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TEACHER CAPACITY BUILDING PROGRAM IN THE ERA OF ARTIFICIAL INTELLIGENCE AS AN OPTION FOR RE-ORIENTING TEACHERS' DAILY ACTIVITIES

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Abstract
The paper x-rayed teacher capacity building program in the era of artificial intelligence as an option for re-orienting teachers for daily activities. The paper contends that integration of Artificial Intelligence into education is changing the traditional roles of teachers and learning processes. The paper discussed the paradigm shift introduced by Artificial Intelligence into the current education system in Nigeria and elsewhere. It explains concept of teacher's capacity building as a veritable tool for teacher re-orienting in the era of Artificial intelligence and identified types of teacher capacity building programs for AI-integration, and the benefits of teachers' capacity building in the AI era. The paper observes that the introduction of integration of Artificial Intelligence (AI) into the education sector has brought about profound changes in teaching, learning, and school administration. It therefore argued that if teachers must cope with the emerging technology, they must be retrained to discharge their roles. In all, the paper among other things suggests that the government should allocate adequate funding for regular and structured teacher's capacity building programs focused on AI and digital technologies and that educational institutions should be equipped with modern ICT facilities, including computers, and AI-powdered tools.

Keywords: Teacher Capacity Building, Artificial Intelligence, Teachers Re-Orienting and Daily Activity

Introduction

The rapid advancement of technology has significantly transformed various aspects of life, many sectors of society, including education. Artificial Intelligence (AI) represents one of the most consequential technological advances in recent years. Artificial intelligence is one of the most influential technological developments in recent years, which refers to a computational system's capacity to do functions typically linked to human cognition, such as learning, reasoning, problem-solving, perception, and decision-making. Artificial Intelligent (AI) is rapidly being applied in education through intelligent tutoring systems, automated assessments, adaptive learning platforms, and digital learning environments represent a few of the innovative pedagogical tactics that AI has introduced to the field of education. According to the definition of Russell et al (2021), they described Artificial Intelligence as the study and design of intelligent agents capable of perceiving their environment and taking actions that maximize goal achievement. This definition is relevant to education because AI-driven systems such as adaptive learning platforms, automated assessment tools, and intelligent tutoring systems operate as intelligent agents that respond to

learners' needs. In Nigeria's education system, where challenges such as overcrowded classrooms, limited teacher–student interaction, and weak monitoring of learning outcomes persist, AI-based educational technologies could support teachers by improving instructional professionalization and feedback delivery. However, the successful use of such intelligent systems requires teacher capacity building and re-orientation to ensure that teachers can effectively manage AI tools and apply them appropriately in classroom instruction.

Timms (2016) posited that AI in education is moving beyond simple adaptive systems toward integrated smart classrooms and collaborative AI agents, underscoring the need for teachers to be re-oriented and professionally developed to work effectively with such technologies. Previously teachers were regarded as the primary source of knowledge in the classroom; but with the emergence of AI-powered learning tools and digital resources, teachers are now expected to act more as facilitators, mentors, and guides who support students in navigating digital learning environments. This transformation requires teachers to possess new competencies, including technological literacy, digital pedagogical skills, and the ability to effectively integrate AI-based tools into classroom instruction. In many educational systems, especially in developing countries like Nigeria, many teachers were trained using traditional teaching methods and may not possess adequate knowledge or skills to effectively utilize emerging technologies such as AI in the teaching process. As a result, there is a growing need for continuous professional development, training and retraining programs aimed at equipping teachers with the necessary competencies required in modern classrooms. This is necessary because teacher capacity building programs play critical roles in preparing teachers to adapt to technological innovations and improve their professional effectiveness.

Although AI offers promising opportunities for educational improvement, its adoption in Nigeria is not without limitations. One major challenge relates to ethical concerns in AI application. The use of AI in assessment, grading, and instructional support raises issues of fairness, transparency, and accountability. In Nigerian schools, where educational policies and monitoring systems are often weak, the introduction of AI tools may lead to bias in decision-making processes, especially when AI systems are designed based on foreign datasets that may not adequately reflect the Nigerian socio-cultural context. Additionally, the ethical misuse of AI tools by students for academic dishonesty such as plagiarism, examination malpractice, and over-dependence on AI-generated content may undermine learning integrity and educational standards. Parallel the ethical issues is the problem of data privacy and security. AI-powered educational systems rely heavily on the collection and analysis of student data such as academic performance records, personal details, learning behaviors, and attendance patterns. In Nigeria, many educational institutions lack strong cybersecurity frameworks and adequate digital regulations to protect learners' information. The use of foreign-based educational platforms further increases the risk of unauthorized access, misuse, or exposure of students' data. Consequently, the absence of strict institutional guidelines and effective enforcement of data protection policies may pose serious threats to the privacy and safety of learners in Nigerian schools.

Another potential limitation of AI integration in Nigeria is the risk of over-reliance on technology. While AI tools can enhance learning experiences, excessive dependence may reduce critical thinking, creativity, and independent problem-solving among students. The Nigerian education system places strong emphasis on teacher guidance, moral instruction, and character development. If AI becomes overly dominant, the human element of teaching may be weakened, thereby limiting the teacher's role as a mentor and moral guide. In addition, teachers who lack digital competence may become overly dependent on AI tools rather than improving their own instructional strategies. This may negatively affect the quality of teaching and reduce teachers' professional confidence. Aside ethical concerns and over-reliance on technology, the issue of digital divide remains a major challenge to AI integration in Nigeria. The digital divide refers to unequal access to digital resources such as computers, internet facilities, and modern learning technologies. In Nigeria, there is a wide disparity between urban and rural schools. While some private and urban public schools have access to ICT laboratories, internet connectivity, and digital devices, many rural schools still

lack basic facilities such as electricity, functional classrooms, and learning materials. This uneven access implies that AI integration may widen educational inequality, benefiting learners in privileged areas while leaving disadvantaged communities behind.

Economic factors added to the digital divide. Many Nigerian families cannot afford smart-phones, laptops, and stable internet subscriptions needed to support AI-driven learning. This challenge is more severe among low-income households, where parents struggle to provide basic educational materials, not to mention digital devices. As a result, AI integration may reinforce existing educational disparities between children from wealthy homes and those from economically disadvantaged backgrounds. In addition, poor infrastructural development, unstable power supply, and weak internet network coverage remain major barriers to effective AI utilization across Nigerian schools. Furthermore, there is an ongoing debate about whether AI integration genuinely improves learning outcomes or merely changes instructional delivery methods. While AI has the potential to improve academic performance through personalized learning, automated feedback, and adaptive instructional content, such benefits may not be realized in environments where teachers are inadequately prepared. In Nigeria, many teachers were trained using traditional teacher-centered approaches and may lack the necessary digital literacy and pedagogical skills to effectively integrate AI tools into classroom teaching. In such cases, AI may only modernize learning delivery without improving students' understanding, retention, and academic achievement.

AI integration can only translate into improved learning outcomes when teachers possess the professional competence to use it effectively. Without proper teacher training and re-orientation, AI tools may encourage surface learning where students depend on AI-generated answers instead of engaging in deep learning. This may negatively affect students' academic development and limit the overall effectiveness of AI in improving educational quality. Therefore, the Nigerian education system must emphasize teacher preparedness and continuous professional development as a key condition for successful AI integration. Given these realities, teacher capacity building has become an essential strategy for ensuring effective integration of AI in Nigerian education. Teacher capacity building refers to the systematic process of enhancing teachers' professional knowledge, skills, attitudes, and competencies through continuous training, workshops, mentoring, and retraining programs. In the AI era, teacher capacity building is critical because it equips teachers with digital literacy, AI competence, and modern pedagogical skills needed for technology-driven instruction. It also helps teachers develop the ability to guide students on responsible and ethical use of AI tools, thereby ensuring that AI enhances rather than undermines educational integrity.

In view of the above, the integration of AI into Nigerian education presents both opportunities and challenges. While AI has the potential to improve teaching effectiveness and learner outcomes, its success depends largely on addressing ethical concerns, reducing the digital divide, strengthening educational infrastructure, and ensuring teachers are adequately trained and re-oriented. Therefore, teacher capacity building programs remain a vital option for repositioning teachers to effectively perform their daily instructional roles in an AI-driven educational environment. The integration of Artificial Intelligence (AI) into education is increasingly becoming a global priority due to its potential to enhance teaching, learning, assessment, and school administration. In Nigeria, educational stakeholders are gradually adopting AI-driven platforms such as digital learning systems, automated assessment tools, and intelligent tutoring applications to improve instructional delivery and support learners. However, despite these developments, the Nigerian education system continues to face serious challenges that hinder the effective implementation of AI technologies in schools.

A major problem is that many Nigerian teachers are inadequately prepared to integrate AI tools into teaching and learning. Most teachers were trained using conventional pedagogical approaches and lack the digital competence, AI literacy, and technological skills required to operate effectively in modern AI-supported learning environments. This challenge is further compounded by limited access to ICT facilities,

poor internet connectivity, unstable electricity supply, and insufficient funding for teacher training programs. In addition, ethical concerns such as data privacy risks, cyber insecurity, academic dishonesty, and over-reliance on AI tools pose serious threats to the effective use of AI in Nigerian schools. The absence of strong institutional policies guiding responsible AI use has created uncertainty about how AI can be utilized without compromising educational integrity and student safety. Furthermore, the digital divide between urban and rural schools continues to widen, making AI access and benefits uneven across different regions and socio-economic groups in Nigeria.

Although AI is believed to improve learning outcomes through personalized learning and automated feedback, it remains unclear whether its integration in Nigeria truly enhances students' academic achievement or merely changes the mode of instructional delivery without improving real learning and without properly trained and re-oriented teachers, the integration of AI in education may remain ineffective or even widen the gap in educational quality. Going by the accounts, the problem of this study lies in the need to examine how teacher capacity building programs can serve as an effective strategy for re-orienting teachers to adapt to the use of AI skills and competences necessary for daily teacher activities.

Concept of Artificial Intelligence

Artificial intelligence (AI) denotes the development of computer systems capable of doing tasks that typically require human intelligence. Responsibilities encompass learning, cognition, problem resolution, decision-making, linguistic comprehension, and pattern identification. Artificial intelligence empowers machines to examine data, learn from mistakes, and render intelligent decisions with less human involvement. Artificial intelligence in education refers to the utilization of advanced computer systems and technology to enhance instruction, learning, evaluation, and educational administration. Artificial intelligence (AI) technologies seek to improve the effectiveness and efficiency of educational processes by offering individualized learning experiences, automating repetitive chores, and facilitating data-driven decision-making. Artificial intelligence aids instructors in various ways. The approaches include:

1. Artificial Intelligence has introduced new innovations in the educational sector by transforming traditional methods of teaching and learning. In the past, education largely depended on conventional classroom instruction where the teacher served as the main source of knowledge. However, the introduction of AI-powered technologies has expanded access to learning resources and created more interactive and learner-centered educational environments. Through AI systems, students can now access digital learning platforms that adapt to their learning pace, abilities, and interests.
2. One of the key applications of Artificial Intelligence in education is personalized learning. AI-powered learning systems analyze students' learning behaviors, strengths, and weaknesses in order to provide customized instructional materials that meet their individual needs. This helps students learn at their own pace and improve their overall academic performance. Another important application of AI in education is the use of intelligent tutoring systems. These systems function like virtual tutors that guide students through learning activities, provide feedback, and assist them in solving problems. Intelligent tutoring systems help students understand complex concepts and allow them to practice skills independently.
3. Artificial Intelligence is also widely used in automated assessment and grading. AI tools can automatically grade assignments, quizzes, and examinations, thereby reducing the workload of teachers and enabling them to focus more on instructional activities. Automated grading systems also provide immediate feedback to students, which enhances the learning process.
4. AI supports administrative and decision-making processes in educational institutions. Educational administrators can use AI systems to analyze data related to student performance, attendance, and academic progress. This data helps school leaders make informed decisions that improve teaching quality and student outcomes.

5. Artificial Intelligence facilitates online and distance learning by powering virtual classrooms, chat-bots, and digital learning platforms. These technologies provide students with access to educational resources anytime and anywhere, thereby promoting flexible learning opportunities. Despite its numerous benefits, the integration of Artificial Intelligence in education also presents certain challenges. These include concerns about data privacy and security, lack of technological infrastructure in some schools, limited digital skills among teachers, and the high cost of implementing AI technologies.
6. AI as a mobile device elevates mobile education, providing ease by aiding students efficiently and facilitating engaging and individualized learning experiences. Virtual reality facilitates learning beyond the classroom, establishing a worldwide educational environment, as AI may link students to the virtual classroom. Furthermore, AI-based chatbots offer individualized online learning and transform instruction into conversational exchanges. This technique can evaluate the student's comprehension level.

In all, Artificial Intelligence has become an important tool in modern education because it enhances teaching and learning processes, supports personalized learning, improves assessment methods, and assists educational administrators in decision-making. As educational institutions continue to adopt AI technologies, it is essential for teachers, administrators, and policymakers to develop the necessary skills and strategies required to effectively utilize these technologies for improved educational outcomes.

Chassignol et al. (2018) provided a narrative overview of the growing trends of Artificial intelligence in education and explained that AI is transforming teaching and learning through personalized instruction, intelligent tutoring systems, automated assessment, and enhanced communication between teachers and learners. He also emphasized that AI has the potential to improve educational delivery by making learning more adaptive and responsive to students' individual needs. He also provide an early but influential perspective on AI in education, identifying key areas such as personalized learning, intelligent tutoring systems, automated assessment, and enhanced teacher-student communication. Further, argue that AI has the potential to significantly improve educational efficiency and learner engagement by adapting instruction to individual student needs. In the Nigerian education context, this argument is highly relevant because the country is currently facing challenges such as overcrowded classrooms, shortage of qualified teachers, limited instructional resources, and weak monitoring of learner performance, especially in public schools. AI technologies, such as adaptive learning platforms and automated assessment tools, can support Nigerian teachers in addressing these challenges by providing personalized learning experiences for pupils and helping teachers track students' progress effectively. However, the effective use of such technologies depends on teachers' preparedness.

Pokrivcakova (2019) posits that artificial intelligence (AI) represents the apex of comprehensive research and development, amalgamating the knowledge of system designers, statisticians, linguists, cognitive scientists, psychologists, education specialists, and others to create educational systems imbued with intelligence and the capacity to execute various tasks, including assisting teachers and students in augmenting their knowledge and adaptable skills in a constantly changing environment. He asserted that AI employs sophisticated software and programming techniques, including algorithmic machine learning, which allows robots to do tasks necessitating human-like intelligence and environmental adaptability. He also argues that teachers training framework must be redesigned to ensure teachers are competent in using AI-powered technologies. However, it is also important in Nigerian education where teachers training institutions and professional development programs often focus more on traditional instructional approaches than on digital competence.

Wartman et al. (2018) argued that education systems must move beyond the Information Age into the Age of Artificial Intelligence. They emphasized that modern education must shift from a focus on memorization and information delivery to the development of critical thinking, problem-solving, creativity, and the ability

to collaborate with intelligent technologies. The authors stressed that the role of educators must evolve to match this transformation, as AI systems are increasingly capable of providing information and supporting decision-making. This argument is particularly applicable to Nigeria's current education system, where teaching and learning practices in many public schools remain largely examination-focused and dependent on rote memorization. Nigerian teachers are often pressured to complete syllabuses quickly, leaving little room for interactive learning, creativity, and technological integration. As a result, pupils may graduate with limited digital competence and weak problem-solving.

He further stated that education must transition from the "information Age" to the "Age of Artificial intelligence," where the focus shifts from memorization to critical thinking, problem-solving, and human-machine collaboration. However, this argument challenges Nigerian education system, which is still largely examination-driven and content-heavy. It suggest that without re-orientation, teachers may continue to emphasize rote learning, thereby limiting the potential benefits of AI integration and with this it would also help in curricula where the teachers redesigned to help learner understand how to leverage AI tools responsibly. However, in Sharma (2019) noted that intelligent learning systems and connected educational technologies are reshaping classroom practices and demanding new digital skills from educators. Furthermore, highlight that successful AI integration in teaching requires continuous professional development and structured capacity building programs that focus not just on hardware access but on pedagogical readiness and lesson planning rooted in AI tools. Sharma et al. (2019) argued that while Artificial Intelligence offers significant opportunities for improving teaching and learning in open and distance education, it also presents challenges such as ethical concerns, digital inequality, and data privacy issues. In the Nigerian context, these concerns highlight the urgent need for teacher capacity building and re-orientation to ensure effective and responsible integration of AI in education.

Concept of Teachers Capacity Building

In the age of artificial intelligence (AI), teacher capacity development refers to a methodical and ongoing process of enhancing teachers' professional attitudes, knowledge, skills, and competences so they can operate successfully in technologically advanced learning environments. It involves equipping teachers with the ability to understand, adopt, and integrate AI-powered tools and digital innovations into teaching, learning, assessment, and classroom management (UNESCO, 2024). The increasing incorporation of AI in education has made teacher capacity building a central requirement for educational transformation. AI is increasingly influencing teaching, learning, assessment, and school management, thereby requiring teachers to acquire new competencies that align with this technological advancement (UNESCO, 2025). This implies that teachers must not only possess subject knowledge but also develop the capacity to incorporate AI tools into their teaching methods. The various ways teacher capacity programs can be enhance the use of AI by teachers to perform their daily functions are:

1. Traditionally, teacher capacity building focused mainly on improving subject knowledge and general pedagogical skills. However, with the emergence of Artificial Intelligence in education, the scope of capacity building has expanded to include digital literacy, technological competence, data-driven instruction, and innovative teaching strategies. Teachers are no longer expected to rely solely on conventional teaching methods; rather, they are required to adapt to modern, learner-centered approaches supported by intelligent technologies.
2. In this context, teacher capacity building serves as a vital mechanism for re-orienting teachers from traditional instructional practices to contemporary, technology-enhanced pedagogies. Re-orientation implies a shift in mindset, skills, and professional roles. Teachers are now expected to act as facilitators of learning, guides, and co-learners who support students in navigating digital learning environments rather than being the sole source of knowledge.
3. Teacher capacity building in the AI era encompasses several key components. First is digital and AI literacy, which involves training teachers to understand basic AI concepts, how AI systems

function, and how they can be applied in educational settings. This includes the use of intelligent tutoring systems, learning analytics tools, virtual classrooms, and automated assessment platforms.

4. Teachers are trained on how to design interactive lessons, personalize learning experiences, and use data generated by AI systems to improve student outcomes. This also includes adopting innovative teaching strategies such as blended learning, flipped classrooms, and adaptive learning. Third is professional development and continuous learning. In the AI era, knowledge and technologies evolve rapidly, making it necessary for teachers to engage in ongoing learning through workshops, seminars, online courses, peer collaboration, and mentoring programs. Continuous professional development ensures that teachers remain relevant and effective in their practice.
5. Teacher capacity building also includes ethical and responsible use of AI. Teachers need to understand issues related to data privacy, academic integrity, and the ethical implications of using AI in education. This ensures that AI technologies are used in ways that protect students' rights and promote responsible learning practices.

From the ongoing, the importance of teacher capacity building as an option for re-orientation cannot be overstated. It helps teachers to develop confidence in using technology, enhances their instructional effectiveness, and equips students to fulfill the requirements of education in the twenty-first century. It also improves students' learning experiences by enabling teachers to deliver personalized and engaging lessons. However, achieving effective teacher capacity building in the AI era may face challenges such as inadequate funding, lack of technological infrastructure, limited access to training opportunities, and resistance to change among teachers. Addressing these challenges requires strong support from governments, educational institutions, and policymakers. Teacher capacity building in the era of Artificial Intelligence is a crucial strategy for re-orienting teachers towards modern, technology-driven teaching practices. By equipping teachers with the necessary skills, knowledge, and attitudes, capacity building programs ensure that they can effectively integrate AI into education and contribute to improved teaching and learning outcomes.

Need for Teacher Re-Orientation in the Era of Artificial Intelligence

There is an urgent need for teacher reorientation as a result of the substantial changes that Artificial Intelligence (AI) has brought about in teaching, learning, and educational administration. Teacher re-orientation involves transforming teachers' knowledge, skills, attitudes, and professional practices to align with the demands of technology-driven educational environments. In the 21st century, this process has become essential for ensuring educators continue to be applicable and productive in modern classrooms (UNESCO, 2024). Some reasons for teacher re-orientation in the use of AI are:

1. The shift from traditional teacher-centered pedagogy to learner-centered approaches. In conventional classrooms, teachers served as the primary source of knowledge. However, AI technologies now support personalized and self-paced learning environments where students actively engage with digital content. As a result, teachers must be re-oriented to function as facilitators, mentors, and guides who support students in navigating AI-driven learning systems (UNESCO, 2025).
2. The need to develop digital and AI literacy is another reason. Many teachers lack the necessary competencies to effectively use AI tools due to limited exposure and training. Re-orientation programs are therefore necessary to equip teachers with the knowledge of how AI systems operate and how they can be integrated into teaching and learning processes. This aligns with the view that teachers require continuous professional development to adapt to technological innovations in education (UNESCO, 2024).
3. Teacher re-orientation is also required for the adoption of innovative teaching strategies. AI has introduced modern instructional approaches such as blended learning, flipped classrooms, and adaptive learning systems. These approaches demand new pedagogical skills and the ability to design interactive and engaging lessons. Without proper re-orientation, teachers may find it difficult to implement these innovative practices effectively (Bai, 2025).

4. The growing need for re-orientation in the area of data-driven instruction and decision-making. AI technologies generate large amounts of data on student learning patterns, performance, and engagement. Teachers must be trained to interpret and utilize this data to improve instruction and provide personalized support to learners. This enhances teaching effectiveness and promotes better learning outcomes (UNESCO, 2025).
5. Critical aspect of teacher re-orientation is the ethical and responsible use of AI. The integration of AI in education raises concerns about data privacy, algorithmic bias, and academic integrity. Teachers must therefore be re-oriented to understand these ethical implications and ensure that AI technologies are used in ways that promote fairness, inclusiveness, and the protection of learners' rights (UNESCO, 2024).
6. Teacher re-orientation for the effective use of AI is necessary to address resistance to technological change. Some teachers may be reluctant to adopt AI technologies due to fear, lack of confidence, or attachment to traditional teaching methods. Re-orientation programs help to reshape teachers' attitudes, build confidence, and encourage openness to innovation and continuous learning (Bai, 2025).
7. The need for teacher re-orientation is further reinforced by the demand for continuous professional development. The field of AI is rapidly evolving, requiring teachers to continuously update their skills and knowledge. Ongoing training ensures that teachers remain competent and capable of integrating emerging technologies into their teaching practices (UNESCO, 2025).
8. No doubt, teacher re-orientation is essential for improving the quality of education. Teachers who are well-equipped with AI-related competencies can offer more individualized, captivating, and successful educational opportunities. This eventually leads to improved student performance and better educational outcomes (UNESCO, 2024).
9. Due to issues like poor infrastructure, restricted access to digital resources, and a lack of training chances, teacher reorientation is even more important in developing nations like Nigeria. The gap between conventional teaching methods and contemporary technology developments can be closed by addressing these problems through efficient reorientation initiatives (UNESCO, 2024).

All in all, Bai (2025) posited that teacher re-orientation The age of artificial intelligence is motivated by the transformation of teaching roles, the need for digital competence, the adoption of innovative pedagogies, and the ethical use of technology. It is a vital strategy for ensuring that teachers can effectively integrate AI into education and contribute to improved teaching and learning Hand.

Types of Teacher Capacity Building Programs for AI Integration

Teacher capacity building programs for Artificial Intelligence (AI) integration are structured professional development initiatives designed to equip teachers with the competencies required to effectively utilize AI technologies in teaching and learning. In the AI era, these programs go beyond traditional training to include technological, pedagogical, and ethical dimensions of teaching. The major types are discussed below:

1. **AI and Digital Literacy Training Programs:** These programs focus on developing teachers' foundational knowledge of digital technologies and AI concepts. Teachers are trained on how AI systems function, including machine learning basics, data usage, and AI applications in education. This type of training helps teachers become confident users of digital tools and prepares them for effective AI integration in the classroom. Digital literacy training is considered a core component of teacher competence in the AI era because it enables teachers to navigate digital platforms and utilize AI tools effectively (UNESCO, 2024).

2. **Pedagogical Training for AI Integration:** This type of program emphasizes how teachers can integrate AI technologies into their instructional practices. It involves training teachers on AI-supported teaching methods, such as personalized learning, adaptive instruction, and student-centered approaches. Teachers learn how to design lessons that incorporate AI tools and enhance student engagement. Teachers who receive pedagogical training are guaranteed to comprehend AI tools and know how to use them effectively in the teaching and learning process (Bai, 2025).

3. **Workshops, Seminars, and Conferences:** Workshops and seminars provide short-term, intensive training opportunities where teachers are exposed to current trends in AI and education. These programs often involve practical demonstrations of AI tools, peer learning, and expert guidance. Conferences also create platforms for knowledge sharing, networking, and exposure to global best practices in AI integration. Such programs contribute to continuous professional development and keep teachers updated with emerging technologies (UNESCO, 2025).

4. **Online and Distance Learning Programs:** Online professional development programs have become increasingly important in the AI era. These include webinars, Massive Open Online Courses (MOOC s), and virtual training platforms that Give educators the freedom to study at their own speed. Online programs are flexible, accessible, and cost-effective, making them particularly beneficial for teachers in remote or resource-constrained areas. They also expose teachers to global perspectives on AI in education (UNESCO, 2024).

5. **Collaborative Learning and Professional Learning Communities (PLCs)**: Collaborative learning programs involve teachers working together to share knowledge, experiences, and best practices in AI integration. Professional Learning Communities (PLCs) provide a platform for peer support, mentoring, and continuous learning. Through collaboration, teachers can collectively solve problems, experiment with AI tools, and improve their teaching practices. This type of capacity building fosters innovation and professional growth (Bai, 2025).

6. **Mentorship and Coaching Programs:** Mentorship programs involve experienced or technologically skilled educators guiding other teachers when utilizing AI technologies and digital technologies. Coaching provides personalized support to help teachers overcome challenges and improve their competencies. This approach is particularly effective because it offers hands-on guidance and continuous feedback, which enhances teachers' confidence and skill development in AI integration (UNESCO, 2025).

7. **In-Service Training and Continuous Professional Development (CPD):** In-service training programs are organized by educational institutions or government agencies to improve teachers' skills while they are still in service. Continuous Professional Development (CPD) ensures that teachers regularly update their knowledge and competencies in line with technological advancements. CPD programs are essential in the AI era because they promote lifelong learning and help teachers remain relevant in a rapidly changing educational landscape (UNESCO, 2024).

8. **Training on Ethical and Responsible Use of AI:** This type of capacity building focuses on ethical issues associated regarding AI in education, including algorithmic bias, data privacy, and academic integrity. Teachers are trained to use AI tools responsibly and to ensure that students' rights are protected. Ethical training is critical for promoting fairness, inclusiveness, and accountability in AI-supported education systems. Teacher capacity building programs for AI integration are diverse and multi-dimensional, encompassing digital literacy, pedagogy, collaboration, mentorship, and ethical training. These courses are crucial for giving educators the skills they need to successfully incorporate AI into instruction. By participating in these programs, teachers can enhance their professional effectiveness and contribute to improved educational outcomes in the age of AI.

The benefits of teacher capacity building in the AI Era

Benefits of Teacher Capacity Building in the age of Artificial Intelligence are numerous. It indeed offers numerous benefits that enhance teachers' professional competence, improve instructional delivery, and promote better learning outcomes. As education systems increasingly adopt AI technologies, continuous professional development becomes crucial for giving educators the tools they need to operate successfully in contemporary classrooms. The major benefits are discussed below:

1. **Improvement in Teachers' Digital and AI Competence:** The development of digital literacy and AI-related abilities is one of the main advantages of teacher capacity building. Through training programs, teachers gain knowledge of how AI tools function and how they can be applied in teaching and learning.

This improves their ability to use digital platforms, intelligent tutoring systems, and automated assessment tools effectively (UNESCO, 2024).

2. **Enhanced Instructional Effectiveness:** Capacity building programs enable teachers to adopt innovative teaching techniques including personalized learning, flipped classrooms, and blended learning. These approaches make teaching more interactive, engaging, and student-centered. As a result, teachers become more effective in delivering lessons and facilitating meaningful learning experiences (Bai, 2025).

3. **Promotion of Personalized Learning:** AI technologies support individualized learning by adapting content to meet students' needs, abilities, and learning pace. Teacher capacity building equips educators with the skills to utilize these AI tools, thereby enabling them to provide personalized instruction that improves student understanding and academic performance (UNESCO, 2025).

4**. Increased Teachers' Confidence and Professional Growth:** Training and professional development programs help teachers build confidence in using new technologies. When teachers are equipped with the necessary skills, they are more willing to experiment with innovative teaching methods. This contributes to their professional growth, job satisfaction, and overall effectiveness in the classroom (UNESCO, 2024).

5. **Improved Data-Driven Decision Making:** AI systems generate valuable data on student performance, engagement, and learning patterns. Teachers who participate in capacity building programs learn how to evaluate and interpret this data so they may make well-informed decisions about their lessons. Better teaching methods and learning outcomes result from this (UNESCO, 2025).

6. **Reduction in Teachers' Workload:** AI tools can automate routine tasks such as grading, attendance tracking, and administrative duties. Teacher capacity building programs help educators learn how to use these tools effectively, thereby reducing their workload and allowing them to focus more on teaching and student support (Bai, 2025).

7. **Encouragement of Innovation and Creativity:** Capacity building fosters a culture of innovation by encouraging teachers to explore new technologies and teaching methods. Teachers become more creative in designing lessons and using AI tools to enhance learning experiences. This leads to a more dynamic and engaging classroom environment (UNESCO, 2024).

8. **Promotion of Ethical and Responsible Use of AI:** The ethical application of AI technologies is another focus of teacher capacity building initiatives. Instructors receive training on topics including algorithmic bias, data privacy, and academic integrity. This guarantees that AI is applied sensibly and in ways that advance equity and inclusivity in education (UNESCO, 2024).

9. **Adaptation to Technological Change:** Teachers must constantly refresh their abilities due to the rapid advancement of AI technologies. Capacity building programs help teachers remain adaptable and responsive to changes in the educational environment. This ensures that they stay relevant and effective in their profession (UNESCO, 2025).

10**. Improvement in Students' Learning Outcomes:** Ultimately, the goal of teacher capacity building is to improve student learning. When teachers are well-trained in AI integration, they can deliver high-quality instruction, provide personalized support, and create engaging learning environments. This leads to better academic performance and overall educational outcomes (UNESCO, 2025).

Teacher capacity building in the era of Artificial Intelligence provides significant benefits that enhance teaching effectiveness, promote innovation, and improve educational quality. By equipping teachers with digital competence, pedagogical skills, and ethical awareness, capacity building programs ensure that teachers can effectively integrate AI into education and meet the demands of the modern learning environment.

Conclusion

Teachers' roles and competences must alter as a result of the significant changes in teaching, learning, and school administration brought about by the integration of artificial intelligence (AI) into the education

sector. Teacher capacity building is a critical strategy for re-orienting teacher to meet the demands of AI-driven educational environment. As education systems continue to evolves, teachers must move beyond traditional instructional practices and embrace innovative, technology-supported approaches that enhance students learning. Teacher capacity building in the era of Artificial Intelligence is not merely an option but a necessity for effective educational transformation. Reorienting educators through organized, ongoing training programs will boost their professional competence, raise the standard of instruction and learning, and guarantee that educational systems are better equipped to handle the opportunities and problems of the digital era.

Suggestions

The following recommendations were given in light of the study's findings:

1. The government ought to allocate adequate funding for regular and structured teacher capacity building programs focused on AI and digital technologies.
2. Colleges of education and universities should incorporate AI, digital literacy, and educational technology courses into per service teacher training programs. Educational institutions should be equipped with modern ICT facilities, including computers, internet access, smart classrooms, and AI-powered tools.
3. Through conferences, seminars, online courses, and certification programs, educators should be encouraged to participate in ongoing professional development.
4. AI and digital skills should be integrate into teacher education curricula.

References

Bai, J. (2025). Overview of AI competency framework for teachers. *De Gruyter.*

Chassignol, M., Khoroshavin, A., Klimova, A. & Bilyatdinova, A. (2018), Artificial Intelligence Trends in Education: A Narrative Overview. *Procedia Computer. Science, 136*(1), 16-24.

Pokrivcakova, S. (2019). Preparing Teachers for the application of AI-Powered Technologies in Foreign Language Education: *Journal of Language and Cultural Education, 7*(3), 135-153.

Rusell, S. J. & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach* (4th Ed.). Pearson.

Sharma, R. C., Kawachi, P., & Bozkurt. A. (2019). The Landscape of Artificial intelligence in open, Online and Distance Education: Promises and Concerns. *Asian Journal Distance Education, 14*(2), 1-2.

Timms, M. J. (2016). Letting Artifcial Intelligence in education out of the box. Educational Cobots and Smart Classroom. *International. Journal of Artificial. Intelligence in Education, 26*(2), 712-712.

UNESCO (2024). *Overview of AI competency framework for teachers*. *UNESCO.*

UNESCO (2025). *Artificial intelligence in education: UNESCO advances key competencies for teachers and learners. UNESCO.*

Wartman, S. A. & Combos, C. D. (2018). Medical Education must move from the information age to the age of Artificial Intelligence. *Academic Medicine, 93*(8), 1107-1109.