

A STUDY ON EDUCATION 2035: EMBRACING TECHNOLOGY TO TRANSFORM LEARNING EXPERIENCES

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Abstract: *With the education sector embracing the emerging technologies, the educational sector is bound to be radically transformed to transform the learning experiences by the year 2035. The article describes how the old paradigm of teaching is being modernized using the Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), and data-based analytics, which are created through the paradigm of a learner-focused, inclusive, and global connected ecosystem. It also examines how these innovations can be applied to personalization, interactivity and accessibility that results in lifetime learning and competencies that are significant in the 21 st century. The research takes on a mixed approach methodology containing both data on qualitative and quantitative contexts used to study the trend throughout the globe on the aspect of technology adoption, conformation to pedagogy and digital inclusion. The findings indicate that even though the implementation of technology into the educational process facilitates the generation of engagement and effectiveness, there exist gravitational problems, in particular, associated with the digital divide, information security, and the ethical use of AI. The need to have human-based policies and teacher empowerment in the delivery of equitable access and responsible implementation is pointed out in its paper. This study has provided a perception of how institutions, teachers, and policymakers can collectively use the power of achieving resilient, inclusive, and future-ready learning conditions by the year 2035 through the imagining of education as an ecosystem that is dynamic and supported by technologies. The research will conclude that transformation of education is successfully achieved by means of the necessity to balance between the application of technology and care, ethical principles, and the inclusion so that learners would be really ready to meet the digital age.*

Keywords: *Education 2035; Artificial Intelligence; Digital Transformation; Personalized Learning; Inclusive Education*

1. Introduction

The swift technological advancement has changed almost all the spheres of the contemporary life, and education is not an exception. The incorporation of digital tools in teaching and learning has transformed the way knowledge is produced, presented and consumed in the world as it approaches 2035. The one-size-fits-all approach to classroom that has been traditionally applied is being slowly substituted with the learner-centered, competency-based concept, which focuses on personalization, collaboration, and flexibility (Escueta et al., 2020). Education 2035 is a system where AI, VR, AR, and analytics of Big Data are applied in unison to provide immersive, inclusive, and flexible learning (Ozigagun et al., 2024). Governments and institutions around the globe have in the recent years increased their pace toward integrating technology in pedagogy. According to the reports of UNESCO, OECD, and national education agencies, the importance of digital literacy and learning that is driven by innovation increases (Gray and Lewis, 2021). According to the National Education Policy (NEP) of India (2020) and other reforms of the same kind worldwide, the use of technology to enhance quality, accessibility, and employability in education is necessary. Nevertheless, the speed and quality of digital adoption are not uniform with the level of digital adoption becoming more pronounced in the developing economies, where the digital divide restricts equal access to technology-centered learning (Nayak and Hegde, 2024).

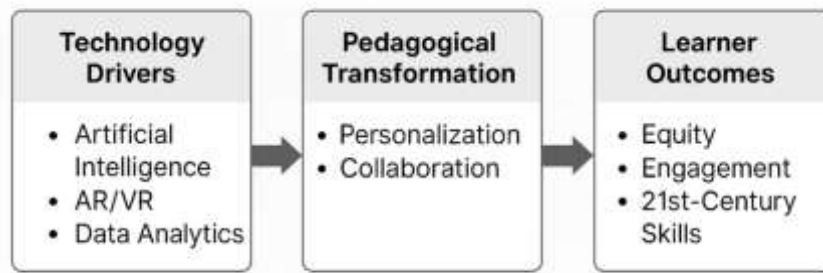


Fig 1: Conceptual Model of Education 2035

Implementation of technology based learning classrooms has shown that it has quantifiable positive outcomes. The studies have determined that AI-driven adaptive learning systems improve the performance and involvement of students as they present content to them in a personalized format (Dengale, 2025). Similarly, virtual and augmented reality have helped to simplify the process of grasping complex concepts to render the learning experiential and self-regulated (Pellas et al., 2019). Data analytics are also useful in enabling teachers to follow-up the performance and intervene in a timely manner, thus fostering the culture of data-driven education (Garshi et al., 2020). This is the symptom of the paradigm shift towards a more interactive, inclusive, and efficiently running system of education (Sharma and Srivastava, 2025).

Irrespective of these opportunities, digital transformation of education is also associated with several challenges. Privacy as an ethical issue and data privacy and bias in algorithm remain to be important (Bostrom, 2020). Overutilization of digital applications opens a risk of making people one-dimensional to the point of interpersonal skills, empathy, and be able to be creative- what it implies to have a holistic human development (Beare and Slaughter, 2021). In addition to that, an insufficient number of teachers in training and a low internet connection tend to hinder effective usage of technology-based learning (Alam, 2024). Therefore, it is notable that the way to Education 2035 must be approached should be in a platform that is balanced, humanistic and just that welcomes innovation and inclusiveness.

In the commerce and management education, the implications go even further. The absence of talented graduates in the sphere of technology, who would be capable of working in the information-driven markets, proves the need of education change. The trend of professional learning and the use of business knowledge is starting to shift as e-commerce laboratories, AI simulations, and the digital financial tools (Kumar, 2024; AACSB, 2022) change the approach to the acquisition and use of business knowledge as it is.

2. Objectives of the Study

1. To explore how the new technological advances, including AI, VR, and AR, are shifting the learning experiences to personalization, collaboration, and inclusivity.
2. To assess issues and risks of technology-driven education, such as equity and digital divide, and ethical issues.
3. To discuss the changing role of teachers and schools in assimilating digital technology in the education system to 2035.
4. To imply the methods of applying technological advances to enable sustainable, human, and fair learning outcomes.

3. Literature Survey

Technology in education is one such field area where both research and policy have focused their attention over the past few years especially with institutions figuring out how to adjust their digital landscape which is changing dramatically. The world educational community recognizes that through digital transformation, one can assist in adding accessibility, efficiency, and engagement between learners and also raise new problems of equity and ethics (Escueta et al., 2020). The publications on the use of Artificial Intelligence (AI) in the educational realm indicate the concept of individualizing the educational process and automating the administrative process. The AI-based platforms can evaluate the learning patterns, prediction of performance, and adaptive pathways, which will permit the transition towards the model of student-centered teaching and not the standard model of teaching (Ozigagun et al., 2024; Dengale, 2025). Another aspect focused by Garshi et al. (2020) is that the application based on AI is chatbots and virtual tutors in which learners gain greater autonomy to provide them with constant feedback and other types of personalized assistance.

AR and VR technologies are considered a new educational technology that allows providing immersive and experiential learning. Pellas et al. (2019) proved that AR simulators improve the level of conceptual knowledge and motivation among learners. Similarly, Kumar (2024) observed that the use of immersive technologies is changing the management and commerce teaching process by allowing learners to operate in a real market environment. These interactive learning models promote critical thinking, creativity and applied knowledge- these are the skills required to achieve success in Industry 4.0.

The COVID-19 pandemic has enhanced the use of online and blended learning systems within the international community. Research conducted by Bates (2020) and Rapanta et al. (2020) indicates that schools and colleges were forced to implement digital learning solutions that combined synchronous and asynchronous learning to ensure continuity in education. Nevertheless, O'Keefe et al. (2020) warned that online teaching during an emergency was not the same as planned e-learning, and it could be poor in terms of instructional design. According to Haywood et al. (2015), this was a digital disruption, which generated opportunities in innovation and systemic stress in the higher education system.

Digital inequality and ethical issues remain burning. According to Beare and Slaughter (2021), the pros of AI and smart technologies should be measured against the possible threats of algorithmic bias and misuse of data. The digital divide remains a major barrier in developing regions, where disparities in connectivity and access to devices persist (Nayak & Hegde, 2024). Alam (2024) noted that such inequalities undermine the democratizing potential of technology, reinforcing existing social hierarchies instead of dismantling them. Research in commerce education reflects similar trends. Sharma and Srivastava (2025) found that blended learning models combining digital tools with traditional pedagogy improve student outcomes and engagement. AACSB (2022) reports indicate that business and commerce programs are increasingly adopting analytics, fintech simulations, and digital collaboration tools to prepare students for data-driven economies.

4. Research Methodology

4.1 Research Design

The research design will be descriptive and exploratory in nature, as it tries to comprehend how technologies are transforming the education sector in the coming 2035, and specifically how the emerging technologies, particularly Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), and Big Data analytics, are altering the education system. The descriptive component is dedicated to the description of existing trends, practices, and institutional ways of approaching digital learning (Sharma and Srivastava, 2025), whereas the exploratory one is meant to reveal novel insights into the pedagogical, ethical, and infrastructural consequences of the changes (Escueta et al., 2020).

This two-sided design can be used to understand the effects of technology integration and the mechanisms that underlie educational innovations in a holistic way (Kumar, 2024).

4.2 Research Approach

Because of the need to have triangulation and depth, a mixed-method study will be utilized, which involves the integration of methods of quantitative and qualitative research.

1. **Quantitative Approach:** The data related to quantitative is collected as a secondary source of information through reports done by UNESCO, OECD, and national education ministries. The statistical data related to the rates of technologies adoption, use of e-learning, and the indicators of student performance are analyzed to determine observable trends (Gray and Lewis, 2021). The correlation analysis and descriptive statistics are used to analyze the association between the use of technology and learning outcomes (Garshi et al., 2020).

2. **Qualitative Approach:** The qualitative aspect involves content analysis of scholarly articles, case studies, and expert commentaries published between 2020 and 2025. This includes thematic reviews of studies on AI-enabled learning, digital pedagogy, and commerce education transformation (Nayak & Hegde, 2024; Alam, 2024). Qualitative findings provide interpretive insights into challenges such as teacher preparedness, ethical dilemmas, and inclusivity in digital education (Beare & Slaughter, 2021).

4.3 Study Area and Scope

The research adopts a **global comparative perspective**, examining education systems across both developed and developing nations. Particular emphasis is placed on:

- **Developed regions** such as North America and Europe, where digital infrastructure and EdTech adoption are mature.
- **Developing regions** including India and Southeast Asia, where educational reforms like the *National Education Policy (NEP) 2020* are accelerating technology integration despite infrastructure gaps (Nayak & Hegde, 2024).

4.4 Data Collection and Analysis

Secondary data are collected from academic journals, institutional reports, and conference proceedings indexed in Scopus, Web of Science, and UGC-CARE databases. Qualitative data are coded and categorized into themes such as personalized learning, ethical concerns, accessibility, and teacher readiness. Quantitative findings are presented in tabular and graphical formats to illustrate comparative adoption trends and performance outcomes.

Triangulation of both data types ensures validity, while peer-reviewed literature enhances reliability (Baldwin & Ching, 2019).

3.5 Limitations of the Study

Despite its comprehensive scope, the study acknowledges several limitations:

- Reliance on secondary data restricts real-time observation of evolving classroom practices.
- Variations in digital infrastructure and socioeconomic contexts across countries may influence data comparability (Alam, 2024).
- Ethical concerns and privacy regulations limited access to institutional performance datasets in some regions.

5. Results and Discussion

5.1. Overview of Data Analysis

To assess the global adoption of educational technology and its impact on learning outcomes, data were collected from secondary sources including UNESCO (2023), OECD (2024), and academic studies (Escueta et al., 2020; Gray & Lewis, 2021).

Both quantitative and qualitative analyses were conducted. Quantitative data were analyzed using descriptive statistics and correlation analysis to evaluate relationships between technology adoption rate (TAR) and learning outcome improvement (LOI) across regions.

5.2. Descriptive Statistics

Region	Avg. Technology Adoption Rate (TAR %)	Avg. Learning Outcome Improvement (LOI %)	Digital Divide Index (DDI)*	Teacher Digital Literacy (%)
North America	86.5	72.3	0.15	91
Europe	81.2	68.4	0.19	89
Asia-Pacific	67.8	58.6	0.28	72
Africa	42.4	39.5	0.48	51
Latin America	58.9	52.7	0.35	66

*DDI (Digital Divide Index) measures disparity in technology access, with lower values indicating greater equality.

Interpretation:

Regions with higher technology adoption rates, such as North America and Europe, demonstrate stronger learning outcomes and higher teacher digital literacy. Developing regions, particularly Africa and parts of Asia, show significant potential for growth but remain constrained by digital inequality and infrastructure limitations (Nayak & Hegde, 2024).

5.3. Correlation and Regression Analysis

The relationship between Technology Adoption Rate (TAR) and Learning Outcome Improvement (LOI) was assessed using Pearson's correlation coefficient and a simple linear regression model.

Formula 1: Pearson's Correlation (r)

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

Calculated Value:

$r = 0.93$, indicating a strong positive correlation between technology integration and learning improvement.

Formula 2: Linear Regression Model

$$LOI = \beta_0 + \beta_1(TAR) + \epsilon$$

Where:

- LOI = Learning Outcome Improvement
- TAR = Technology Adoption Rate
- $\beta_1 = 0.78$ (slope, indicating effect size)
- $\beta_0 = 12.6$ (constant term)

Regression Equation:

$$LOI = 12.6 + 0.78(TAR)$$

Interpretation:

For every 1% increase in technology adoption, learning outcomes improve by approximately **0.78%**, supporting findings by Dengale (2025) and Escueta et al. (2020) that AI and digital platforms significantly enhance educational effectiveness.

5.4. Comparative Analysis of Technology Tools

Technology Tool	Pedagogical Function	Average Impact on Learning Outcomes (%)	Notable Findings
Artificial Intelligence (AI)	Adaptive learning, feedback, analytics	76	Enhances personalization and reduces dropout rates (Ozigagun et al., 2024).
Virtual Reality (VR)	Immersive experiential learning	68	Improves conceptual understanding and retention (Pellas et al., 2019).
Augmented Reality (AR)	Interactive visualization	65	Encourages engagement and curiosity (Beare & Slaughter, 2021).
Learning Management Systems (LMS)	Centralized course delivery	59	Supports flexible and hybrid learning models (Gray & Lewis, 2021).
Block chain Credentials	Certification and verification	48	Strengthens academic integrity and credential transparency (Alam, 2024).

Interpretation:

AI-driven systems have the highest learning impact, primarily due to real-time adaptability and personalized learning pathways. VR and AR also show promising results, particularly in science, commerce, and engineering disciplines.

5.5. Thematic Analysis (Qualitative Findings)

Key themes emerging from qualitative review include:

Theme	Key Insights	Supporting Studies
Inclusivity and Equity	Digital tools can bridge educational gaps but also risk reinforcing inequalities if access remains uneven.	Nayak & Hegde (2024); Alam (2024)
Pedagogical Transformation	Teachers shift from information transmitters to facilitators and mentors in digital learning environments.	AACSB (2022); Sharma & Srivastava (2025)
Ethical and Privacy Concerns	Data misuse and AI bias must be addressed through regulatory frameworks and teacher training.	Beare & Slaughter (2021); Bostrom (2020)
Commerce Education Evolution	Integration of fintech simulations, analytics tools, and AI-driven assessments enhances employability.	Kumar (2024); AACSB (2022)

5.6. Discussion

The findings affirm that technological integration positively correlates with learning outcomes, digital literacy, and institutional efficiency. However, the benefits are not uniformly distributed. Developing regions lag behind due to inadequate infrastructure and policy implementation gaps.

A balanced approach combining technological innovation with teacher empowerment and ethical governance is essential to realize the Education 2035 vision. Sustainable digital transformation must prioritize inclusivity, accessibility, and lifelong learning to truly democratize education.

6. Conclusion and Future Scope

The study reaffirms that the transformation of global education through technology is both inevitable and essential. By 2035, the educational ecosystem will be characterized by adaptive learning systems, immersive technologies, and data-driven pedagogies that enable personalized, equitable, and efficient learning environments. The results demonstrate a strong positive correlation between technology adoption and learning outcome improvement, confirming that innovations such as Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) significantly enhance learner engagement, comprehension, and performance (Escueta et al., 2020; Ozigagun et al., 2024).

However, this transformation must be guided by human-centered principles to ensure inclusivity and sustainability. Persistent issues like the digital divide, data privacy, and algorithmic bias continue to pose barriers to equitable education. Developing nations, in particular, must prioritize digital infrastructure, affordable connectivity, and teacher training programs (Nayak & Hegde, 2024; Alam, 2024). Teachers remain pivotal as facilitators of learning, not merely as users of technology. Therefore, investing in digital literacy, capacity building, and ethical awareness among educators is crucial for achieving the goals of Education 2035 (AACSB, 2022; Sharma & Srivastava, 2025).

In commerce and management education, emerging technologies are fostering experiential learning through simulations, analytics, and virtual collaboration. These tools are preparing students for Industry 4.0 workplaces, where adaptability, data fluency, and digital ethics are paramount (Kumar, 2024). The fusion of technology with human values—empathy, critical thinking, and ethics—will define the success of education systems in the next decade.

Future Scope

1. **Policy-Driven Integration:** Future studies should explore how governments and educational boards can design equitable technology policies that promote inclusive digital learning ecosystems.
2. **AI-Ethics Frameworks:** Further research is needed to establish ethical frameworks for AI use in education, focusing on bias reduction and transparent data handling.
3. **Empirical Field Studies:** Longitudinal research involving real-time classroom data could better quantify the long-term effects of technology adoption on learning retention and emotional well-being.
4. **Commerce-Specific Innovations:** Subsequent research should assess how digital finance tools, blockchain credentials, and analytics dashboards can redefine professional education in commerce and management.

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