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Philosophical Implication of Human-Artificial Intelligence Collaboration and its Impact on Student Agency and Autonomy in Education

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Abstract

Access to quality education is essential in fostering critical thinking, independence, self-reliance, and social responsibility – key outcomes the learners is expected to embody through their actions and decisions. In an era where Information and Communication Technology (ICT) underpins global progress, digital literacy and ICT compliance are essential for meaningful participation in today's scientific and technological environment. The emergence of Artificial Intelligence (AI) in education has further transformed the system, introducing personalized learning pathways, automating routine tasks, and amplifying student engagement. Human-AI collaboration offers transformative potential for teaching and learning processes. However, it simultaneously prompts deep philosophical inquiry into the evolving notions of student agency and autonomy. Concerns have been raised that AI-driven learning platforms may inadvertently encourage passivity, reducing learners to compliant consumers of algorithmically generated content. This paper, employing a hermeneutic methodology, examines the concepts of human-AI collaboration, interrogates the implications for student autonomy and agency, and examines the challenges posed by personalized technologies in educational settings. It argues that while AI can significantly empower learners, its deployment must be guided by pedagogical strategies that promote student choice, active participation, and critical reflection. The paper advocates for a curricular framework that integrates AI tools in ways that support exploratory learning and adaptive learning paths, ensuring that technology serves as a facilitator – not a substitute – for

human-centred education. Such an approach will help safeguard student agency while leveraging the benefits of AI to enrich the learning experience.

Keywords: Autonomy, Education, Human-Artificial Intelligence Collaboration, Philosophical Implication, Student Agency

Introduction

Access to quality education transcends the confines of literacy, numeracy, and the attainment of academic credentials. It is fundamentally about nurturing human potential – developing creative and critical thinking, independence, self-reliance, and a strong sense of social and moral responsibility. These attributes are essential for learners to engage in complex societal structures and to actively participate in shaping their communities and futures. Education, in its most holistic form, is not merely a transmission of knowledge but a transformative process that equips individuals for meaningful and purposeful living (Federal Republic of Nigeria [FRN], 2014; Dewey, 1938).

In today's digital age, Information and Communication Technology (ICT) has emerged as a critical enabler of educational innovation and socio-economic advancement. The effective integration of ICT is now indispensable to any system aspiring to deliver equitable, relevant, and future-ready education. As societies move deeper into the Fourth Industrial Revolution, Artificial Intelligence (AI) has begun to reshape educational practices – redefining pedagogical approaches, personalizing learning experiences, and streamlining instructional delivery and assessment mechanisms. The growing collaboration between humans and AI in education promises to revolutionize the learning environment by enhancing access, efficiency, and engagement. However, this transformation also introduces complex philosophical and ethical considerations, particularly surrounding student agency and autonomy. Scholars have raised concerns that as AI systems assume more instructional and decision-making functions, students may increasingly depend on algorithmic outputs rather than exercising critical judgment or self-directed inquiry (Waters, 2020; Bates, 2020; Luckin, 2017; Luckin & C.E.M.A., 2016).

This paradox lies at the heart of contemporary educational discourse: while AI has the potential to empower learners by offering “readymade” and supportive learning pathways, it may simultaneously constrain autonomy by fostering passive learning behaviours and algorithmic dependency. If unchecked, this could undermine the very qualities – such as initiative, reflective thinking, and moral responsibility – that education seeks to cultivate. So, this paper adopts a hermeneutic approach to interrogate the philosophical implications of human and AI collaboration in education. It critically examines how such collaboration influences student agency and autonomy, explores the challenges of harmonizing human judgment with personalized technologies, and identifies strategies for preserving the humanistic goals of education in an increasingly automated learning environment. The central problem addressed is whether these emerging dynamics truly empower students or subtly shift them toward dependence – raising fundamental questions about the nature and purpose of education in the era of AI.

Concept Clarification:

Human nature

The concept of human nature has long captivated thinkers across disciplines, probing whether there are inherent traits shared by all humans or whether our essence is shaped largely by social context. In traditional philosophy, Plato envisioned the soul as a tripartite structure reason, spirit, and appetite arguing that social harmony arises when reason governs. Aristotle built on this, portraying humans as naturally social beings who achieve their highest potential through ethical participation in civic life, famously calling man a “zoon politikon.” Modern thinkers expanded and critiqued these views: Hobbes saw humans as self-serving and conflict-prone without strong governance, while Rousseau maintained that people are innately good but corrupted by social inequality. Meanwhile, Freud introduced the idea of an inner struggle among unconscious drives, while Skinner and other behaviorists downplayed internal processes, stressing environmental conditioning. Humanistic psychologists like Maslow and Rogers countered this, viewing people as growth-oriented and fundamentally good.

Anthropology and evolutionary theorists further broaden the conversation. Cultural anthropologists such as Geertz argued that human nature is not fixed but shaped by symbolic systems and culture, making adaptability its critical feature. On the other hand, evolutionary psychologists like Pinker (2002) highlighted universal traits shaped by natural selection, such as language and moral intuition. In contemporary thought, the nature-vs-nurture divide has softened into more nuanced models like gene-culture coevolution, which suggest that biology and culture continuously influence one another. The rise of technology, AI, and globalization has only deepened the conversation, challenging traditional definitions of identity and human agency. Finally, the debate has shifted from whether human nature is innate or constructed to how it evolves alongside our ever-changing environments.

Student Agency

Student agency refers to learners' capacity to act purposefully and reflectively in shaping their educational experiences. From constructivist and socio-cultural traditions, it emphasizes autonomy, voice, and choice, recasting students from passive recipients of instruction to active co-constructors of meaning. Drawing from Bandura's (2001) theory of human agency, this concept highlighted intentional action in learning contexts, encouraging goal-setting, decision-making, and self-regulation. It reimagines traditional classroom power structures, recognizing students' prior knowledge, cultural background, and interests as assets in learning. Effective cultivation of agency depends on supportive pedagogical relationships and a classroom climate that values participation, belonging, and diverse ways of knowing (Emdin, 2016; Reeve, 2013). Student agency intersects with equity and justice, requiring inclusive and culturally responsive teaching that addresses structural inequities. Thinkers like Freire (1970) believed that education is a political act. This is because it equips the learner to interrogate and transform their social realities. Project-based learning, inquiry-driven curricula, and digital tools are acclaimed to foster agency in the learner, but their true impact depends on whether they genuinely shift classroom power dynamics. Promoting authentic agency means reimagining students as epistemic agents – being capable of influencing how they learn, what they learn and why they learn.

Student Autonomy

Student autonomy is learner-centred and emphasizes students' ability to exercise agency over their own learning through goal-setting, decision-making, and self-regulation. From self-

determination and constructivist perspectives, autonomy involves more than just freedom of choice. It embodies critical self-awareness, confidence in one's abilities, and ownership of personal academic growth. According to Deci and Ryan's (1985) self-determination theory (1985), autonomy is viewed as one of three fundamental psychological needs, alongside competence and relatedness. To them, classrooms that nurture autonomy through supportive, choice-rich environments tend to engage more deeply, persist longer, and develop stronger well-being among learners. However, an environment defined by rigidity and control may stifle motivation, leading to disengagement and surface-level compliance. Autonomy presupposes inquiry-based learning, personalized projects, and reflective goal-setting. However, they build academic resilience, equip learners with essential skills for lifelong growth, which include critical thinking and metacognitive awareness (Zimmerman, 2002; Reeve, 2006).

Education

Education, a concept with no universally accepted definition due to its expansive meaning, nature, and scope, is perceived as an institution, discipline, activity, process, and product. Etymologically rooted in the Latin words *educere* and *educare*, meaning "to draw out" and "to nourish," education is fundamentally the process of developing a learner's innate tendencies and capacities (Ireyefoju & Ojeje, 2024; Schofield, 1972). Philosophers such as Plato, Aristotle, Rousseau, Froebel, Pestalozzi, and Montessori emphasized that genuine education unfolds from within, fostering the learner's individuality through a natural, progressive, and harmonious development of inborn potential (Taylor et al., 2012). This perspective positions education not as the mere transmission of knowledge but as the cultivation of habits, skills, attitudes, and values that enable learners to interact meaningfully with their environment and shape their destinies. The ultimate goal is to nurture rational, logical, and autonomous individuals capable of living authentic lives and making responsible choices, even in the face of complex or controversial circumstances. Consequently, the community must recognize and support the learner as a thinking, emotional, and independent being, and ready to contribute meaningfully to societal growth. It is on this foundation that diverse subjects have been integrated into the school curriculum to cater for the evolving needs and aspirations of both individuals and their communities (FRN, 2014).

Artificial intelligence

Artificial intelligence (AI) refers to the simulation of human intelligence processes by computer systems. These processes encompass learning (the acquisition of information and the rules for utilizing it), reasoning (the application of rules to reach approximate or definitive conclusions), and self-correction. AI can be broadly categorized into two main types: Narrow AI (Weak AI) and General AI (Strong AI). Narrow AI is specialized for specific tasks or a limited range of activities. Examples include virtual assistants like Siri and Alexa, recommendation systems used by platforms such as Netflix and Amazon, and image recognition software. In contrast, General AI (Strong AI) is a hypothetical form of AI that would possess the ability to understand, learn, and apply intelligence across a diverse array of tasks, akin to human cognitive abilities (Bostrom, 2021; Barocas & Selbst, 2016). As of now, General AI remains largely theoretical and has yet to be realized. Key concepts within AI include:

- Machine Learning (ML): A subset of AI that enables systems to learn from data and improve over time without explicit programming. ML includes techniques such as supervised learning, unsupervised learning, and reinforcement learning.

- Deep Learning: An advanced subfield of ML that employs neural networks with multiple layers (deep neural networks) to analyze various aspects of data. It is particularly effective in tasks such as image and speech recognition.
- Natural Language Processing (NLP): A branch of AI that focuses on the interaction between computers and humans through natural language. NLP enables machines to understand, interpret, and respond to human language (Papert, 2020; Dede, 2020).

AI serves as a valuable tool across various sectors. In healthcare, it is utilized for diagnostic purposes, personalized medicine, and administrative tasks within hospitals. In finance, AI aids in fraud detection, algorithmic trading, and personalized banking services. Self-driving cars leverage AI for navigation, traffic management, and safety systems in the transportation sector. In education, AI-driven tools personalize learning experiences and assist teachers in managing administrative tasks while analyzing student performance. Largely, AI has the potential to significantly transform education by enhancing teaching and learning processes, providing individualized experiences, and improving administrative efficiency (Papert, 2020).

Benefits of AI in education

AI plays a transformative role in education by enabling personalized learning experiences tailored to individual student performance and preferences. By analyzing large volumes of educational data, AI helps educators identify students' strengths and weaknesses, adjust content difficulty in real time through adaptive platforms, and implement targeted interventions. This empowers schools to make informed decisions about curriculum design, resource allocation, and student support services (McLuhan, 2020; Deleuze, 2018). In addition to enhancing instructional strategies, AI streamlines administrative tasks such as grading and scheduling, allowing educators to focus more on engaging with students. Virtual assistants further support communication and logistical coordination with parents. AI also expands accessibility by offering tools like speech recognition, text-to-speech, and language translation ensuring more inclusive learning for students with disabilities. Outside the classroom, AI powered tutoring systems simulate one-on-one support, helping learners grasp difficult concepts at their own pace. Overall, AI is being applied across educational settings to optimize teaching efficiency, personalize instruction, and promote equitable learning opportunities for all, including:

- Adaptive Learning Platforms: Tools like Knewton and Smart Sparrow utilize AI algorithms to deliver customized learning experiences based on real-time analysis of student interactions and performance.
- AI-Powered Assessment Tools: Platforms like Gradescope use AI to streamline grading processes, allowing instructors to provide faster feedback on student submissions.
- Learning Analytics Systems: These systems, powered by AI, can predict student outcomes using historical data. For example, Civitas Learning analyzes data to identify at-risk students, prompting timely interventions.
- Chatbots and Virtual Assistants: Educational institutions can implement AI-driven chatbots to assist students and parents with inquiries about courses, deadlines, and available resources on campus.

- **Gamified Learning Environments:** AI can power adaptive games that engage students in interactive learning experiences, adjusting to their knowledge level and providing immediate feedback (Hattie, 2001; Deleuze, 2018).

Artificial intelligence (AI) holds great promise for transforming education, but it also introduces significant ethical and practical challenges. One primary concern is the potential for AI to unintentionally reinforce existing biases embedded in the data it learns from, which can perpetuate educational disparities. Ensuring that AI applications are fair and equitable is especially critical in classrooms where even small inequalities can dramatically affect student outcomes. Additionally, the increased use of student data for personalization raises critical issues around privacy and data security, making compliance with regulations like FERPA and GDPR essential for safeguarding sensitive information. For AI to be meaningfully and effectively integrated into educational environments, educators need consistent training and support. Professional development should center on pedagogical strategies that leverage AI in ways that genuinely enhance learning. However, some educators and institutions may resist adopting AI tools due to concerns over their complexity, effectiveness, or fears of job displacement. To overcome these barriers, schools must cultivate a culture that embraces innovation, collaboration, and a willingness to explore new technological frontiers. Even as AI continues to advance with breakthroughs in machine learning, natural language processing, and immersive technologies like virtual and augmented reality the role of human educators remains irreplaceable. Teachers offer critical emotional and social support that machines cannot replicate. As AI helps create more personalized and data-informed learning experiences, it's vital to ensure a balanced approach where technology serves to empower, not replace, human interaction. Addressing ethical challenges thoughtfully will help ensure that AI benefits all stakeholders in the educational ecosystem.

Human nature and human-AI collaboration

As artificial intelligence becomes more advanced, its integration with human nature calls for a nuanced understanding of both human behavior and the ethical dimensions of technology. Human nature is defined by characteristics such as curiosity, emotional expression, moral awareness, and the drive to create and collaborate traits that are vital in shaping how we learn and interact with the world (Habermas, 2020; Kroll, 2018; Luckin, 2017). The fusion of these innate human traits with AI raises important questions about how to balance technological enhancement with the fundamental aspects of what it means to be human, especially in educational and learning environments. This interplay challenges traditional views of intellect and creativity while fostering new possibilities for collaboration.

AI's strengths like processing vast datasets, recognizing patterns, and performing cognitive tasks such as language analysis and decision-making complement human capabilities in powerful ways (Giroux, 2020; Georgiou, 2020; Warschauer, 2003). It enables humans to focus on innovation, ethical reasoning, and empathy, while AI offers efficiency and precision. For example, in fields like design and healthcare, AI can assist by delivering data-driven insights, yet the nuanced emotional intelligence and creative spark must remain human-driven (Burbules, 2022; Freire, 1970). This partnership holds great promise, but it also introduces ethical dilemmas bias in AI training data, the risk of job displacement, and questions surrounding autonomy and fairness necessitating responsible oversight and inclusive development (Postman, 2020; Schunk & Zimmerman, 2008).

The vision is one of synergistic collaboration, where AI amplifies human potential instead of diminishing it. As AI becomes more embedded in decision-making processes, developing transparent, explainable systems aligned with ethical standards becomes vital (Noddings, 2019; Data & Society Research Institute, 2018). Education systems will play a key role in preparing individuals to work alongside AI effectively, ensuring they thrive in an evolving economy. This human-AI alliance has the potential to drive societal progress – one where creativity, empathy, and moral insight are empowered by technological support (McLuhan, 2020; Deleuze, 2018). As we forge ahead, keeping the human experience at the center of AI development will be crucial to fostering a future that benefits everyone.

Student Agency, Autonomy and Artificial Intelligence

The integration of AI in education prompts significant considerations regarding student agency and autonomy. AI can enhance personalized learning by offering tailored content and resources that resonate with individual preferences and objectives. This level of personalization empowers students to make choices about what, how, and when they learn, thereby strengthening their sense of agency (Noddings, 2019; Data & Society Research Institute, 2018). AI systems provide immediate feedback on student performance, enabling learners to reflect on their progress and adjust their learning strategies accordingly. This instant reinforcement fosters a growth mindset and encourages students to take ownership of their learning journeys. With AI-driven platforms, students can access a wide range of learning materials and experiences beyond traditional classroom settings, allowing them to explore topics of interest independently. Such accessibility promotes a sense of agency as learners engage with their passions. Additionally, AI enables various forms of assessment, allowing students to showcase their knowledge in ways that suit them best whether through projects, presentations, or traditional tests thereby enhancing their engagement and control over their learning outcomes (Luckin, 2017; Luckin & CEMA., 2016).

AI technologies, including intelligent tutoring systems, support self-directed learning by allowing students to navigate their educational paths at their own pace. This approach fosters autonomy, as learners can progress through material without constant oversight from instructors. Adaptive learning platforms adjust task difficulty in real-time based on individual performance, enabling students to encounter challenges that are appropriately matched to their skill levels. This responsive method enhances autonomy, as students engage with content that meets their needs, encouraging them to take initiative in their learning processes. Moreover, AI can provide personalized recommendations for further study based on students' interests and past performance, motivating deeper exploration of subjects and fostering intrinsic motivation (Luckin, 2017).

While AI has the potential to enhance student agency and autonomy, there are risks associated with over-reliance on technology for decision-making and learning. Such dependence may impede the development of critical thinking and self-regulation skills, which are essential for lifelong learning. Furthermore, unequal access to AI technologies can create disparities in agency and autonomy among students. Educational institutions must ensure that all learners benefit from AI integration and have the necessary tools to take control of their education. Additionally, the increasing reliance on AI may reduce the importance of human interaction, which is vital for developing social skills and emotional intelligence. Striking a balance between AI tools and meaningful teacher-student relationships is crucial for creating a holistic learning environment. As AI continues to evolve, it is vital for stakeholders to collaborate on frameworks

that promote meaningful student agency and autonomy while addressing ethical considerations related to data privacy and usage (Carr, 2020).

Challenges of Human-AI Collaboration in Education

Human-AI collaboration in education faces several significant challenges that impact the teaching and learning process. One major concern is the growing dependence on AI-driven guidance, which can lead students to rely excessively on automated systems for their learning and decision-making. Such dependence may detract from their sense of ownership regarding their educational journey. When students allow algorithms to dictate their learning paths, they risk not developing essential skills like critical thinking and self-directed learning that are vital for their personal and professional growth. Consequently, educators must find a balance by encouraging the use of AI as a supportive tool rather than as a crutch, ensuring that students remain engaged, motivated, and proactive in their educational pursuits (Schunk & Zimmerman, 2008).

In addition, AI-driven learning systems frequently utilize standardized methodologies that may neglect the individual needs, learning styles, and creative potential of students. A one-size-fits-all approach can limit diversity in thought and expression, resulting in an uninspiring educational experience. To overcome this issue, educational AI should integrate adaptive learning principles that embrace individual differences, personalizing the learning experience to cater to diverse interests, strengths, and needs while promoting creativity and innovation (Luckin & CEMA, 2016).

Moreover, AI systems can unintentionally perpetuate biases found in their training data, leading to outcomes that may disadvantage marginalized groups. An AI trained on biased datasets may produce results that reinforce harmful stereotypes, further disadvantaging certain demographics. It is crucial for developers and educators to focus on fairness in AI training by ensuring that the data used is diverse and representative. Additionally, ongoing monitoring and evaluation of AI systems are essential to identify and rectify biased behaviors quickly (Barocas & Selbst, 2016). The integration of AI into education may also lead to a disconnection from the human aspects of learning, such as empathy, mentorship, and personal connection. Although AI can offer valuable insights and assistance, it cannot replicate the social and emotional learning experiences that enrich education. To counteract this depersonalization, educators should emphasize blended learning approaches that integrate AI tools with meaningful human interactions, thereby fostering community and social engagement in the learning process (Georgiou, 2000).

As AI's role in education expands, defining accountability for learning outcomes becomes increasingly complicated, raising questions about who bears responsibility for a student's performance, whether it is the AI developer, the educational institution, or the teachers. Establishing clear lines of accountability is vital to ensuring stakeholders can be held responsible for the effectiveness and ethical deployment of AI systems in educational settings. Policies must be developed to clarify these roles and responsibilities in this evolving landscape (Kroll, 2018). The emergence of AI tools also prompts concerns regarding the evolving role of teachers and their interactions with AI systems. Educators may feel threatened by AI's capabilities, fearing it might undermine their authority or replace them. However, it is essential to view AI as a complementary tool that enhances a teacher's ability to address students' needs rather than a

competitor. Supporting educators in learning how to effectively integrate AI into their teaching practices will foster a collaborative environment where AI enhances, rather than replaces, the instructional role of teachers (Luckin, 2017).

Strategies for Addressing Human-AI Collaboration in Education

Addressing the challenges associated with human-AI collaboration in education necessitates a comprehensive approach that emphasizes ethical considerations, inclusivity, and the enhancement of human capabilities. One effective strategy is to implement user-centric AI design, which prioritizes user control and decision-making. This involves creating systems that allow educators and students to tailor how AI assists them, such as selecting the types of recommendations or interventions they prefer. By incorporating feedback loops, users can adjust AI parameters to align with their preferences, ensuring that AI serves as a supportive tool rather than a dominating force. This development calls for a shift in perspective, treating AI as a collaborative partner that enhances decision-making processes rather than simply dictating actions. Educational environments should encourage discussions around autonomy-conscious AI and explore ways it can foster agency among users (Carr, 2020; Luckin, 2017).

Another strategy is to leverage adaptive learning technologies that personalize educational content according to individual learning styles and paces. These platforms utilize real-time assessments of student performance to adjust content delivery dynamically. Tools like DreamBox or Smart Sparrow exemplify this approach by modifying the curriculum based on how students interact with the material, which can create more tailored learning experiences. However, it is crucial that these adaptive learning systems respect the varying needs of students and incorporate input from stakeholders, teachers, students, and parents during their development. This collaborative approach ensures that the platforms accommodate different learning preferences and cultural contexts while effective mechanisms are in place to evaluate their true impact on student learning (Luckin, 2017).

To combat the issue of bias in AI, it is essential to ensure that the datasets used for training AI systems are diverse and representative of various demographic groups. Regular bias audits should be conducted to identify and address any unintended consequences of AI implementation. Utilizing frameworks such as AI Fairness 360 or Fairness Indicators can aid in the consistent evaluation of algorithms. This effort goes beyond technical solutions, as developers must engage with the communities affected by these technologies to understand the broader implications of bias within educational contexts. Transparency in the audit processes is critical, as it allows stakeholders to gain insight into how algorithms are assessed. Educational institutions should also take the lead in ethical AI use by providing training focused on recognizing and mitigating bias among educators and students alike (Haraway, 2021; Luckin, 2017).

Furthermore, establishing clear guidelines and policies is vital to delineate accountability for AI-related outcomes. This includes defining the respective roles of educators, institutions, and developers in the effective deployment and use of AI systems. Creating accountability frameworks or ethics review boards can help evaluate the use of AI technologies in educational settings, ensuring responsible practices are followed. Collaborative policymaking among various stakeholders, educators, technology developers, and policymakers is essential for crafting these guidelines. They must clearly outline roles, responsibilities, and expectations concerning AI use while also incorporating considerations for student privacy and the ethical ramifications of AI

decision-making. When these guidelines are put in place, they foster trust within the educational community and provide a framework for responsible AI integration (Rose, 2020; Kroll, 2018).

Conclusion

The incorporation of AI in education holds significant promise for enhancing student agency and autonomy, giving learners unprecedented control over their educational journeys. However, to fully realize these advantages, it is essential to address the associated challenges and commit to developing equitable and supportive learning environments. Achieving a harmony between technological advancements and a human-centred approach to education is crucial for nurturing a generation of self-motivated and engaged learners who can succeed in an increasingly complex society. As AI transforms educational systems, educators must critically reflect on how these changes affect the essence of learning and teaching. It is vital to ensure that technology complements and enhances human potential rather than detracts from it. Ultimately, the thoughtful integration of AI into educational frameworks can lead to a more just and enlightened society, prioritize equitable access, promote student autonomy, and continuously engage with the ethical dimensions of AI in education. By so doing, we can create a learning environment where all students are empowered to thrive in a rapidly evolving world.

Philosophical Implications

The integration of AI into education prompts deep philosophical questions about the very goals and nature of learning. Should education centre solely on acquiring knowledge, or should it also prioritize cultivating critical thinking, creativity, and individual agency? As AI becomes more involved in shaping learning environments, debates arise over whether its role enhances or diminishes the holistic development of learners into thoughtful, capable contributors to society. This interaction between human cognition and machine support invites reflection on what it truly means to learn in an era of digital mediation. It challenges educators and learners alike to rethink the balance between intuition, creativity, and algorithmic analysis in shaping meaningful educational experiences (Siemens, 2020).

Additionally, AI's rise in personalized learning pathways and adaptive content delivery compels a reevaluation of traditional notions of knowledge acquisition. Classic epistemological frameworks emphasize learners' active role in constructing understanding, while AI interventions often streamline content delivery in individualized ways. This shift raises questions about the completeness and validity of knowledge gained through machine-guided methods compared to conventional human-led instruction. The flexibility of AI tools also contests the standardization of curricula, suggesting a move toward context-sensitive education tailored to personal needs and goals. However, while such tools can empower learners by granting more autonomy over their educational paths, they also prompt concerns about overreliance on technology. If decision-making increasingly depends on AI, we must reconsider what genuine autonomy looks like in the age of intelligent machines (Bostrom, 2021; Latour, 2020; Bates, 2020).

Suggestions

The following suggestions were reached:

1. Integrating AI tools in education should encourage exploration and agency in curricular design, allowing for flexible learning paths.

2. Educators should be prepared to effectively use AI in ways that enhance student agency, rather than replace the teacher's role or diminish student involvement.
3. Engaging students in the design and implementation of AI tools in education should ensure that their voices are heard and their needs are met.

References

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1-26.

Baracas, S. & Selbst, A. D. (2016). Big data's disparate impact. *California Law Review*, 104(3), 671-732.

Bates, A. (2020). *Teaching in a digital age: Guidelines for designing teaching and learning*. Routledge Publishers.

Biesta, G. (2010). *Good education in an age of measurement: Ethics, politics, democracy*. Routledge Publishers.

Bostrom, N. (2021). *The future of artificial intelligence: Opportunities and challenges*. Oxford University Press.

Burbules, N. (2022). *The limits of educational technology*. Routledge Publishers.

Carr, N. (2020). *The shallows: What the internet is doing to our brains*. W.W. Norton & Company Publishers.

Data & Society Research Institute. (2018). *Data privacy: Student perspectives*.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Plenum Publishers.

Dede, C. (2020). *Learning engineering: A new discipline for the digital age*. Routledge Publishers.

Deleuze, G. (2018). *Postscript on the societies of control*. MIT Press.

Dewey, J. (1938). *Democracy and education*. Macmillan Publishers.

Dewey, J. (1938). *Experience and education*. Macmillan Publishers.

Federal Republic of Nigeria (2014). *National policy on education*. NERDC.

Fielding, M. (2004). New wave' student voice and the renewal of civic society. *London Review of Education*, 2(3), 197-217.

Freire, P. (1970). *Pedagogy of the oppressed*. Bloomsbury Academic Publishers.

Freire, P. (1970). *Pedagogy of the Oppressed*. Herder and Herder Publishers.

Gagne, R. (1989). *The conditions of learning*. Holt, Rinehart and Winston Publishers.

Georgiou, Y. (2000). The Role of affective computing in education: Designing emotional intelligence in learning environments." *International Journal of Artificial Intelligence in Education*, 30(4), 1-30.

Giroux, H. (2008). *The pedagogy of resistance*. Routledge Publishers.

Habermas, J. (2010). *Knowledge and human interests*. Polity Press.

Haraway, D. (2021). *Simians, cyborgs, and women*. Routledge Publishers.

Hattie, J. (2001). *Visible learning*. Routledge Publishers.

Illich, I. (1968). Deschooling society. Marion Boyars Publishers.

Ireyefoju, P.J. & Ojeje, M.A. (2024). *Knowing educational philosophy*. COEWA Publishers.

Ireyefoju, P.J. (2014). *Existential Phenomenology of Autonomy in Human Relations: The Dilemma of the Nigerian Adolescent Learner*. A PhD Thesis of the University of Benin, Benin City.

Ireyefoju, P.J. (2015). Constructing education for self-realization on the basis of Plato's human psychology. *International Letters of Social and Humanistic Sciences*, 7(2), 192-197. Doi:10.18052/www.scripress.com/ILSHS.48-192

Kroll, J. A. (2018). Accountability in Artificial Intelligence: The role of Artificial Intelligence in education. *Harvard Journal on Legislation*.

Kuhn, T. (2012). *The structure of scientific revolutions*. University of Chicago Press.

Latour, B. (2022). *Reassembling the social*. Oxford University Press.

Lave, J. (2020). *Cognition in practice*. Cambridge University Press.

Luckin, R. (2017). *Enhancing learning and teaching with Artificial Intelligence: The role of teachers in the age of Artificial Intelligence*. Educause Review.

Luckin, R., & C. E. M. A. (2016). *Machine learning and human intelligence: The future of education for the 21st century*. UCL Institute of Education.

Marcuse, H. (2018). *One-dimensional man*. Routledge Publishers.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370-396.

McLuhan, M. (2020). *Understanding media*. Routledge Publishers.

Mitra, D. (2004). The significance of students: Can increasing "student voice" in schools lead to gains in youth development? *Teachers College Record*, 106(4), 651-688.

Morozov, E. (2022). *To save everything, click here*. PublicAffairs Publishers.

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education*, 7(2), 133-144.

Noddings, N. (2014). The relevance of philosophy of education for teacher education. *Journal of Philosophy of Education*, 48(1), 1-19.

Noddings, N. (2019). *Caring: A feminine approach to ethics and moral education*. University of California Press.

Papert, S. (2020). *Mindstorms: Children, computers, and powerful ideas*. Basic Books Publishers.

Pinar, W. (1987). *What is curriculum theory?* Routledge Publishers.

Pinker, S. (2002). *The Blank Slate: The Modern Denial of Human Nature*. Viking Publishers.

Postman, N. (2020). *The end of education*. Vintage Books Publishers.

Ranciere, J. (2018). *The ignorant schoolmaster*. Stanford University Press.

Reeve, J. (2006). Teachers as facilitators: What autonomy-supportive teachers do and why their students benefit. *The Elementary School Journal*, 106(3), 225-236.

Rose, N. (2020). *The politics of life itself*. Princeton University Press.

Rousseau, J.-J. (1762). *Emile, or On Education*.

Schofield, H. (1972). *The philosophy of education: An introduction*. George Allen and Unwin.

Schunk, D. H., & Zimmerman, B. (Eds.). (2008). *Motivation and self-regulated learning: Theory, research, and applications*. Routledge.

Siemens, G. (2020). *Connectivism: A learning theory for the digital age*. Routledge Publishers.

Slavin, R. (2016). *Educational psychology: Theory and practice*. Allyn & Bacon Publishers.

Taylor et al. (2012). Children's relations to the more-than-human world. *Contemporary Issues in Early Childhood*, 13(2), 81-85.

Warschauer, M. (2003). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.

Watters, A. (2020). *Teaching machines: Learning from the intersection of education and technology*. MIT Press.