

DIGITAL TRANSFORMATION IN HIGHER EDUCATION (HE) IS THE STRATEGIC, COMPREHENSIVE INTEGRATION OF DIGITAL TECHNOLOGIES

Dhulla Srisailam

Research Scholar, BEST INNOVATION University, Asst.Professor, Department of Management, Teegala Krishna Reddy Engineering College, Hyderabad

Dr. G.Venkata Reddy

Asst.Professor, Sreenidhi Institute of Science and Technology, Hyderabad.

Abstract:

Digital transformation in higher education (HE) is the strategic, comprehensive integration of digital technologies—such as AI, cloud computing, and advanced analytics—to revolutionize pedagogy, research, and institutional operations. It enhances student engagement, improves accessibility, and drives efficiency, moving beyond just digitizing existing processes to fostering new, flexible learning models, including hybrid and virtual experiences. In this technology-driven world, digital transformation of higher education institutions (HEIs) is essential. This research paper tried to study the importance of digital transformation in higher education, it's elements and key stages in achieving digital transformation. It also overviewed objectives, examples of digital technologies bringing digital transformation and challenges faced.

Keywords: Digital Transformation, Higher Education, Virtual Learning, VR

Introduction:

21st century is the age of technology. Higher education institutions are turning towards technology to improve their teaching, learning, faculty performance and student management. Digital technologies help students to accelerate their learning, to understand difficult concepts, to appear for online exams and to find jobs. Digital transformation was essential during COVID situation to enable students' study from their home. Cutting-edge technologies help institutions to attract and retain students and quality staff, to get funding, to innovate and also helps in marketing. Thus, higher education institutions are beginning to embark on a digital transformation journey to bring their systems and technology in line with student expectations and to enhance their experience.

This paper reflects on current practices and directions for digital transformation through a framework that supports the strategic responses and structural changes that higher education institutions could implement to enhance digital teaching and learning

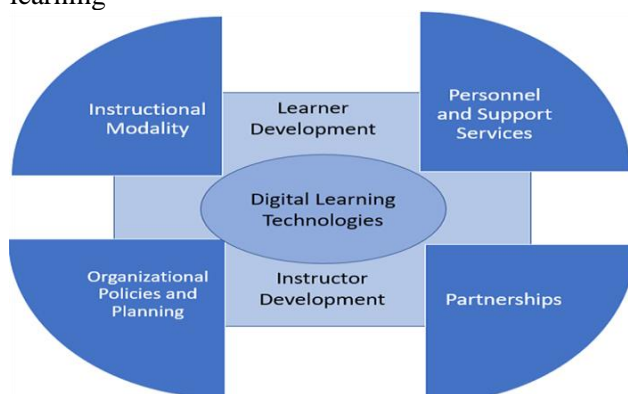


Figure 1. Digital Transformation for Digital Learning in Higher Education

Digital Learning Technologies. Digital technologies, which play a crucial role in digital teaching and learning. Digital technologies can be used in various instructional modalities to engage learners. Instructors can use these technologies to build engaging digital teaching and learning solutions. However, effective digital teaching and learning in higher education settings require significant increases in infrastructure to support these technologies. Some commonly used digital teaching and learning technologies are described below.

Learning management systems (LMS). An LMS is used to house all course materials, modules, and activities. The instructor can send announcements, engage in discussions, develop and grade assignments, and maintain an online grade book in the LMS.

Synchronous technologies. Synchronous technologies are used to conduct real-time online meetings. Synchronous technologies include various functionalities, such as audio and video, text/chat, screen sharing, polls, whiteboards, and breakout rooms for small group discussions. These functionalities can help instructors maintain interactivity in online classrooms.

Multimedia applications. Multimedia can engage learners and includes audio, video, and other interactive elements. Multimedia software can be used to record micro lectures, demonstrations, orientations, etc. Some multimedia software is open access. More robust applications must be purchased. Some multimedia applications can also be embedded within the LMS for easy access and use.

Collaborative applications. Web-based or cloud-based word processing, presentation, social participation, and whiteboard applications allow students to collaborate online with their peers and instructors.

Cloud-based technologies. Colleges and universities rely on various cloud-based applications. Some faculty use cloud-based applications to store files so they can access them from anywhere in the world and aren't restricted to their office computers.

Objectives of the Study:

- 1) To study the elements in the process of digital transformation.
- 2) To study the key stages in achieving digital transformation.
- 3) To overview objectives of digital transformation in higher education and challenges in bringing this digital transformation.
- 4) To study examples of digital technologies bringing digital transformation in the field of higher education.

Research Methodology:

This study is based on secondary data which is collected from various reports, journals and websites. This study tried to study the digital transformation in the field of higher education.

Digital Transformation in Higher Education:

Higher education refers to the education imparted by universities, research centers and colleges. Digital transformation is the use of technology to increase efficiency and effectiveness of teaching-learning and curriculum delivery. Digital transformation is more than just updating existing technology. It is the adoption of procedures and processes to incorporate digital technology to create better results.¹ It does this by removing space and time barriers to education and expands student's access to quality learning. Digital resources include e-books, webinars, websites, social media, cloud computing, virtual reality and artificial intelligence. From the perspective of students, this cutting-edge technology boosts their cognitive retention and improves their learning. Technology increases productivity of teachers. Colleges and universities use it to develop new tools that add value to their teaching and learning.

Elements in the Process of Digital Transformation:

There is no single way to achieve digital transformation – it depends on the context of each organization. Digital transformation activities and approaches should be founded on organizational goals and values, should reflect business ambitions

and be implemented strategically. However, there are some common elements to the process that need to be addressed are as follows:

- 1) **Aspiration:** Organizational principles, business goals and ambitions.
- 2) **Assess Readiness:** Digital maturity and identify priorities.
- 3) **Leadership:** Digital vision and organizational roadmap.
- 4) **Implementation:** Action plans and digital infrastructure.
- 5) **Review:** Evaluation and revising plans.

Key Stages in Achieving Digital Transformation:

The digital transformation of higher education is not a one-time event. The journey of digital transformation includes four distinct phases, which are related to each other are as follows:²

- 1) **Digital Adoption:** The first phase in the process of digital transformation in higher education is digital adoption. Digital tools and technologies are introduced into their existing processes by the organization. This phase involves basic data analytics, the implementation of learning management systems and online communication platforms. The aim is to create a foundation for future digital progress and familiarize stakeholders with new technologies.
- 2) **Digital optimization:** As organizations adapt to digital tools, the focus is on digital optimization. This phase involves improving existing processes by using data analysis to make informed decisions. This may include simplifying administrative tasks, improving user experience and improving online services. The goal is to use digital resources to increase efficiency and effectiveness.
- 3) **Digital Transformation:** In the third stage, institutions move beyond optimization to achieve true digital AI-driven decision support systems, and emerging technologies like virtual reality or blockchain to revolutionize the way they deliver education and manage operations.
- 4) **Digital Maturity:** The final stage is digital maturity, where an organization integrates technology into its DNA. Here, digital transformation becomes an ongoing and permanent part of the corporate culture. Data-based decision making, innovation and change are becoming indispensable. Today's organizations are well prepared to navigate the changing digital landscape and respond to new trends.

Key Objectives of Digital Transformation in Higher Education:

Following are the important objectives behind

digital transformation in higher education:

- 1) **Improving the student's learning environment:** Technology enhances the learning environment with help of various educational platforms, educational videos, online quizzes and tests. Virtual reality and AI tools help students to share their thoughts and ideas and to understand subjects better.
- 2) **Enhancing the institution's operational efficacy:** Digital transformation enhances the institution's operational efficacy by using descriptive analytics, predictive analytics and diagnostic analytics to prescribe possible solutions to their problems.
- 3) **Increasing computing power for cutting-edge research:** Digital libraries of databases can also be accessed for review of various researches. Google search engine, Research Gate, Google Scholar etc. help students and teachers to access endless research.

Thus, digital technologies provide a seamless and cost-effective route to quality education as well as the latest information across disciplines.

- 4) **Stimulating innovation in education:** Technology is the means of innovation. It helps to phase out textbooks with digital content and replacing costly equipment with VR or AR resources.
- 5) **Improve Competitiveness:** This goal focuses on differentiating an institution from the competition by using digital avenues.
- 6) **Create a Culture of Data-Driven Decision Making:** This includes adopting a digital mindset across all areas of the campus for students, faculty, leadership and other staff members.
- 7) **Optimize Resources:** This covers everything from improving communication between administrators to cutting costs related to electricity usage.

Examples of Digital Technologies bringing transformation in Higher Education:

Here are a few examples of new digital technologies bringing the transformation in higher education industry:

- 1) **Virtual Learning:** During COVID-19 Ministry of Education, China broadcasted state-approved lessons in Math, Language, English, Art and Physical Education on TV for all days in a week. The Chinese government also provided 22 free online platforms with 24,000 higher-education courses which includes MOOCs, SPOCs and virtual labs, online internet and mobile apps.
- 2) **Educational Apps:** Many higher education institutions use various educational apps such

as Student Information System, Blackboard App, Canvas Student, Duolingo, Evernote, Google Calendar, Google Drive, Mendeley, a reference manager and PDF reader, Quizlet and Student safety applications.

- 3) **Digital Payments:** Students can use e-wallets to pay for school lunches, textbooks, stationary the like. Students can also use apps for ordering school meals.
- 4) **Library Chatbots:** Library chatbots make up for budget shortfalls and free librarians to focus on value-added services that only they as humans can accomplish.
- 5) **Online Recruiting:** Unmudl's virtual program is a work-and-learn marketplace that focuses on non-degree, skill-driven learning options and that helps these so-called working- learners find jobs as they develop skills through e-learning.
- 6) **AR/VR:** Instructors use an immersive VR/AR environment to help students with special needs in higher education. For example: Google Chromecast to expand visuals for visually impaired people, the Google Glass app to help deaf students and gamification for learning disabled individuals to improve vocabulary.

Challenges in Digital Transformation for Higher Education Institutions:

Higher education institutions face many challenges in the implementation of digital transformation, which are as follows:^{3,4}

- 1) **Changing student needs:** IT systems must adapt to changing needs of students and industry regulations. Organizations will not succeed with digital transformation unless they are committed to change management.
- 2) **Lack of Digital Literacy:** Academic staff who do not know and understand digital technologies cannot use new technologies in the learning environment. The success of digital transformation in higher education institutions often depends on the knowledge and skills of faculty members and students. There is a generation gap between students and teachers. Students and teachers who use technology need to adapt to technology and learn how to use technology.
- 3) **Resistance to Change and Risk Aversion:** Many teachers are not positive about the changes taking place and often refuse to change their attitude. Pressure on teachers to embrace digital change may create further resistance.
- 4) **Lack of Adequate IT Infrastructure:** The lack of appropriate and adequate IT infrastructure is another barrier to digital transformation.
- 5) **Budgetary Constraints:** Digital transformation

requires large and upfront financial investment. The economic challenges and funding limitations faced by HEIs in combination with the escalating costs of education are major barriers to digital transformation.

Conclusions:

To achieve prominent position in the field of higher education, digital transformation is necessary in this field also. There are some elements and key stages, which are to be considered while bringing digital transformation in higher education.

References

1. Leah Zitter (2022). Digital Transformation of Higher Education in 2024. Retrieved from <https://whatfix.com/blog/digital-transformation-in-higher-education>.
2. Thomais Gkrimpizi , Vassilios Peristeras and Loannis Magnisalis (2023). Classification of Barriers to Digital Transformation in Higher Education Institutions: Systematic Literature Review. *Educ. Sci.*, 13(7), pp. 746.
3. Himanshu Nigam (2024). What are the key aspects of digital transformation and how are they relevant to higher education? Retrieved from <https://elearningindustry.com/what-are-key-aspects-digital-transformation-how-are-they-relevant-to-higher-education>.
4. <https://www.timeshighereducation.com/hub/inter-systems/p/why-universities-must-embrace-digital-transformation>
5. Bholane Kishor Prakash (2023). National Education Policy2020: A Catalyst for Skill Based Education, pp. 17-23.