

ARTIFICIAL INTELLIGENCE, GATEWAY FOR EDUCATIONAL ATTAINMENT AND NATIONAL DEVELOPMENT

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force with the potential to accelerate progress toward the educational achievement and national development. This paper explores the role of artificial intelligence in addressing educational challenges such as digital divide, data security, data mechanism, financial resources, economic inequalities and infrastructural challenges. By enabling data-driving decision making optimizing resource use, and fostering innovation, Artificial Intelligence contributes to national development across diverse sectors. However, the deployment of AI also raises significant ethical, social, and governance concerns, including risks of bias, privacy violations, and inequality, which must be addressed through inclusive and responsible frameworks. The paper highlights key Artificial Intelligence technologies relevant to the achievement of national development, their applications, and ongoing global initiatives aimed at promoting ethical AI governance. It concludes with recommendations to ensure AI's equitable and effective integration into educational attainment and national development efforts, emphasizing the importance of collaboration, transparency, and cultural sensitivity to harness AI's full potential for the global good.

Keywords: *Artificial Intelligence, National Development, Gateway, Technology, Relevance.*

Introduction

The occurrence in technological change is fundamental to scientific and economic breakthroughs that significantly promote global development efforts. Activities of humane are also increasingly affecting and shaping the biosphere and climate system. Artificial Intelligence (AI) and related technologies such as robotics, automation, and the Internet of Things further increase society's capacity to detect, adapt and respond to climate and environmental change. Technologies such as Intelligence, robotics and automation play a key role in increasing the capability to detect and adapt to climate and environmental changes to achieve National Development Goals (Galaz, Centeno, Callahan. Causevic, Patterson, The head, Baum, Farber, Fischer, Garcia, Mc Phearson, Jimnez, King, Larcey, Levy, 2021).

National development is, therefore, a development that meets the needs of the present

without compromising the ability of future generations to meet their needs. Furthermore, development is the foundation for today's leading global framework for international cooperation. The first conference on national development was held in Stockholm in 1972, which focused on the link between environmental, economic and social issues through establishing the United Nations Environment Programme (International Institute for National Development, 2025).

Due to such diverse and broad-based objectives, AI has been integrated into national development goal in various forms, first through experiments and later in sustainable management and governance programmes. Smart artificial intelligence management systems, replicate how people learn in an ever changing environment that maximally empowers decisions with their presence. It can be emphasize that artificial intelligence will positively and negatively affect society. While people in advanced communities may fear losing their jobs to AI, in low-income countries, people may see AI as an opportunity to break poverty (Goralski, Tan, 2020).

An oversight of global achievement and national development present a global blue print to address challenging issues like poverty, climate change, food security, economic degradation among others. The aim is to foster inclusive economic growth, protect the environment, and ensure peace and prosperity worldwide (Lamjo, 2024) Achieving these ambitious targets requires innovative solutions capable of accelerating progress and overcoming complex, interconnected problem.

Artificial Intelligence (AI), a rapidly advancing branch of computer science, has emerged as a powerful tool that can transform how we address the educational achievement and national development. By enabling machines to learn from data, recognize patterns, and make decisions, AI offers unprecedented capabilities to analyze large data sets, optimize resource allocation, and automate processes (Chinitia, 2023). These capabilities can be harnessed to tackle diverse challenges embedded in national development from improving agricultural productivity to enhancing healthcare delivery and managing natural resources. Understanding artificial intelligence potential contribution is critical as governments, international organizations, businesses, and civil society seek to integrate AI into national development strategies. While artificial intelligence promises to accelerate progress, it is not a silver bullet; it must be combined with sound policies, inclusive governance, and human-centered design to ensure equitable benefits.

Despite educational commitment, progress toward the educational achievement and national development has been uneven and slower than anticipated in many regions, especially in developing countries. Barriers include limited financial resources, inadequate infrastructure, governance challenges, and data gaps that hinder effective monitoring and decision-making. Furthermore, global crises such as the climate change insecurity and economic distribution have intensified vulnerabilities, underscoring the urgency of innovative solutions to accelerate progress. (World Economic Forum, 2022).

This paper examines the multifaceted role of AI in enhancing educational achievement and national development. It explores the specific applications of AI technologies across various goals, highlighting success and innovative approaches. At the same time, it acknowledges the risks and ethical dilemmas associated with AI, such as bias, inequality, and privacy concerns, emphasizing the need for responsible development and deployment.

Acquiring Knowledge Based of AI for National Development

AI's emergence in all forms of technologies in our daily lives has also led to incorporating into curricula to prepare schoolchildren to learn about these newly emerging advanced technologies. However, a significant gap has occurred in including prospective teachers in the curriculum to improve curriculum theories and teacher development in educational setting.

Through the educational path, educationist have to rearrange the optimal level of learning, education, and balance of results to industrial orientation. They is need to create sustainable education for the future, which includes zero energy, infrastructure, intelligent energy use and environmentally friendly sources of green curriculum and take them in the light of the concept of green sustainability. Green education is not only introducing and placing environmental ethics, norms and values into the learning plans but new lasting progress and prosperity achieved through innovative technology (Pal, Bhattacharya, Mustafi, Mitra, 2023). Governments, policymakers, private sectors and public-private partnerships have launched national strategic initiatives to strengthen the introduction of the Fourth Industrial Revolution (Bongomin, Nganyi, Abswaidi, Hitiyise, Tumusiime, 2020).

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Holmes, Peresson, Chounta, Wasson and Dimitrov (2022) state that before AI tools are put into service in education, it is necessary to ensure the democratic rights of parents, which include human rights and the need for curricula to address the human and technological dimensions of artificial intelligence literacy. The dilemma of the plan's ethics in developing and using artificial intelligence tools in educational contexts must also be resolved. It is necessary to ensure that data and intellectual property rights remain expressly with the pupil.

Mhlanga (2021) report that artificial intelligence change the teacher's role by taking over most knowledge-based teaching and assessment so that teachers are more focused on the social aspects of education. Artificial Intelligence is becoming a catalyst for education reform, allowing for a greater emphasis on project-based, adaptive, collaborative, and only-regulated learning. The main obstacle to the widespread use of artificial intelligence technologies is the lack of reliable evidence of their effectiveness.

In the report, Unesco (2020) states that transformation cannot be done without adequate physical infrastructure, students need skills to develop AI and abilities to work with AI, so the traditional view of teachers as knowledge carriers are changing. Education ministers must provide overhauls on curriculums from primary school to university. It must empower students with information awareness, computer thinking and digital learning and higher order competencies than those critically thought, courage to explore and innovate, and the ability to reflect, introspection and ethical standards.

Global Coordination and Policy Implementation

Recognizing the potential and risks of artificial intelligence in national development, various international organizations, governments, and the private sector have launched initiatives and policy frameworks to guide its responsible use (Chinthala, 2023). The United Nations has been at the forefront, with programs such as the AI for Good Global Summit, which fosters dialogue among experts to promote AI solutions aligned with the educational achievement and national development. The UN's Secretary-General has emphasized the importance of inclusive AI governance frameworks that safeguard human rights.

- Governments have developed national artificial intelligence strategies that incorporate development and ethical considerations, aiming to leverage artificial intelligence for economic growth and social good while addressing risks. These strategies often promote research, innovation, education, and international collaboration.
- Private sector companies are increasingly integrating sustainable development goals into their AI projects, emphasizing ethical AI principles, transparency, and social responsibility.
- Partnerships between corporations, academia, and NGOs are fostering innovation in areas such as precision agriculture, clean energy, and healthcare.
- Multilateral organizations like the OECD and UNESCO have also published guidelines and recommendations on AI ethics, emphasizing human rights, fairness, and accountability. These frameworks encourage countries to adopt policies that balance innovation with societal well-being.

In essence, the global coordination remains a challenge due to differing national priorities, regulatory environments, and capacities. Bridging these gaps requires continuous dialogue, knowledge sharing, and capacity building, particularly in developing countries. Overall, these initiatives reflect a growing recognition that harnessing AI for sustainable development demands collaborative, transparent, and ethical governance structures at local, national, and international levels.

Relevance of AI to Goal Achievement and National Development

Artificial Intelligence encompasses a broad range of technologies designed to mimic human cognitive functions such as learning, reasoning, problem-solving, and decision-making. Key artificial intelligence technologies that are particularly relevant to advancing the educational achievement national development include machine learning, natural language processing (NLP), computer vision, robotics, and expert systems. These technologies can process vast amounts of structured and unstructured data, uncover hidden patterns, and automate complex tasks across diverse domains. (Farahani, & Ghasemi, 2024).

- **Machine learning:** Is the backbone of many artificial intelligence applications, enables computers to improve performance on tasks through experience and data analysis (Elias, Esebre, Abijo, Timothy, Babayemi, Markinde, Oladepo&Fatiki 2024). For example, supervised learning models can predict disease outbreaks by analyzing historical health data, while unsupervised models can cluster environmental data to identify pollution hotspots.
- **Natural language processing:** This allows artificial intelligence systems to understand, interpret, and generate human language, facilitating applications such as automated translation, sentiment analysis, and information extraction (Malanga, 2023). This capability supports education, governance, and social inclusion by breaking language barriers and enabling large-scale text analysis.
- **Computer vision technologies:** This interpret visual data, making them invaluable for applications like satellite imagery analysis for climate monitoring, crop health assessment in agriculture, and infrastructure inspection. Robotics, powered by AI, can automate labor-intensive or hazardous tasks, such as precision farming or disaster response, improving efficiency and safety (Sawers, Bolster, & Bastarrous, 2021).

According to Lainjo (2024) AI contribute to educational achievement to national development by enabling smarter, faster and more efficient solutions. Others vital roles are:

- **Alleviation or poverty:** AI can improve social protection systems by predicting vulnerable populations using socio-economic data, enabling targeted assistance. It also supports financial inclusion by powering credit scoring models that assess loan eligibility for underserved communities, fostering economic empowerment.
- **Protection of food insecurity:** In agriculture, artificial intelligence -driven precision farming uses sensors, drones, and satellite imagery to monitor crop health, optimize irrigation, and manage pests, increasing yield and reducing resource waste. AI also enhances food supply chains by predicting demand, reducing losses, and improving distribution efficiency.
- **Promote good health and well-being of individuals:** Assists in early disease detection through image recognition for medical diagnostics, predicts outbreaks by analyzing epidemiological data, and personalizes treatments using genetic and clinical information. AI-driven telemedicine expands access to healthcare in remote regions
- **Promotion of quality education:** Powered platforms offer personalized learning experiences, adapting content to individual student needs and learning speeds. Automated grading and virtual tutoring increase educational access and quality, particularly in under-resourced areas.
- **Promote water sanitation:** AI systems monitor water quality through sensor networks, predict contamination events, and optimize water distribution networks to reduce waste and ensure equitable access.
- **Create energy protections:** Optimizes renewable energy production by forecasting weather patterns, manages smart grids for efficient energy distribution, and improves energy storage solutions, facilitating the transition to sustainable energy systems.
- **Proper climate change:** Enhance Modelling by integrating complex datasets to improve predictions of weather extremes and climate impacts. It supports disaster risk reduction through early warning systems and optimizes resource allocation for mitigation and adaptation strategies.

By targeting these and other goals, artificial intelligence demonstrates its versatility in addressing diverse challenges, accelerating national development while promoting innovation and inclusivity.

Sectional Impact of AI in Educational Achievement and Sustainability

Beyond its application to educational achievement and sustainability, AI plays a vital sectional role in national development by enhancing data collection, monitoring, governance, and inclusive

- **Data collection:** Data is critical for tracking progress toward educational achievement sustainable development. AI-powered tools automate the extraction and analysis of large-scale datasets from satellites, social media, mobile devices, and sensors, filling data gaps and providing real-time insights. This capability enhances transparency and accountability, enabling policymakers to make informed decisions and adjust strategies dynamically, (Amula, Alabdulrahman, 2024).
- **Monitoring government;** AI also strengthens governance by improving public service delivery, detecting fraud or corruption, and enabling participatory decision-making platforms. By automating routine administrative tasks, AI frees resources for more strategic work, improving government efficiency and responsiveness. Inclusion is another key dimension. AI can empower marginalized communities by providing access to education, healthcare, and financial services through mobile apps and chatbots tailored to diverse languages and cultural contexts. AI-driven accessibility tools support persons with disabilities, promoting equity. (Pong, Ahmad, Ahmad, Shairieh Deoul, & Alhandi, 2023)
- **Insecurity:** The benefits of artificial intelligence also depend on inclusive design and deployment. If artificial intelligence systems are biased or exclude certain populations due to data gaps or lack of digital infrastructure, they may reinforce existing inequalities. Therefore, ensuring equitable AI access and developing culturally sensitive models is essential. AI's sectional impact lies in its ability to integrate information and coordinate actions across sectors, enabling a holistic approach to sustainable development that leverages synergies among the goal achievement and sustainable development (Dasgupta, Palton, Sengupta, Namhata, Mahato & Sarkar, 2024).

Issues and Ethical Concern

While AI offers transformative potential for national development, it also presents significant issues and ethical dilemmas that must be addressed to ensure responsible use (Wahyudi, 2020).

- **The risk of exacerbating social and economic inequalities:** AI systems trained on biased or incomplete data can perpetuate discrimination against marginalized groups, reinforcing existing disparities rather than alleviating them. This is particularly problematic in contexts like healthcare, credit scoring, or law enforcement, where biased AI decisions can have serious consequences.
- **Privacy and data security are critical.** Sustainable development initiatives often rely on collecting sensitive personal and environmental data. Without robust protections, there is a risk of misuse, surveillance, or breaches that undermine public trust.
- **The digital divide:** Unequal access to artificial intelligence technologies and digital infrastructure can marginalize low-income and rural communities, limiting their participation in and benefits from AI-driven development. Ethical considerations also extend to transparency and accountability. Many AI models operate as "black boxes," making it difficult to understand or challenge decisions. This opacity raises questions about who is responsible when AI causes harm or fails.
- **Sustainability of AI itself is a concern;** artificial intelligence technologies require significant energy and resources, which may conflict with environmental goals if not managed responsibly. Addressing these issues requires developing ethical frameworks that emphasize fairness, transparency, accountability, and inclusivity. Stakeholders must adopt principles for responsible artificial intelligence design, ensure participatory governance, and invest in capacity building to empower communities to engage with AI technologies effectively. In essence the responsible AI deployment is crucial to harness its benefits while mitigating risks and ensuring that sustainable development is truly equitable and just.

Way Forward

Looking forward, AI holds immense promise for accelerating progress toward the educational achievement and national development, but realizing this potential requires strategic action and foresight. Emerging AI technologies such as explainable AI, federated learning, and AI-enabled IoT are poised to enhance transparency, data privacy, and real-time decision-making. Advances in multimodal AI could better integrate diverse data types, including qualitative and context-specific information. To address these challenging issues above, the paper highlighted the following point.

- Policymakers should develop inclusive regulatory frameworks that promote ethical AI development, protect vulnerable populations, and encourage transparency and accountability. International cooperation is essential to create harmonized standards and facilitate technology transfer to lower-income countries.
- Investing in digital infrastructure, education, and capacity building is crucial to bridge the digital divide and empower communities to benefit from AI. Encouraging interdisciplinary research will help design AI systems that are culturally sensitive and context-aware.
- Multi-stakeholder partnerships involving governments, academia, civil society, and the private sector should be strengthened to foster innovation, share best practices, and address emerging challenges collaboratively.
- Continuous monitoring and evaluation mechanisms should be established to assess AI's impact on sustainable development, enabling adaptive governance that can respond to new opportunities and risks.

By prioritizing these recommendations, the global community can ensure that AI serves as a powerful enabler of national development driving innovation while safeguarding human rights, equity, and environmental stewardship

Conclusion

Realizing AI's potential requires careful attention to ethical, social, and governance dimensions. Without deliberate and inclusive efforts, AI risks exacerbating inequalities, compromising privacy, and marginalizing vulnerable populations. The diverse and interconnected nature of the educational achievement and national development demands that AI solutions be contextually appropriate, culturally sensitive, and aligned with human rights. Multi-stakeholder approach is essential to develop responsible AI governance frameworks that balance innovation with accountability and equity. Collaboration among governments, international organizations, civil society, and the private sector will foster knowledge sharing, capacity building, and coordinated action.

AI in achieving the goals achievement and national development will be shaped by the choices societies make in designing, deploying, and regulating these technologies. By embracing transparency, inclusivity, and ethical principles, artificial intelligence can become a powerful catalyst for national development, helping build a more just, resilient, and prosperous world for all.

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