



Common Usage of Modern Technologies in Education System

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Abstract

The traditional Gurukul system, where students lived and learned at the teacher's residence, was prominent before the advent of formalized education during the British colonial period.

The new structure of edification system poses a. pre primary education, b. primary education, c. secondary education, d. higher secondary education and e. higher education. The advent of new technology in the education system marks a transformative era that redefines traditional teaching and learning methods. From the integration of artificial intelligence and machine learning to the widespread use of digital platforms and interactive tools, technology is reshaping the educational landscape. This evolution is not only enhancing the accessibility and quality of education but also personalizing learning experiences to meet the diverse needs of students.

One of the most significant changes brought about by new technology is the shift towards more interactive and engaging learning environments. Tools such as virtual reality (VR) and augmented reality (AR) are providing immersive educational experiences that go beyond the limitations of traditional classrooms. These technologies enable students to explore historical sites, conduct complex scientific experiments, and interact with three-dimensional models, thereby deepening their understanding and retention of knowledge.

Introduction

The historical origins of the Indian education system can be seen in establishments of the educational institutions such as the Takshashila and Nalanda universities, which were highly esteemed as centers of learning. Before to the establishment of official education system during the British colonial era, pupils lived and learned in the teacher's home under the well-known Gurukul system.

a. Structure of the Education System

a. Pre-primary Education

Anganwadi and Nursery Schools: Cater to children aged 3-6 years, focusing on foundational skills and early childhood development.

b. Primary Education

Classes I to V: Covers children aged 6-11 years. The curriculum includes basic literacy, numeracy, and introduction to subjects like science, social studies, and languages.

c. Secondary Education

Upper Primary (Classes VI to VIII): For children aged 11-14 years, introducing more complex concepts and subjects.

Secondary (Classes IX and X): Covers ages 14-16. Students typically prepare for the Class X board exams, which are crucial for determining their future academic paths.

d. Higher Secondary Education

Classes XI and XII: For students aged 16-18. These two years are focused on specialized streams such as Science, Commerce, and Arts/Humanities, culminating in the Class XII board exams.

e. Higher Education

Undergraduate Programs: Typically last three to four years, depending on the course.

Postgraduate Programs: Include Master's degrees, which usually take two years.

Doctoral Programs: Focused on research and can take several years to complete.

b. Governing Bodies and Policies

Ministry of Education: The central body responsible for formulating and implementing national policies.

State Education Departments: Each state has its own department to manage education within its jurisdiction.

National Education Policy (NEP) 2020: The most recent policy intends to change the educational environment in India by making it more diverse, flexible, comprehensive, and in line with 21st-century demands while also highlighting each student's individual talents.

New Technologies in Teaching

The education system is continually evolving with new technologies that enhance teaching and learning experiences. Here are some of the key emerging technologies transforming education in 2024:

1. Artificial Intelligence (AI)

AI is transforming education by automating administrative duties and providing individualized learning experiences. Teachers can concentrate on more engaging and individualized training by using AI-powered technologies that can automate grading, adjust lessons to each student's needs, and provide immediate feedback.

2. Augmented Reality (AR) and Virtual Reality (VR)

AR and VR are creating immersive learning environments, allowing students to experience historical events, scientific phenomena, and more in a virtual setting. These technologies make abstract concepts more tangible and can enhance engagement and retention.

3. Gamification

Incorporating game design elements into educational content makes learning more engaging and enjoyable. Gamification techniques, such as earning points or badges for completing tasks, can motivate students and improve learning outcomes.

4. Mobile Learning and Digital Content Platforms

The rise of mobile learning platforms provides students with access to high-quality educational content anytime, anywhere. These platforms support diverse learning styles and make education more accessible.

5. Wearable Technology

Wearable devices like smart watches and VR headsets are being used to track students' progress, provide performance feedback, and deliver real-time personalized guidance. These tools can enhance the learning experience by offering new ways to interact with educational content.

6. Automated Assessments

Automation in assessments helps in efficiently evaluating student performance and identifying areas for improvement. Automated grading tools reduce the administrative burden on teachers and provide timely feedback to students.

7. Hybrid and Blended Learning

Hybrid learning combines online and in-person education, offering flexibility and enabling students to engage in real-time discussions and access recorded lectures. This approach supports diverse learning needs and allows for more dynamic and interactive learning environments.

8. Data Analytics

The use of data analytics in education helps track student performance, identify learning patterns, and tailor educational content to meet students' needs. This data-driven approach supports personalized learning and helps educators make informed decisions.

These technologies not only enhance the learning experience but also prepare students for a technologically advanced world. As educational institutions continue to adopt and integrate these innovations, the future of education looks increasingly dynamic and student-centered.

Integration of Artificial Intelligence in Education System

Artificial Intelligence (AI) is increasingly being integrated into education systems worldwide, transforming how pupils study and how educators teach. Here are some of the key ways AI is impacting education:

AI makes individualized learning experiences possible by customizing course materials to each student's unique requirements. In order to offer students with the appropriate challenge and assistance, adaptive learning platforms and intelligent tutoring systems use artificial intelligence (AI) to analyze individuals' learning habits and deliver individualized resources and feedback. AI-powered solutions can grade essays, multiple-choice exams, and even complicated tasks automatically. With the aid of these technologies, which offer instant feedback, students can comprehend their errors and accelerate their learning. Teachers can concentrate more on teaching activities because of this automation, which also lessens their administrative workload.

AI-powered virtual assistants and chatbots can support students by answering their questions, providing reminders about assignments, and assisting with administrative tasks. These tools are available 24/7, offering continuous support and helping students stay organized and engaged with their studies. While AI offers many benefits, it also raises ethical concerns, such as data privacy, algorithmic bias, and the digital divide. Ensuring that AI is used responsibly and equitably in education is crucial to maximizing its positive impact while mitigating potential risks.

AI can improve gamification in the classroom by developing adaptive learning games that changes difficulty according to how well students do. As a result, learning is more successful and pleasurable and students remain motivated and engaged. Artificial intelligence (AI) technologies that serve students with impairments and enable real-time language translation include speech recognition and natural language processing. Students with hearing or vision impairments as well as non-native speakers can access educational content more easily thanks to these solutions. AI recognizes pupils who run the danger of falling behind or quitting school using predictive analytics. Artificial Intelligence (AI) has the potential to assist educators in early intervention and provision of critical support to at-risk pupils by assessing data on attendance, performance, and engagement. AI helps with research in education by sifting through big information to find patterns, trends, and insights. This supports educators and decision-makers.

Mobile Learning and Digital Content Platforms

Mobile learning and digital content platforms are transforming education by making high-quality resources more accessible and customizable for students and educators. Here's an overview of their impact:

a. Accessibility and Flexibility

Mobile learning enables students to access educational content anytime and anywhere using smartphones, tablets, and other mobile devices. This flexibility supports diverse learning styles and schedules, particularly beneficial for students in remote areas or those balancing education with other responsibilities.

b. Engagement and Interactivity

Digital content platforms often incorporate multimedia elements such as videos, animations, interactive quizzes, and gamified lessons. These features enhance student engagement and make learning more interactive and enjoyable. Platforms like Khan Academy, Coursera, and edX offer courses with such interactive elements that cater to various learning preferences.

c. Personalized Learning Paths

Mobile learning apps and digital platforms use algorithms to personalize the learning experience based on the user's progress, strengths, and weaknesses. They can recommend specific resources, adjust difficulty levels, and provide targeted feedback, ensuring that each student receives a tailored educational experience.

d. Collaboration and Communication

These platforms often include features that facilitate collaboration and communication among students and teachers. Tools like discussion forums, chat functions, and group projects allow for real-time interaction and collaborative learning, which can enhance understanding and retention of material.

e. Resource Richness

Digital content platforms provide access to a vast array of resources, including e-books, scholarly articles, videos, and interactive modules. This richness of content helps students and educators find the materials that best suit their needs and stay updated with the latest knowledge and developments in various fields.

f. Cost-Effectiveness

Many digital platforms offer free or affordable access to high-quality educational content, which can reduce the financial burden on students and educational institutions. Platforms like Coursera and edX provide free access to course materials, with optional paid certifications.

g. Analytics and Feedback

Mobile learning and digital content platforms often include analytics tools that track student performance and progress. Teachers can utilize this information to pinpoint the areas in which their pupils are most struggling and modify their lesson plans accordingly. Instant feedback on tests is beneficial to students as well, since it enables them to recognize their errors and make improvements.

h. Integration with Traditional Education

These technologies complement traditional classroom settings by providing additional resources and learning opportunities. Blended learning models, which combine in-person and online instruction, are becoming increasingly popular, offering a more comprehensive and flexible educational experience.

Examples of Platforms

Khan Academy: Khan Academy Offers online courses for free, lessons, and practice exercises for several subjects, emphasizing interactive content and personalized learning.

Coursera: Provides courses, specializations, and degrees from universities and companies worldwide, often including interactive elements and peer-reviewed assignments.

edX: A platform for online courses and programs from top institutions, offering free access to course materials and optional paid certifications.

Duolingo: A mobile app focused on language learning, using gamification and personalized learning paths to enhance engagement and retention.

Automated Assessment In Modern Education

Automated assessments are becoming an integral part of modern education, leveraging technology to evaluate student performance efficiently and effectively. Here's an overview of their features, benefits, and challenges:

Features of Automated Assessments

- 1. Multiple Formats:** Automated assessments can handle various question formats, including a.true/false, b.multiple-choice, c.fill-in-the-blank, and d.short answer questions.
- 2. Instant Feedback:** By the feedback system, students will get immediate feedback which will help them understanding their own mistakes and to learn more efficiently.
- 3. Scalability:** Automated assessments can evaluate large numbers of students simultaneously, making them suitable for institutions with significant enrollments.

Benefits of Automated Assessments

- 1. Efficiency:** Automated grading significantly reduces the time and effort required from educators, allowing them to focus more on teaching and interacting with students.

- 2. Consistency and Objectivity:** These systems ensure consistent grading free from human bias, providing fair assessments for all students.
- 3. Detailed Analytics:** Automated systems collect data on student performance, offering detailed insights into areas of strength and weakness. This data can help educators tailor instruction to better meet students' needs.
- 4. Personalized Learning:** By analyzing performance data, automated systems can adapt future assessments to the student's level, providing a more personalized learning experience.

Challenges of Automated Assessments

- 1. Complexity of Questions:** While automated systems excel at grading objective questions, assessing subjective or complex responses like essays and creative works remains challenging. Advances in AI and natural language processing are gradually addressing this, but limitations still exist.
- 2. Technological Dependence:** Reliance on technology can be a drawback in regions with limited access to digital resources or reliable internet connections.
- 3. Data Privacy and Security:** Ensuring that these systems comply with data protection regulations is crucial.
- 4. Potential for Cheating:** Automated assessments can be vulnerable to cheating if not properly monitored. Combining them with proctoring solutions can help mitigate this risk.

Examples of Automated Assessment Tools

- 1. Grammarly:** Primarily known for grammar checking, Grammarly also provides writing feedback that helps students improve their writing skills by highlighting errors and suggesting improvements.
- 2. EdX and Coursera:** These platforms offer automated assessments for their online courses, providing instant feedback and enabling large-scale student evaluation.
- 3. Turnitin:** While primarily a plagiarism detection tool, Turnitin also includes features for automated grading and feedback on written assignments.

Conclusion

Automated assessments represent an important development in educational technology, offering numerous benefits in terms of efficiency, consistency, and data-driven insights. However, their effective implementation requires addressing challenges related to question complexity, technological dependence, data privacy, and academic integrity. As technology continues to evolve, automated assessments are likely to become even more sophisticated, further enhancing their utility in education. Mobile learning and digital content platforms are reshaping education by making it more accessible, interactive, and personalized. They offer significant benefits in terms of flexibility, engagement, and cost-effectiveness, helping to bridge educational gaps and support lifelong learning. Day by day, the evolution of technologies achieve enormous heights, we shall expect great transformation in educational practices and outcomes internationally.

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