources	38.6%
2	Diminish critical thinking by promoting passive learning	33.3%
3	Improve critical thinking through personalized learning experiences	21.1%
4	Have no significant impact on critical thinking skills	7%



Pie Chart- 5

Observation

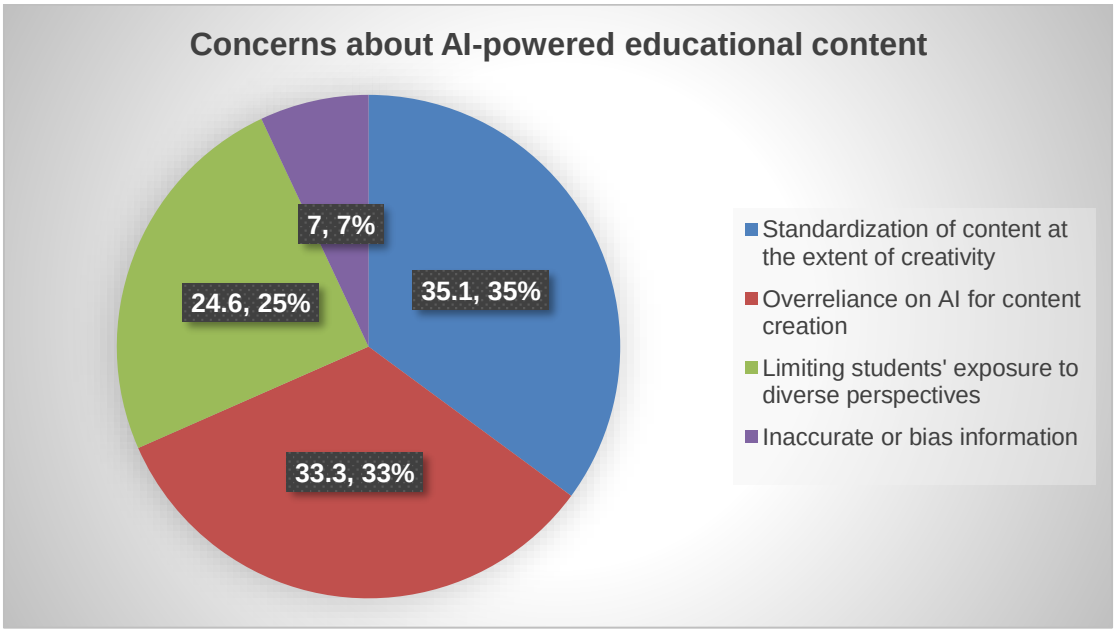
It is observed from the table 5 that 38.5% respondents reflected that AI enhance critical thinking by providing diverse learning resources.33.3% respondents feel that AI diminish critical thinking by promoting passive learning.21.1% respondents gave the opinion that AI improve critical thinking through personalized learning experiences. 7% respondents said that AI have no significant impact on critical thinking skills.

Interpretation

It can be interpreted from table 5 that most of the teachers feel that AI increases critical thinking by providing diverse learning resources whereas another set of teachers feel that AI diminish critical thinking by promoting passive learning. It creates controversy between 2 lining of thoughts. Some of the teachers feel that AI improves critical thinking through personalized learning experiences. It is found that there are 2 sides on AI's impact on critical thinking skills. Some teachers have positive opinion whereas some teachers feel that AI creates obstacle to critical thinking skills.

Table 6: Concerns about AI-Powered Educational Content

1	Standardization of content at the extent of creativity	35.1%
2	Overreliance on AI for content creation	33.3%
3	Limiting students' exposure to diverse perspectives	24.6%
4	Inaccurate or bias information	7%



Graph 6

Observation

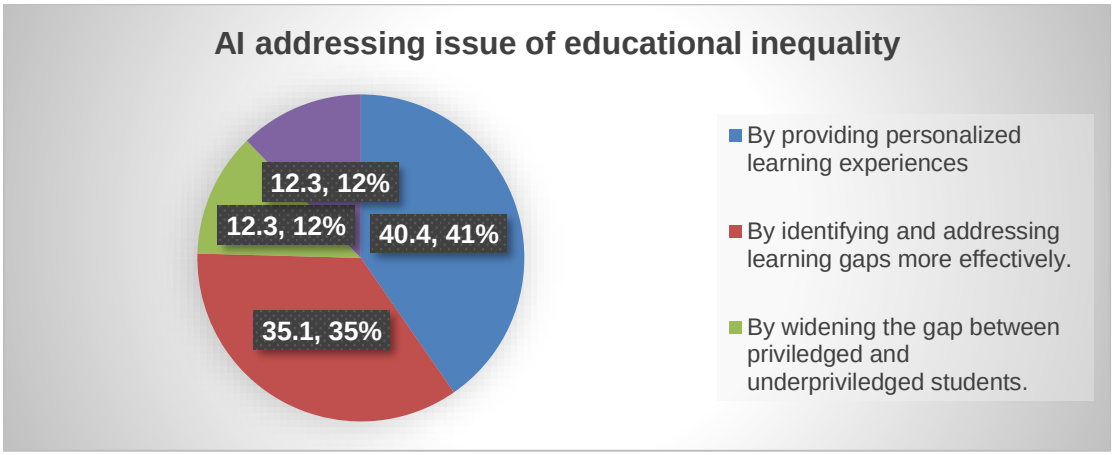
It is observed from table 6 that 35.1% respondents concern about AI of standardization of content at the expense of creativity. 33.3% respondents say that there is overreliance on AI for content creation.24.6% respondents say that AI limits students' exposure to diverse perspectives . 7 % respondents say that AI creates inaccurate or biased information.

Interpretation

It is interpreted from the observation of table 6 that there is a loss of creativity due to AI among students. There is overdependence on AI for content creation. Standardization of content occurs but creativity is lost. Some teachers feel that it limits the students' exposure to diverse perspectives. Sometimes AI generated information is bias or inaccurate. Hence students should think of AI powered educational content.

Table 7: AI Addressing Issue of Educational Inequality

1	By providing personalized learning experiences	40.4%
2	By identifying and addressing learning gaps more effectively.	35.1%
3	By widening the gap between privileged and underprivileged students.	12.3%
4	By replacing human teachers in underprivileged areas	12.3%



Graph 7

Observation

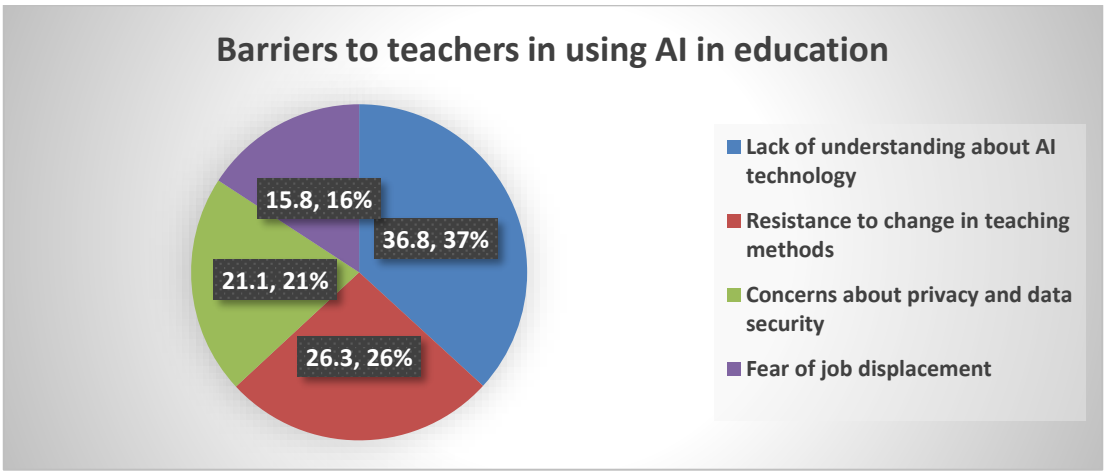
It is observed from table 7, 40.7% respondents reflected that AI lessons educational inequality by providing personalized learning experiences for all students. 35.1% respondents said that AI identifies and addresses learning gaps more effectively.12.3% respondents feel that AI solves problem of educational inequality by replacing human teachers in underprivileged areas. 12.3 % respondents say that AI widens the gap between privileged and underprivileged students.

Interpretation

It is interpreted from the table 7 that AI addresses the issue of educational inequality by providing personalized learning experiences for all students .AI identifies gaps more effectively. Hence it reduces educational inequality. Some teachers feel that AI replaces human teachers in underprivileged areas. Or it can act as educational aids to the human teachers. Few teachers feel that AI will widen the gap between privileged and underprivileged students.AI will definitely help to solve the issue of educational inequality in various ways.

Table 8: Barriers to teachers in using AI in education

1	Lack of understanding about AI technology	36.8 %
2	Resistance to change in teaching methods	26.3 %
3	Concerns about privacy and data security	21.1 %
4	Fear of job displacement	15.8 %



Graph 8

Observation

It is observed from table 8, 36.8 % respondents feel that there is lack of understanding about AI technology.26.3 % respondents reflected that main barrier in embracing AI in education is resistance by teachers to change in teaching methods. 21.1 % respondents said that there is concern about privacy and data security. Around 15.8 % teachers have the fear of job displacement.

Interpretation

Most of the teachers feel that the main barrier in implementing AI in education is lack of understanding about AI technology. Teachers don't know various AI tools. Hence they have fear in using AI technologies in classrooms. Besides that teachers do resistance to change the old teaching methods. The concern about privacy and data security is the major challenge in the implementation of AI in education. Few of the teachers feel fear of job displacement for AI. These are the main barriers to teachers embracing AI in education.

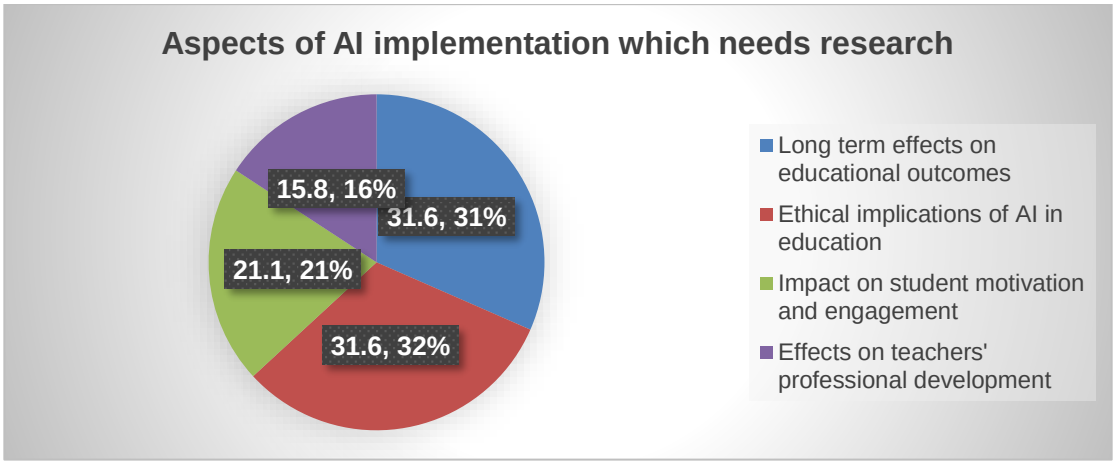
- **Phase 2**

  Obj 2 – To know the importance of AI in education.

  The above objective has been analyzed and interpreted as follows;

Table 9: Aspects of AI Implementation which Needs Research

1	Long term effects on educational outcomes	31.6
2	Ethical implications of AI in education	31.6
3	Impact on student motivation and engagement	21.1
4	Effects on teachers' professional development	15.8



Graph 9

Observation

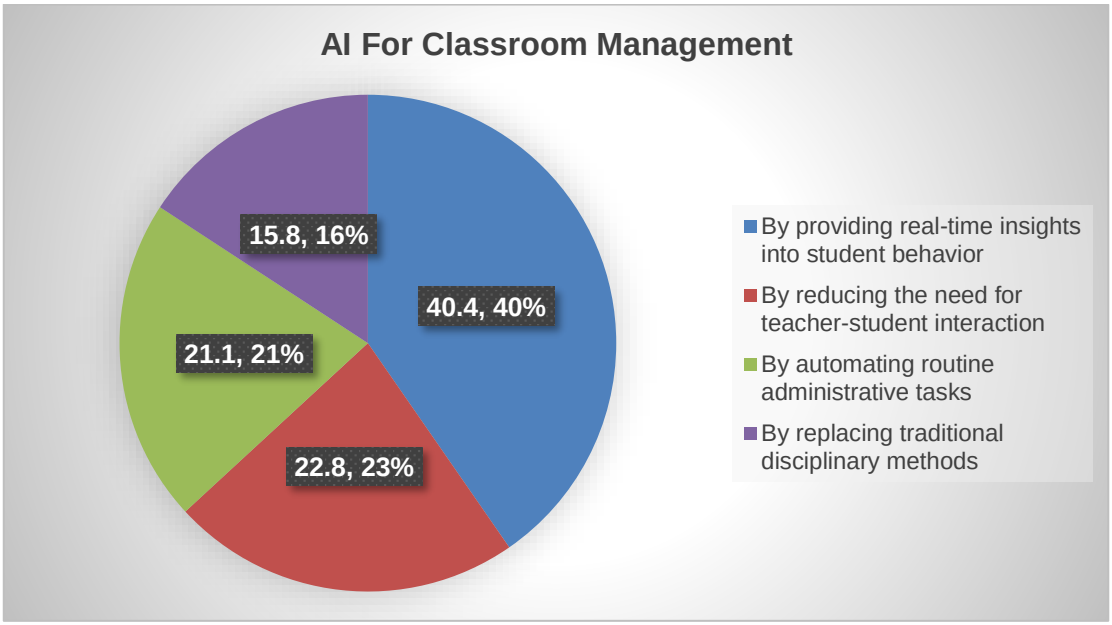
It is observed from table 9, 31.6% respondents gave the opinion that long-term effects on educational outcomes and ethical implications of AI in education these 2 areas need more research. 21.1 % respondents reflected that it is needed to do research on impact on student motivation and engagement. 15.8% respondents said that research should be done on effects on teachers' development.

Interpretation

As AI is the emerging technology there are pros and cons to the use of it. Hence to get positive and negative impacts of AI in education many teachers suggested the research area 'long term effects on educational outcomes'. Many of the teachers also recommended there should be research on ethical implications of AI in education. Few of teachers suggested that there should be research on impact on student motivation and engagement. Some of the teachers also suggested research area 'effects on teachers' professional development'. By doing research on these areas teachers would make use of AI more efficiently. There should be proper and ethical use of AI in education.

Table 10: AI for Classroom Management

1	By providing real-time insights into student behavior	40.4
2	By reducing the need for teacher-student interaction	22.8
3	By automating routine administrative tasks	21.1
4	By replacing traditional disciplinary methods	15.8



Graph 10

Observation

It is observed from table 10, that 40.4% respondents feel that AI provides real-time insights into student behavior for classroom management. 22.8% respondents reflected that AI reduces the need for teacher-student interaction. 21.1 % respondents said that AI helps by automating routine administrative tasks. 15.8 % teachers said that AI helps them by replacing traditional disciplinary methods.

Interpretation

Most of the teachers have the opinion that AI provides real-time insights into student behavior to them. It helps to give justice to the individuality of each student. It partly reduces the need for teacher-student interaction. For teachers AI replaces traditional methods with new technology aided methods. Many of the teachers said that due to use of AI administrative tasks are getting automated which are helpful for teachers and administrative staff.

Findings

- Primary concern regarding the use of AI in education is dependency on technology. Lack of technological facilities in schools is main reason in successful implementation of AI in schools.
- Teacher training and support is very necessary at school level for proper learning and use of AI tools.
- AI strengthens student-teacher relationships, enhances communication and collaboration. It improves understanding individual students' needs.
- Considering AI ethical considerations and data security is a big problem. It can be solved by making appropriate use of AI i.e. in an ethical manner.
- AI can effect in a good and also in a bad way to the students' critical thinking. AI enhances critical thinking by providing diverse learning experiences. Sometimes AI can interrupt students' creativity and diminish critical thinking by promoting passive learning.

- There should not be overreliance on AI for content creation otherwise creativity is diminished of students.
- AI can reach to urban and rural areas in the same way. Hence it can identify and address learning gaps more effectively. Thus solves the issue of educational inequality .AI can take place of human teachers in underprivileged area to some extent.
- Teachers resist to change their traditional teaching methods, but AI seems helpful to do them innovative teaching. It can generate interest among students and helpful in student engagement.
- There should be research done on ethical use of AI in schools.
- AI can automate routine administrative tasks for teachers and administrative staff.
- It reduces need of teacher-student interaction.

Conclusion

AI is the emerging technology which is spreading in all fields. While implementing AI in education there are many challenges. Primary concern regarding the use of AI in education is dependency on technology. In our country many rural areas are there where technology has not reached. Hence technological aids should be made in every school compulsorily. AI can give diverse and personal experiences to every student in which the need of student-teacher interaction is reduced. AI has a good impact on student teacher relationships. For successful implementation of AI in schools, teacher training and support is necessary. While using AI in classrooms ethical considerations must be followed. There should be access to technology for all students.AI enhances critical thinking skills of students providing diverse learning perspectives. But it has a threat of promoting passive learning to students as they get ready information each time.AI improves critical thinking through personalized learning experiences.

Students should not overlay on AI for content creation. Otherwise students' creativity is lost.

AI identifies and addresses learning gaps more effectively. AI can take place of human teachers in underprivileged areas. The main barrier to teachers embracing AI in education is lack of understanding about AI technology. For that training programs at State level and National level should be arranged. There is another issue about privacy and data security. For that ethical use of AI should be done. Teachers are not ready to change their traditional teaching methods. They should learn AI tools and make use of these tools innovatively in the teaching-learning process.

There is no fear of job displacement for teachers, only teachers should adapt with the changing AI technology. Still it is needed to do research on long-term effects on educational outcomes due to AI. It is also needed of the research about ethical implications of AI in education. AI can assist teachers in classroom management in many ways like automation of routine administrative tasks, provision of real-time insights into student behavior, help in student engagement and interest creation.

AI is a boon for the teachers and every teacher should take it's advantage for effective teaching-learning process.

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