

Education 6.0: A Human-AI Co-Creation Framework for Future Higher Education

K. Rama Krishna Baba¹, Tuk Prasad Neupane², Vinod Kumar Sahu³, Sucheta Panda⁴, Smruti Ranjan Rath⁵

¹Dr. B. R. Ambedkar Department of Legal Studies, Acharya Nagarjuna University Vijayawada, Andhra Pradesh

²Noida International University, Noida, Uttar Pradesh

³Department- Commerce, Govt Naveen Girls College Surajpur, Chhattisgarh

⁴CSE- AI& ML, GMRIT Deemed to be University, Rajam, Andhra Pradesh

⁵Faculty of Commerce and Management, AISECT University, Hazaribag, Jharkhand

¹rkbabamail@gmail.com, ²tpneupane15@gmail.com, ³vsahu9306@gmail.com, ⁴sucheta.p@gmritdu.edu.in, ⁵srrath10@gmail.com

Peer Review Information	Abstract
Type: Article Received: 30 April 2026 Revised: 29 May 2026 Accepted: 13 June 2026 Published: 16 July 2026	The rapid advancement of Artificial Intelligence (AI) has initiated a paradigm shift in higher education, necessitating the development of innovative educational models that integrate technological capabilities with human-centered values. While previous educational paradigms primarily focused on digital transformation and technology-enabled learning, the emergence of Education 6.0 advocates a collaborative ecosystem where humans and AI function as co-creators of knowledge, innovation, and problem-solving. This conceptual paper proposes a Human–AI Co-Creation Framework that redefines higher education by positioning AI as an intelligent collaborator rather than a replacement for educators and learners. Drawing on recent literature on Education 6.0, AI literacy, personalized learning, adaptive pedagogy, ethical AI, and intelligent educational systems, the framework integrates ten core dimensions supporting human-centered learning. It further incorporates the SCALE Framework and Cognitive Rhythm Theory to explain progressive AI integration and cognitive synchronization in education. The study emphasizes that effective implementation requires institutional readiness, robust digital infrastructure, faculty development, ethical governance, and responsible AI policies for sustainable educational transformation. The paper argues that Education 6.0 extends beyond technological adoption by fostering collaborative intelligence, innovation, and lifelong learning while preserving uniquely human capabilities such as creativity, empathy, ethical reasoning, and critical thinking. The proposed framework contributes to the emerging discourse on AI-enabled higher education by offering a comprehensive roadmap for educators, university administrators, policymakers, and researchers seeking to design intelligent, inclusive, ethical, and sustainable higher education systems capable of preparing graduates for the evolving demands of the AI-driven knowledge economy. Keywords: Education 6.0; Human–AI Co-Creation; Artificial Intelligence in Higher Education; AI Literacy; Personalized Learning

How to Cite This Article

Baba, K. R. K., Neupane, T. P., Sahu, V. K., Panda, S., & Rath, S. R. (2026). Education 6.0: A Human-AI Co-Creation Framework for Future Higher Education. *International Journal of Research and Development: A Management Review*, 15(2), 434–xxx.

Introduction

The global higher education ecosystem is experiencing a transformative shift driven by rapid advancements in Artificial Intelligence (AI), particularly generative AI, machine learning, natural language processing, and intelligent learning systems. Traditional educational models that primarily focused on knowledge transmission are gradually evolving toward learner-centered, technology-enabled, and competency-driven approaches. This transformation has accelerated following the widespread adoption of intelligent technologies capable of supporting personalized learning, automated assessment, adaptive curriculum design, academic advising, and collaborative knowledge creation. Consequently, scholars and policymakers have begun to envision the next phase of educational evolution, commonly referred to as Education 6.0, which emphasizes human-centered innovation, ethical AI integration, lifelong learning, sustainability, and intelligent collaboration between humans and machines (Moleka, 2023; Kumar, 2025).

Education has evolved significantly over the past decades. Education 1.0 was characterized by teacher-centered knowledge dissemination, whereas Education 2.0 introduced digital learning resources and internet-enabled education. Education 3.0 promoted collaborative learning and learner autonomy, while Education 4.0 aligned educational practices with Industry 4.0 through digital technologies, smart classrooms, and personalized learning. Education 5.0 further emphasized human-centered innovation, creativity, and sustainable development by integrating advanced technologies into educational processes. Building upon these developments, Education 6.0 extends beyond technological adoption by promoting an intelligent ecosystem where humans and artificial intelligence collaborate as co-creators of knowledge rather than functioning in isolated roles (Moleka, 2023; Hernández García et al., 2025).

Unlike previous educational paradigms, Education 6.0 recognizes AI as a collaborative partner capable of enhancing human creativity, decision-making, and innovation while preserving uniquely human attributes such as empathy, ethical reasoning, critical thinking, and contextual judgment. Rather than replacing educators, AI complements their expertise by automating repetitive administrative tasks, providing personalized feedback, generating learning resources, and facilitating data-driven instructional decisions. This paradigm positions educators as mentors, facilitators, and designers of meaningful learning experiences while students actively engage in problem-solving, creativity, and interdisciplinary collaboration supported by intelligent systems (Elkordy & McVey, 2025; Torrisi-Steele, 2025).

The emergence of generative AI tools such as ChatGPT, Gemini, Claude, Microsoft Copilot, and numerous AI-assisted educational platforms has fundamentally altered teaching and learning practices across universities worldwide. These technologies provide opportunities for personalized tutoring, automated content generation, intelligent assessment, adaptive curriculum planning, virtual laboratories, multilingual communication, and research assistance. Consequently, universities are increasingly adopting AI-powered solutions to improve student engagement, institutional efficiency, and educational quality. However, the rapid integration of AI also raises important concerns regarding academic integrity, algorithmic bias, data privacy, transparency, ethical governance, intellectual ownership, and excessive dependence on automated systems (Kayyali, 2025; Kumar, 2025).

Human-AI co-creation has emerged as one of the most promising approaches for addressing these challenges while maximizing the educational benefits of AI. Human-AI co-creation refers to a collaborative process in which humans and intelligent systems jointly contribute to ideation, knowledge generation, creativity, decision-making, and problem-solving. Instead of viewing AI as a replacement for human intelligence, co-creation frameworks emphasize complementary strengths where AI contributes computational efficiency, pattern recognition, data processing, and content generation, whereas humans provide contextual understanding, ethical judgment, emotional intelligence, creativity, and reflective thinking (Liu, 2025; Zhong & Zheng, 2023).

Within higher education, Human-AI co-creation has significant implications for curriculum development, research collaboration, assessment practices, faculty development, and student learning experiences. AI-powered systems can support faculty members in designing learning materials, generating case studies, developing assessments, and analyzing learning analytics, allowing educators to devote greater attention to mentoring, innovation, and student engagement. Similarly, students can utilize AI as an intelligent learning companion that facilitates brainstorming, coding assistance, academic writing support, language translation, and personalized feedback while maintaining responsibility for critical evaluation and ethical decision-making (Romero, 2025; Bennett, 2023).

Another defining characteristic of Education 6.0 is its emphasis on AI literacy. As AI technologies become increasingly integrated into educational environments, learners, educators, and institutional leaders require competencies that extend beyond technical proficiency. AI literacy includes understanding AI capabilities, recognizing its limitations, interpreting algorithmic outputs, evaluating ethical implications, ensuring responsible use, and effectively collaborating with intelligent systems. Developing AI literacy enables higher education institutions to cultivate graduates who can confidently participate in future digital economies while maintaining human agency and ethical responsibility (Framework of AI Literacy for Multi-role Capabilities in Future Education, 2024).

Furthermore, Education 6.0 aligns closely with emerging global priorities, including the United Nations Sustainable Development Goals (SDGs), digital transformation strategies, and Industry 5.0 initiatives that advocate human-centric technological development. Universities

are increasingly expected to produce graduates capable of addressing complex societal challenges through interdisciplinary collaboration, innovation, and responsible technology adoption. Human-AI co-creation supports these objectives by fostering creativity, adaptive learning, critical inquiry, entrepreneurial thinking, and collaborative problem-solving within intelligent educational ecosystems (Shi & Xuwei, 2023; Zargham, 2023).

Despite growing scholarly interest, existing literature remains fragmented across domains such as AI-assisted learning, generative AI adoption, AI literacy, educational innovation, and digital pedagogy. Few studies provide an integrated conceptual framework that systematically explains how Human-AI co-creation can operationalize Education 6.0 within higher education institutions. Much of the current research focuses either on technological implementation or ethical challenges without adequately examining the dynamic interactions among educators, learners, AI systems, institutional governance, and learning outcomes. This conceptual fragmentation highlights the need for a comprehensive framework capable of integrating pedagogical, technological, organizational, and ethical dimensions into a unified educational model (Ravarini et al., 2024; Kumar et al., 2025).

Accordingly, this paper proposes "Education 6.0: A Human-AI Co-Creation Framework for Future Higher Education" as a conceptual model that positions AI as an intelligent collaborator rather than a technological substitute. The proposed framework emphasizes collaborative intelligence, personalized learning, ethical governance, AI literacy, human creativity, institutional readiness, and continuous innovation as foundational pillars for the future of higher education. By synthesizing recent developments in Education 6.0, Human-AI collaboration, and AI-enabled pedagogical transformation, this study contributes to the growing discourse on designing resilient, inclusive, and sustainable higher education systems capable of preparing learners for an increasingly AI-driven society.

Literature Review

The rapid advancement of Artificial Intelligence (AI) has fundamentally transformed the landscape of higher education, creating opportunities for more intelligent, personalized, and collaborative learning environments. The emergence of Education 6.0 reflects a paradigm shift from technology-assisted learning toward human-AI co-creation, where artificial intelligence functions as a collaborative partner in knowledge generation, creativity, and innovation rather than merely serving as an instructional tool. Recent scholarly work demonstrates that future higher education must integrate technological innovation with human-centered values, ethical governance, creativity, and lifelong learning to prepare graduates for an increasingly intelligent society (Moleka, 2023; Kumar et al., 2025).

One of the foundational contributions to Education 6.0 is provided by Moleka (2023), who argues that Education 5.0 is no longer sufficient to address the rapidly changing technological ecosystem driven by generative AI, automation, and adaptive intelligence. The proposed Education 6.0 framework emphasizes personalized learning, adaptive pedagogy, intelligent decision-making, and learner autonomy. Rather than replacing educators, AI should facilitate customized educational experiences that respond dynamically to learners' cognitive needs, preferences, and learning styles. The study also highlights ethical AI implementation, transparency, and responsible governance as essential components of future educational systems.

The concept of Human-AI co-creation has received growing attention within higher education research. Zhong and Zheng (2023) developed a conceptual framework explaining how collaborative interactions between students and AI systems can enhance creativity and innovation. Drawing upon creativity theories and the SAMR model, the authors propose four guiding principles that position AI as an active collaborator in idea generation, knowledge construction, and problem-solving. Their findings suggest that educational institutions should design learning environments that encourage students to critically engage with AI-generated outputs rather than passively consume automatically generated information. Such collaborative engagement develops higher-order thinking skills while preserving learner autonomy.

Expanding this perspective, Zhong and Cochrane (2024) introduced a Heutagogy-based Human-AI Co-creation (HACC) framework that emphasizes self-determined learning. Unlike conventional AI-assisted education, HACC enables learners to exercise agency in defining learning objectives, selecting AI tools, and evaluating AI-generated knowledge. The framework aligns with Education 6.0 by promoting learner independence, creativity, reflection, and lifelong learning competencies. Their work demonstrates that AI should empower rather than control educational processes, enabling students to become active participants in constructing knowledge.

Faculty readiness represents another important dimension of Human-AI collaboration. Elkordy and McVey (2025) proposed the SCALE Framework, which provides a structured pathway for educators to progressively integrate AI into teaching practices. The framework begins with task automation and gradually advances toward collaborative instructional design, personalized learning experiences, and transformative educational innovation. Their findings indicate that AI should be viewed as an intellectual partner capable of enhancing instructional quality while allowing educators to devote greater attention to mentoring, creativity, and student engagement. This perspective reinforces the human-centered philosophy underlying Education 6.0.

Recent literature also emphasizes the importance of creative engagement within AI-supported education. Romero (2025) proposed the #ppAI6 model, which conceptualizes six progressive levels of AI-enhanced creative engagement, ranging from passive AI consumption to

deep human-AI knowledge co-creation. The review concludes that most educational institutions currently operate at lower levels of AI utilization, focusing primarily on content generation and automation rather than collaborative innovation. The author recommends redesigning learning activities that position students and educators as co-designers of knowledge, thereby strengthening AI literacy, creativity, and collaborative intelligence.

Generative AI has also transformed pedagogical design and institutional practices. Ravarini et al. (2024) explored how educators and generative AI systems can function as strategic partners in shaping the future of higher education. Their framework identifies multiple strategies including personalized learning pathways, AI-assisted curriculum design, intelligent content generation, and adaptive course development. However, the authors emphasize that successful implementation requires institutional governance, faculty development, ethical guidelines, and collaborative leadership rather than purely technological investments. These findings reinforce the notion that Education 6.0 depends equally upon organizational readiness and human capability development.

Several scholars have examined AI integration from broader institutional perspectives. Bennett (2023) proposed a framework describing the interface between human intelligence and artificial intelligence in higher education curriculum design. The study argues that future curricula should cultivate uniquely human competencies—including creativity, emotional intelligence, ethical reasoning, and complex problem-solving—while leveraging AI for data processing, personalization, and routine academic tasks. Similarly, Shi and Xuwei (2023) conclude that AI enhances educational quality when integrated through collaborative pedagogical models supported by ethical governance and continuous faculty training.

Another emerging research stream focuses on AI literacy as a prerequisite for successful Human-AI collaboration. The Framework of AI Literacy for Multi-role Capabilities in Future Education (2024) identifies four stakeholder groups—students, educators, administrators, and educational support professionals—and outlines the competencies required for effective AI adoption. The framework emphasizes AI knowledge, critical thinking, ethical awareness, digital skills, and responsible decision-making as essential capabilities for Education 6.0. Rather than limiting AI literacy to technical expertise, the framework advocates a holistic approach encompassing cognitive, behavioral, and ethical dimensions.

Ethical considerations remain central to contemporary discussions on AI-enabled higher education. Torrisi-Steele (2025) argues that while AI significantly improves teaching, learning, and institutional administration, universities must simultaneously address issues including algorithmic bias, data privacy, academic integrity, intellectual property, and transparency. Similarly, Kayyali (2025) warns that AI systems may inadvertently reinforce structural inequalities unless institutions adopt inclusive governance mechanisms that prioritize accessibility, fairness, and stakeholder participation. These studies collectively suggest that Education 6.0 should balance technological innovation with responsible AI governance and human oversight.

Recent conceptual studies increasingly support the transition from AI-assisted learning toward collaborative intelligence, where humans and AI jointly contribute to educational innovation. Kumar et al. (2025) propose a conceptual framework demonstrating how AI can transform institutional governance, teaching, assessment, research, and learner engagement when integrated through ethical, pedagogical, and organizational dimensions. Likewise, Liu (2025) introduces a Human-AI co-creation framework emphasizing collaborative ideation, human oversight, creativity, and reflective decision-making. Together, these studies demonstrate that AI should augment rather than replace human intelligence, aligning closely with the principles of Education 6.0.

Overall, the literature consistently indicates that future higher education requires a balanced integration of human expertise and artificial intelligence. Existing studies have independently explored AI-assisted learning, personalized education, AI literacy, ethical governance, creative engagement, and institutional transformation. However, limited research integrates these dimensions into a comprehensive Human-AI Co-Creation Framework specifically designed for Education 6.0. This gap highlights the need for a unified conceptual model that explains how collaborative intelligence among educators, learners, institutional leaders, and AI systems can collectively shape sustainable, ethical, innovative, and learner-centered higher education ecosystems.

Table 1. *Authors Key Contribution to Education 6.0*

Author(s)	Focus Area	Key Findings	Contribution to Education 6.0
Moleka (2023)	Education 6.0	Proposed personalized, adaptive, AI-enabled education model	Established conceptual foundation of Education 6.0
Zhong & Zheng (2023)	Human–AI Co-creation	AI enhances creativity through collaborative learning	Developed student–AI co-creation framework
Zhong & Cochrane (2024)	Heutagogy	Self-determined learning with AI	Strengthened learner autonomy and agency

Bennett (2023)	Human–AI Interface	Curriculum should combine AI efficiency with human intelligence	Framework for future curriculum design
Ravarini et al. (2024)	Generative AI	AI supports personalized learning and course development	Strategic educator–AI collaboration
Elkordy & McVey (2025)	SCALE Framework	Progressive AI integration for faculty	Faculty AI readiness model
Romero (2025)	AI Creative Engagement	Six levels of AI-enhanced creativity	Human–AI knowledge co-creation model
AI Literacy Framework (2024)	AI Literacy	Defined competencies for students, teachers, and administrators	Multi-role AI capability framework
Torrisi-Steele (2025)	AI Governance	Responsible AI adoption in higher education	Ethical governance and faculty development
Kumar et al. (2025)	AI in Higher Education	AI transforms teaching, governance, and institutional management	Comprehensive conceptual AI framework
Liu (2025)	Human–AI Co-Creation	Human oversight and collaborative intelligence	Co-creation model for intelligent systems
Kayyali (2025)	AI Ethics	Inclusive and equitable AI implementation	Responsible and human-centered AI adoption

Components of Education 6.0

Education 6.0 represents the next generation of higher education, where human intelligence and artificial intelligence (AI) collaboratively create knowledge, foster innovation, and enhance lifelong learning. Unlike previous educational paradigms that primarily emphasized technology adoption, Education 6.0 integrates AI with human creativity, ethical reasoning, emotional intelligence, and critical thinking to establish an intelligent, inclusive, and sustainable learning ecosystem. It envisions higher education institutions as adaptive environments where educators, learners, AI systems, industry, and society collectively contribute to knowledge creation and problem-solving (Moleka, 2023; Kumar et al., 2025).

The major components of Education 6.0 are discussed below.

- **Human–AI Co-Creation:** Human–AI co-creation forms the foundation of Education 6.0. Rather than replacing educators or students, AI serves as an intelligent collaborator that assists in content generation, research, problem-solving, and decision-making. Human participants contribute creativity, ethical judgment, contextual understanding, and emotional intelligence, while AI offers computational efficiency, data analysis, and adaptive recommendations. This collaborative partnership promotes innovation, creativity, and higher-order thinking, transforming both teaching and learning into interactive knowledge-building processes (Zhong & Zheng, 2023; Liu, 2025).
- **Personalized and Adaptive Learning:** Education 6.0 emphasizes learner-centered education through AI-driven personalization. Intelligent learning systems continuously analyze students' learning styles, progress, strengths, and weaknesses to provide customized learning pathways, adaptive assessments, and real-time feedback. Personalized learning enhances student engagement, improves academic performance, and accommodates diverse learning needs, making education more inclusive and effective (Moleka, 2023; Ravarini et al., 2024).
- **AI Literacy and Digital Competencies:** Future graduates must possess AI literacy to effectively collaborate with intelligent systems. Education 6.0 therefore integrates AI knowledge, digital skills, ethical awareness, critical evaluation of AI-generated outputs, prompt engineering, and responsible AI usage into academic curricula. AI literacy extends beyond technical proficiency by enabling students and educators to understand AI capabilities, limitations, risks, and societal implications while making informed decisions regarding AI adoption (Framework of AI Literacy for Multi-role Capabilities in Future Education, 2024).
- **Creativity, Innovation, and Critical Thinking:** Education 6.0 shifts the educational focus from memorization to innovation and creative problem-solving. AI assists learners in brainstorming ideas, generating prototypes, analyzing complex datasets, and exploring multiple perspectives, while humans critically evaluate AI-generated outputs to ensure originality and contextual relevance. This collaborative process nurtures creativity, entrepreneurial thinking, interdisciplinary learning, and innovation capabilities essential for future workplaces (Romero, 2025; Zhong & Cochrane, 2024).

- **Ethical AI and Responsible Governance:** Ethical considerations are central to Education 6.0. Universities must establish governance mechanisms addressing data privacy, transparency, algorithmic fairness, intellectual property, academic integrity, cybersecurity, and accountability. Responsible AI implementation ensures that intelligent technologies enhance educational quality without compromising human rights, equity, or institutional trust. Ethical governance also promotes transparency in AI-assisted assessment and decision-making processes (Torrissi-Steele, 2025; Kayyali, 2025).
- **Intelligent Assessment and Learning Analytics:** Traditional examinations are increasingly complemented by AI-enabled assessment systems capable of providing continuous evaluation, predictive analytics, competency mapping, and personalized feedback. Learning analytics enable educators to identify at-risk students, monitor academic progress, optimize instructional strategies, and improve institutional decision-making. These data-driven approaches facilitate evidence-based teaching while supporting student success throughout their educational journey (Kumar et al., 2025; Shi & Xuwei, 2023).
- **Lifelong and Flexible Learning:** Education 6.0 recognizes that learning extends beyond formal university education. Rapid technological advancements require continuous reskilling and upskilling throughout an individual's career. AI-powered platforms support lifelong learning by offering flexible, self-paced, competency-based, and micro-credential programs that adapt to learners' evolving professional and personal needs. This flexibility enables graduates to remain competitive in dynamic labor markets while fostering continuous intellectual growth (Zargham, 2023; Moleka, 2023).
- **Collaborative and Interdisciplinary Learning Ecosystems:** Education 6.0 promotes collaboration among universities, industries, governments, research institutions, and intelligent technologies. Students engage in interdisciplinary projects that combine knowledge from diverse fields to solve complex societal challenges. AI facilitates collaboration through virtual environments, intelligent tutoring systems, multilingual communication, and global knowledge-sharing platforms, enabling learners to participate in collaborative innovation regardless of geographical boundaries (Elkordy & McVey, 2025; Kumar et al., 2025).
- **Faculty Empowerment and AI-Augmented Teaching:** Rather than diminishing the role of educators, Education 6.0 empowers faculty through AI-assisted instructional design, automated grading, content generation, and administrative support. By reducing routine workloads, AI enables educators to focus on mentoring, research supervision, emotional support, and developing innovative pedagogical practices. Continuous faculty development programs are essential for building AI competencies and effectively integrating intelligent technologies into teaching and learning (Elkordy & McVey, 2025; Torrissi-Steele, 2025).
- **Sustainability, Inclusion, and Human-Centered Development:** Education 6.0 aligns technological innovation with sustainable development and social responsibility. It promotes equitable access to education, inclusive learning environments, accessibility for diverse learners, and responsible use of digital technologies. Human-centered values including empathy, cultural diversity, ethical leadership, and social well-being remain fundamental despite increasing AI integration. Consequently, Education 6.0 seeks to develop graduates who are technologically proficient while remaining socially responsible, ethically aware, and globally competent (Hernández García et al., 2025; Kayyali, 2025).

Research Objectives

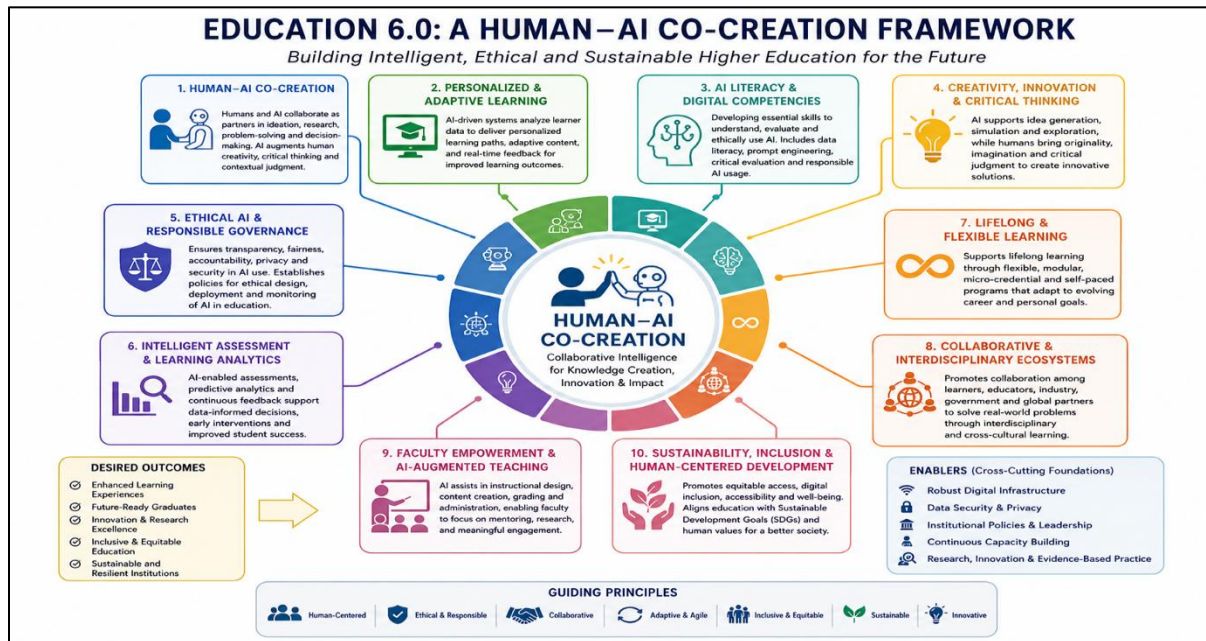
Based on the conceptual nature of this manuscript, the following research objectives are proposed:

1. To examine the evolution of higher education from traditional educational paradigms to Education 6.0 in the context of Artificial Intelligence integration.
2. To identify and synthesize the key components of Education 6.0 that contribute to intelligent, learner-centered, and human-centric higher education ecosystems.
3. To develop a comprehensive Human–AI Co-Creation Framework that explains collaborative interactions between educators, learners, and AI systems in higher education.
4. To explore the role of Human–AI collaboration in enhancing creativity, personalized learning, AI literacy, critical thinking, and lifelong learning within higher education institutions.
5. To propose strategic recommendations for policymakers, educational institutions, and educators for implementing Education 6.0 through ethical AI governance, institutional readiness, and sustainable Human–AI collaboration.

Study Framework

The proposed Education 6.0: A Human–AI Co-Creation Framework presents a comprehensive model for transforming higher education into an intelligent, ethical, and learner-centered ecosystem. At the core of the framework lies Human–AI Co-Creation, which represents the collaborative partnership between human intelligence and artificial intelligence in teaching, learning, research, and innovation. Unlike traditional educational models where technology functions merely as a support tool, Education 6.0 positions AI as an intelligent collaborator that complements human creativity, critical thinking, ethical reasoning, and emotional intelligence. This partnership enables educators and

students to jointly generate knowledge, solve complex problems, and create innovative solutions while maintaining human oversight and decision-making (Zhong & Zheng, 2023; Liu, 2025).



Source: Author's Work

Fig. 1. Education 6.0: A Human-AI Co-Creation Framework

Surrounding the central Human-AI collaboration are ten interrelated components that collectively define the Education 6.0 ecosystem. These include Human-AI Co-Creation, Personalized and Adaptive Learning, AI Literacy and Digital Competencies, Creativity and Critical Thinking, Ethical AI and Responsible Governance, Intelligent Assessment and Learning Analytics, Lifelong and Flexible Learning, Collaborative and Interdisciplinary Ecosystems, Faculty Empowerment through AI-Augmented Teaching, and Sustainability, Inclusion, and Human-Centered Development. Each component contributes to developing a future-ready higher education system that balances technological advancement with human values. AI-powered technologies personalize learning experiences, provide intelligent feedback, automate repetitive academic tasks, and generate learning resources, while educators continue to guide students through mentorship, ethical judgment, and experiential learning (Elkordy & McVey, 2025; Romero, 2025).

The framework also recognizes that successful implementation depends on several cross-cutting enablers, including robust digital infrastructure, secure data governance, institutional leadership, AI policies, continuous faculty development, and research-driven innovation. These enablers create the technological and organizational foundation necessary for universities to effectively integrate AI into academic processes while ensuring transparency, accountability, privacy protection, and equitable access to educational opportunities. Simultaneously, the framework is guided by key principles such as human-centeredness, ethical responsibility, collaboration, adaptability, inclusiveness, sustainability, and innovation, ensuring that AI enhances rather than replaces human capabilities (Torrissi-Steele, 2025; Framework of AI Literacy for Multi-role Capabilities in Future Education, 2024).

Ultimately, the interaction among these components produces several strategic outcomes, including enhanced learning experiences, future-ready graduates, stronger research and innovation capabilities, inclusive and equitable education, and resilient higher education institutions. By integrating advanced AI technologies with human intelligence, ethical governance, and collaborative learning practices, the proposed framework offers a holistic roadmap for universities seeking to transition from conventional digital education toward Education 6.0. It provides a conceptual foundation for policymakers, institutional leaders, educators, and researchers to design intelligent higher education systems that are innovative, sustainable, and capable of preparing learners for the rapidly evolving demands of the AI-driven knowledge economy (Moleka, 2023; Kumar et al., 2025).

Human-AI Co-Creation Framework in Education 6.0

The transition toward Education 6.0 has introduced a new paradigm in which artificial intelligence (AI) and human intelligence work collaboratively to enhance teaching, learning, creativity, and innovation. Unlike conventional educational models that primarily use AI for automation, the Human-AI Co-Creation Framework emphasizes a partnership where educators, learners, and AI systems jointly contribute to knowledge creation, problem-solving, and decision-making. This collaborative approach recognizes that AI possesses exceptional

computational capabilities, data-processing efficiency, and pattern-recognition skills, while humans contribute creativity, ethical reasoning, contextual understanding, emotional intelligence, and critical thinking. Together, these complementary strengths create an intelligent learning ecosystem capable of improving educational quality and preparing students for the challenges of the digital knowledge economy (Elkordy & McVey, 2025; Liu, 2025).

The SCALE Framework: A Progressive Model for Human–AI Collaboration

One of the most influential Human–AI co-creation models proposed for higher education is the SCALE Framework, developed by Elkordy and McVey (2025). The framework provides a structured pathway that guides educators and institutions through progressively deeper levels of AI integration. Rather than encouraging immediate dependence on AI technologies, the SCALE Framework promotes a gradual and iterative adoption process that enables faculty members to build confidence, develop AI literacy, and effectively integrate intelligent systems into teaching and learning practices.

The framework begins with the automation of routine tasks, where AI supports administrative activities such as grading, scheduling, content organization, attendance management, and document preparation. By automating repetitive processes, educators gain additional time to focus on meaningful teaching, mentoring, curriculum development, and student engagement. As educators become more comfortable with AI technologies, the framework progresses toward augmentation, where AI assists in generating teaching materials, designing assessments, providing personalized learning recommendations, and analyzing student performance through learning analytics.

The highest stage of the SCALE Framework emphasizes Human–AI collaboration, in which AI functions as an intellectual partner rather than a technological assistant. At this stage, educators and students jointly engage with AI to generate ideas, solve complex problems, conduct research, create innovative learning resources, and support collaborative knowledge construction. AI contributes computational intelligence and rapid information processing, while humans provide contextual interpretation, ethical judgment, creativity, and reflective thinking. This balanced collaboration enhances cognitive performance, promotes personalized learning experiences, and strengthens innovation across higher education institutions. The iterative nature of the SCALE Framework also encourages continuous experimentation, reflection, and improvement, ensuring that AI integration remains responsive to evolving educational needs (Elkordy & McVey, 2025).

Cognitive Rhythm Theory: Synchronizing Human and AI Intelligence

Another significant contribution to Human–AI co-creation is the Cognitive Rhythm Theory, which explains how effective collaboration depends upon the synchronization of human and artificial intelligence during learning and creative activities. According to this theory, successful Human–AI interaction is not determined solely by technological sophistication but by the extent to which both partners adapt to each other's cognitive processes, decision-making patterns, and learning behaviors ("The Cognitive Rhythm Theory – AI-Human Co-Creation Education and Beyond," 2025).

The theory introduces the concept of cognitive synchronization, where learners and AI systems continuously exchange information, respond to feedback, and adjust their actions based on evolving learning contexts. Instead of operating independently, AI and humans develop complementary working rhythms that improve communication, creativity, and collaborative problem-solving. When this synchronization is achieved, learners become more engaged, generate higher-quality ideas, and demonstrate improved critical thinking and innovation.

The Cognitive Rhythm Theory further emphasizes that learning is an iterative and dynamic process characterized by continuous cycles of interaction, reflection, adaptation, and refinement. AI analyzes learner behavior, provides intelligent recommendations, identifies knowledge gaps, and generates alternative solutions, while human learners evaluate these suggestions using contextual understanding, ethical reasoning, and disciplinary expertise. This reciprocal interaction strengthens cognitive performance by combining computational intelligence with uniquely human capabilities such as imagination, empathy, and reflective judgment.

Moreover, the theory suggests that future AI systems should be designed to recognize learners' cognitive states, learning preferences, emotional responses, and collaborative behaviors in real time. Such adaptive AI systems can dynamically modify instructional strategies, personalize learning experiences, and facilitate more meaningful educational interactions. Consequently, Cognitive Rhythm Theory provides a scientific foundation for designing intelligent educational environments that support collaborative intelligence rather than human dependence on AI.

Implications for Higher Education

Together, the SCALE Framework and Cognitive Rhythm Theory provide complementary perspectives on implementing Human–AI co-creation in higher education. While the SCALE Framework offers a practical roadmap for progressively integrating AI into educational practice, Cognitive Rhythm Theory explains the cognitive mechanisms that enable effective collaboration between humans and intelligent systems. Both frameworks emphasize that AI should augment rather than replace educators and learners, reinforcing the importance of human agency, ethical decision-making, and continuous learning.

The integration of these frameworks enables universities to establish intelligent learning ecosystems where AI supports personalized education, collaborative research, curriculum innovation, creative problem-solving, and evidence-based decision-making. Faculty members benefit from reduced administrative burdens and enhanced instructional capabilities, while students develop AI literacy, creativity, critical thinking, and lifelong learning competencies essential for the future workforce. Furthermore, these frameworks encourage institutions to invest in faculty development, digital infrastructure, ethical AI governance, and interdisciplinary collaboration to ensure sustainable implementation.

Enhancing Creativity and Learning in Education 6.0 through Human–AI Co-Creation

The emergence of Education 6.0 has transformed the traditional educational landscape by shifting from technology-assisted learning to Human–AI co-creation, where artificial intelligence serves as an intelligent collaborator rather than merely a technological tool. This transformation is reshaping how knowledge is created, shared, and applied in higher education. By integrating AI into teaching and learning processes, universities can promote creativity, innovation, personalized learning, and lifelong skill development while preserving the essential role of human intelligence, ethical reasoning, and emotional understanding. The concept emphasizes that AI should complement rather than replace educators and learners, enabling collaborative knowledge creation that prepares students for the demands of an AI-driven society (Zhong & Zheng, 2023; Zhong & Cochrane, 2024).

Heutagogy: Promoting Learner Autonomy and Human–AI Collaboration

A fundamental component of Education 6.0 is the application of Heutagogy, or self-determined learning, which places learners at the center of the educational process. Unlike traditional teacher-centered pedagogy, heutagogy encourages students to take ownership of their learning by defining objectives, selecting learning resources, and reflecting upon their progress. Within a Human–AI co-creation environment, AI functions as an adaptive learning partner that provides personalized recommendations, generates ideas, offers feedback, and supports problem-solving without diminishing learner autonomy.

According to Zhong and Cochrane (2024), the Heutagogy-based Human–AI Co-Creation (HACC) framework enables students to engage with AI as a collaborative partner rather than simply consuming AI-generated information. Learners actively evaluate, modify, and build upon AI outputs, thereby strengthening independent thinking and self-directed learning. This collaborative relationship encourages students to develop confidence in decision-making, become responsible users of AI technologies, and cultivate lifelong learning competencies. Rather than depending entirely on AI, students learn to critically assess AI-generated knowledge, identify limitations, and integrate human judgment into academic work. Consequently, heutagogy enhances learner agency while ensuring that AI remains a facilitator of educational growth rather than a substitute for human intelligence.

Human–AI Co-Creation and Creativity Enhancement

Creativity has become one of the most valuable competencies in the digital knowledge economy. Education 6.0 recognizes that creativity is most effectively developed when humans and AI collaborate to solve complex problems, generate innovative ideas, and explore multiple perspectives. AI-powered systems can rapidly analyze large datasets, generate alternative solutions, simulate real-world scenarios, and produce creative content, allowing students to devote greater attention to critical evaluation, originality, and innovation.

Research conducted by Zhong and Zheng (2023) demonstrates that Human–AI co-creation significantly enhances students' creativity by encouraging iterative collaboration throughout the learning process. Instead of replacing human imagination, AI expands creative possibilities by serving as a brainstorming partner capable of generating diverse ideas and alternative viewpoints. Students then apply their own experiences, contextual understanding, ethical reasoning, and disciplinary knowledge to refine and validate AI-generated outputs. This collaborative interaction improves creative confidence, problem-solving ability, and innovation while developing higher-order cognitive skills such as analysis, synthesis, and evaluation.

Furthermore, AI-assisted creativity extends beyond classroom learning into research, design thinking, entrepreneurship, software development, and interdisciplinary collaboration. Intelligent systems enable students to experiment with multiple design alternatives, visualize concepts, conduct simulations, and receive immediate feedback, thereby accelerating innovation while maintaining human originality and authorship. Education 6.0 therefore views AI not as a creator that replaces human intelligence but as a catalyst that stimulates deeper creative engagement and collaborative knowledge construction.

Personalized Learning and Adaptive Pedagogy

Another defining feature of Education 6.0 is its emphasis on personalized learning supported by AI-driven adaptive pedagogical systems. Traditional educational models often adopt standardized teaching methods that fail to accommodate diverse learning styles, abilities, and interests. AI-enabled educational technologies overcome these limitations by continuously analyzing learner behavior, academic performance, engagement patterns, and cognitive preferences to deliver customized learning experiences.

Adaptive learning platforms provide individualized instructional content, personalized assessments, intelligent tutoring, and real-time feedback that enable students to progress at their own pace. Such personalized educational experiences improve learning outcomes, increase student motivation, reduce learning gaps, and encourage continuous self-improvement. Simultaneously, educators receive valuable learning analytics that help identify struggling students, optimize instructional strategies, and make evidence-based pedagogical decisions. As a result, AI enhances educational effectiveness while allowing teachers to concentrate on mentoring, facilitating discussions, and nurturing students' intellectual and emotional development.

Ethical Considerations and Responsible Human Oversight

Despite its transformative potential, integrating AI into higher education raises significant ethical challenges that require careful attention. Education 6.0 emphasizes that AI should always operate under meaningful human oversight, ensuring that educational decisions remain transparent, fair, accountable, and aligned with human values. Overreliance on AI may lead to concerns regarding algorithmic bias, misinformation, academic dishonesty, data privacy, intellectual property, and diminished critical thinking if learners unquestioningly accept AI-generated content.

Maintaining an appropriate balance between AI autonomy and human control is therefore essential. Educators continue to play an indispensable role in interpreting AI recommendations, validating information, fostering ethical reasoning, and guiding students toward responsible AI use. Universities must establish comprehensive governance frameworks addressing data protection, academic integrity, explainability, accountability, and equitable access to AI technologies. In addition, students should receive AI literacy education that equips them to understand AI capabilities, recognize its limitations, critically evaluate outputs, and apply AI responsibly within academic and professional contexts.

By embedding ethical principles into curriculum design, institutional policies, and classroom practice, higher education institutions can maximize the benefits of AI while safeguarding human dignity, creativity, and educational integrity. Such responsible integration ensures that Human–AI co-creation remains a partnership grounded in trust, transparency, and shared accountability, ultimately supporting the broader vision of Education 6.0 as an intelligent, inclusive, and human-centered educational paradigm (Zhong & Cochrane, 2024; Zhong & Zheng, 2023).

Discussion

The proposed Education 6.0: A Human–AI Co-Creation Framework extends the current discourse on artificial intelligence in higher education by presenting a holistic conceptual model that integrates technological innovation with human-centered educational values. Unlike previous educational paradigms, which primarily emphasized digital transformation and technology adoption, Education 6.0 positions AI as a collaborative partner that complements rather than replaces human intelligence. This perspective reflects the growing recognition that future higher education should prioritize collaborative intelligence, where educators, learners, and AI systems jointly contribute to knowledge creation, innovation, and societal development.

The review of contemporary literature demonstrates that existing studies have largely examined isolated dimensions of AI integration, including personalized learning, AI literacy, generative AI, ethical governance, adaptive pedagogy, and intelligent assessment. However, few studies integrate these dimensions into a unified framework capable of guiding higher education institutions through the transition toward Education 6.0. The proposed framework addresses this gap by bringing together ten interconnected components that collectively define a future-ready educational ecosystem. These components emphasize that successful AI implementation depends not only on technological infrastructure but also on institutional culture, faculty competencies, ethical governance, interdisciplinary collaboration, and continuous innovation.

One of the most significant contributions of the framework is its emphasis on Human–AI co-creation as the central mechanism of educational transformation. Instead of viewing AI as an automated teaching system or information retrieval tool, the framework conceptualizes AI as an intelligent collaborator capable of supporting creativity, problem-solving, curriculum design, research, assessment, and decision-making. Human expertise remains indispensable because educators contribute ethical reasoning, contextual interpretation, empathy, and critical reflection, while AI enhances efficiency through data analytics, automation, and intelligent recommendations. This complementary relationship strengthens educational quality while preserving the human dimensions of teaching and learning.

The integration of the SCALE Framework further strengthens the proposed model by illustrating how institutions can progressively adopt AI through stages of automation, augmentation, and collaborative intelligence. This gradual approach recognizes that effective AI adoption requires continuous faculty development, institutional readiness, and iterative experimentation rather than immediate technological dependence. Similarly, the incorporation of Cognitive Rhythm Theory highlights that successful Human–AI collaboration depends upon cognitive synchronization between learners and intelligent systems. Such synchronization enables adaptive learning, personalized feedback, and creative engagement, thereby improving both cognitive performance and learning outcomes. Another important implication concerns

AI literacy. The framework suggests that AI literacy should become a core graduate competency alongside critical thinking, communication, creativity, and ethical reasoning. Future professionals will increasingly collaborate with intelligent systems across industries; therefore, higher education institutions must redesign curricula to include responsible AI usage, prompt engineering, algorithmic awareness, data ethics, and AI-assisted decision-making. Faculty members similarly require continuous professional development to effectively integrate AI into teaching while maintaining academic integrity and pedagogical quality. The framework also reinforces the importance of ethical AI governance. As universities increasingly adopt generative AI technologies, challenges relating to privacy, algorithmic bias, transparency, intellectual property, academic misconduct, and accountability become increasingly significant. Consequently, Education 6.0 requires robust institutional policies, ethical guidelines, and governance mechanisms that ensure AI serves educational objectives while protecting learner rights and promoting equitable access.

Overall, the proposed framework contributes both theoretically and practically. Theoretically, it synthesizes fragmented literature into a comprehensive conceptual model for Education 6.0. Practically, it provides policymakers, university leaders, and educators with a strategic roadmap for implementing AI-enabled higher education systems that are innovative, inclusive, ethical, and sustainable. As AI technologies continue to evolve, the framework offers a foundation for future empirical studies examining its applicability across diverse institutional and cultural contexts.

Conclusion

The emergence of Artificial Intelligence represents one of the most significant transformations in the history of higher education. While previous educational paradigms focused primarily on digitization, online learning, and technological enhancement, Education 6.0 introduces a fundamentally different perspective by emphasizing Human–AI co-creation as the cornerstone of future learning ecosystems. Rather than replacing educators or diminishing human intelligence, AI functions as a collaborative partner that enhances creativity, innovation, personalized learning, intelligent decision-making, and knowledge creation while preserving uniquely human qualities such as empathy, ethical reasoning, critical thinking, and contextual judgment.

This conceptual study proposed the Education 6.0: A Human–AI Co-Creation Framework, integrating recent developments in AI-enabled education into a unified model for higher education institutions. The framework identified ten interconnected components that collectively define Education 6.0, including Human–AI Co-Creation, Personalized Learning, AI Literacy, Creativity and Critical Thinking, Ethical AI Governance, Intelligent Assessment, Lifelong Learning, Collaborative Learning Ecosystems, Faculty Empowerment, and Sustainability. Together, these dimensions provide a comprehensive foundation for designing intelligent, learner-centered, and future-ready universities capable of responding to rapidly changing technological and societal demands.

The proposed framework further demonstrates that successful implementation of Education 6.0 depends upon more than technological infrastructure alone. Universities must simultaneously invest in institutional leadership, faculty development, AI literacy programs, ethical governance mechanisms, digital infrastructure, interdisciplinary collaboration, and continuous innovation. The integration of the SCALE Framework and Cognitive Rhythm Theory illustrates that Human–AI collaboration is both a technological and cognitive process requiring gradual institutional adoption, continuous learning, and meaningful human oversight. These complementary perspectives reinforce the importance of balancing computational intelligence with human creativity and ethical responsibility.

Another important contribution of this study is its emphasis on responsible AI adoption. Although AI offers significant opportunities for personalized education, intelligent assessment, research support, and administrative efficiency, it also introduces ethical challenges including algorithmic bias, misinformation, academic integrity, privacy protection, intellectual property, and digital inequality. Consequently, Education 6.0 advocates responsible AI governance that prioritizes transparency, accountability, inclusiveness, fairness, and human agency. Such governance ensures that technological innovation strengthens rather than undermines the core values of higher education.

From a practical perspective, the framework provides valuable guidance for university administrators, educators, curriculum designers, policymakers, and researchers seeking to integrate AI into institutional practices. It encourages redesigning curricula around AI literacy, interdisciplinary collaboration, creativity, lifelong learning, and ethical decision-making while empowering faculty members through continuous professional development and AI-supported pedagogical innovation. These strategies can enhance institutional resilience, graduate employability, research productivity, and educational quality within increasingly digital knowledge societies.

Despite its contributions, this study is conceptual in nature and therefore provides opportunities for future empirical validation. Subsequent research may operationalize the proposed framework by developing measurement scales, testing relationships among its components, examining institutional readiness for Education 6.0, and evaluating its effectiveness across different educational systems, disciplines, and cultural contexts. Comparative international studies may further explore variations in AI adoption and educational transformation.

Education 6.0 represents not merely another stage of technological evolution but a comprehensive reimagining of higher education built upon collaborative intelligence between humans and artificial intelligence. By integrating innovation with ethical responsibility,

personalized learning, sustainability, and human-centered values, the proposed Human–AI Co-Creation Framework offers a strategic roadmap for creating intelligent universities capable of preparing learners for the complex opportunities and challenges of the AI-driven future. It is anticipated that this framework will contribute meaningfully to both academic scholarship and institutional practice, supporting the development of resilient, inclusive, and sustainable higher education systems for the next generation.

References

1. Bennett, L. (2023). *Optimising the interface between artificial intelligence and human intelligence in higher education*. *International Journal of Transformative Learning in Education*. <https://doi.org/10.22161/ijtle.2.3.3>
2. Elkordy, A., & McVey, M. (2025). *Co-creating with AI*. In *Advances in Computational Intelligence and Robotics Book Series*. IGI Global. <https://doi.org/10.4018/979-8-3373-2397-8.ch005>
3. Hernández García, R. A., Galván Sarabia, A., Cortés Viveros, N., et al. (2025). *La transición de Educación 5.0 a Educación 6.0 en universidades: Paradigmas emergentes, IA generativa y responsabilidad social*. *Revista Horizonte Académico*. <https://doi.org/10.70208/3007.8245.v5.n3.213>
4. Kayyali, M. (2025). *AI in higher education*. <https://doi.org/10.4018/979-8-3373-2685-6.ch003>
5. Kumar, A. (2025). *Artificial intelligence in education: The changing perspectives*. *Journal of Global Values*. <https://doi.org/10.31995/jgv.2025.v16isi7.033>
6. Kumar, R., Singh, A., Thakur, A., et al. (2025). *Reimagining higher education through artificial intelligence: A conceptual framework*. *International Journal of Worldwide Studies*. <https://doi.org/10.71366/ijwos02120838955>
7. Liu, Z. (2025). *Human-AI co-creation: A framework for collaborative design in intelligent systems*. *arXiv*. <https://doi.org/10.48550/arXiv.2507.17774>
8. Liu, Z. (2025). *Human-AI co-creation: A framework for collaborative design in intelligent systems*. *AHFE International Conference Proceedings*. <https://doi.org/10.54941/ahfe1007036>
9. Mishra, R., & Varshney, D. (2024). *Comprehensive analysis of human and AI task allocation in the education sector: Defining futuristic roles and responsibilities*. Zenodo. <https://doi.org/10.5281/zenodo.14764239>
10. Mishra, R., & Varshney, D. (2025). *Comprehensive analysis of human and AI task allocation in the education sector: Defining futuristic roles and responsibilities*. Zenodo. <https://doi.org/10.5281/zenodo.14764238>
11. Moleka, P. B. (2023). *Dispelling the limitations of Education 5.0 and outlining the vision of Education 6.0* (Preprint). OSF Preprints. <https://doi.org/10.31219/osf.io/vrbhn>
12. Moleka, P. B. (2023). *Dispelling the limitations of Education 5.0 and outlining the vision of Education 6.0* (Preprint). Preprints. <https://doi.org/10.20944/preprints202307.1703.v1>
13. Moleka, P. B. (2023). *Exploring the role of artificial intelligence in Education 6.0: Enhancing personalized learning and adaptive pedagogy* (Preprint). Preprints. <https://doi.org/10.20944/preprints202309.0562.v1>
14. Ravarini, A., Canavesi, A., & Passerini, K. (2024). *From users to allies: Exploring educator and generative AI roles in shaping the future of higher education*. *International Conference on Higher Education Advances (HEAD)*. <https://doi.org/10.4995/head24.2024.17345>
15. Romero, M. (2025). *From passive learning to co-creativity: Six levels of AI-enhanced creative engagement in education* (Preprint). Preprints. <https://doi.org/10.20944/preprints202504.1154.v1>
16. Romero, M. (2025). *From consumption to co-creation: A systematic review of six levels of AI-enhanced creative engagement in education*. *Multimodal Technologies and Interaction*. <https://doi.org/10.3390/mti9100110>
17. Romero, M. (2025). *From consumption to co-creation: A systematic review of six levels of AI-enhanced creative engagement in education*. Zenodo. <https://doi.org/10.5281/zenodo.17405853>
18. Shi, J., & Xuwei, Z. (2023). *Integration of AI with higher education innovation: Reforming future educational directions*. *International Journal of Science and Research*. <https://doi.org/10.21275/SR231023183401>
19. Son, N. T., & Son, N. T. (2025). *Post-AI education: Redefining the human role in learning*. *EPRA International Journal of Environmental, Economics, Commerce and Educational Management*. <https://doi.org/10.36713/epra24279>
20. Torrisi-Steele, G. (2025). *AI in higher education*. In *Advances in Computational Intelligence and Robotics Book Series*. IGI Global. <https://doi.org/10.4018/979-8-3373-2397-8.ch007>
21. Wu, B., & He, Y. (2025). *A new realm of human-AI co-creative learning: AI-empowered science and innovation education*. <https://doi.org/10.13718/j.cnki.jsjy.2025.04.002>
22. Zhong, J., & Cochrane, T. (2024). *Heutagogy-based human-AI co-creation practice*. *ASCILITE Conference Proceedings*. <https://doi.org/10.14742/apubs.2024.1083>

23. Zhong, J., & Zheng, Y. (2023). *Identifying the impact of human-AI co-creation on students' creativity development: A conceptual framework*. In *Proceedings of the International Conference on Educational Technology*. IEEE. <https://doi.org/10.1109/ICET59358.2023.10424147>
24. Zargham, M. (2023). *A perspective on the future of higher education*. In *Proceedings of the IEEE Canadian Conference on Software and Computer Engineering*. IEEE. <https://doi.org/10.1109/CSCE60160.2023.00184>
25. Chávez, S. F. B., Chávez, C. R. B., Pambabay Sangacha, L. V., et al. (2025). *La educación superior del futuro: Cómo la virtualidad y la IA están reestructurando los aprendizajes*. *Ciencia Latina Revista Científica Multidisciplinar*. https://doi.org/10.37811/cl_rcm.v9i4.18813
26. *The cognitive rhythm theory: AI-human co-creation education and beyond*. (2025). Zenodo. <https://doi.org/10.5281/zenodo.15480362>
27. *Curiosity engineer: A practical methodology for human-AI co-creation in education & innovation*. (2025). Zenodo. <https://doi.org/10.5281/zenodo.17107590>
28. *Curiosity engineer: A practical methodology for human-AI co-creation in education & innovation*. (2025). Zenodo. <https://doi.org/10.5281/zenodo.17107591>
29. *Framework of AI literacy for multi-role capabilities in future education: Based on typical cases of "AI + higher education" application scenarios*. (2024). <https://doi.org/10.13998/j.cnki.issn1002-1248.24-0472>