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IMPACT OF INNOVATIVE TECHNOLOGY PRACTICES IN HIGHER EDUCATION- OPPORTUNITIES AND CHALLENGES

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ABSTRACT
Technology refers to methods, systems, and devices which are the result of scientific knowledge being used for practical purposes.The branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science. Within the constantly evolving set of challenges faced by Higher Education institutions, pedagogic innovation has been at the heart of the discussion on the quality of Education. Research Methodology/Materials and Methods:Overall objective of the study: To examine the impact of technological innovation on higher education.Specific objectives of the study are: to examine best technology in future as per 2024, to know Future of marketing in 2025, 2030, to examine 7 Cs,4 Cs., to investigate the main problem of higher education in India. Suggestion: Impact of innovation practices on higher education is really enormous. Hence more funds should be provided to institutions which have been engaged in new innovative practices.
KEY WORDS: *Educational technology, ChatGPT, Digital transformation, AI-powered learning environments, augmented reality (AR) and virtual reality (VR),*

I. INTRODUCTION

Technology refers to methods, systems, and devices which are the result of scientific knowledge being used for practical purposes.The branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science.

New Technology means an invention, discovery, improvement, or innovation that was not available to organization at the effective date of the contract. These include non-patentable items such as new processes, emerging technology, machines, and improvements to existing processes, machines, software.

Educational Technology is the field of study that investigates the process of analyzing, designing, developing, implementing, and evaluating the instructional environment, learning materials, learners, and the learning process in order to improve teaching and learning.

The use of scientific knowledge to solve practical problems, especially in industry and commerce. The specific methods, materials, and devices used to solve practical problems.

II.REVIEW OF LITERATURE:

1) Within the constantly evolving set of challenges faced by Higher Education institutions, pedagogic innovation has been at the heart of the discussion on the quality of Education. Teaching, learning, and assessment methods have significantly changed in the recent years, which has led to a transformation in the role of students and teachers, giving the former a more active role in the construction of his/her own learning process and the latter the responsibility of creating the adequate learning environment.Sandra Fernandes[1] (19 February 2024,) Editorial: Pedagogic innovation and student learning in higher education: perceptions, practices and challenges

2) ChatGPT has been at the heart of conversation in the industry for the last 12 months, prompting adaptations in teaching, learning, assessments, and even personal statements. In 2024, universities can transition from reactive responses to proactively incorporating AI, as evidenced by some institutions creating their own 'UniversityGPT.' Additionally, potential market share shifts for OpenAI due to increased competition and internal turbulence may be detrimental for their market share in the Check out this insightful Bloomberg article on competitors and the evolving discourse.(2024: Trends and Predictions for Higher Education,January 2nd 2024).

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3) To establish causality, we exploit a policy-induced exogenous shock in the supply of Chinese college-educated labor starting in 2003. Using a difference-in-differences approach, we find that Chinese firms in skilled industries generate better innovation outcomes as measured by patents and citations than those in unskilled industries. This effect is more pronounced among firms headquartered in a province with more science and engineering college graduates, young firms that are more likely to hire young graduates, and firms located near universities. Moreover, higher education expansion increases a firm's innovative human capital in terms of the number of educated employees and inventors. Finally, we show that technological innovation is a mechanism through which higher education affects productivity growth and, thus, the economy(Higher education and corporate innovation, Dongmin Kong, February 2022).

4) Innovation is an inevitable way to enhance regional competitiveness, promote urbanization and achieve sustainable development. The sci-tech park is one of the main land use types in the construction of a new town and the critical space carriers of urbanization. This study focuses on the correlation between higher education institutions (HEIs) innovation and sci-tech enterprises (STEs) development, and the Hangzhou West Hi-tech Corridor as a case study. Innovation indicators of HEIs related to teaching staff, talent cultivation, scientific research quality, academic influence, and university-enterprise cooperation, as well as development indicators of STEs related to aggregation degree, development level, and innovation level are selected. The results show that HEI innovation is significantly positively correlated with STE development. (Yue W, 3 October 2020The Influence of Innovation Resources in Higher Education Institutions on the Development of Sci-Tech Parks' Enterprises in the Urban Innovative Districts at the Stage of Urbanization Transformation).

III.RESEARCH METHODOLOGY/MATERIALS AND METHODS

Overall objective of the study: To examine the impact of technological innovation on higher education.
Specific objectives of the study are:

1. To examine best technology in future as per 2024:
2. To examine future of marketing in 2025, 2030.
3. To examine Top 7 Innovations in K-12 Education
4. To examine 7 Cs,4 Cs.
5. To examine the main problem of higher education in India.

IV. Results and Discussion:

V. SUMMARY, CONCLUSIONS, SUGGESTIONS AND RECOMMENDATIONS.

Virtual Reality and Augmented Reality
In 2024, we can expect these forms of technologies being further integrated into our lives.
New technology in 2025:
Advancements in artificial intelligence, machine vision, sensors, motors, hydraulics, and materials will revolutionise product and service delivery. The rise of advanced robotics will drive a surge in demand for skilled professionals who can design, operate, and maintain these sophisticated machines.
Details of best technology in future as per 2024:

- Quantum Computing. ...
- Internet of Things (IoT) ...
- Business Intelligence. ...
- Digital Transformation. ...
- 5G. ...
- Datafication. ...
- Programming. ...
- Automation Testing

The 10 Technology Trends that will define 2024
1. Articial Intelligence (AI): The Engine of Innovation
Artificial intelligence (AI) is the cornerstone of technological innovation in 2024 which facilitate significant transformation in process automation, business decision making and service personalization. AI is now driving advances in fields such as medicine, logistics and artistic creativity.
2. 5G: The Connectivity Revolution
The deployment of 5G networks transform the way the people communicate and access information. The low latency and high speed of 5G will drive revolutionary applications such as high-precision remote surgery, real-time augmented reality and the interconnection of devices in the Internet of Things (IoT).
3. Augmented and Virtual Reality (AR/VR): Beyond Imagination
The technologies of augmented reality (AR) and virtual reality (VR) (AR) and virtual reality (VR) technologies will exceed our expectations by 2024. With increased adoption of AR/VR devices and applications that will change the way we work, learn and entertain ourselves.

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4. Cybersecurity: Protecting Our Digital Space
As our lives become increasingly digital, cybersecurity has become a critical priority. Cyber threats are constantly evolving, which is driving the development of advanced solutions for cybersecurity solutions. Thus Artificial intelligence and machine learning will play a pivotal role in early detection and mitigation of attacks, thus keeping our systems and data secure.
5. Blockchain and Decentralized Finance (DeFi): Beyond Cryptocurrencies.
The blockchain is more than the foundation of cryptocurrencies; it is transforming the way we manage trust and transactions. Decentralized Finance (DeFi) is gaining ground, offering loans, exchanges and financial services without intermediaries. In addition to finance, blockchain is being used in sectors such as supply chain management, electronic voting and identity authentication.
6. Quantum Computing: Unlocking Unimaginable Potential
Quantum computing is expected radically changing computing. Large technology companies are investing in the research and development of quantum solutions that can solve extremely complex problems in minutes rather than years. From simulating molecules for drug creation to optimizing logistics routes, quantum computing will open up new possibilities in science and industry and as a result of that more advancements in science and technology expected to yield good results.
7. Technological Sustainability: Toward a Greener Future
Environmental concerns are driving significant changes in the technology industry. Companies are adopting more sustainable practices in device manufacturing and data management. Renewable energy and energy efficiency are at the center of technological innovation, paving the way for a cleaner, greener future which is urgent need of the day to achieve sustainable development.
8. Digital Health: Redefining Health Care
The COVID-19 pandemic accelerated the adoption of telemedicine and digital health. By 2024, we will see greater integration of health monitoring devices and diagnostic applications in the home. This will enable patients to access care more conveniently and effectively, while improving disease prevention and monitoring.
9. Advanced Robotics: Partners at Work and in Everyday Life
Advanced robots are no longer limited to factories; they are playing increasingly diverse roles in our society. From home health aides to co-workers in automated warehouses, advanced robotics will improve efficiency and safety in a variety of industries and contexts.
10. Digital Education: Personalized Learning for All
Digital education is undergoing a revolution driven by artificial intelligence. In 2024, we will see an increased focus on personalized learning, where AI will tailor content and teaching strategies according to the individual needs of learners. This will further democratize quality education, breaking down geographic and economic barriers and providing educational opportunities worldwide.

Digital transformation is at the forefront, with 70% of higher education institutions planning to increase their digital marketing budgets in 2024. Video content emerges as a powerful influencer, with 84% of students acknowledging its impact on their college decisions.

The emerging trends in education technology for 2023 include mobile learning and digital content platforms, AI-powered learning environments, augmented reality (AR) and virtual reality (VR), gamification of learning, automated assessments, adaptive learning, and mobile learning.

The innovations in higher education in India
Virtual reality, artificial intelligence, mobile learning, smartboards, gamification, personalized learning, augmented reality, cloud computing, experiential learning, project-based learning, and collaborative learning are some of the latest trends and innovations driving this change.

Future of marketing in 2025
By the year 2025, virtual reality will take the lead in marketing trends. Customers will enjoy the amazing emotional experience as they shop for product brands with colorful, engaging advertising. They will come back time and time again, increasing their loyalty to a product brand, possibly even more than chatbots.

Future of education in 2030:
Future-ready students will need both broad and specialised knowledge. Disciplinary knowledge will continue to be important, as the raw material from which new knowledge is developed, together with the capacity to think across the boundaries of disciplines and “connect the dots”.

The best innovation in education
Top 7 Innovations in K-12 Education -

- Flipped Classroom Approach.

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- Audiobooks and Dictation Software.
- Digital Content Libraries.
- Social Media for Collaborative Learning.
- Simulation Games.
- Augmented Reality.
- Virtual Reality.

Details about 5 of innovation:

Innovation also needs a system.

Some are formal, designed by leadership, and some are informal, taking place outside established channels. Systems for innovation fall into one of 5 categories: originator-assisted; targeted innovation; internal venturing; continuous improvement; or strategic transfer.

Innovation has had the most profound impact on education

Here are some of the most significant technological advancements in education: Online Learning: The widespread availability of high-speed internet and the development of online learning platforms have made it possible for students to take courses and even complete entire degrees online.

The main problem of higher education in India

Infrastructure: Poor infrastructure is another challenge to higher education in India. Due to the budget deficit, corruption and lobbying by the vested interest group (Education Mafias), public sector universities in India lack the necessary infrastructure.

Trending in 2025

By 2025, most people in the developed world will have 3 or 4 bio-connectivity medical devices linked to them on a 24/7 basis. This will include small chips buried under the skin that constantly monitor medical vital signs such as heart rate, blood pressure, temperature, and glucose and oxygenation levels.

Future of marketing in 2024

In 2024, AI-powered marketing tools like chatbots, voice search optimization and predictive analytics will become even more widespread. However, business leaders must avoid relying solely on "set it and forget it" automation strategies and enforce a more collaborative approach between humans and AI.

industry will grow in 2025:

IT Sector

As a result, the nation's IT market has been expanding quickly, and by 2025, sales are anticipated to exceed $300 billion. Several international corporations outsource their IT projects to Indian businesses, which are significant software development and maintenance service providers.

Details about the business in 2025:

The business is most profitable in 2025:

If we develop the necessary skills and have an interest in these fields then we can consider starting any of the following businesses.

1) Cloud Kitchen. ...
2) Digital Marketing Agency. ...
3) Investment Business. ...
4) Courier Service. ...
5) Outsourcing Business. ...
6) Internet of Things (IoT) Business. ...
7) Biometric Sensor Locks. ...

The direct selling future in India 2025

- Growth Rate: The Indian direct selling industry is expected to grow at a compound annual growth rate (CAGR) of 23.7% between 2021 and 2025. This is significantly higher than the global CAGR of 5.8%.
- Future of marketing in 2050:
- Hyper-personalization: In 2050, marketing will become hyper-personalized, with AI algorithms analyzing vast amounts of data to create personalized experiences for each individual customer. Advanced AI algorithms will analyze vast amounts of data to create personalized experiences for each individual customer.
- Education in next 10 years:

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- However, it is likely that technology will continue to play a significant role in education and may help to improve the educational system in a number of ways. In the next 10 years, technology is likely to continue playing a significant role in transforming the educational system.
- Our future education:
- Giving students a sustainable and high-quality education in the future will be made possible by a mix of teachers' involvement and AI. Personalizing learning for each student's strengths, needs, talents, and interests is yet another straightforward yet very successful and novel approach to the learning process.
- The biggest challenge facing education today:
- The biggest challenges facing education today include the low quality of human resources, the need to adapt to the fast-changing digital world, the discrepancy between classroom learning and the reality outside, and the transformation brought by new technologies.
- Role of innovation in education:
- Innovation in education can lead to better overall outcomes in the school environment. Innovative classrooms are filled with students who are developing stronger communication skills and building engagement capacity amongst their peers.
- The 7 C's of innovation:
- 7 Cs are: Culture, Continuous Improvement, Collaboration, Challenge, Celebrate, Consistency and Constraint. None of these are individual skills, they are all behaviours or traits that are needed for an individual or organisation to be effectively innovative.
- 4 C's of innovation:
- – Context, Culture, Capability and Collaboration.
- 3 P's of innovation:
- People, Philosophy and Process
- So: People, Philosophy and Process are the three necessary Ps for enabling innovation in an organization.
- What is the main goal of innovative teaching method:
- Such strategies can also help to foster critical thinking skills and creativity, which can lead to improved problem-solving and decision-making abilities in the long run. In addition, innovative teaching strategies can help to improve student retention and engagement.
- The present status of higher education in India:
- As of 2020, India has over 1000 universities, with a break up of 54 central universities, 416 state universities, 125 deemed universities, 361 private universities and 159 Institutes of National Importance which include AIIMS, IIMs, IIITs, IISERs, IITs and NITs among others.

Details of innovative practices in 2024
The Eight Coolest Inventions From the 2024 Consumer Electronics...

- Walking assist robot. Extremely Lightweight Wearable Robot WIM!! ...
- Solar-powered tiny E.V. Watch on. ...
- Targeted hearing device. ...
- Need-to-pee predictor. ...
- A powerful solar generator for emergencies. ...
- At-home health check. ...
- A desk bike to charge your phone.
- The sector which will be in boom in next 5 years:
- According to Invest India, the Indian healthcare industry is projected to reach $372 billion by 2022. In addition, India's hospital sector contributes 80% of the healthcare industry and is projected to increase by 16-17% to $132.84 billion by 2022. It is, without a doubt, one of the fastest-growing sectors in India.

industry will boom in next 5 years?
10 Global Industries That Will Boom in the Next 5 Years:

- 5G Security. ...
- Virtual Reality Gaming. ...
- Virtualization Software. ...
- Digital Education. ...
- Healthcare Predictive Analytics. ...
- Cannabis Edibles. ...
- E-commerce Logistics. ...
- Solar Energy Solutions.

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- Growing business in India 2025:
- Best Innovative Business Ideas in India

Business	Estimated Investment	Growth Rate (CAGR)
Internet of Things (IoT) Business	₹10 lacs	29.4%
Biometric Sensor Locks	13 lacs	11.8%
Broadband Business	₹8 lacs	9.7%
Freelancing Services	₹5k	15.3%

What is the future of marketing in 2025

By the year 2025, virtual reality will take the lead in marketing trends. Customers will enjoy the amazing emotional experience as they shop for product brands with colorful, engaging advertising. They will come back time and time again, increasing their loyalty to a product brand, possibly even more than chatbots.

Future of technology in education in 2030

Technology will enter the classroom: currently, technology is used only as a source of information, however, soon children will have their own digital devices and teachers will use different tools to teach children and make their learning experience experiential and personalized.

Issue of important to improve the future of education

By promoting thinking, creativity, social and emotional intelligence, and ethical values, education empowers individuals to become active contributor to the society . Education give us the moral values, skills and knowledge that help us to shape our lives and progressive development of our future .

Causes for the change n educational system in future

Giving students a sustainable and high-quality education in the future will be made possible by a mix of teachers' involvement and AI. Personalizing learning for each student's strengths, needs, talents, and interests is yet another straightforward yet very successful and novel approach to the learning process.

Conclusion

In short, 2024 promises to be an exciting year in terms of technological advances. These trends are redefining the way we live and work, and are opening up new possibilities in all aspects of our society.

In 2024, the top innovations in STEM education include AI-driven personalized learning, immersive technologies like virtual and augmented reality, gamified learning experiences, collaborative online laboratories, and the integration of real-world problem-solving into the curriculum. (Paul Young, Oct 29, 2023, Experience Customer Success Manager working with clients and Business Partners on their data journey).

Suggestion

Impact of innovation practices on higher education is really enormous. Hence more funds should be provided to institutions which have been engaged in new innovative practices.

Recommendation

Central Government as well as State Governments should take proper initiation for the adoption of advanced technology, advanced innovative practices.Then only it is possible to expect good results.

REFERENCES

1. *Cohen, J.; Schmidt, E. (2013). The New Digital Age: Reshaping the Future of People, Nations and Business. New York, Knopf. ISBN 9780307957139*
2. *Freire, Tiago; Li, Jingping (23 December 2014). "Using Wikipedia to enhance student learning: A case study in economics". Education and Information Technologies. 21 (5): 1169–1181. doi:10.1007/s10639-014-9374-0. ISSN 1360-2357*
3. *Hart, A.D.; Hart, Frejd S. (2013). The Digital Invasion: How Technology Is Shaping You and Your Relationships. Baker Books.*
4. *Katherin, Marton (1992). "New technologies and developing countries: Prospects and potential*
5. *Madrazo, Eneko; Sarrionandia-Ibarra, Aitor; Esteban, Gustavo Adolfo; Peña, Alberto; Izquierdo, Urko (July 2022). "Changes in the Social Responsibility of University Students Involved in Wikipedia Article Edition". EDULEARN22: Conference Proceedings. EDULEARN22 Proceedings. 1: 4151–4158. doi:10.21125/edulearn.2022.0995. ISBN 978-84-09-42484-9*
6. *Selwyn, Neil; Gorard, Stephen (2016-01-01). "Students' use of Wikipedia as an academic resource — Patterns of use and perceptions of usefulness". The Internet and Higher Education. 28: 28–34. doi:10.1016/j.iheduc.2015.08.004. ISS*
7. *Sigalov, Shani Evenstein; Cohen, Anat; Nachmias, Rafi (8 February 2023), Olivier, Jako; Rambow, Andreas (eds.), "Open Educational Resources for Literacies, Diversity, Equity and Inclusion: The Case of Integrating Wikidata into Higher Education", Open Educational*

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Resources in Higher Education, Singapore: Springer Nature Singapore, pp. 279–306, doi:10.1007/978-981-19-8590-4_13, ISBN 978-981-19-8589-8, retrieved

8. *Stakić, Đorđe; Tasić, Marija; Stanković, Marko; Bogdanović, Milena (2021). "Students' Attitudes Towards the Use of Wikipedia: A Teaching Tool and a Way to Modernize Teaching". Área Abierta. 21 (2): 309–325.*
9. *Simkovic, Michael (5 September 2011). "Risk-Based Student Loans". Washington and Lee Law Review. SSRN 1941070.*
10. *Toyama, Kentaro (26 May 2015). Geek Heresy: Rescuing Social Change from the Cult of Technology (1st ed.). New York: PublicAffairs. ISBN 979-8200007240.*