Innovations

Vision Viksit Bharat 2047: Redefining Higher Education in the Digital Era

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Abstract: *The innovative integration of digital learning in India's education sector has emerged as a transformative force. Vision 2047 envisions making education universally accessible and compulsory by leveraging digital technologies and platforms to foster inclusive growth and equitable learning environments. This initiative seeks to redesign the education system, addressing existing barriers to achieve the evolving demands of the 21st century. Digital learning platforms enhance collaboration and communication between students and teachers, fostering synergy within diverse educational communities. Vision 2047 also emphasizes the adoption of advanced technologies, such as artificial intelligence, virtual reality, and augmented reality, to enrich learning experiences and equip students with the necessary skills required to thrive in the digital era. Aligned with this vision, the New Education Policy (NEP) 2020 introduces project-based and value-driven learning initiatives designed to strengthen discipline proficiency and communication skills. Since the early 21st century, digital learning has been a key innovation in Indian higher education, with the government championing e-learning and online courses to improve access and quality. However, challenges persist, particularly in remote areas where inadequate internet connectivity and limited technical support hinder the full adoption of digital technologies in higher education. This study aims to explore the opportunities and obstacles faced by universities as they strive for continuous innovation and adaptation to emerging digital learning technologies, ensuring competitiveness in a rapidly evolving educational landscape.*

Keywords: *Digital Learning, collaboration, augmented reality, e-learning, competitiveness.*

Introduction

Education is the sole mean that fosters the emergence of enlightenment within the stagnant human mind. Without the impartation of wisdom, no individual can embark on the journey of self-elevation; thus, education alone paves the way for the holistic development of an individual. (Pandey, 2024)

The rise of the digital era has transformed the educational framework, offering distinct opportunities and obstacles for nations such as India. As part of the "Vision Viksit Bharat 2047." It becomes essential to reimagine higher education to equip learners with the skills necessary for a knowledge economy. This paper explores the transformation among the higher education policy and practice to meet the demands of the digital age, with a emphasis on innovation, inclusivity, and excellence

Digital learning in the higher education of India has been a significant and revolutionary development. With the gradual development of high technology and the growing demand for high-quality education, educational institutions have been prepared to accommodate and transmit technology-based innovations. Vision 2047 seeks to transform education in India by leveraging digital technologies and platforms to establish a more inclusive and reachable learning atmosphere for all students. This initiative is not limited to merely integrating technology into classrooms; it necessitates a complete rethinking of the education system to address the hindrance and opportunities of the 21st century. In recent years, India's education sector has experienced considerable changes, with the adoption of digital tools and platforms facilitating broader access to education. Although traditional teaching and learning methods are still in use, digital education has gained prominence and influence due to improvements in technology.

The COVID-19epidemic has played a significant role in accelerating this transformation, as educational institutions rapidly adapted to online modes of learning to maintain uninterrupted education. Consequently, there has been a growing acceptance of the strength of digital learning to enhance accessibility, adaptability, and excellence in education in India. The conventional educational system in India has faced noteworthy criticism for its sluggish integration of digital learning resources, insufficient quality, and failure to keep pace with the swiftly evolving global environment.

The rise of digital technologies presents a unique opportunity to bridge these disparities and provide more efficient and engaging educational experiences for students.(Abichandani et al., 2022) Harnessing the capabilities of these technologies in keeping with the demands of the 21stcentury aims to establish a more dynamic and interactive learning atmosphere that allows students to learn at their own pace and in their preferred way. The use of digital tools and platforms helps schools improve the quality of education and expand their reach to a wider range of students, regardless of their background or geographic location. The shift to digital learning provides significant opportunities for collaboration and communication between students and teachers, eliminating traditional barriers and creating a more

inclusive and diverse educational community.(Maxine & Robert, 2022) Furthermore, Vision 2047 seeks to meet the unique needs and abilities of each student by implementing customized learning paths and adaptive assessments, helping them develop to their maximum potential.

Digital technologies are revolutionizing education, moving us away from the outdated "one size fits all" approach which has dominated during the Industrial Revolution. In the traditional model, students were treated like assembly line products, receiving the same information at the same time and the same pace. Now, we have the opportunity to create a more adaptive and personalized learning environment that caters to individual needs. Gone are the days of passive knowledge transfer where learners sit as silent recipients during lectures with little chance for meaningful engagement. Modern technologies enable immersive, active, collaborative, and inquiry-based interactions, even with large groups of students. What we are witnessing is not just online education; it is more accurately described as remote emergency learning. This new approach provides much-needed flexibility, breaking down barriers of time and location. It allows access to education for a larger audience while seamlessly integrating academic pursuits with other life responsibilities. As a result, we are likely to see lower costs for learners, increased opportunities for all, and a genuine democratization of knowledge access. These developments hold significant promise for enhancing higher education in India, particularly in achieving the ambitious goals laid out in NEP-2020. Relying solely on traditional teaching methods and physical facilities won't bring about these transformative changes in the short term. (Pandey, 2023)

Objectives of the Study
➢ To assess the current status of Indian higher education and highlight areas of digital transformation.
➢ To identify the role of digital technologies in redesigning pedagogical practices, curriculum design, and institutional governance.
➢ To propose actionable strategies and policy frameworks for effective integration of technology in higher education.
➢ To address challenges such as digital divide, regulatory barriers, and capacity building in the context of digital transformation.

Research Questions
➢ How can India's higher education system be redefined to effectively leverage digital advancements?
➢ What are the current challenges and opportunities in integrating technology into higher education?
➢ How can the options provided by NEP 2020 be structured to ensure inclusivity, accessibility, and quality within a digitally-driven educational ecosystem?
➢ What roles can stakeholders, including the government, private sector, and academia, play in achieving the vision of a developed India by 2047?

Research Methodology

The methodology of present study is qualitative in nature that includes literature review of research articles, policy frameworks, and case study analysis on digital transformation in education and review of existing higher education policies in India and their comparative policy analysis with global benchmarks to identify gaps and opportunities.

Digital Transformation for Digital Learning in Higher Education:

Digital technology encompasses a wide range of electronic tools, devices, systems, and resources which are utilized to produce, store, or process data. Illustrative examples of digital technology include online gaming, social media platforms, multimedia content, and mobile telecommunication devices, etc. (State Government of Victoria. 2019)There are various technological tools of learning such as;

- ➢ **Learning Management Systems (LMS)** encompass platforms such as Blackboard, Moodle, and WebCT, which facilitate the delivery of online courses and related educational activities.

- ➢ **Publish & share tools** such as wikis, blogs, Flickr, YouTube, podcasts, social bookmarking, e-portfolios, e-books, digital storytelling, and video lectures.

- ➢ **Collaborative systems** feature applications like Google Docs, mind mapping software, social bookmarking tools, wikis, and blogs, which promote teamwork and information sharing.

- ➢ **Social networking platforms** consist of services such astwitter, facebook, Hi5, LinkedIn, Ning, and Academia.edu, which enable users to keep in touch with one another.

- ➢ **Interpersonal communication tools** include email, MSN, Skype, forums, and video conferencing platforms.

- ➢ **Content aggregation tools** encompass NetVibes, RSS feeds, and Google reader.

- ➢ **3D virtual environments** consist of second life, Habbo, augmented reality applications, games, and virtual laboratories.

- ➢ **Assessment & feedback systems** feature electronic marking, audio feedback, clickers, and computer-based note-taking.

- ➢ **Mobile tools** refer to internet-based mobile applications.

➢ **Information & Communication Technologies (ICT)** pertain to software or applications that operate on the internet (Pinto, & Leite, 2020).

Some educational institutions, including schools and universities, may currently be engaged in the implementation of digital technologies, whereas others might still be in the early phases of this endeavour to achieve established objective. Digital Learning Technology works in the following pattern:
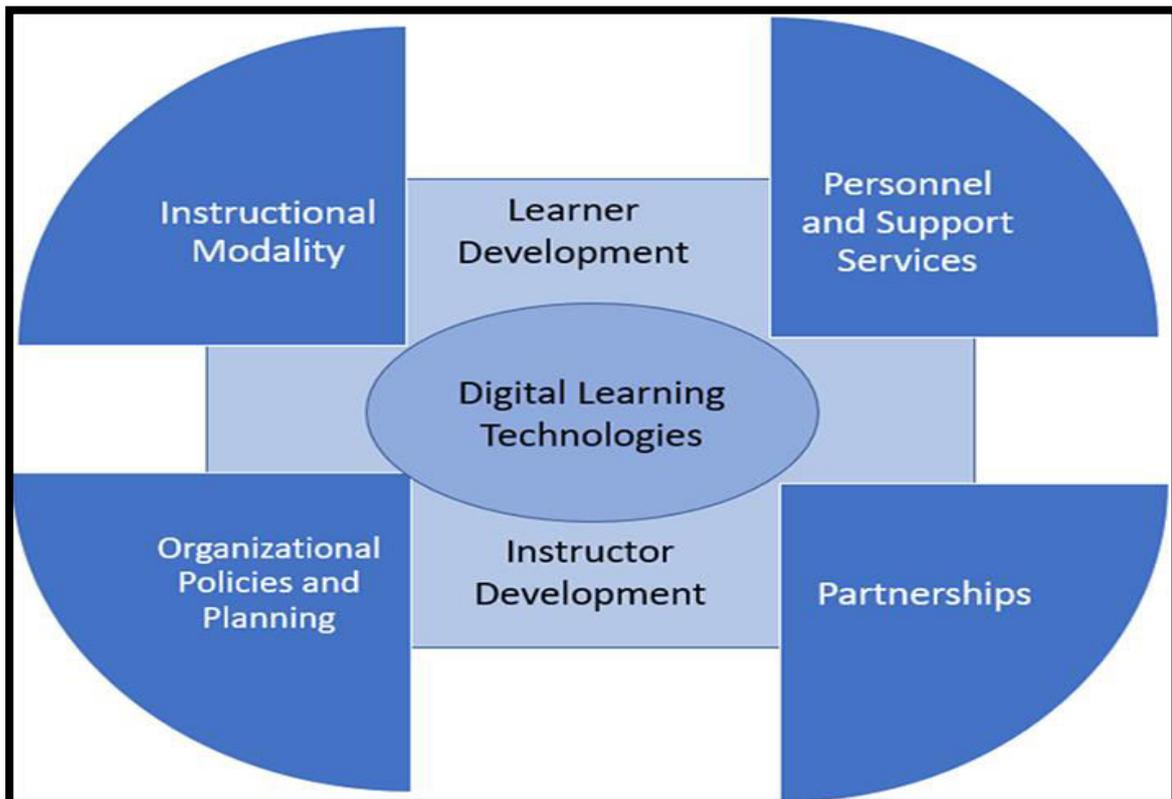
Image courtesy of Florence Martin and Kui Xie

The Role of Emerging Technologies in Achieving Vision 2047:
The most prevalent application of technologies in the education field is to connect experts or trainers with learners. However, several additional technology-enabled aspects are significantly transforming the delivery, methods, and effectiveness of teaching and learning, which may further impact higher education soon. The subsequent sections provide a brief overview of these aspects:

➢ **Increasing access to diverse student populations:**
In the past, access to education was likely limited in the absence of technological resources. The foundation of new higher education institutions and theirmaintenance expenditure were significant barriers in increasing the number of students enrolled in such institutions. The limited faculty relative to the increasing student population, along with remote physical

locations,further restricted participation and teaching capabilities. Consequently, these challenges led to the occurrence of metrics such as financial resources, examination scores, and others as means to filter out a huge number of applicants, mitigating this practice under the guise of 'excellence' and 'preparedness,' which created obstacles for the education of average students. However, in the modern scenario, the increasing sophistication of digital learning methods through modern technological innovations has shown promising applications.

The evolution of educational modalities has expanded significantly, ranging from traditional face-to-face interactions to completely online immersive experiences, encompassing both synchronous and asynchronous access. Through the implementation of hyflex, hybrid, flipped, and various modalities, a vast number of students can now engage in learning that is largely independent of physical infrastructure and the conventional frameworks of universities and colleges. (Beatty, 2014)While the social interactions facilitated by traditional classroom learning are undeniably valuable, the complexities introduced by high costs and personal responsibilities related to family and work have made this approach increasingly challenging in today's context. Consequently, students now have a multitude of options, from traditional methods to hybrid models and fully immersive online learning, which includes real-time instruction complemented by in-person support at local centres.The opportunities will significantly increase in higher education due to the digitalization, enabling the creation of an inclusive academic framework that transcends barriers related to income/career, residential location, and learning capacity.(Elvira, et al. 2017)

➢ **Large-scale connectivity:**
Traditional methods of education are limited to those learners who reside in close proximity to higher education institutions (HEIs) or who possess the financial means to attend them, as students must travel to these institutions. Often, students living in remote village areas, those from lower socio-economic backgrounds, and even those burdened with family responsibilities find it challenging to access HEIs. However, technological development has not only facilitated access to education through digital means, reducing the need for geographical proximity and travel but has also enhanced the flexibility of connections and engagement. The COVID-19 pandemic has significantly increased the utilization of platforms such as Zoom, Meet, Teams, Webex, and similar technologies for the distribution of meetings and lectures. These innovations have facilitated enhanced connectivity, bringing together learners and experts more effectively. Consequently, these technological platforms are capable of delivering knowledge to any location where there is an interested learner present. Additionally, they greatly expand the capacity of Higher Education Institutions (HEIs) and subject matter experts to fulfil the

visionary mission of Vision 2047, ensuring that knowledge can be accessed whenever and wherever it is needed. In modern India, as advanced tools are readily available to ordinary students, instructors and facilitators now have limitless digital possibilities to encourage and accommodate student participation, thereby promoting greater equity in academic engagement. (Florence, et al. 2022)

➤ **Virtual and integrated/hybrid group work:**
Generally, learning through face-to-face interactions or under the guidance of an instructor is considered most effective. Separating students in small groups within the university campus facilitates enhanced communication among students and promotes a greater exchange of knowledge between instructors and their students. This is accomplished not only via exploratory and experiential activities but also through comprehensive discussions and dialogues, which are frequently impractical in classes with large student populations or for students that are not present.Digital technologies facilitate the formation of virtual groups in both formal and informal contexts, thereby enhancing learning through face-to-face interactions that are unencumbered by the spatial limitations of the physical world, where classroom settings often pose a barrier to group activities. These tools increase flexibility in learning time, as students can now convene at convenient times for group members that are independent of the university schedule. This framework also enables instructors to sustain comprehensive connections with all groups while facilitating their movement between groups to interact with individuals or groups as required. (Florence,&Anthony, 2019)

➤ **AI/ML-driven learning**:
In a transformed environment, the utilization of technological innovations such as AI (Artificial Intelligence) and ML (Machine Learning) allows learners to progress at a pace which was previously unattainable within the confines of traditional learning frameworks. Consequently, there is a growing emphasis on the potential development of each individual within the established timeframes. As a result, the 'gateway' courses serve as a catalyst, accommodating students who arrive with a diverse range of prior knowledge, thereby rendering the 'one size fits all' approach of conventional methods entirely ineffective.The growing adoption and initial deployment of AI-powered tutors functioning as 'virtual' teaching assistants during discussions and tutorial sessions have transformed the landscape of learning in innovative and broad contexts. This service enhances the availability of support by offering a continuous 24/7/365 schedule, thus guaranteeing that learners can access assistance at any time they need it.The potential for AI to assist with grammar and language style, provide AI-supported assignments, produce new thoughts for research and experimentation, and improvequalitative

aspects of publication and evaluation in of higher education institutions through the implementation of ERP is embedded within the technological implementation. Additionally, platforms utilizing Artificial Intelligence are already being employed to contributionof the 'early warning' systems, leading to personalized educational programming and enhancement. However, many aspects of education in India are still managed through traditional methods.(Digital India. Retrieved on December 21, 2024)

➤ **Advanced search capabilities:**
Authentic learning is facilitated by exploring experiential alternatives that diverge from the binary notions of truth/falsehood and right/wrong, as well as by engaging in inquiries related to "what if" and "why not." The amalgamation of simulation tools within digital learning environments empowers learners to investigate multiple pathways, even letting them to engage with new innovations within the course content. The technological use is associated with online/digital settings removes numerous constraints related to employing various scenarios within a single classroom, thereby enabling the personalization and customization of scenarios for individual learners or groups. Laboratory sections have traditionally been utilized to enhance students' understanding of events, such as chemical reactions, or conditions, such as the operation of turbines. That can be accomplished by the use of technological tools without concerns regarding cost and safety. An online environment enables widespread engagement, allowing for individualized experimentation at the student's own pace. It permits multiple iterations with various parameters and facilitates learning through methods that may be inaccessible in a conventional classroom setting. Examples include analysing the causes of glacier melting, the environmental impacts of El Niño, and the economic effects of regional instability within a global context. However, the potential to use these tools in a way that stimulates students' curiosity and promotes inquiry-based learning has diminished. (Xie & Hawk, 2017)

➤ **Completely immersive learning experiences:**
The ongoing development of augmented reality and virtual reality technologies has allowed learners, whether alone or in groups, to engage with and immerse themselves in experiences that mirror the 'real world.' These technologies provide experiences akin to those found in various settings such as laboratories, manufacturing assembly lines, hospitals, operating theatres, construction sites, archaeological excavation sites, battlefields, protest gatherings, legislative assemblies, and moot courts, which would be challenging to offer to a huge number of students. They serve as powerful experiential tools for medical science students, teaching them to operate under the stress related with fast changing and deteriorating patient conditions, and for civil engineers, who gain a profound understanding of the

techniques involved in new manufacturing processes.Similarly, the ability to engage students in the Indian National Movement or the American Revolution can significantly enhance their indebtedness and understanding of history, and the impact of the prevailing social and cultural norms and the decisions made during that time. Generally, students are afforded the opportunity for experiential learning without the constraints of language barriers, travel expenses, and excessive costs associated with practical applications. Additionally, the use of technologies for staff reskilling and skill enhancement yields comparable effects.(Julie, 2005)

> **The application of AR/VR to assimilate academic knowledge with work experience and skills**:
> Work-integrated education is typically delivered through organized experiences like, practicums, cooperative education, internships, and field training. When effectively integrated into the curriculum, it can yield significant benefits. However, in certain remote higher education institutions in India, the application of these experiences is often restricted due to limitations in course design, participant availability, and geographical challenges. The rise of digital technologies, including augmented and virtual reality, not only supports the incorporation of these methodologies into educational programs but also offers new avenues for the intentional and systematic incorporation of work experience into certification processes. The capacity to immerse students in a virtual work setting greatly enriches the academic curriculum by establishing a direct connection to practical applications. Additionally, it allows learners to broaden their experiences at the convergence of work, information, technology, and interpersonal skills.(Joosten, et al. 2020)

Indian Perspective and Technical Context in NEP 2020:
The PM Modi emphasized the significance of promoting technology in India with a human touch, ensuring that it never becomes an obstacle or exacerbates issues for individuals through its complex applications. Instead, technology should serve as a common service network that simplifies life. In education sector, numerous changes are evident, as institutions have embraced the mantra of digitization. They are integrating technology into every aspect of teaching, whether it involves learning, online instruction, credit transfers through an Academic Bank of Credits, the use of Digi Locker, sharing knowledge and ideas, or expanding collaboration and connections at both national and international levels. This transformation is reshaping the educational landscape and facilitating the universalization of education in accordance with global standards. Numerous applications and platforms, including MOOCs, SWAYAM, SAMARTH, PARAKH, and DIKSHA, have been developed to improve and elevate the quality of education and educators by offering a digital framework for knowledge dissemination and learning. It is clear that

contemporary Indian education institutions do not align with the expectations of stakeholders in an ever-evolving landscape and fail to prepare the younger generation to tackle contemporary challenges, the aims of NEP-2020 will not be achieved. The advancement of research and innovation is crucial for the betterment of humanity. The National Research Foundation (NRF) is dedicated to supporting this initiative while fostering high-quality research in humanities and social sciences.

The NEP-2020 seeks to enhance competency development in developing technologies by implementing various initiatives and reforms across different educational levels. (Govt. of India, 2020. National Education Policy-2020).The policy comprises the following references to attain this objective:

➢ **The amalgamation of emergent technologies in educational curricula at both schools and universities** is designed to improve students' understanding of these advancements and to cultivate essential skills from early education through to advanced research stages.

➢ **Emphasize the relevance of multidisciplinary education** that will permit students to cultivate a comprehensive knowledge of technology, its consequences, and its significance within society.

➢ **The creation of the national educational technology forum** will serve as a platform for the exchange of ideas, successful practices and resources related to the incorporation of technology in education.

➢ **The advancement of vocational education & skills training** will enhance the workforce's abilities in emergent technologies and foster entrepreneurship within technology sector.

➢ **The creation of the national research foundation (NRF)** aims to provide financial assistance for research across diverse disciplines, foster the advancement of innovative technologies, and enhance skill development within these areas.

➢ **Promoting Collaborative and Interdisciplinary Learning** to enhance interdisciplinary education by motivating students to engage in projects alongside peers from different departments and providing courses that integrate both technical and non-technical skills.

➢ **Establishing a culture of innovation** through incubation centres provides a supportive environment for students to explore their ideas without the apprehension of failure.

> ➢ **Providing industry partnerships and internships** can assist students in acquiring practical skills and establishing valuable connections within the industry. A more effective approach would be to implement a work-integrated learning pedagogy. (Make In India. n.d. Retrieved on December 20, 2024).
> ➢ **Professional development & career services** support students in cultivating the necessary soft skills essential for success in job market.

> ➢ **Encouraging a commitment to lifelong learning** by motivating students to engage in ongoing education and offering resources for professional growth through sustainable frameworks supported by technology. (Mandke, 1992)

Challenges and Opportunities in Achieving Vision 2047:

The primary obstacles to achieving the goals of higher education institutions (HEIs) in digital learning is the scarcity of adequate investment in technological infrastructure, along with insufficient training for professors and staff. Many institutions face challenges in securing the necessary funding and resources to keep pace with the rapid rate of technological implementation, while some faculty members exhibit resistance due to their reluctance to adopt new technologies and modify their teaching approaches. In the contemporary digital age, the scarcity of resources, appropriate internet facilities, and excessive spending on new technologies hinder remote colleges from effectively managing a combination of traditional practices and innovative approaches. Additionally, the socio-economic conditions of students further complicate the adjustment to these evolving requirements.

In the other hand, technological learning encounters considerable regulatory challenges, which encompass adherence to data protection and privacy regulations such as the GDPR, the protection of intellectual property rights, and the establishment of strong cybersecurity measures to counteract emerging threats. Innovations frequently necessitate the navigation of intricate regulatory approval procedures, especially within heavily regulated sectors like healthcare and finance. Furthermore, tackling ethical and social concerns, including AI bias, job displacement, and the need for transparency, presents difficulties that require thoughtful deliberation to reconcile innovation with societal and legal obligations. (Polly, et al. 2021)

Despite numerous challenges, institutions have various options to thrive in this digital environment. Universities can enhance their ability to distinguish themselves in a competitive landscape by attracting highly skilled individuals, increasing student engagement, and fostering an environment that promotes innovation and collaboration. Furthermore, colleges can ensure their long term success in the digital age by identifying emerging trends and understanding the needs of students while maintaining agility and adaptability. The anticipated opportunities for digital learning include: Customized Learning Experiences, Worldwide Access to High-Quality Education, Development of Skills for Future Employment, Incorporation of

Emerging Technologies, Promotion of Research and Innovation, Reinforcement of Collaboration between Industry and Academia, Development of Sustainable and Inclusive Educational Models, Transformation of Policy and Governance, Improvement of Global Competitiveness, and Ongoing Professional Development.

Conclusion:

In this digital era, colleges can achieve success by effectively managing a combination of traditional practices and innovative approaches, while also adjusting to the evolving requirements of students and society. The acceptance of technology and innovative teaching approaches can improve outcomes for both students and educational institutions. While collaboration and innovation can undoubtedly benefit universities, it is essential to recognize potential drawbacks, such as an over-reliance on technology, which may undermine conventional teaching methods and diminish human interface between students and professors. Furthermore, it is essential to keep in mind that not all students may excel in a fully digital educational environment, highlighting the significance of maintaining a harmonious blend of traditional and cutting-edge approaches. Additionally, attention must be given to regulatory challenges, including data protection, cybersecurity, and ethical-social contexts.

Emerging technologies are significantly reshaping the global marketplace, compelling organizations to pursue adept professionals who can thrive and innovate within these fields. The institutions of higher education are pivotal in equipping students for this evolving landscape by assimilating emerging technologies in their academic programs, fostering collaborations with industry, facilitating internships, offering career services & professional development opportunities, and promoting the relevance of continuous learning. The NEP-2020 has duly acknowledged this need by providing targeted recommendations for institutions of higher learning. India, as a nation, is well-positioned to address the increasing demand for expertise in emerging technologies, thanks to its extensive talent pool, competitive labor costs, proficiency in English, governmental support, and a vibrant start-up ecosystem. However, stakeholders should identify obstacles and strive to achieve the goals outlined in Vision 2047 for the application of technological learning with appropriate alternatives.

Stakeholders are expected to actively promote the goal of implementing digital education in the higher education by the year 2047. To realize the objective of digital education in higher education by 2047, it is necessary for all stakeholders involved to collaborate and work towards a shared purpose. This includes government officials, educational leaders, instructors, students, and parents. By addressing inequalities and highlighting the common goal of providing standard education through technology, a more inclusive and innovative learning environment for all can be established.

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