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Implementing AI in Teacher Education: Opportunities, Challenges and Ethical Issues

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Abstract:

This article is about implementing Artificial Intelligence in the teacher education program. In this era of innovative and generative technology, technological advancement has taken over the minds of people. The innovations and discoveries which are taking place in the field of technologies have captivated the hearts and minds of human beings. AI platforms like DeepSeek, ChatGPT, Gemini and Alibaba's Qwen have revolutionised the world. They have created fears among teachers that AI will replace them in the near future. The main reason behind their fears is that they are not trained in using AI tools. They do not have the required skills to use AI because teacher education programs do not provide training to use innovative and generative technology. AI is now the need of time and to improve the educational system, AI should be implemented in teaching and learning. Instead of fear, teachers need to take training and should use AI tools to make their teaching learning process more interactive and attractive. A classroom consists of diverse types of learners and they learn according to their interest and pace. If teachers are not techno savvy then they will face problems during their teaching learning process and they will not be able to handle Covid-19 like situations. There are many challenges in implementing Artificial intelligence in rural areas because of electricity shortage and bad quality internet. To cope with this type of situation, teachers should be aware of tools which work without Wi-Fi like Kolibri and Google Bolo. The paper has some glimpses on ethical issues as some schools have started to AI driven facial recognition systems that can put student's privacy at risk. The paper also discusses some useful strategies to implement AI in teacher education programs by upgrading the curriculum. The conclusion portion stresses that AI will not overhaul the education system at once but it will take time. There is no way to avoid AI tools but take them easily, adopt them and apply them in the teaching learning process. AI will not replace teachers but the teachers who know AI will replace those who don't know.

Key Words: Artificial Intelligence, Ethical considerations, MindSpark, Geekie, Gradescope.

Introduction:

Noori works as a teacher in a school. She is not well aware with technological advancement in the world. She teaches multiple abilities students but she is not happy with her work. She feels her teaching method is not appealing for the students, that's why they do not take interest in class. Every day she uses different strategies to make her teaching effective, but no meaning, because all strategies are old and traditional. Mrs. Reema has passion to help every child, but due to lack of information about innovative and generative technology, infrastructure and resources, she is unable to help them. One day, her school announces to introduce Mindspark an AI tool, which prepares lessons according to interest and ability of each student. **MindSpark** is like a friendly tutor that uses AI to figure out where a student shines or needs a little extra help, whether it's math, science, or English. Instead of forcing everyone to learn the same way, MindSpark creates fun, tailored lessons that match each kid's pace and skill level. Think of it as a learning adventure where no one feels left behind or bored, because the tool adjusts to how they learn, not the other way around. By applying this tool in her teaching, within months, her students' test scores improve, and she finally has time to mentor those who need extra help.

The magic of artificial intelligence (AI) in education isn't about swapping teachers with machines. Instead, think of it as giving gurus like Mrs. Noori an extra set of tools to connect with every child in her class. Tools like chatbot assistants, smart lesson plans, and even software that picks up on students' moods are already transforming how classrooms work globally. If the teachers want to make these tools useful then they should have proper training and guidance. The training sessions just not comprises on technical tutorials but it should include mix gadget skills with emotions and values. After all, teaching isn't just about bookish knowledge and theoretical concept, it's about nurturing minds with care.

Why Does This Matter?

The following examples can give much clear picture about AI integration in teacher education program:

- In **India**, platforms like **BYJU'S** and **Mindspark** leverage AI-driven adaptive learning to personalize education. For instance, if a student in a Maharashtra government school struggles with fractions, **Mindspark's AI algorithm** detects the gap and automatically recommends targeted video lessons in Marathi, interactive simulations, and practice quizzes. Teachers receive real-time dashboards highlighting class-wide trends, such as 40% of students struggling with decimal addition. They then adjust lesson plans to address these gaps, ensuring mastery at each student's pace.

- In **Nigeria**, teachers use **uLesson's AI-powered platform** to create personalized quizzes and video lessons tailored to students' learning gaps. For example, if a student struggles with algebraic equations, the AI recommends bite-sized tutorials and practice problems. Keeping all the observations in mind, teacher makes necessary changes and prepares his instructions according to need of every child.

- Like Nigeria, **Geekie** is used in Brazil. This tool finds the weakness of the students in different areas suggests multiple ways to overcome those weaknesses. The tool plans lessons and exercises to boost their learning process. Geekie tracks student's performances if they commit some mistakes, it corrects them. Now, this tool is playing an important role in Brazil's education sector and students are acquiring their education without stress.

These examples show AI's potential, but without training, teachers may misuse tools or miss opportunities to connect with students. This article explores how teacher education programs can prepare educators for an AI-driven future without losing the human touch.

Importance of AI in Teacher Education

- **Innovative Teaching Method**

Just think about Noori's classroom who used traditional method to teach her student. She depended of old methods like lecture and textbook etc. But in this advance era, students are much aware and familiar with technological advancement. They spent more time on social media and use innovative technologies. So, a teacher should also be equipped with new technologies used in the field of education. These skills should be reflected in his teaching learning process. Unfortunately, most teacher training programs are not upgraded, they follow old techniques, that's why our teachers are unable to adjust in modern classrooms.

- **The Covid-19, A wake up Call:**

At time of pandemic when everything was stagnated, teachers struggled more with remote learning. Worldwide they tried hard to convert lessons and resources in digital and online mode. In that situation AI tools could have made remote learning easier. For example, **Otter.ai**, this is an AI platform which convert speeches in texts. By using this tool, we can transcribe Zoom or Meet class. Another AI tool is **Quizlet.** this tool helps learners to through flashcards and games etc. These tools have made teaching learning process much easy. But without training, these tools can't be used in proper way.

The UNESCO report warns that schools may risk leaving behind millions of students, especially girls, minorities, and those with disabilities if proper training is not provided to teacher to use AI ethically and effectively.

- **Filling the gap between Theory and Practice**

During training period, student teachers do not get much time for practical work. They focus more on theory base work. If they will not face real classrooms, their teaching skills will not be nurtured. There are multiple tools which can create real classrooms like situations but our training program does not focus on this part and leave our future teachers untrained. Tool like **ClassDojo** gives experience of live classroom. A teacher can manage his classroom by using this tool and can interact with students and parents. It's used by teachers, students, and families in schools around the world) or **Kahoot!** (**Kahoot**! is a game-based learning platform that makes it easy to create, share and play learning games or quizzes in minutes.). Imagine in medical college if students taught surgery using textbook only and never let students touch a scalpel then what will happen? With the help of AI, we can give teachers "practice scalpel" experiences, like:

- **AI Simulated Classrooms**: Platforms like **TeachLivE** use virtual students to help teachers practice classroom management. Teachlive is a platform that provides free resources to help teachers and students in India. It offers academic support, life skills development, parental guidance, and updates on the education system.

- **Instant Feedback Tools**: **Edthena** uses AI to analyze teaching videos and suggest improvements. Edthena is a digital learning platform which provides professional learning videos and materials for educators. Educators can upload their teaching videos and their colleagues can provide timestamped feedback.

Advantages of Implementing AI in Teacher Education

- **Learning according to student's interest and abilities**

There are students of different characteristics and they learn according to their pace and interest. Some students get the

things easily but some face problem. An educator should plan his teaching according to their characteristics, so that they can get it easily. In today's world there are many AI tools that can customise lessons like a personal tutor. For example:

Read Along by Google: This is a free app that can be very useful for the children who want to boost their reading skills. This tool listens students and corrects their mistakes. Also, this tool rewards students digitally. This tool can be accessed by android devices as well as by systems. Another AI tool is **Squirrel AI**. This tool gives personalized learning to students in China. The mission of the tool is to provide every child with an AI super teacher. After a student fails a math test, this tool diagnoses gaps in their understanding and creates recovery plan.

➢ **Saves More Time for Teaching**

Our teachers spent less time in teaching and more time in grading, meetings, and paperwork. By applying some AI tools, a teacher can save his time and automate teaching learning process:

- **Gradescope**: Gradescope is a web-based tool that helps instructors grade assignments and provide feedback to students. It can be used for paper-based, digital, and code assignments. Grades handwritten math tests in minutes, even spotting common errors like misplaced decimals.
- **AttendanceBot**: AttendanceBot is a time tracking and vacation management tool that helps users track hours worked, sick days, and leaves. It can also be used to manage shifts and return to work safely. Integrates with Zoom or Google Classroom to track who's present, absent, or zoning out.

ChatGPT and **GrammarlyGO** can also be used to improve teaching learning process. ChatGPT is very well known, AI tool and mostly students and teachers are aware about it. GrammarlyGO is an AI-powered writing assistant that helps improve the quality of writing. It can check for grammar and spelling. GrammarlyGO can also help with plagiarism detection and suggest ways to improve the writing.

Teaching on the basis of real data

There is some data driven platforms which provide students performance report on the basis of real data. If teachers will be aware and familiar with this kind of tool then they can make teaching learning process more productive. For example: **BrightBytes**: BrightBytes is a data analytics company that provides schools with tools to measure and improve student learning outcomes. It combines data from schools with educational research to help schools make better decisions about technology use. **Civitas Learning** is another data driven platform. This is a comprehensive platform providing real- time insights and workflow solutions to support the entire student lifecycle and improve student outcomes. Predicts which students might fail a course, allowing teachers to offer extra help early.

We can use **Canva** also to make teaching learning process more productive and interesting. By using Canva, a teacher can create visual content like graphics, videos, and presentations. It's designed to be easy to use, even for people without a graphic design background.

Challenges and Ethical Considerations in Implementing AI in Teacher Education

➢ **Fear of Change**

There are rumours among teachers that AI will replace them. They fear that if AI will be implemented in teacher education, they will be job less. Instead of fear, they should think that all technological innovations and advancement are because of human. Humans control the digital world and nothing can control human. So, teachers should adapt new innovations and apply them to their day to day lives to make things easy. Our education system should be equipped according to need of the new era, otherwise we will fall behind.

There is an AI tool known as **Emotion AI**. This tool gather data by facial expressions, body language etc. and understand human emotions. By using this tool, a teacher can understand his student emotions and plan his teaching accordingly.

➢ **Ethical Issues:**

States like U.P, Assam and Tamil Nadu has already started to use facial recognition systems which are equipped with AI for attendance purpose. In near future other states will follow the same strategy. So, in this situation AI can't be fair every time. There might be some discrepancies in the content provided by AI. For example:

- **Biased Algorithms**: Suppose a hiring team scrutinizes resumes with the help of AI tool. So here AI tool can downgrade a resume on the basis of some words or characteristics. Similarly, essay-grading AIs might favour certain writing styles.
- **Privacy Risks**: The other issue is related to privacy. AI tools might be used for facial recognition to track "unusual" student behavior and can be used for malicious purposes. Some AI tools used for facial recognition are: FaceCheck ID, FaceFirst, Microsoft Azure Face API, DeepVision AI, Google Cloud Vision API, and Megvii AI.

To keep teaching learning process safe from above discrepancies, teacher training must include:

- **Bias Audits**: Checking if an AI tool works equally well for all students and gives accurate result and information.
- **Privacy rule**: There should be privacy related rules and regulations. Like teaching laws in US FERPA (stands for Family Educational Rights and Privacy Act. It's a federal law that protects the privacy of student education records.) and in Europe GDPR (The General Data Protection Regulation is a European Union (EU) law that protects the privacy and security of personal data).

According to John Dewey, "Education is not preparation for life; education is life itself." So, AI should make life easy, not control and dictate it.

➢ **The Digital Divide**

Kerala has set a milestone the field of AI. It has become the first Indian state who introduces robot teacher with generative AI, known as 'Iris'. But many in rural India lack electricity. UNESCO estimates that 50% of the world's schools don't have internet. In this digital divide world, our teachers must know about the tools which work offline. So that, they can fill the gap in teaching learning process. Tools like Kolibri and Google's Bolo can address this gap.

- Promoting offline AI tools like **Kolibri** (Kolibri is an open-source, offline-first learning platform designed to provide

access to educational content without an internet connection, particularly in low-resource environments, allowing users to learn through a curated library of openly licensed materials even when offline).

- Using low-cost apps like **Google's Bolo** (Bolo is an Android app that helps children improve their reading skills. It uses artificial intelligence (AI) and speech recognition technology to encourage children to read aloud and provide feedback. The app provides feedback even when offline).

Strategies for Implementing AI in Teacher Education

If we want to integrate AI in Teacher Education Program then we have to make some useful strategies like to update curriculum, partnership with tech companies etc. So that we can implement it properly. Following strategies can help to implement AI in Teacher Education.

➢ **Modernize and revamp the Curriculum**

Curriculum is the backbone of the education system. Our curriculum should be according the need of modern era. It should be flexible not rigid. Innovative and generative technologies should be part of our curriculum. To upgrade the curriculum, we can Add courses like:

- **AI Modules in B.Ed. Programs**: Include courses on: Using chatbots like **Diksha's AI Assistant**. Analyzing data from platforms like **UDISE+** (Unified District Information System). **NISHTHA 3.0**: The government's teacher training program now includes AI literacy. These initiatives by government will be very useful for future education.
- **"AI for Classroom Survival"**: How to use chatbots for parent communication or AI planners for scheduling.
- **"Ethics in EdTech"**: In the age of AI in education, protecting student privacy is more important than ever. Student privacy rights ensure that personal and academic information is handled with care and respect.

Considering ethics and privacy related issues, UNESCO has made a global standard on AI ethics to protect human rights and dignity.

➢ **Public-Private Partnerships**

Public-Private partnership is very important to give pace teaching learning process. Tech giant companies like Google, Microsoft, Infosys and Wipro research in the field of innovative and generative technologies. So, our government should coordinate with these tech giants to give boost to our education system. Recently, Microsoft & IndiaAI, partnered to train 500,000 individuals by 2026, including students, educators, developers, government officials, and women entrepreneurs. The IndiaAI Mission is a government initiative aimed at building a strong ecosystem for artificial intelligence (AI) in India.

Same like this, NCERT, CBSE and other educational bodies should also make partnership with giant IT companies to boost AI in the field of education.

➢ **Support Lifelong Learning**

There are some platforms which can support lifelong learning like **Coursera's AI for Everyone** and **Teacher TikTok.** These platforms can play an important role for lifelong learning. Coursera's AI for Everyone gives information about the basics of Artificial Intelligence. Teacher TikTok is used to create short educational videos. Teacher can make videos

according to their subjects and need of students. These both tools should be part of the teacher training course. So that teachers can learn and use them properly and effectively.

Case Studies: AI in Action

- **Andhra Pradesh's Predictive Analytics**

AI can not only save time and energy but it can provide support school management in many areas for example dropout and quality related issues. To find out the causes of dropouts, Andhra Pradesh govt. partnered with Microsoft in 2019 by using machine learning and learning analytics. The report suggested that there are multiple factors which are leading towards student's dropouts like lack of furniture and toilets. On the basis of report, management tried to find out those students and provided special counselling to solve the issues.

- **Elements of AI**

Finland is known for its educational revolution in the world and is one of the first countries who integrated AI in teacher education. A course known as "Elements of AI" started by university of Helsinki and MinnalLearn in 2018 to train educators and citizens about the basics of AI. More than 1 million students from 100+ countries enrolled for the course, most of the participants were educators. This large number of participations made Finnish teachers more confident about using AI and technology in education.

Conclusion:

Artificial Intelligence will not reshape our educational system at once, but it can be proved a best tool to improve teaching learning process. A teacher can take time to adjust with innovative and generative technologies but he can't avoid himself to use it. As Mrs. Noori adjusted herself with new technology. At beginning, she was hesitant, but gradually she was used to for it. The purpose is not to create tech experts but compassionate educators who know when to trust AI and when to trust their instincts. As we step into this future, let's remember: the heart of teaching isn't technology. It's the spark between a teacher and student that no machine can replicate. And a teacher should not fear with integration of AI but he should accept it and improve his teaching learning process.

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