PROCEEDING OF NATIONAL WEBINAR ON

USE AND UTILITY OF MODERN TECHNIQUES IN TEACHING – LEARNING

(उच्च शिक्षा के अध्ययन -अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता)

SPONSORED BY
DEPARTMENT OF HIGHER EDUCATION, MADHYA PRADESH

ORGANIZED BY
SHRI NEELKANTHESHWAR GOVERNMENT POST-GRADUATE COLLEGE, KHANDWA (MP)
(ACCREDITED B+ BY NAAC)
UNDER THE AEGIS OF IQAC

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Proceeding of National Webinar

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AUGUST 24, 2023

Sponsored By

Department of Higher Education, Madhya Pradesh

Organized by

Shri Neelkantheshwar Government Post-Graduate College, Khandwa (MP) (Accredited B+ by NAAC)

under the aegis of IQAC

Patron and Principal

Dr. Ganesh Prasad Dawre

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August 2023

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Glimpse of National Webinar

संदेश

डॉ. मोहन यादव
मंत्री
उच्च शिक्षा विभाग
मध्यप्रदेश शासन
(प्रभारी जिला-राजगढ़ एवं डिण्डौरी)

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पत्र क्रं.....A.15.27.8)M)23

दिनांक.......14).08.2023

संदेश

अत्यन्त हर्ष का विषय है कि श्री नीलकण्ठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खण्डवा द्वारा "उच्च शिक्षा के अध्ययन–अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता" विषय पर राष्ट्रीय वेबिनार का आयोजन किया जा रहा है। इस आयोजन के अवसर पर महाविद्यालय द्वारा प्रकाशित की जा रही स्मारिका विद्यार्थियों के सतत विकास और लक्ष्यों के कार्यान्वयन को निश्चित ही दिशा प्रदान करेगी।

स्मारिका प्रकाशन पर महाविद्यालय परिवार को हार्दिक शुभकांमनाए एवं बधाई।

(डॉ. मोहन यादव)

ज्ञानेश्वर पाटील
संसद सदस्य(लोकसभा)
क्षेत्र क्र. 28 खण्डवा (मध्यप्रदेश)

सदस्य :
उर्जा मंत्रालय संबंधी स्थायी समिति

क्र. १०५६

दिनांक : २१ / ०८ / २०२३

शुभकामना-संदेश

मुझे यह जानकर अत्यंत हर्ष हुआ है कि श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खंडवा द्वारा "उच्च शिक्षा के अध्ययन अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता" विषय पर राष्ट्रीय वेबीनार का आयोजन होने जा रहा है।

राष्ट्रीय वेबीनार शिक्षको एवं विद्यार्थियों की अभिव्यक्ति एवं बौद्धिक प्रतिभा को व्यक्त करने का मंच होता है। आशा है इस राष्ट्रीय वेबीनार से एवं वेबीनार में प्रकाशित होने वाली स्मारिका शिक्षको एवं विद्यार्थियों के लिए बहुत ही लाभकारी सिद्ध होगी ।

इस आयोजन के लिए महाविद्यालय परिवार को मेरी ओर से हार्दिक शुभकामनाएं ।

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क्रमांक/ Q - 492/

दिनांक   27/08/2023

शुभकामना संदेश

अत्यंत हर्ष का विषय है कि श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खंडवा द्वारा "उच्च शिक्षा के अध्ययन अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता" विषय पर राष्ट्रीय वेबीनार का आयोजन किया जा रहा है | इस वेबीनार में स्मारिका के प्रकाशन के लिए महाविद्यालय परिवार को बहुत बहुत शुभकामनाएं | यह वेबीनार एवं प्रकाशित होने वाली स्मारिका विद्यार्थियों के लिए बहुत ही लाभकारी सिद्ध हो यही कामना है |

श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय परिवार एवं वेबीनार की समस्त टीम को मेरी ओर से हार्दिक शुभकामनाएं एवं बधाई |

भवदीय

देवेन्द्र वर्मा
विधायक – 177 खण्डवा

संदेश

मुझे यह जानकर अत्यंत प्रसन्नता हई है कि श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खंडवा द्वारा "उच्च शिक्षा के अध्ययन अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता" विषय पर राष्ट्रीय वेबीनार का आयोजन किया जा रहा है । यह वेबीनार निश्चित ही महाविद्यालय के विद्यार्थियों एवं शैक्षणिक संवर्ग के लिए उपयोगी सिद्ध होगा ।

इस वेबीनार के सफल आयोजन के लिए महाविद्यालय परिवार को हार्दिक शुभकामनाएं एवं बधाइयां ।

(अनूप कुमार सिंह)
कलेक्टर
जिला खण्डवा (म.प्र.)

डॉ. किरणबाला सलूजा
अतिरिक्त संचालक, इंदौर संभाग

यह अत्यंत हर्ष का विषय है कि खंडवा जिले के अग्रणी महाविद्यालय श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खंडवा, छात्रों को शिक्षण के क्षेत्र में प्रयुक्त आधुनिक तकनीकों के बारे में शिक्षित करने के लिए "उच्च शिक्षा के अध्ययन अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता" विषय पर एक राष्ट्रीय वेबीनार का आयोजन करने जा रहा है। यह वेबीनार छात्रों के तकनीकी ज्ञान को बढ़ाएगा जो उनके समय विकास में सहायक होगा ।

यह वेबीनार एवं प्रकाशित होने वाली स्मारिका विद्यार्थियों के लिए बहुत ही लाभकारी सिद्ध हो यही कामना है। श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय परिवार एवं वेबीनार की समस्त टीम को मेरी ओर से हार्दिक शुभकामनाएं एवं बधाई।

डॉ. किरणबाला सलूजा

कार्यालय प्राचार्य, श्री नीलकण्ठेश्वर शासकीय स्नातकोत्तर
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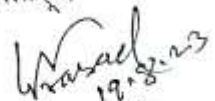क्र. २ ४२ ५ /2023   खण्डवा, दिनांक: 19/08/2023

डॉ गणेश प्रसाद दाबरे

(प्राचार्य)

जैसा कि हम सभी जानते हैं कि हम प्रौद्योगिकी के युग में हैं और शिक्षा का क्षेत्र भी इससे अछूता नहीं है। मुझे यह घोषणा करते हुए बहुत खुशी हो रही है कि हमारे जिले के अग्रणी महाविद्यालय श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खंडवा द्वारा "उच्च शिक्षा के अध्ययन अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता" विषय पर राष्ट्रीय वेबीनार का आयोजन किया जा रहा है।

मुझे विश्वास है कि यह वेबीनार शिक्षकों एवं विद्यार्थियों दोनों की तकनीकी कौशल को आगे बढ़ने में सहयोगी होगा, जिसके परिणामस्वरूप हमारा महाविद्यालय अकादमिक उत्कृष्टता की ओर बढेगा।

मैं राष्ट्रीय वेबिनार के आयोजकों को अपनी शुभकामनाएं प्रेषित करता हूँ।

(डॉ गणेश प्रसाद दाबरे)
Principal
S.M. Govt. P.G. College
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Dr. Avinash Dube

Professor and Head, Department of Physics

(Convener)

Message from Convener

It is my great pleasure to present the proceeding of the National Webinar on "Use and Utility of Modern Techniques in Teaching - Learning (उच्च शिक्षा के अध्ययन -अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता)" organised by Shri Neelkantheshwar Government Post-Graduate College, Khandwa (M.P.) under the aegis of IQAC and sponsored by Department of Higher Education, Madhya Pradesh. We were honoured to have Dr. Vineet Soni, Associate Professor and Head, Department of Botany, Mohanlal Sukhadia University, Udaipur, Rajasthan and Dr. Harendra Singh, Assistant Professor, Department of Mathematics, Post-Graduate College, Gazipuras the resource persons in this National Webinar.

We have received more than 200 registrations and 80+ participants were joined this national webinar in online mode while 70+ participants watch this webinar via smart classrooms of our institution. After the expert talk of resource persons, we have technical session for the contributors in which 4 papers were presented. We have received many articles based on different sub themes of the webinar and after screening 25 articles were accepted for proceeding.

As the convener of the webinar, I extend my gratitude to Chief Patron, Dr Kiranbala Saluja, Additional Director, HED, Indore division and Patron, Dr Ganesh Prasad Dawre, Principal, S. N. Govt. P. G. College, Khandwa for their support. I would like to thank organising, technical, editorial, publicity, publishing committees, and the whole teaching, non-teaching staff members of S. N. Govt. P. G. College, Khandwa for their dedicated support.

Finally, I would like to thank Dr Shakun Mishra Co-Convener, Dr Sonu Sen Organising Secretary, Dr Arpana Agrawal, Shri Abhishek Sinde, Smt. Shweta Dashore, all the contributors, attendees and persons who directly or indirectly contributed to the webinar. Without their invaluable cooperation and unwavering support, this webinar would not have come to fruition.

PREFACE

It is with great pleasure that we introduce the webinar proceeding for the event, "Use and Utility of Modern Techniques in Teaching – Learning." This collection represents the culmination of a collaborative effort to explore, share, and celebrate the transformative impact of modern techniques in education. As we stand on the cusp of a new era in teaching and learning, these proceeding serve as a testament to the vitality of innovative pedagogical approaches and their profound implications for the future of education.

The field of education has witnessed a remarkable evolution over the past few decades. Rapid advancements in technology, changing societal needs, and a deeper understanding of cognitive processes have all converged to usher in a new era of educational practices. This webinar sought to capture the essence of this transformation by bringing together scholars, educators, researchers, and practitioners from around the world to exchange ideas, share insights, and present their latest research findings.

These proceeding aim to serve as a valuable resource for educators, researchers, policymakers, and all those dedicated to advancing the frontiers of education. We believe that the ideas, research findings, and best practices presented within these pages will inspire ongoing dialogue and innovation in the field of education.

We extend our heartfelt appreciation to all the webinar participants, authors, reviewers, and organizers who have contributed their time, expertise, and enthusiasm to make this event and these proceeding possible. Your dedication to the pursuit of educational excellence is evident throughout this volume.

As we move forward into an era defined by the continued evolution of teaching and learning techniques, let us remain committed to harnessing the full potential of modern tools and strategies to empower learners and educators alike. These proceeding are a testament to the boundless possibilities that lie ahead in the pursuit of educational excellence.

We express our sincere thanks to Department of Higher Education, Madhya Pradesh for providing financial assistance to organize this webinar. Also, for college authority for their valuable support and inspiration. Thank you for your participation, and we hope these proceeding serve as a source of inspiration and knowledge in your educational endeavors.

Editors

TABLE OF CONTENT

INTRODUCTION TO SCILAB SOFTWARE

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Introduction

Scilab is a software package for high-performance numerical computation and high visualization. Scilab is a free and open-source software. It is an alternative to the highly-paid software MATLAB. It provides an interactive environment with a lot of built-in functions for technical computation, graphics, and animations. Scilab runs on all popular operating systems such as Linux and Windows. Since 1994, it has been distributed freely along with the source code via the Internet. It is useful for students at schools, colleges, and Research and development institutions. IIT Bombay is leading the effort to popularise Scilab in India.

History of Scilab

Scilab software history begins in the 1980s, with Blaise, a computer-aided control system design software created at the French Institute of Research in Computer Science and Control. It was inspired by MATLAB. In 1984, Blaise became Basile and was distributed for a few years by Simulog, the first French national institute for research in computer science and control. At the beginning of the '90s, Simulog stopped distributing Basile and then this software name became Scilab. The French National Institute for Research in Computer Science and Control decided to distribute Scilab as free open-source software. Scilab generally allows faster and more user-friendly development processes because the user can directly access a high-level language, with a lot of features provided by the library. The basic building block of the Scilab is the matrix. The fundamental data type is the array. Vectors, scalars, and matrices are automatically handled as a special case of basic data type. From the license point of view, Scilab is free software the user does not have to pay any money to purchase a license or subscription. Users can freely download and install a binary version of Scilab.

Some of the features are as follows

1. Linear algebra.

2. 2-D and 3-D graphics, animations.

3. Matrices.

4. Polynomials.

5. Rational functions.

6. Interpolation, approximations.

7. Ordinary differential equations solver.

8. Algebraic equations solver.

9. Signal processing.

10. Statistics.

Scilab provides many graphics features including, a set of plotting functions which allows to create 2-D, 3-D plots and animations.

Cloud Computing

Cloud computing is the delivery of computing services such as servers, storage, databases, networking, and software all over the Internet to offer faster innovation. For users who do not have a computer system, Scilab provides online programming through cloud computing. The users have to open the webpage www.cloud.scilab.in on their mobile phones to use this software.

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TRANSFORMING EDUCATION THROUGH GAMIFIED LEARNING USING KAHOOT

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Abstract

Kahoot, an innovative gamified learning platform, is revolutionizing education by introducing engagement, competition, and collaboration into the classroom. This article delves into Kahoot's transformative impact on education, making learning not only effective but also an enjoyable experience.

Introduction

In today's dynamic educational landscape, the pursuit of effective and engaging teaching methods is an ongoing quest. The advent of digital technology has not only reshaped the way we communicate but has also revolutionized the classroom experience. At the forefront of this educational transformation is Kahoot, a platform that has captured the imagination of educators and students worldwide. This article delves into how Kahoot is reshaping the educational landscape through its gamified approach to learning, making lessons not only effective but also undeniably fun.

Kahoot is far more than just a platform; it's an experience that redefines traditional classroom dynamics. At its core, Kahoot leverages the principles of gamification, a pedagogical strategy that incorporates game elements into non-game contexts, to create an environment where engagement, competition, and collaboration flourish. With its user-friendly interface and adaptability, Kahoot has emerged as an invaluable tool for educators, turning mundane quizzes and assessments into thrilling, interactive experiences. This article delves into how Kahoot is transforming education, making learning not only effective but also fun.

Features of Kahoot

1. The Kahoot Experience

Kahoot is an interactive, web-based platform that allows educators to create, customize, and share quizzes, surveys, and discussions in a game-like format. Students can participate using any internet-enabled device, from smartphones to laptops, making it accessible and inclusive. The Kahoot experience is built on three fundamental pillars: engagement, competition, and collaboration.

2. Gamification and Engagement

The core of Kahoot's success lies in its gamified approach to learning. Gamification, the application of game design elements in non-game contexts, stimulates student engagement and motivation. Kahoot achieves this by turning traditional quizzes into competitive, timed challenges. Students answer questions on their devices, and the platform awards points based on accuracy and speed. The competitive element, coupled with the real-time feedback provided by the platform, keeps students on the edge of their seats.

3. Competition as a Learning Driver

Kahoot leverages friendly competition to motivate students. Leaderboards display the top performers after each question, fueling the desire to excel. This competitive spirit not only encourages active participation but also challenges students to think quickly and critically. It transforms the learning process into an exciting game, where every question is a chance to climb the ranks.

4. Collaboration and Team-Based Learning

Beyond competition, Kahoot promotes collaboration through its team-based mode. Students can work together in groups, pooling their knowledge to answer questions collectively. This collaborative approach nurtures communication skills and peer learning, reinforcing the idea that education is not just about individual achievement but also about teamwork.

5. Customization and Versatility

Kahoot's versatility is one of its most compelling features. Educators can create quizzes, surveys, and discussions tailored to their curriculum. Whether it's reviewing previous lessons, assessing knowledge retention, or introducing new concepts, Kahoot can be adapted to suit a wide range of educational goals. The ability to add images, videos, and diagrams further enhances the learning experience.

6. Real-World Impact

The impact of Kahoot extends beyond the classroom. The platform provides educators with valuable insights into student performance, allowing for data-driven adjustments to teaching strategies. Kahoot's vast library of user-generated content ensures that educators have access to a wealth of pre-made resources, saving time and effort in lesson planning.

Conclusion

Kahoot's gamified approach to learning has transformed education by making it engaging, competitive, and collaborative. By harnessing the power of technology and game design principles, Kahoot has tapped into the innate desire for challenge and achievement, turning learning into an exciting adventure. As educators and students alike continue to embrace this platform, the future of education is poised to become not only effective but also tremendously enjoyable. Kahoot is not just a tool; it's a catalyst for a more interactive and dynamic educational experience.

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ARTIFICIAL INTELLIGENCE IN MEDICINE

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Abstract

Artificial Intelligence (AI) is a general term that implies the use of a computer to model intelligent behavior with minimal human intervention. AI is generally accepted as having started with the invention of robots. The term derives from the Czech word *robota*, meaning biosynthetic machines used as forced labor. AI in medicine, which is the focus of this review, has two main branches: virtual and physical. The virtual branch includes informatics approaches from deep learning information management to control of health management systems, including electronic health records, and active guidance of physicians in their treatment decisions. The physical branch is best represented by robots used to assist the elderly patient or the attending surgeon.

Introduction

Artificial intelligence (AI) is generally accepted as having started with the invention of robots. The word robot, spelled *robota* in Czech, was introduced into the literature by the writer Karel Capek in his 1921 play, "R.U. R" (*Rossum's Universal Robots*). It signified a factory where biosynthetic machines are used as forced labor. During the Renaissance period, Leonardo da Vinci made a detailed study of human anatomy to design his humanoid robot. His sketches drawn in 1495, were only rediscovered in the 1950s. Leonardo's robot was a *knight robot* that was able to stand-up, sit-down, wave arms and move head and jaw. More important than his accomplishments in this area, da Vinci's sketchbooks were a source of inspiration for a generation of robotic researchers, some of whom worked at NASA.

In medicine, a surgical system made by the American company, *Intuitive Surgical*, was named *Da Vinci* in recognition of his inspirational impact. *Da Vinci* surgical systems facilitate complex surgery using a minimally invasive approach, and can be controlled by a surgeon from a console. The system is commonly used for prostatectomies and gynecologic surgical procedures. It is starting to be used for cardiac valve repair.

William Gray Water became famous in 1948 for the fabrication of the first electronic autonomous robot, which he named Machina Speculatrix. His goal was to demonstrate how the brain functions. John McCarthy coined the term "artificial intelligence" (AI) in 1955, defining it as "the science and engineering of making intelligent machines".

Today, AI is considered a branch of engineering that implements novel concepts and novel solutions to resolve complex challenges. With continued progress in electronic speed, capacity, and software programming, computers might someday be as intelligent as humans. One cannot neglect the important contribution of contemporary cybernetics to the development of AI.

Today literature on AI is abundant and unbridled. AI was portrayed as a possible threat to the world economy during the 2015 economic forum held at Davos, where Stephen Hawking even expressed his fear that AI may one day eliminate humanity.

Artificial Intelligence in Medicine: The Virtual Branch

The application of AI in medicine has two main branches: virtual and physical. The virtual component is represented by *Machine Learning*, (also called *Deep Learning*) that is represented by mathematical algorithms that improve learning through experience. There are three types of machine learning algorithms: (i) unsupervised (ability to find patterns), (ii) supervised (classification and prediction algorithms based on previous examples), and (iii) reinforcement learning (use of sequences of

Artificial Intelligence in Medicine: The Physical Branch

The second form of application of AI in medicine includes physical objects, medical devices and increasingly sophisticated robots taking part in the delivery of care (*carebots*) [13]. Perhaps the most promising approach is the use of robots as helpers; for example, a robot companion for the aging population with cognitive decline or limited mobility. Japanese carebots are the most advanced forms of this technology. Robots are used in surgery as assistant-surgeons or even as solo performers [14].

Use of Robots to Monitor Effectiveness of Treatment

Robots can also be useful in the evaluation of changes in human performance in such situations as rehabilitation [16]. Another area where AI might be helpfully employed is for monitoring the guided delivery of drugs to target organs, tissues or tumors. For example, it is encouraging to learn of the recent development of nanorobots designed to overcome delivery problems that arise when difficulty of diffusion of the therapeutic agent into a site of interest is encountered. AI can also be used in investigation and diagnosis of diseases

such and cardiovascular conditions for which holter monitoring is the gold standard investigation. The Holter monitor is a type of portable electrocardiogram (ECG). It records the electrical activity of the heart continuously over 24 hours.

Recently many companies have developed similar machines for blood glucose monitoring which measures patient's blood glucose levels over 15 days and helps in acesseing peak bloood glucose levels and hence helps in adjustment of the respective treatment regimen.

Conclusion

AI for personal use is going to stay with us much as genetics will continue to provide personal services. It is therefore important to consider how AI will also serve the development of our health care systems. One researcher has proposed *MyFinder* as a personalized community computing to resolve challenges of personalized genome services, acting jointly with AI and shaping the personalized and participative health care of the future. The goal of this platform is to provide personal genome

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SWAYAM PLATFORM FOR EFFECTUAL TEACHING AND LEARNING

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Abstract

In the digital age, education has undergone a profound transformation with the integration of technology into teaching and learning processes. One remarkable manifestation of this transformation is the SWAYAM platform - a digital initiative by the Government of India aimed at providing open and accessible education to learners across the nation. This research article delves into the architecture, features, benefits, challenges, and impact of the SWAYAM platform on the landscape of education. By analyzing its effectiveness in democratizing education, promoting lifelong learning, and addressing barriers to access, this article highlights the potential of SWAYAM to revolutionize education in India and beyond.

Introduction

Education is a cornerstone of societal progress and personal growth. With the advent of technology, digital platforms have emerged as a powerful medium to deliver education beyond traditional classrooms. SWAYAM, which stands for "Study Webs of Active Learning for Young Aspiring Minds," is a comprehensive digital platform launched by the Government of India to provide high-quality education to learners of all ages, breaking down geographical, financial, and other barriers. SWAYAM leverages technology to deliver a wide range of courses, from school-level to postgraduate courses, across various disciplines. The platform is built on a user-friendly web interface that enables learners to access courses, lectures, assignments, and assessments.

Herein, the various features of the SWAYAM platform have been illustrated along with the impact of teaching/learning via SWAYAM. Challenges and future directions have also been discussed.

Architecture and Features

There are several fascinating features that were offered by SWAYAM which include Massive Open Online Courses, open access, online delivery, course flexibility, interactive

and self-paced learning, global community, certification and recognition, and 24/7 Access, etc.

1. Massive Open Online Courses (MOOCs)

SWAYAM offers MOOCs that combine video lectures, quizzes, and interactive content to enhance engagement and learning outcomes. MOOCs are designed to accommodate a large number of participants, often numbering in the thousands or even tens of thousands. This scalability is made possible through online platforms that can handle the distribution of content, assessments, and interactions among a diverse group of learners.

2. Open Access

MOOCs are typically open to anyone with an internet connection. This inclusivity removes traditional barriers to education, such as geographical location, financial constraints, and institutional affiliations. Individuals from different backgrounds and regions can enroll and participate, democratizing education on a global scale.

3. Online Delivery

MOOCs are delivered entirely online, usually through a dedicated learning platform or website. Participants can access course materials, lectures, assignments, quizzes, and discussion forums through their computers or mobile devices. This online format provides flexibility for learners to engage with the content at their own pace and according to their own schedules.

4. Course Flexibility

MOOCs cover a wide array of subjects, ranging from academic disciplines to vocational skills, personal development, and beyond. This diversity of offerings allows learners to explore areas of interest, acquire new skills, or even supplement their formal education with specialized knowledge. The diverse range of courses and subjects allows the learner to tailor their learning experiences to their interests and needs.

5. Interactive and Self-Paced Learning

SWAYAM provides discussion forums where learners can interact with peers, instructors, and experts to foster collaborative learning. MOOCs often incorporate interactive elements to enhance the learning experience. These may include video lectures, quizzes, assignments, peer-reviewed assessments, discussion forums, and collaborative projects. Interactive components encourage active engagement with the material and facilitate meaningful learning interactions among participants. One of the significant advantages of MOOCs is their self-paced nature. Learners can progress through the course content at

their own speed, which accommodates various learning styles and preferences. This flexibility is particularly valuable for individuals who are working, have family responsibilities, or are pursuing multiple interests.

6. Global Community

MOOCs foster a sense of community among learners from different parts of the world. Discussion forums and social interactions enable participants to share ideas, collaborate on projects, and learn from each other's perspectives. This global networking enhances the learning experience and provides opportunities for cross-cultural exchange.

7. Certificationand Recognition

Upon successful completion of a course, learners receive certificates that can contribute to their academic and professional credentials.While many MOOCs offer free access to their content, some also provide the option for participants to earn certificates upon successful completion. These certificates can serve as evidence of the knowledge and skills acquired during the course and can be valuable for professional development, career advancement, and even academic credit in some cases.

8. 24/7 Access

 Learners can access course materials and lectures at any time, enabling self-paced learning and accommodating various schedules.

Impact of teaching/learning via SWAYAM

1. Democratizing Education

SWAYAM has democratized education by bridging geographical gaps and making quality education accessible to learners in remote areas. Learners from different backgrounds and regions can access courses from prestigious institutions, leveling the playing field for those who lack access to traditional educational institutions.

2. Lifelong Learning

The platform promotes lifelong learning by catering to individuals of all ages. Professionals seeking to upskill, students aiming to supplement their school education, and individuals pursuing higher education all benefit from SWAYAM's diverse course offerings.

3. Addressing Barriers

SWAYAM addresses financial constraints by offering courses for free, reducing the financial burden on learners. Most courses on SWAYAM are offered for free or at a minimal cost. This makes quality education accessible to a broader range of students, regardless of their financial background. The reduced financial burden allows students to pursue additional

courses and expand their knowledge base. Also, the language barriers have also been overruled on this platform. Various courses available on SWAYAM platform have now been translated into various regional languages.

Additionally, the platform accommodates learners with physical disabilities through features that ensure accessibility. SWAYAM's digital platform ensures accessibility for students with disabilities. The platform includes features that accommodate different learning needs, making education more inclusive and equitable.

Challenges and Future Directions

While SWAYAM has made significant strides in revolutionizing education, challenges remain. Limited internet connectivity in some regions, varying digital literacy levels among learners, and ensuring course quality and instructor engagement are ongoing concerns. To address these challenges, efforts should be made to expand internet infrastructure, provide digital literacy training, and continually improve course design and delivery.

Conclusion

SWAYAM stands as a groundbreaking initiative in the realm of digital education, offering a wide array of courses to learners across India. By leveraging technology to break down barriers and promote lifelong learning, SWAYAM has the potential to transform education, making it inclusive and accessible to all. While challenges persist, the impact of SWAYAM on democratizing education is undeniable, paving the way for a more inclusive and educated society.

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ARTIFICIAL INTELLIGENCE IN PERSONALIZED LEARNING IN THE INDIAN CONTEXT

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Introduction

The term Artificial Intelligence or AI was given by John McCarthy in 1956, sometime after Alan Turing's death, who later became known as the father of AI. In his time, Turing had already wondered, "Can machines think?" several times. Almost six decades later, Artificial Intelligence has reached a place where AI can exhibit human-like intelligence, such as logical reasoning, problem-solving, and learning (Panigrahi & Joshi, 2020).

AI is "computing systems which are capable of engaging in human-like processes such as learning, adapting, synthesizing, self-correction, and use of data for complex processing tasks" (Jaiswal & Arun, 2021). The question we aim to explore in this paper is whether this advancing technology can be used to improve the educational sector.

AI has an incredible framework, and if utilized strategically, it holds tremendous potential to provide prodigious benefits to educators, students, guardians, and society overall. India's educational structure is vast, holding around 340 million students in 800 universities, 40,000 colleges, and around 0.15 million schools (Majid & Lakshmi, 2023). There exists, however, a significant demographic divide between different educational sectors. If AI is to be utilized uniformly in the whole sector, it must overcome this divide.

Personalized learning is a system where teaching is tailored to a student's preference, adaptability, skills, and interests. This method is all about students taking ownership of their learning. Due to logistical boundaries, not every educational institute can accommodate the idea of personalized learning. The authors want to explore how Artificial Intelligence (AI) will facilitate the process.

In this paper, the researchers aim to explore the methods, positive and negative influences of AI, and the risks and challenges of introducing AI to personalized learning methods.

Technology in The Educational Sector of India

1. Evolution of Edtech Firms

From the concepts of gurukuls, where children were taught under the shade of a tree, to high-tech equipped classrooms and applications, the Indian educational sector has seen significant changes. According to a KPMG Report, education technology (Edtech) is estimated to be roughly1.96 billion (KPMG, 2017). In 2021, the gradual increase in ed-tech startups led to around 4,000 (Eximius Ventures, 2021). The numbers sound promising; however, no data is available to determine how many of these organizations are indulging in personalized learning rather than using a 'one size fits all' formula in prices that reach the sky. India not only has a vast share of students but is known for conducting some of the world's most competitive exams and realizes lakhs of candidates every year. The competition is cut-throat, with lakhs of young kids studying for nearly 10-12 hours daily. In these circumstances, several Edtech companies solidified their 'business' by virtue of good marketing (Eximius Ventures, 2021).

2. Aftermath of Pandemic and Online Classes

The pandemic forced the educational sector to go virtual. However, only 11 percent of households own a computer or other digital device in rural areas, compared to 42 percent of urban Indian households (NSSO, 2018). The percentage of enrolled children with access to smartphones has risen from 36.5 percent in 2018 to 61.8 percent in 2020 (ASER, 2020). As per a recent 2022 study, 43 percent of students in India had no access to schooling in 19 months during the pandemic (Vernekar, Rai, & Singhal, 2022). Now that the world is back to normal, an amalgamation of online and offline learning could be created to bring out the best out of both the modes of learning.

Ai in Education: Scope and Current Uses

1. AI in Personalized Learning

In (Blaylock, 2019), the authors realize the changes that AI may bring to the 'learning experience' in its entirety and forced transitions in the global education industry, which are as follows:

- Adjustable Learning Environment
- New Opportunities
- Improved Efficiency
- AI-driven Education Platform

AI-based products must be commoditized and contextualized to make them available to more expansive, diverse, and regular recipients of any sector. With new avenues like ChatGPT's emergence, AI is both handily available to anyone with an electronic device and

accessible to most. Education technology firms have worked on rule-based algorithms to detect students' learning paths (Jaiswal & Arun, 2021).

Personalized learning, as mentioned before, aims to cater to the specific needs of every student. It gives them the choice and voice for their education. A teacher explains a concept, but the extent of understanding and ability to utilize the same to solve application-based questions differs from student to student. Currently, the education system follows 'one size fits all.' The teacher leads the whole class with a standard lesson. To test students' understanding, a standard set of questions is provided to all the students simultaneously. The whole class moves on even if the student does not perform up to the standards. Personalized learning challenges this idea by acknowledging every student's different needs and capabilities. It believes in tailor-made solutions for every student to improve their respective performances.

However, the same can be difficult with the vast differences in the teacher-student ratio. It is humanly impossible for a teacher to cater to every student's needs individually. This is where AI steps in and makes things easier. The determined use of AI in personalized learning can improve students' capability and interest in the subjects and provide better results.

2. Current Use Cases of AI in Education

AI has been accepted as an emerging technological trend in several India-based education reports that impact education delivery and management (Panigrahi & Joshi, 2020). In previous years, digital technologies have integrated innovation in education by including interactive projectors and educational movies in curriculums. Technology has also been utilized to reduce the administrative workload of such institutes. For example, the Gujarat Government launched the "Command & Control Centre 2.0," which uses machine learning (ML) and artificial intelligence (AI) to analyze factors such as Periodic Assessment Tests (PAT) and school attendance to forecast valuable insights such as, "students likely to migrate, places to which they will migrate and students facing high-risk of dropping out" (KPMG; Confederation of Indian Industry, 2021).

In Tamil Nadu, some government-run schools replaced physical attendance registers with an application. Remote Proctoring, an AI platform, invigilates students during online exams. This allowed students to take exams online and reduced the logistical burden of organizing and writing exams. IIM, Rohtak used this model to conduct its executive MBA entrance exam (Panigrahi & Joshi, 2020).The role of advancing technology in most educational institutes in India, excluding the private sector, seems limited to fulfilling the

smaller objectives. However, the government has recently acknowledged and tried to incorporate AI-driven ideas into education.

The Ministry of Education (MoE), Govt. of India launched "AI for All" in cooperation with Intel and CBSE in August 2021. "AI for All," a self-learning online program, aims to raise awareness about artificial intelligence. The self-learning program strives to improve everyone, including children, adults, and older persons (Majid & Lakshmi, 2023).

However, Indian schools are not strangers to emerging technological trends. Mount Zion, School of Gangtok, prepared exam papers for students using adaptive assessment software. The questions were customized to their pace of learning, i.e., personalized learning using AI (Dhar, 2019). An ed-tech company in Hyderabad, Next Education, developed an AI-driven assessment platform used by more than 50 schools in India (Dhar, 2019). With these existing use cases and AI at one's fingertips, these technologies can be modified and used for personalized learning. Despite AI's easy availability, the infrastructure will pose a significant challenge in the Indian scenario.

Conclusion and Suggestions

AI is an emerging technological trend in contemporary society. The educational sector has also experienced significant shifts in the accessibility of technology to fingertips. AI can be extremely useful if modeled carefully. The government has recently acknowledged AI for education. In this paper, the researchers have tried to explore the idea of AI in personalized education.

Implementing personalized learning models without technology is impossible in India due to the vast difference in the teacher-student ratio. This creates a vital need and scope for AI in the educational sector. The researchers suggest commoditization of the technology in the simplest form to reach more places. This could be done by building a simple software or application that can be used easily on available electronic devices. This software or application can have a limited dataset that, in the literal sense, would limit its scope to only educational purposes.

The object of such software or application should be to connect the teachers with the students for them to be able to review their progress. Therefore, the teachers will only have a supervisory role, among other things, in the personalized learning process while AI does the work.

Along with this suggestion, the authors promote personalized education in learning. It is imperative for students to study to gain knowledge. This can be hard when the system focuses on common lesson practice, meaning the whole class moves on if the marks are above average. Students who did not do well in a lesson can still focus on it personally and

learn at their own pace. Thus, AI can become a great tool to fasten this process and improve the overall quality of learning in the contemporary education system by incorporating the personalized learning method.

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VIRTUAL LABS FOR EFFECTIVE LEARNING

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Abstract

In an era characterized by rapid technological advancements and an increasingly digitalized world, education is evolving at an unprecedented pace. Traditional methods of learning are being augmented and, in some cases, replaced by innovative tools and platforms that leverage technology to enhance the educational experience. One such transformative tool is the advent of virtual labs, which have revolutionized how students engage with and comprehend complex scientific concepts and practical experiments. This paper explores the concept of virtual labs and their profound impact on effective learning.

Introduction

Education has always been a dynamic field, adapting to the changing needs of learners and the evolving demands of society. With the advent of digital technology, the traditional classroom model is being supplemented by various digital tools and platforms, all designed to make learning more interactive, engaging, and accessible. Among these tools, virtual labs have emerged as a powerful instrument for enhancing the effectiveness of learning, particularly in the fields of science, technology, engineering, and mathematics (STEM).

What Are Virtual Labs?

Virtual labs are interactive computer-based simulations that replicate real-world laboratory experiments and activities. They provide a digital environment where students can perform experiments, manipulate variables, and observe outcomes, all without the need for physical laboratory equipment or materials. These simulations are often highly detailed and realistic, aiming to recreate the experience of conducting experiments in a physical lab.

Benefits of Virtual Labs for Effective Learning

1. Accessibility and Flexibility

One of the most significant advantages of virtual labs is their accessibility. They break down geographical barriers and eliminate the need for expensive laboratory setups.

Students from around the world can access and conduct experiments at any time, fostering an environment of self-paced learning and accommodating diverse schedules and learning styles.

2. Cost-Effectiveness

Traditional physical labs can be expensive to set up and maintain, requiring funds for equipment, chemicals, and safety measures. Virtual labs substantially reduce these costs, making high-quality laboratory experiences available to institutions with limited budgets.

3. Safety and Risk Reduction

In some experiments, safety concerns or the use of hazardous materials may pose risks to students in physical labs. Virtual labs provide a risk-free environment where students can conduct experiments without any danger, allowing them to focus solely on the scientific principles and procedures.

4. Enhanced Interactivity and Visualization

Virtual labs often incorporate advanced 3D graphics and animations that enable students to visualize complex scientific concepts and processes more effectively. This enhanced interactivity promotes a deeper understanding of the subject matter.

5. Immediate Feedback and Iteration

Virtual labs provide instant feedback on experiments, allowing students to adjust variables, correct mistakes, and repeat experiments as needed. This iterative process reinforces learning by emphasizing the scientific method and the importance of experimentation in hypothesis testing.

6. Expanding Educational Reach

Virtual labs have the potential to reach a broader audience, including learners who may not have access to traditional laboratory resources due to geographic constraints or disabilities. This inclusivity promotes diversity and democratizes access to STEM education.

Challenges and Considerations

While virtual labs offer numerous advantages, they are not without challenges. Some argue that the tactile experience of physical labs cannot be fully replicated, and there may be limitations in simulating certain experiments. Additionally, ensuring that students engage actively and maintain academic integrity in virtual lab settings can be challenging.

Conclusion

Virtual labs have emerged as a powerful tool for enhancing the effectiveness of learning in STEM fields and beyond. Their accessibility, cost-effectiveness, safety benefits, interactivity, and capacity for immediate feedback make them an invaluable addition to the educational landscape. However, their implementation should be mindful of the unique challenges they present and the need for pedagogical strategies that maximize their potential. As technology continues to advance, virtual labs are poised to play an increasingly vital role in fostering effective learning experiences and nurturing the next generation of scientists, engineers, and innovators.

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EFFECTIVE USE OF MODERN TEACHING-LEARNING TECHNIQUES IN HIGHER EDUCATION

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Abstract

Modern teaching-learning techniques have been widely used all over the world. These techniques greatly affect traditional learning. It has the potential to provide better knowledge and learning than traditional classroom teaching. Today's world is the era of technology. Technology can play a significant role in enhancing skills and improving quality education to learning methods in higher education. In this work, we have explored the various modern teaching-learning techniques, particularly in higher education. This paper also includes the relevance and use of modern teaching-learning techniques in higher education.

Keywords: Classroom teaching, Traditional teaching-learning, Modern teaching-learning techniques, technology, etc.

Introduction

Education is very important for the development of any country, especially higher education, which is one of the aspects as it gives graduates and post-graduates the opportunity to start working in various sectors that can help in nation-building. Over the past few decades, traditional teaching methods have been used to deliver knowledge to learners. However, these methods require a lot of effort as sitting passively and listening to lectures till the end. Old techniques are limited by classroom teaching knowledge. Modern teaching-learning is the new learning techniques that are more practical and activity-based to make teaching and learning clear and easy.

This is the era of technology. Technology has the potential to change the traditional learning system. Teachers are the backbone of the education system and can play an important role in the effective implementation of modern teaching-learning techniques. The teacher is not only a source of knowledge but a stimulator, initiator, and facilitator of knowledge also. Traditional teaching-learning methods have been restructured for the purpose of making learning easy and transferring knowledge fast [1]. Many research

groups have discussed the various teaching-learning pedagogies in providing quality education, inclusive practices, and relevant articles. They have also discussed that the teacher plays an important role in providing knowledge and making learning easy. The teacher is also responsible for identifying and creating important learning goals, providing instructional materials, and presenting the strategy of teaching and learning into action [2]. In light of the above techniques, the various modern teaching-learning techniques have been discussed in detail in this paper. The relevance and use of these modern techniques have also been shown particularly in higher education.

Traditional vs. modern techniques of teaching-learning in higher education

From the last few decades, traditional teaching-learning methods have been popular and in trend to deliver knowledge through teachers. These types of teaching methods are required to sit passively and listen to lectures for a longer time. Sometimes it is also dull and limited by the classroom knowledge. This type of methodology is based on repetition and memorization. After the intervention of technology, various modern teaching-learning have been included which are more based on activities and practical. Modern teaching-learning methods are capable of delivering knowledge and making learning effective. These techniques make learning easy and clear as well as keep us away from repetition and memorization. Modern teaching-learning can be implemented effectively including traditional teaching-learning methods using technology.

Methodology of modern teaching-learning techniques

The new modern teaching-learning techniques are a practical approach that makes learning easy, simple, and clear. These methods have the potential to change the traditional learning system. Modern teaching-learning techniques are capable of delivering the knowledge effectively and making the learning enjoyable. These methods require participation from both side teachers and learners. Below some modern teaching-learning methods have been shown and discussed to make learning easy [3-6]. The methods are as follows

1. Flipped classroom: The learning based on the activities and the collaborative project is called a flipped classroom. In this type of classroom, learners play an active role and initiate learning on their own. It is complementary to traditional learning where learners learn the subjects first.

2. Project-based learning: This type of learning is based on real-life problems. Learners are responsible for learning through projects which should be relevant to real life.

3. Cooperative learning: Cooperative learning is based on collaborative learning where each member of a small group is assigned a role. The aim of this learning is to teach students about collaborative work, responsibility, and teamwork.

4. Gamification: The learning based on games is called gamification. Game-based learning is always enjoyable and makes the task and subjects easy. In this type of learning, rewards are distributed to the learners.

5. Problem-based learning: In this type of learning lower to higher level of problem is given to the learners. The learners can work in a group or separately to accomplish the task.

6. Thinking-based learning: The teachers ask deeper questions to learners which helps learners to enhance critical thinking and increase analytical thinking.

7. Competency-based learning: Learning which is based on action-oriented knowledge rather than memorization is called competency-based learning.

8. Inquiry-based learning: The learning based on open-ended questions is called inquiry-based learning. In this type of learning, learners are responsible for getting answers through their own research. This type of learning helps to disseminate reasoning and analytical skills.

9. Visual auditory and kinesthetic learning: The visual or view, audio, and content-based activity is called VAK learning. In this type of learning the learners have the freedom to view content, listen to discussion, and act accordingly to content which will help learners to keep themself updated about knowledge.

10. Tactical learning: The demonstration and hands-on-based learning between teacher and learners simultaneously is called tactical learning. This type of methodology helps to correct mistakes after instructions from teachers to learners.

Difference between traditional and modern teaching-learning techniques:

Traditional teaching-learning is mainly based on repetition and memorization-based techniques where learners are unable to disseminate skills. Learners are limited by the classroom teaching knowledge as well. Whereas modern teaching-learning methods are student-centered and more based on practical knowledge. Modern teaching-learning methods allow learners to learn the subjects on their own. Therefore, these types of

learning are capable of imparting knowledge easily and help in learning fast in higher education [5-6].

Conclusions

Traditional teaching-learning methods have been widely used for the last few decades. Due to the lack of limited classroom knowledge, and learning methods, modern teaching-learning techniques have been introduced to overcome this type of problem. The new modern teaching-learning methodologies have been discussed in this paper in detail to make learning easy. These types of methods are capable of making learning easy through the involvement of learners directly. The methods are student-centered and teacher-oriented. Modern teaching-learning techniques can play an important role in imparting knowledge and learning easily in higher education.

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IMPACT OF MODERN TECHNOLOGY ON HIGHER EDUCATION – A REVIEW

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Abstract

Technology is the mother of civilizations of arts and sciences. Technology is transferring to every field of life today including education. No doubt the education sector is highly benefitted from the rapid evolution in the technology world. It eased the life of both students and teachers whether our students are sitting in the classroom with us we teach, sitting in their homes listening, participating by video webinar, or answering questions on an online platform. Technology can play a pivotal role in students learning. Here is a discussion of the types of students who benefit from distance learning and the importance of technology in higher education.

Keywords: Technology – Distance learning – Higher education

Introduction

Modern technology is modern products, services, and infrastructure that are designed and built using scientific knowledge and engineering. This includes information technology based on software computers and networks that were released or improved recently. In higher education technology facilities active and experimental learning through interactive simulations, virtual labs, online discussion platforms, multimedia content, and real-timecollaboration tools. Technology provides students with access to countless online resources, encouraging, them to carry out research and therefore become more independent, it also simplifies learning by making concepts more digestible for example through an instructional video.

Use of Technology in Curriculum Development-

The use of technology in higher education such as digital learning platforms and interactive Multimedia is already improving classroom engagement and educational outcomes. Implementing interactive learning features quizzes, simulations, gamification, and so on in an educational curriculum can improve the motivation performance and achievement of learners. Higher educational institutions must focus on creating a basic curriculum for

students with the help of smart- education apps and all-based programs, embedding technology in the educational curriculum can help students learn in a better and more effective manner.

Use of Technology in Distance Education

Technology has removed the limitations of time and space and the number of students who can "attend" a college has increased dramatically. Students who were previously eliminated from college, institutions due to their inabilityphysically to sit in the classroom are now fully able to participate in higher education. Studentsin rural areas who would find it difficult to relocate, and parents with children who find it difficult toleave the home have the facility of distance learning.

Some important educational technology tools are the following

1. MOOCS

2. EDMODO

3. SOCRATIVE

4. PROJEQT

5. TED-ED

6. CLASS-DOJO

7. EDUCLIPPER

Difference between Traditional and Modern Teaching Methods

The traditional method of teaching is still prevalent in most parts of our nation. In educational institutions, teachers are the only source of information. Teachers explain the concept to the learners with the use of blackboard and chalk. They write all the contents on the blackboard and ask the students to note down in their notebooks and memorize and recite the notes. That is all the focus of education in these institutions is to pass the semester exams. Then they continue lacking indecision-making and problem-solving skills. Unlike Traditional teaching methods, modern teaching methods are more interactive and keep students intact. It maintains the interest of students through animations and videos. The visual medium is better than any other medium to give instructions. It helps to memorize the concept fast and for a more extended period than reading. However, there must be a proper balance between the use of traditional and modern teaching methods. Both ways should be imparted into higher education.

Conclusion

Modern technology in higher education provides many benefits to students-

1. Faster access to information is one of the most substantial advantages of technology in higher education is that it provides students with an ocean of the information in the quickest possible time.

2. Students can now access valid information at any time from a vast number of sources i.e. websitese-books, PDFs, and so on. They use it for assignment projects/internships/research etc.

3. Wide variety of learning mattersStudents can access a huge variety of learning materials on the internet. They include scientific articles, journals, guidebooks, informational websites online databases, and blogs of educators/ authors to increase the scope for distance learning.

4. Implementation of online collaboration and broadcasting tools to make the courses accessible from anywhere.

5. Finally since the need of students changes with time and advancement in technology, gradual upgradation of curriculum is essential. Technology integration is a vital step to make learning effective and collaborative, which in turn will make students future-ready.

6. Any Ed tech applications or devices need internet support for functions like video streaming, online chat, video calling, and so on. Internet connectivity with higher bandwidth and reliable devices are necessary for operating any Ed-tech apps or tools. Thus, college teachers and students need to have resources and support.

7. The education sector demands that teachers and students have basic technical skills and know-how. They must have the necessary skills or gain them to leverage the benefits of education technology.

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DIGITAL HERBARIUM –ICT-BASED ECO-FRIENDLY TEACHING –LEARNING TECHNIQUE IN PLANT-SCIENCE

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Abstract

Herbarium is a technique of study of real plants in a scientific way. Collection and preservation of specimens is a part of biological science study. Digital herbarium is prepared in a digitized form, where digital images of plant and plant parts are preserved. Using modern techniques preparation of a digital herbarium only not helps learners in a nice way but also savesthe environment.

Keywords: Botany, Digital herbarium, online resources, Plant Science.

Introduction

An herbarium is a collection of preserved plant specimens with data used for scientific study. Herbaria have long been essential for the study of plant taxonomy. A herbarium is a storehouse of plant species. In it dried, pressed, preserved, and mounted plant specimens are arranged in a sequence of an accepted system of classification for future reference and study. Herbarium specimens greatly help in developing flora, manuals, and monographs. The term 'virtual herbarium' or 'digital herbarium' has widely been applied to a web-based collection of digital images of preserved plants or their parts. Over the past five years, considerable progress has been achieved in the creation of digital assets from herbarium specimens, and in the dissemination of this information.

The steps involved in the preparation of the herbarium are

1. Collection of plant specimens.
2. Pressing and drying of specimens.
3. Preservation of specimens.
4. Mounting of specimens, on the standard size sheet.
5. Labeling of sheets on the right lower corner.
6. Filing of sheets.

The tools and equipment required are many and the techniques go so long. The collection of specimens from nature also destroys some natural resources. To overcome this problem

there is an alternate and modern method ofherbariumpreparation that is digital herbarium. The present study deals withICT based teaching-learning method of digital herbarium in plant science, where virtual images of planned specimens are in digital forms. There are many different ways to incorporate digital herbaria into biology classes.

Historical background

For those who stress history, there are sites like the one presenting plants Charles Darwin gathered on his Beagle Voyage and sent to his mentor, John Stevens Henslow, professor of botany at Cambridge University (Darwin's Plants from the Beagle Voyage, 2012). The site links to a video describing the importance of the collection to Darwin's work (Parker, 2009). The American plant systematic and historian of botany, James Reveal, has created a rich website on Lewis and Clark's botanical collection (Reveal, 2008). On the Linnaean Society's website are scans not only of Linnaeus's plant specimens, but of insects, fish, and shells (The Linnaean Collections, 2012) and field notebooks for American naturalists are coming online through a Smithsonian Institution project (Field Book Project, 2013). The material available is so rich that it's open to a variety of approaches that can attract different types of learners and also renew a sense of discovery in faculty.

Concept of Digital Herbarium

According to Fosberg and Sachet (1965), a modern herbarium is a great filing system for informationabout plants both primary in the form of actual specimens and secondary in the form of published information, pictures (JPG), and recorded notes.

In botany, a virtual herbarium is a herbarium in digitized form i. e. it concerns a collection of preserved plants or plant parts. Virtual herbaria often are established to improve the availability of specimens to a wider audience. The Botanical Survey of India has also prepared digital herbariums, which are called virtual herbariums. Indian Virtual Herbarium (https://ivh.bsi.gov.in) is a database of dried plants that maximizes the usefulness of the collections. Apart from digital images of the herbarium specimens, the label data on each species include all information about the herbarium specimen such as family, genus, species, author citation, sub-species, variety (if any), collector, collection number, collection date, herbarium region, localities, plant description, habitat and comments (if any) are available.We can also get information about the virtual herbarium from the plant list (http://www.theplantlist.org/) apart from this we can also get information from the following International virtual websites which are as follows Royal Botanic Gardens Kew (http://apps.kew.org/herbcat/navigator); 468,400 specimens), C. V.

Starr Virtual Herbarium at New York Botanical Garden (http://sciweb.nybg.org/science2/vii2.asp; 2.5 million specimen records and 1.5 million images), Geneva Herbaria Catalogue (https://www.village.ch/musinfo/bd/cjb/chg/?lang=en); 135,747 images).

In India, the major initiatives on digitization of herbaria have been accomplished by the Indian Institute of Science Herbarium {(JCB) (http://florakarnataka.ces.iisc.ernet.in/hjcb2), Herbarium, Raw Drug Repository of(FRLHT)http://envis.frlht.org/digital-herbariummain.php}, Herbarium of (JNTBGRI) http://www.jntbgri.in/tbgtherbarium/contacts.asp}, Janaki Ammal Herbarium in the Indian Institute of Integrative Medicine {(RRLH) (http://www.iiim.res.in/herbarium/herbarium.htm}, the Herbarium of French Institute of Pondicherry {(HIFP) http://ifp.plantnet-project.org/search}and Herbarium of Regional Plant Resource Center, Odisha. (http://www.rprcbbsr.com/View/digital_herbarium. aspx).

Merits of digital Herbarium

1. Advantages of digitization is that the specimen's morphology can be visualized without damage to the original specimens.

2. The high-resolution images of digitized specimens can be magnified; hence researchers can examine them.

3. Preparation of a digital herbarium is a non-destructive method. In it real plant material is not killed so it is an ecofriendly technique for study.

4. Preservation of a large part of a plant is difficult in traditional herbarium, but it is easy in digital herbarium.

5. A large, well-maintained laboratory is not required.

6. Maintenance with large numbers of preservative is not required.

7. It gives a scope of usage of information.

Technology in Botany and provide adequate knowledge of computers and electronic devices.

Demerits

1. Real plant specimens are not stored.

2. Aroma of plant is not observed.

3. Some studies, which are based on touch, cannot be possible

Conclusion

The availability of on-line digital images isforming an indispensable part of primary data provision for floristic research. With the help of a digital herbarium, we can get online information about online specimens. In addition, type specimens of International Digital Herbarium can be obtained. This onlinedatabase hasa tremendous impact on research and education in plant systematics, ecology, plant community analysis, phenological studies, environmental sciences, agriculture, and forestry.

Figure 1: Digital Herbarium specimens webpage
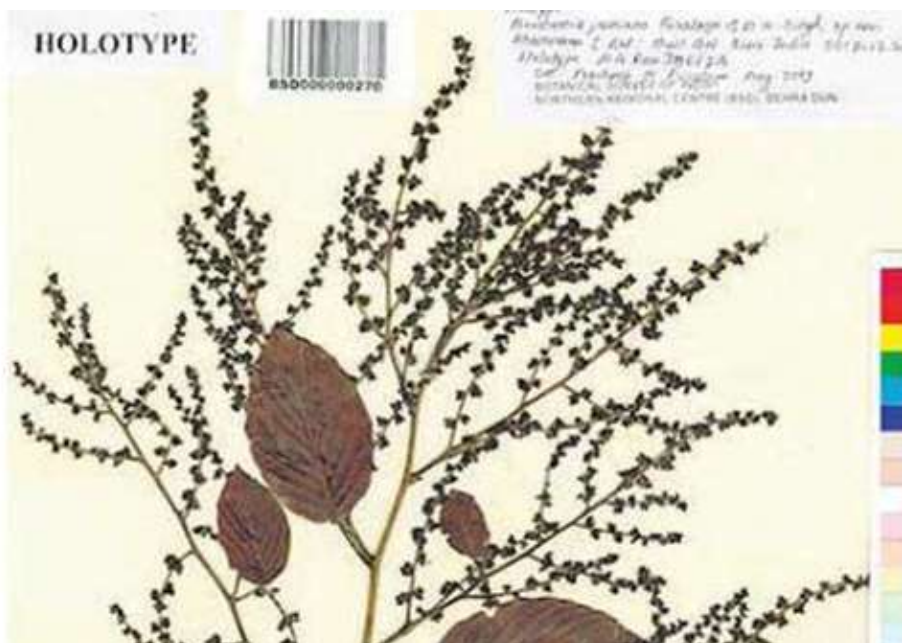
Figure 2: Zooming option to enable studyof micro-morphological feature

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THE TRANSFORMATIVE ROLE OF ARTIFICIAL INTELLIGENCE IN EDUCATION: EMPOWERING TOMORROW'S MINDS

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Abstract

Knowledge is power, and with today's advanced technology, you have all the power you need at your fingertips. For most of the students, the traditional face-to-face way of learning was the only known and practiced option. Role of artificial intelligence in education especially in higher education which is highly advancedtechnology froman education point of view.

Introduction

Artificial Intelligence (AI) has emerged as a disruptive force that is reshaping various industries, and the education sector is no exception. In recent years, AI and AI tools have demonstrated the potential to revolutionize education, offering innovative solutions to enhance the quality of education for students of all backgrounds. This essay explores the positive contributions of AI in the education sector, focusing on how it can improve the quality of education for students across the board.

Personalized Learning

One of the most significant benefits of AI in education is its ability to facilitate personalized learning experiences. Traditional classroom settings often struggle to cater to the diverse needs and learning paces of students. AI tools, through data analysis and machine learning algorithms, can assess individual students' strengths and weaknesses, creating customized learning paths for each student. This personalization ensures that students receive tailored instruction, helping them grasp concepts more effectively and at their own pace.

Intelligent Tutoring Systems

AI-powered intelligent tutoring systems provide students with on-demand support, acting as virtual mentors available 24/7. These systems offer immediate feedback, identify areas where students struggle, and provide targeted assistance. They not only improve students'

understanding of subject matter but also enhance their problem-solving skills, critical thinking abilities, and overall academic performance.

Accessibility and Inclusivity

AI tools can break down barriers to education, making it more accessible and inclusive for all students. For students with disabilities, AI-driven technologies can provide speech recognition, text-to-speech capabilities, and assistive learning materials that cater to their specific needs. This empowers students who might otherwise face obstacles in traditional learning environments.

Data-Driven Insights

AI's data analytics capabilities enable educational institutions to gather and analyze vast amounts of data regarding student performance, attendance, and engagement. These insights help educators make informed decisions, such as identifying at-risk students who may need additional support or refining teaching strategies for better outcomes. Such data-driven decision-making contributes to overall educational quality.

Reducing Administrative Burden

AI can automate administrative tasks, freeing up educators to focus more on teaching. Administrative processes like grading, scheduling, and resource allocation can be streamlined with AI, allowing teachers to allocate their time and energy more efficiently toward instructional activities.

Lifelong Learning

The rapidly changing job market requires individuals to engage in lifelong learning. AI can assist in this endeavor by recommending relevant courses, resources, and learning opportunities based on a person's career goals and interests. This promotes a culture of continuous learning and skill development, ultimately improving the quality of the workforce.

Global Learning Networks

AI-powered platforms can connect students and educators across the globe, fostering international collaboration and cultural exchange. This exposure to diverse perspectives enhances students' global awareness, tolerance, and understanding, contributing to a well-rounded education.

Conclusion

AI and AI tools have ushered in a new era of possibilities for the education sector. By offering personalized learning, intelligent tutoring, accessibility enhancements, data-driven

insights, administrative support, lifelong learning opportunities, and global connectivity, AI positively contributes to improving the quality of education for students across the board. As we embrace these innovations, it is crucial to ensure responsible and ethical use of AI in education, while also addressing challenges such as privacy concerns and the digital divide to ensure that all students can benefit from these advancements. With careful implementation, AI can empower educators and students, paving the way for a brighter and more inclusive future in education.

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BLENDED LEARNING IN HIGHER EDUCATION: A NEW VISION

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Abstract

Blended learning is gaining popularity because it has been shown to be a successful method for accommodating an increasingly varied student body while enhancing the learning environment by incorporating online teaching materials. Higher education research on blended learning contributes to the blended learning literature. The ideas for future researchers are a vital component of research-based research articles. This study aims to consolidate the recommendations made for future studies.

Keywords: Blended learning, Universities, hybrid mode, teaching

Introduction

The optimum learning experience is provided by blended learning, which combines in-person events with digital tools and resources. Learning tools can be used for a number of pedagogical objectives before, during, or after an in-person session. For instance, the blended component might seek to increase the amount of time students spend on a task, improve their information literacy, pique their interest before a session, or give them the option to work at their own pace afterward.

Impact of blended learning

A well-developed offering and programme of blended learning can:

- Enhance the student experience
- Potentially improve student outcomes
- Widen participation
- Improve accessibility and inclusion

However, there are also risks as parts of the course are moved online that could result in:

- Loss of community and cohort cohesion
- Challenges of reconciling the inconsistent experience resulting from the differences between the physical and virtual student experience
- Impact on connectivity and bandwidth on the experience
- Poor student experience due to insufficient skills and capabilities across staff and students

Overview of blended learning in Higher Education

Universities are in a continual process of planning and delivering programmes of study. The landscape has now fundamentally changed and universities are looking to mitigate risks and ensure continued high-quality provision and a positive student experience while ensuring continuity of service through uncertain times. Effective use of digital technology is seen as fundamental in helping to ensure continuity of learning and engaging positively with students.

Many universities are deploying a range of hybrid curriculum models, inviting students to participate in a combination of in-person and online learning.[1] Working in this way requires specific skills for both learners and staff and a well-planned, blended learning programme that effectively integrates a range of techniques and resources.

Simply moving content online is not sufficient, though staff may instinctively feel more comfortable with simply automating their established styles of delivery and content. Translating established techniques onto new platforms without altering design and delivery is not enough. It requires real transformation, which demands an adjustment in thinking and sufficient staff comfort and confidence to shift to new ways of delivering blended learning.

When deploying a hybrid mode of blended learning, the course and programme are responsive to changes in the landscape and environment. Sessions can be switched from one mode to another; sessions can move to or from an online or a physical location. Hybrid modes allow universities to clarify with prospective students about their experience and how learning and teaching could potentially change. It helps staff plan their teaching and assessments to take into account the environment and changes to the situation.

The higher education landscape has changed and will continue to change, meaning existing models of blended learning may not be appropriate or practical. Universities will need to reflect not just on how blended learning can be used to deliver modules, but how existing blended learning curriculum models will need to be adjusted to fit this new future.

A vision for blended learning

Effective blended programmes are focused on the learning experience and outcomes before considering the technology. As with physically presented learning, blended and online programmes have clear aims, objectives, and assessment points. Effective blended learning emphasizes active participation over consumption of "content".

Blended learning action plan

A wide range of elements needs to be considered to support effective blended learning programmes:

- Do you have a clear understanding of what 'good' blended learning looks like, including how this aligns with requirements for learning, teaching, assessment, and quality assurance? How is this understanding communicated and shared within your institution?

- Have you identified your aims and what success will look like in terms of the use of blended learning within your institution (and/or for individual programmes or specific groups of students)?

- How will blended learning look in the short term and how will it look in the short term, medium term, and long term?

- What digital and pedagogical skills are required by staff to design, develop and deliver blended learning programmes? How will you ensure that staff not only have the technical skills but also have the knowledge and understanding to design pedagogically sound programmes?

- Have institutional policies (eg. GDPR, online safety, accessibility, inclusion, complaints and wellbeing) been updated to reflect the change in how courses are delivered?

Case study: University of Northampton[2]

The University of Northampton started from a strong position. Since 2014 it has been moving towards its current institutional approach to learning and teaching: active blended learning. While never perceived as a large-scale online learning or distance learning strategy for campus-based Northampton, successful active blended learning does rely on fluent, purposeful, and thoughtful use of technologies for learning, which stood the university in good stead when lockdown hit in March 2020. As a result, much of the teaching that took place was well-planned rather than a rushed emergency response.

Teachers found that, thanks to the work they had done in the past few years around active blended learning, they were able to apply those lessons in the context of an unexpected scenario like this and do so quickly. There are also challenges around community building.

One of the benefits of the crisis occurring when it did was that, in most cases, tutors and learners knew each other and they already had an element of trust built in. With first-year students arriving in September, new relationships and a sense of cohesion and belonging will need to be built from scratch in an environment with limited face-to-face contact time.

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21ST CENTURY LEARNING USING VIRTUAL LAB

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Abstract

Virtual labs are so popular that it not only helps students better understand concepts, but it is also eco-friendly. Virtual labs provide a safe environment for students. Today's 21st-century classroom focuses on a multi-dimensional approach to the learning experience. 21st century learning is more than just reading, writing, and arithmetic. It accentuates the importance of critical thinking, creativity, collaboration, and communication. Virtual labs are the framework of the Four C's: communication, collaboration, critical thinking, and creative thinking. Virtual lab offers several other learning styles for people to know and be comfortable with different learning styles. Younger students enjoy the colorful design, interesting lessons, interactive platform, and multimedia format of Learning. The education industry was one of the worst hits by the COVID-19 pandemic, the education system has to undergo some profound changes. For the safety and security of students, institutions adopted online learning. That is a great initiative by the Government of India to adopt curiosity, creativity, and design thinking in young minds. It can also help students keep up with the technological development of the digital age. Virtual Labs are interactive learning through gamification. Virtual lab is an approach to learning and development that integrates the areas of science, technology, engineering, mathematics & history. Through this, students can develop creative thinking patterns and develop an interest in subjects through unique learning experiences. This education system is beyond the classrooms, assignments, and assessments. And the world has already moved ahead of the chalk-and-talk methods through online schools and digital resources. Virtual Labs are cloud-based and offer a collaborative, energetic, and adaptable platform that caters to users at different levels of concept and supports end-to-end analysis. Virtual laboratories offer economic and time benefits, they eliminate the time and expensive equipment and sample preparation. It provides a flexible learning environment for students enable to conduct experiments at their own pace, anywhere and anytime. These virtual labs enable students to learn new

concepts through an immersive visual experience. Virtual labs eliminate the risk of injury or damage to equipment during experiments. Virtual labs are a cost-effective Digital alternative to physical labs, requiring fewer resources for equipment, maintenance, and preservation. A single lab platform can serve an entire institution, providing an affordable solution for science education. virtual labs allow learners to track their progress, recreate experiments, analyse their mistakes, and communicate more efficiently with their teachers'Virtual labs incorporate various pedagogical techniques that help learners to better understand the theoretical information. These techniques include visual learning, active learning, recall-based learning, gamification & storytelling labs create an immersive experience both for teachers and learners and allow to understand the concept better, faster and in a fun way. VR labs allow students to conduct experiments repeatedly and make errors without the fear of injury. Virtual learning is flexible, and there are no restrictions on getting late to the class or missing out on lectures, etc. With fewer limitations and more comfort, learners can complete their own courses taking their own sweet time. Practical laboratory courses are an essential part of education. However, they can be costly and time-consuming. They also require the physical presence of the teacher and students. Virtual Lab has handling capabilities required to bridge the gap between highly facilitated institutions and remote economically challenged educational institutionsIn today's world, the need to "Go Green" is stronger than ever. Virtual labs are an eco-friendly alternative to traditional labs, as they help reduce chemical and electronic waste. This minimizes chemical pollution and conserves natural resources. Virtual labs are an important and cost-effective tool for turning sustainability initiatives into established lab culture. There will be no frog mouse or pig dissect in labs and replacing them with virtual labs. Chemicals and machinery are another common source of water contamination. This green lab reduces the single use of plastics, goes paperless, installs and maintains equipment, well-organized and clean storage, avoids polluting water and any unfortunate spills that happen during experiments, and this green lab has set a new goal to reduce waste or save energy too. and contribute towards climate action. At present, a demand for greener methodologies is increased to protect the environment by reducing waste. At graduation level, vast hazardous chemicals and pollutants are used in wet labs causing various health issues as well as pollution. Virtual labs in India have been available for a long time, and there are several virtual lab service providers currently in the country. One of the most prominent virtual labs in India is 'Virtual Labs' which is being operated by the

Ministry of Human Resource Development (MHRD), Government of India. IITs (Delhi, Bombay, Kanpur, Kharagpur, Madras, Roorkee and Guwahati), IIIT Hyderabad, Amrita University, Dayal Bagh University, NIT Karnataka, and College of Engineering, Pune, several other organizations like A-VIEW (Amrita Virtual Interactive e-Learning World), OLabs, Science Lab, and many others are also contributing their best in this sector

Conclusion

Virtual labs are good self-learning Modern innovation E -Tool. that help to explain basic knowledge of experiment before performing in the lab they can explore and visualize the concept and operation involved during the experiment. These labs can be add-on solutions for users of economically challenged urban and rural areas. Virtual Labs have played a catalytic role in improving conceptual learning across the higher education landscape.

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USES OF TECHNOLOGY IN NEW EDUCATION POLICY

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Abstract

Technology is a gift of God. After the life, it is perhaps the greatest of God's gifts. It is the mother of civilizations, of arts, and of sciences. Technology has certainly changed the way we live. It has impacted different facets of life and redefined living. Undoubtedly, technology plays an important role in every sphere of life. Several manual tasks can be automated, thanks to technology. Also, many complex and critical processes can be carried out with ease and greater efficiency with the help of modern technology. Thanks to the application of technology, living has changed and it has changed for the better. Technology has revolutionized the field of education. The importance of technology in educational institutes cannot be ignored. In fact, with the use of computers in education, it has become easier for teachers to impart knowledge and for students to acquire it. The use of technology has made the process of teaching and learning all the more enjoyable.

Keywords: Education, modern technology, teaching.

Introduction

The era of the 21st century is often regarded as an era of technology. Technology, today, plays a very important role in our life. It is seen as a basis for the growth of an economy. An economy that is poor in technology can never grow in today's scenario. This is because technology makes our work much easier and less time-consuming. The impact of technology can be felt in every possible field one such field is Education.

Latest Technology in Education

According to the latest insights as to how exactly modern students of today prefer to use technology and how their learning gets an impact if they use technology, it was revealed that with the use of modern equipment technology, and tools, the learning and interactivity of students increases. They also find it much more interactive, as well as full of interesting areas, when aided by technology. The transfer of knowledge becomes very easy and convenient, as well as effective. What this means is, that our minds now tend to work faster

when assisted with the use of modern technology, be it any part of life, here we talk about education. The reliance and dependence on such an innovation, which simply makes life an easy, smooth journey is completely unavoidable these days even in schools, universities, and colleges. Students and teachers today can make use of technology in the following ways

1. Internet Connectivity

The internet has grown in importance by many folds, over the process of decade. Its importance in the education world can never be undermined. Despite the chances of fraud and drawbacks, the use of the internet is like a blessing for students. Today, the internet is something that is present in almost everything we use. From television to gaming consoles, and our phones, the internet is literally everywhere. The use of the internet allows students to find amazing convenience, they can find various kinds of help, tutorials, and other kinds of assisting material that could be used to academically improve and enhance their learning.

2. Using Graphics Devices

Visual images always have a strong appeal compared to words. Using projectors and visuals to aid in learning is another form of great technological use. Top institutions around the world, now rely on the use of amazing PowerPoint presentations and projections in order to keep the learning interactive and interesting. Technological use such as projectors within schools and colleges can take the interaction and interest levels right up and also improve motivation. Students like to see appealing visuals and something that entices them to think rather than just read words. The learning part also becomes pretty efficient when it comes to technology.

3. Digital Footprint in The Education Sector

If we talk about digital and education, then theuses of digital media within the education sector have now grown. This penetration has resulted in round-the-clock connectivity with students and different forums that are available for different kinds of assignments or help. As the power of digital increases, there are and there will be more applications that will assist students in development and learning.

4. Online Courses with The Use of Technology

Online degrees now have become a very common phenomenon. People wish to take up online courses for their learning and certifications. Top institutions offer amazing online programs with the use of various applications and the Internet. This is a concept that will continue to rise as it gets more support and awareness. The online degree scenario around

the world is more famous among students who work and look for flexible studying programs

5. Major Role of Technology in Education

The role of technology in the field of education is four-fold: it is included as a part of the curriculum, as an instructional delivery system, as a means of aiding instructions, and also as a tool to enhance the entire learning process. Thanks to technology; education has gone from passive and reactive to interactive and aggressive.Education is essential in corporate and academic settings. In the former, education or training is used to help workers do things differently than they did before. In the latter; education is geared towards creating curiosity in the minds of students. In either case, the use of technology can help students understand and retain concepts better.

Barriers to Technology in Education

I. Jung talks about the enormous challenge teachers are facing in our society due to the rapid expansion of knowledge. The modern technologies are demanding that teachers learn how to use these technologies in their teaching. Hence these new technologies increase the teachers' training needs. Teachers' and student attitudes toward computers are a key factor in the successful implementation of ICT in education. Teachers do not always have positive attitudes towards computers and their poor attitudes may lead to the failure of the computer- based projects.

Also, the most commonly cited barriers are:

1. Lack of time;
2. Lack of access;
3. Lack of resources;
4. Lack of expertise and
5. Lack of support.

Another barrier given by Butler and Sellbom (2002) and Chizmar & Williams (2001) is reliability. Reliability included hardware failures, incompatible software between home and school, poor or slow internet connectivity, and out-of-date software which are available mostly at school while the students/educators have more up-to-date software at home.

Impact of ICT on Education

In an educational context, ICT has the potential to increase access to education and improve its relevance and quality. Tinio (2002) asserted that ICT has a tremendous impact

on education in terms of the acquisition and absorption of knowledge to both teachers and students through the promotion of

1. Active learning: ICT tools help with the calculation and analysis of information obtained for examination and also students' performance report is all being computerized and made easily available for inquiry. In contrast to memorization-based or rote learning, ICT promotes learner engagement as learners choose what to learn at their own pace and work on real-lifesituationsand problems.

2. Collaborative and Cooperative learning: ICT encourages interaction and cooperation among students, and teachers regardless of the distance which is between them. It also provides students the chance to work with people from different cultures and work together in groups, hence helping students to enhance their communication skills as well as their global awareness. Researchers have found that typically the use of ICT leads to more cooperation among learners within and beyond school and there exists a more interactive relationship between students and teachers (Grégoire et al., 1996). "Collaboration is a philosophy of interaction and personal lifestyle where individuals are responsible for their actions, including learning and respect the abilities and contributions of their peers." (Panitz, 1996).

1. Creative Learning: ICT promotes the manipulation of existing information and to creationof one's own knowledge to produce a tangible product or a given instructional purpose.

2. Integrative learning: ICT promotes an integrative approach to teaching and learning, by eliminating the synthetic separation between theory and practice unlike in the traditional classroom where emphasis encloses just a particular aspect.

3. Evaluative learning: The use of ICT for learning is student-centered and provides useful feedback through various interactive features. ICT allows students to discover and learn through new ways of teaching and learning which are sustained by constructivist theories of learning rather than students memorization and rote learning.

Positive impact

1. Enhanced Teaching and Learning

(i) Technological developments like digital cameras, projectors, mind training software, computers, PowerPoint presentations, and 3D visualization tools; all these have become great sources for teachers to help students grasp a concept easily.

(ii) It has to be understood that visual explanation of concepts makes learning fun and enjoyable for students. They're able to participate more in the classroom and even teachers get a chance to make their classes more interactive and interesting.

2. Globalization

(i) When schools in different parts of the state, students can "meet" their counterparts through video conferencing without leaving the classroom.

(ii) Some sites, such as www.glovico.com are used to help students learn foreign languages online by pairing a group of students with a teacher from another country.

3. No Geographical Limitations

(i) With the introduction of online degree programs there is hardly any need of being present physically in the classroom. Even several foreign universities have started online degree courses that students can join.

(ii) Distance learning and online education have become very important parts of the education system nowadays.

Negative impact

1. Declining Writing Skills

(i) Due to the excessive usage of online chatting and shortcuts, the writing skills of today's young generation have declined quite tremendously.

(ii) These days, children are relying more and more on digital communication that they have totally forgot about improving their writing skills.

(iii) They don't know the spelling of different words, how to use grammar properly or how to do cursive writing.

2. Increasing Incidents of Cheating

(i) Technological developments like graphical calculators, high-tech watches, mini cameras and similar equipment have become great sources to cheat in exams.

(ii) It is easier for students to write formulas and notes on graphing calculators, with the least chance of being caught.

3. Lack of Focus

(i) SMS or text messaging has become a favorite pastime of many students. Students are seen playing with their cell phones, iPhones day and night, or driving and very often even between lectures.

(ii) Being ever-connected to the online world has resulted in a lack of focus and concentration in academics and to some extent, even in sports and extracurricular activities.

Advantages

(i) It makes students more excited to learn.

(ii) Help students with busy schedules, the freedom to work at home on their own time.

(iii) Train students to learn new technology skills they can use later in the workplace.

(iv) Decrease paper and photocopying costs, promoting the concept of a "green revolution".

Disadvantages

(i) Many experts and experienced people say that, due to such technology in education, students' imagination is affected, and their thinking ability is reduced.

(ii) Sometimes it's also time-consuming from the teacher's point of view.

(iii) It is costly to install such technology.

(iv) There can be health issues too when used over the limit.

(v) Some students can't afford technology.

Conclusion

Technology has a positive impact on education and at the same time may also pose negative effects. Teachers and students should take advantage of this in a good light and eliminate the drawbacks which are pulling back many students as well as schools from achieving excellence. It is thus time for every country to introduce a more technologically equipped education sector in the future.

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MIND MAPS FOR EFFECTIVE TEACHING AND LEARNING

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Abstract

In the realm of education, finding innovative methods to enhance learning outcomes is a constant pursuit. This study delves into the efficacy of Mind Maps, a visual representation tool, in facilitating more effective learning. By examining their impact on learning efficiency and retention, we aim to shed light on the practical benefits of incorporating Mind Maps into educational practices.

Introduction

In the ever-evolving landscape of education, the quest for more effective teaching and learning methodologies is an ongoing and unceasing endeavor. In this digital age, where information flows abundantly and dynamically, educators and students alike are challenged with not only acquiring knowledge but also retaining it, comprehending its intricacies, and applying it in a meaningful way. This challenge has given rise to a profound interest in alternative pedagogical tools that transcend the limitations of traditional rote memorization and linear note-taking.

Amidst this educational transformation, the concept of Mind Mapping has emerged as a prominent and intriguing solution. Born out of the creative genius of Tony Buzan in the 1970s, Mind Maps represent a visual manifestation of knowledge, a web of interconnected ideas and concepts that weaves a tapestry of understanding. They have transcended their origins as a mere tool for note-taking and brainstorming and have emerged as a dynamic force capable of revolutionizing the educational experience.

At its core, a Mind Map is a deceptively simple construct - a diagram with a central idea or theme from which branches radiate, each branch representing a subtopic or related idea, akin to the branching structure of a tree or the neural pathways of the human brain. Yet, within this apparent simplicity lies a profound capacity to enhance learning, spark

creativity, sharpen critical thinking, and foster lasting retention. Mind Maps serve as a cognitive scaffold that encourages creative thinking, critical analysis, and structured organization of information. The non-linear, visually stimulating nature of Mind Maps engages both the left and right hemispheres of the brain, making them a versatile tool for teaching and learning.

In view of the above discussion, the present article embarks on a comprehensive exploration of the Impact of Mind Mapping on Learning Efficiency and Retention, a journey that delves deep into the realm of cognitive science, pedagogy, and practical application. In a world where access to information has never been easier, the ability to make sense of this information, to internalize it, and to transform it into knowledge has become the hallmark of effective education.

Learning Efficiency

1. Enhanced Comprehension and Synthesis

Mind Maps have been found to promote deeper comprehension of subject matter. The visual representation of information aids learners in synthesizing complex ideas by breaking them down into smaller, manageable components. This process facilitates a holistic understanding of the material.

2. Improved Note-Taking and Organization

In traditional note-taking, students often transcribe lectures verbatim, leading to passive learning. Mind Maps encourage active engagement with the material. When students create their own Mind Maps, they must distill key concepts, prioritize information, and establish connections, resulting in more organized and effective note-taking.

Retention and Long-Term Learning

1. Visualization and Memory Enhancement

Mind Maps capitalize on the brain's preference for visual information. The use of colors, images, and spatial organization makes content more memorable. Students who create Mind Maps are more likely to retain and recall information effectively, both in the short and long term.

2. Retrieval Practice

Mind Maps facilitate the practice of retrieval – the act of actively recalling information from memory. This cognitive process strengthens memory retention, as students revisit and reconstructs knowledge during the creation and review of their Mind Maps.

Conclusion and Implications for Education

The findings of this study underscore the significant impact of Mind Mapping on learning efficiency and retention. Educators should consider integrating Mind Maps into their teaching practices as a versatile tool for improving student outcomes. Furthermore, students are encouraged to harness Mind Maps for active learning and the consolidation of knowledge. The potential benefits of Mind Maps extend across various educational levels and subjects, highlighting their universal relevance in promoting effective learning.

In an era marked by information overload, fostering efficient learning and long-term retention is paramount. Mind Maps offer a practical and engaging solution, empowering learners to navigate the complexities of education with clarity and confidence. As we continue to explore innovative strategies in education, Mind Mapping stands as a valuable ally in the pursuit of enhanced learning outcomes.

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BLENDED LEARNING AND MODELS: PRESENT NEED

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Abstract

The evolution of digital learning platforms has had a huge impact on educational institutions and has eventually put traditional methods in the back seat. However, there are demands for both technology and traditional learning methods. As a result of this, the art of combining digital learning tools with more traditional classroom face-to-face teaching gave birth to the term "Blended Learning". Given the emergence of digital technologies and the emerging importance of leveraging technology for teaching-learning at all levels from school to higher education, the NEP 2020 recommends for use of blended models of learning. BL shifts the teacher's role from knowledge provider to coach and mentor. The advantages of BL for students include increased learning skills, greater access to information, improved satisfaction and learning outcomes, and opportunities both to learn with others and to teach others. All blended learning models have a common goal. That is to move from a teacher-centered to a more learner-centered approach; improving student success.

Keywords: Blended Learning, BL Structure, Models, Student Role, Teacher Role.

Introduction

A formal definition of blended learning that was introduced by Garrison and Kanuka (2004) explains that: "Blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences." (Kyriaki Raouna, 2022). It is an instructional methodology, a teaching and learning approach that combines face-to-face classroom methods with computer-mediated activities to deliver instruction. This Pedagogical approach means a mixture of face-to-face and online activities and the integration of synchronous and asynchronous learning tools, thus providing an optimal possibility for the arrangement of effective learning processes. Blended learning is the term given to the educational practice of combining digital learning tools with more traditional classroom face-to-face teaching. In a true blended learning environment, both the student and the teacher should be physically located in the same space. Despite this, the digital

tools used should be able to be utilized by the students in order to enforce some control over the speed or topics of their learning. The flipped classroom model is a similar program that aims to utilize technology in order to rearrange the learning experience and maximize the effectiveness of valuable face-to-face time in the classroom. In a flipped classroom program, students would be encouraged to access digital learning materials via a cloud-based learning platform during their own time. Resources such as video lectures, podcasts, recordings, and articles would be provided in order to transfer the main bulk of the necessary knowledge from teacher to student before each class. This then frees up time in class for teachers to support students in activities, lead discussions, and facilitate engagement. The NEP-2020 states that while promoting digital learning and education, the importance of face-to-face in-person learning is fully recognized. The important features of a Blended learning environment are:

1. Increased student engagement in learning.

2. Enhanced teacher and student interaction.

3. Responsibility for learning.

4. Time management and flexibility

5. Improved student learning outcomes

6. Enhanced institutional reputation.

7. More flexible teaching and learning environment

8. More amenable for self and continuous learning

9. Better opportunities for experiential learning

Role of Teachers in Bl Environment

BL shifts the teacher's role from knowledge provider to coach and mentor. This shift does not mean that teachers play a passive or less important role in students' education. Quite the

contrary—with BL, teachers can have an even more profound influence andeffect on students' learning. Traditionally, classroom instruction has largely beenteacher-directed, top-down, and one-size-fits-all, with a bit of differentiation thrown in, but with BL, it now becomes more student-driven, bottom-up, and customized, withdifferentiation as a main feature. Much of this new learning dynamic is due to theenhanced role technology plays in instruction. BL provides an appropriate balancebetween online instructions, which offers interactive, tech-based learning, individualized pacing, and privacy that keep students continuously engaged andmotivated, and teacher-led instruction, which personalizes the

learning experience andadds the human elements of encouragement, compassion, and caring guidance that onlyteachers can give. This new learning dynamic benefits students and teachers alike. Giving studentspermission and space to become active learners who gain knowledge directly lets themassume some control over their learning and helps them develop self-reliance. As morestudents are working independently, time opens up for teachers to provide face-to-facesupport and individualized instruction more frequently for more students, effectivelyimproving differentiation. BL provides teachers with a fuller, more accurate picture ofhow each student is doing. BL yields more frequent and more personal teacherinteraction with individual students; teachers have the opportunity to deepen andstrengthen student/teacher relationships. The trust that comes with close relationshipscan give teachers insights into students' personal struggles and needs - insights thatempower teachers to comfort and coach students through challenges that often serve asobstacles to learning. In summary, BL combines the best aspects of online learning withthe best aspects of direct instruction, helping teachers easily manage to do much moreto meet student needs without adding to an already weighty workload.

Role of a Learner in the Bl Environment

- Increase student interest
- Keep students focused for longer,Provides student autonomy
- Promote student ownership
- Allow instant diagnostic information and student feedback
- Enables students to learn at their own pace.
- Prepares students for the future

Bl Structures and Models

Teachers are valuable coaches for helping students manage any learning situation; it is up to teachers and learning designers to offer blended activities that best suit the subject, the learners' needs, and the curriculum requirements. Below are seven sample configurations of BL activities to consider for BL teaching situations.

1. Blended Face-To-Face Class

Also sometimes called the "face-to-face driver model," the blended face-to-face class model is based in the classroom, although a significant amount of classroom time has been replaced by online activities. Seat time is required for this model, while online activities are used to supplement the in-person classes; readings, quizzes, or other assessments are done online at home. This model allows students and faculty to share more high-value

instructional time because class time is used for higher-order learning activities such as discussions and group projects.

2. Blended Online Class

Sometimes referred to as the "online driver model," this class is the inverse of the blended face-to-face class. The class is mostly conducted online, but there are some required in-person activities such as lectures or labs.

3. The Flipped Classroom

 Students in flipped classes watch a short lecture video online and come into the classroom to complete activities such as group work, projects or other exercises. The flipped classroom model can be seen as a sub-model of the blended face-to-face or blended online class (UGC). Students engage with learning outside of the class, in a virtual environment. This may include lectures and online coursework. Then educators use class time to conduct teacher-facilitated practice or projects (National Education Association 2021).

4. The Rotation Models

 This model involves breaking a group of learners into smaller units to perform different types of tasks at different stages in turns. Some activities are online and some are realized in person (Helga Kolinski,2022). In this model, students in a course rotate between various modalities, one of which is online learning. There are various sub-models: station rotation, lab rotation andindividual rotation. In the labrotation model, for example, requires students in a course to rotate among locations oncampus (at least one of which is an online learning lab). In the individual rotation.

5. The Self-Blend Models

 While many of the BL models on this list are at the course level, self-blending is a program-level model and is familiar to many college students. Learners using this model are enrolled in a school but take online courses in addition to their traditional face-to-face courses. They are not directed by a faculty member and choose which courses they will take online and which they will take in person. model, a student rotates through learning modalities on a customized schedule.

6. The Blended MOOC

The blended MOOC is a form of flipped classroom using in-person class meetings tosupplement a massive open online course. Students access MOOC materials – perhapsfrom another institution or instructor if the course is openly accessible - outside of classand then come to a class meeting for discussions or in-class activities.

7. Flexible-Mode Courses

Flexible-mode courses offer all instruction in multiple modes - in-person and online andstudents choose how to take their course (UGC).

8. Gamification

One of the most effective ways to motivate learners is by letting them play. By using gameplay elements such as points or levels, learners feel a little competition and are more motivated to experience the material on their own time.

Conclusion

BL mode is to be used nationwide to help learners develop 21st-century skills along with effective learning and skill development related to the subject domains. BL should be carefully implemented and should not replace classroom time as a privilege. Every institute should strive to be a model institute to demonstrate successful implementation of BL in the higher education of our country.

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ENHANCING TEACHER PROFESSIONAL DEVELOPMENT IN THE DIGITAL AGE

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Abstract

In this comprehensive exploration of the digital age's impact on education and teacher professional development, we find ourselves at the intersection of transformation and opportunity. The introduction of technology into education has fundamentally reshaped how we teach and how students learn. As the digital landscape continues to evolve, so too must the practices of educators. This study has emphasized the pivotal role of teacher professional development as the linchpin for educational progress in this era marked by rapid technological advancements, changing pedagogical paradigms, and a diverse student population.

Introduction

The introduction to the digital age in education marks a transformative shift in the landscape of teaching and learning. Over the past few decades, technology has woven itself into the very fabric of education, reshaping traditional classrooms into dynamic, interconnected learning environments. From interactive whiteboards to cloud-based collaboration tools, the digital age has brought forth a multitude of technological innovations, each promising to enhance the educational experience. This paradigm shift has not only impacted how educators deliver content but has also necessitated a fundamental change in the way teachers are trained and developed [1]. As we delve into this comprehensive study, we embark on a journey to explore the profound implications of the digital age on teacher professional development, aiming to understand how educators can harness these technological advancements to foster a more dynamic, effective, and responsive teaching practice.

Importance of Teacher Professional Development

Teacher professional development stands as the cornerstone of educational progress and quality. In an era characterized by rapid advancements in technology, evolving pedagogical

approaches, and diverse student populations, the role of educators has never been more pivotal. Effective teaching requires a continuous commitment to growth and adaptation. Professional development equips teachers with the tools and knowledge they need to stay current, refine their instructional strategies, and address the ever-changing needs of their students. It is not merely a means to enhance individual teaching skills but also a pathway to improving overall student learning outcomes. Furthermore, teacher professional development serves as a bridge between theory and practice, allowing educators to translate educational research and innovative ideas into tangible classroom benefits [2, 3]. As we delve into the realm of enhancing teacher professional development in the digital age, we acknowledge that empowering teachers with opportunities for ongoing learning is an investment in the present and future success of our educational systems.

Models and Methods of Teacher Professional Development

There are several existing models and methods of teacher professional development, each with its unique features and advantages. These models and methods can vary in terms of delivery, content focus, and duration. Workshops and Seminars, Webinars:In-Service Training,Mentorship and Coaching, Action Research, Online Courses and Webinars, Communities of Practice, Peer Observation and Feedback are somecommon models and methods of teacher professional development. The choice of model or method depends on the specific goals of the professional development, the preferences of the educators, and the available resources. Many effective professional development programs combine multiple models to provide a comprehensive and tailored approach to teacher growth and development.

Theoretical Frameworks for Digital-Age Personality Development

Theoretical frameworks for digital-age personality development offer a lens through which to understand how technology and the digital landscape influence the formation and expression of individuals' personalities. In the digital age, where online interactions, social media, and digital platforms play pivotal roles in our lives, these frameworks provide insights into how these virtual spaces shape our self-concept, identity, and interpersonal relationships. The concept of "digital identity" emerges, emphasizing how individuals curate and project aspects of their personality online, often influenced by the affordances of the digital environment and the expectations of their online communities. The psychological impact of extended online presence, such as digital fatigue and the potential for identity fragmentation, also comes under scrutiny [4, 5]. The intersection of traditional

personality theories, like the Big Five personality traits, with digital-age considerations offers a nuanced perspective on how technology is both a reflection and a shaper of our evolving personalities in this digital era, providing a fertile ground for research and exploration. Here are some case studies that highlight the impact of digital-age teacher professional development on teacher practices and student outcomes.

Maine's 1:1 Laptop Program:

Maine's statewide 1:1 laptop program provided professional development opportunities for teachers to integrate technology into their classrooms. Research showed that participating schools saw improved student outcomes, including higher test scores and increased graduation rates. Teachers reported greater flexibility in their teaching methods and an improved ability to personalize instruction [6].

New Media Consortium Horizon Project:

The New Media Consortium's Horizon Project provided personality development to teachers focused on emerging technologies and digital literacies. Case studies from this project revealed that teachers who participated were better equipped to prepare students for the digital age. They integrated technologies like virtual reality and augmented reality into their teaching, resulting in enhanced student engagement and deeper learning experiences [7].

Google for Education Certified Innovator Program:

Case studies of educators who completed Google's Certified Innovator program showcased how this personality development initiative transformed teaching practices. Educators reported using Google tools to create innovative learning experiences, fostering collaboration, and empowering students to take ownership of their learning. This translated into improved student outcomes, including increased critical thinking and problem-solving skills.

These case studies demonstrate the tangible benefits of digital-age teacher professional development, including increased teacher confidence, improved teaching practices, and positive impacts on student engagement and achievement. They underscore the importance of ongoing personality development initiatives that empower educators to effectively integrate technology into their classrooms, ultimately enhancing the educational experience for students in the digital age.

Conclusion

In conclusion, as we navigate the digital age in education, it becomes increasingly evident that teacher professional development is not only vital but also transformative. The introduction of technology into our educational landscape has woven a rich tapestry of possibilities, reshaping classrooms and redefining the roles of educators. In this context, the significance of continuous professional growth cannot be overstated. It equips teachers with the tools and knowledge needed to navigate this dynamic landscape, fostering effective teaching practices that resonate with the needs of today's diverse student populations. The array of models and methods available for teacher professional development offers a flexible and adaptable approach, recognizing that each educator's journey is unique. Whether through workshops, online courses, mentoring, or collaborative communities, these methods cater to different preferences and goals, ultimately strengthening the teaching profession. Moreover, the theoretical frameworks that underpin digital-age professional development provide essential guidance for educators and institutions. They offer insights into how technology intersects with pedagogy, content knowledge, and the development of teachers' own personalities, serving as a compass for navigating the digital realm. These frameworks not only enrich teaching practices but also help shape the evolving digital identities of educators and students alike.

Finally, the case studies presented here reinforce the profound impact of digital-age teacher professional development on both educators and learners. From Maine's laptop program to Google's Certified Innovator initiative, these studies highlight that well-designed personality development programs empower teachers, fostering innovative teaching practices that, in turn, improve student outcomes. As we progress further into the digital age, the importance of teacher professional development becomes ever more pronounced. It is a journey of growth, adaptation, and transformation that holds the key to unlocking the full potential of education in our digital era. It is an investment in the present and future, where educators and students alike can thrive in the dynamic, interconnected, and technology-rich world of modern education.

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MOODLE PLATFORM FOR EFFICIENT TEACHING AND LEARNING

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Abstract

In the dynamic realm of education, where digital transformation exerts a pervasive influence, the demand for adaptable and innovative tools for teaching and learning has reached a pivotal juncture. Moodle, an acronym for "Modular Object-Oriented Dynamic Learning Environment," emerges as a pioneering force in the educational revolution of the digital age. As an open-source Learning Management System (LMS), Moodle has garnered global recognition for its remarkable capacity to empower educators and institutions, ushering in a paradigm shift towards more engaging, interactive, and effective learning experiences. With its diverse array of features and unmatched customization options, Moodle has firmly established itself as a cornerstone of modern pedagogy, equipping educators with the essential tools to cultivate profound learning experiences across traditional classrooms, online courses, and blended learning environments.

Introduction

In an era defined by digital transformation and the ever-evolving landscape of education, the need for innovative and adaptable tools for teaching and learning has never been more pressing. Enter Moodle, a dynamic and widely embraced platform that stands at the forefront of revolutionizing education in the digital age. Moodle, short for Modular Object-Oriented Dynamic Learning Environment, is an open-source Learning Management System (LMS) that has gained global recognition for its ability to empower educators and institutions to create engaging, interactive, and effective learning experiences. With its diverse array of features and customizable options, Moodle has become a cornerstone of modern pedagogy, offering educators the tools they need to foster meaningful learning experiences in traditional classrooms, online courses, and blended learning environments. In this exploration of the Moodle platform, we delve into the myriad ways in which it facilitates and enhances effective teaching and learning, transforming education into a dynamic and accessible journey for students and educators alike.

Course management

Course management in Moodle is a fundamental aspect of orchestrating a successful and organized learning experience. Instructors harness a rich set of tools and functionalities within Moodle to efficiently administer their courses. Starting with course creation, Moodle allows instructors to specify course details, such as its name, description, and enrolment preferences, including methods like self-enrolment or integration with institutional systems. The platform offers various course formats to cater to different teaching styles, and instructors can customize their courses by adding resources like files, links, and directories, along with a diverse array of activities such as forums, quizzes, and assignments. Content organization is made seamless through the creation of sections or topics, enabling a structured learning journey. Moodle's flexibility shines through in customization options, allowing for unique course themes and personalized appearances. Instructors wield control over enrolment and user access, and they can communicate effectively using announcements, messaging, and forums. The gradebook is highly configurable to suit various grading systems, and assessment configuration options ensure that quizzes and assignments align with instructional goals. User management, activity completion settings, and analytics tools further empower instructors to monitor and enhance their courses, making Moodle a comprehensive platform for effective course management.

Content Delivery and Discussion Forums:

Moodle excels not only in course management but also in delivering content and fostering engaging discussions among students. Content delivery in Moodle is a seamless process, allowing educators to upload various types of resources, from documents and presentations to videos and web links. This versatility ensures that instructors can effectively present course materials in a digital format, enhancing accessibility and convenience for learners.

Moreover, Moodle's discussion forums serve as dynamic hubs for asynchronous communication and collaborative learning. Instructors can create forums for class discussions, questions and answers, or group interactions. These forums enable students to engage in thoughtful discourse, share insights, and seek clarification on course topics. The threaded discussion format promotes in-depth exploration of ideas, while features like notifications and subscriptions keep participants informed and engaged.

Combined, content delivery and discussion forums in Moodle create a rich, interactive learning environment that transcends physical boundaries. They empower educators to share knowledge effectively and provide students with opportunities to interact, reflect, and deepen their understanding of the course material, ultimately enhancing the overall learning experience.

Assessment, Grading, and Collaborative Tools

Moodle goes beyond traditional course management by offering robust features for assessment, grading, and collaboration, transforming the learning experience into a dynamic and comprehensive journey. Assessment tools in Moodle allow instructors to create diverse and customized quizzes, assignments, and exams, catering to different learning objectives and assessment types. These assessments can range from multiple-choice questions to essay-style responses, and even peer-reviewed assignments, promoting both formative and summative assessment approaches.

The grading capabilities of Moodle streamline the evaluation process, offering options for manual and automated grading. Instructors can establish grading scales, provide detailed feedback, and track student progress efficiently. This feature not only simplifies grading but also ensures transparency and fairness in the assessment process.

Collaborative tools within Moodle foster a sense of community and teamwork among students. Features such as wikis, group assignments, and discussion forums promote collaborative learning experiences. Students can collaborate on projects, engage in group discussions, and collectively create and edit content. This collaborative aspect of Moodle not only enhances critical thinking and problem-solving skills but also encourages peer-to-peer learning and knowledge sharing.

In sum, Moodle's comprehensive approach to assessment, grading, and collaboration empowers educators to design and deliver assessments that align with their course objectives, effectively evaluate student performance, and provide students with opportunities to collaborate and learn from each other. These tools contribute significantly to creating a well-rounded and engaging educational experience in the digital realm.

Conclusion

In conclusion, Moodle stands as an educational beacon in the digital age, addressing the growing need for adaptable and innovative tools for teaching and learning. This dynamic platform, with its apt abbreviation "Modular Object-Oriented Dynamic Learning Environment," has garnered global acclaim as an open-source Learning Management

System (LMS), spearheading a transformative shift in education. Moodle's ability to empower educators and institutions to craft engaging, interactive, and effective learning experiences has solidified its position as a cornerstone of modern pedagogy. It equips educators with indispensable tools that transcend traditional boundaries, nurturing profound learning experiences in diverse settings, including traditional classrooms, online courses, and hybrid learning environments.

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TRANSFORMING EDUCATION USING AI, GOOGLE CLASSROOM, AND MIND MAPS

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Abstract

The convergence of Artificial Intelligence (AI), digital platforms such as Google Classroom, and the innovative use of visual learning tools like mind maps is revolutionizing education. This article explores the transformative potential of this convergence, where AI-driven personalization enhances the learning experience, Google Classroom provides a collaborative and organized digital environment, and mind maps stimulate creativity and critical thinking. Together, these elements are reshaping education, making it more engaging and effective in the digital age.

Introduction

The realms of education and technology have converged in unprecedented ways, catalyzed by the emergence of Artificial Intelligence (AI), the proliferation of digital platforms such as Google Classroom, and the innovative adoption of visual learning tools like mind maps. This convergence is ushering in a transformative era in education, where traditional pedagogical boundaries are being redefined, and learning experiences are evolving at a rapid pace.

When AI, Google Classroom, and mind maps converge, the synergy is nothing short of transformative. This article explores the profound impact of this convergence on education, showcasing how AI-driven features integrated into platforms like Google Classroom empower educators to provide personalized learning experiences and how the visual power of mind maps enhances student engagement and comprehension. As we embark on this exploration, we witness the dynamic interplay between technology and education, shaping a future where learning is not only accessible and efficient but also inherently creative and impactful.

Accordingly, the present article will focuses on the educational transformations using AI, Google Classroom, and Mind Maps.

Educational transformations

1. AI in Education: Personalized learning at scale

Artificial intelligence has found a prominent role in education, primarily through personalized learning systems. AI algorithms can analyze student data, learning patterns, and preferences to tailor educational content and pacing to individual needs. In Google Classroom, AI-driven features such as automated grading and data-driven insights help educators make data-informed decisions, allowing them to allocate more time to teaching and mentoring.

AI can also assist students by providing real-time feedback and adaptive resources. When integrated with Google Classroom, it enables teachers to identify struggling students and offer targeted support. Furthermore, AI-driven chatbots can address common student queries, providing instant assistance and freeing educators from routine administrative tasks.

2. Google Classroom: A digital hub for learning

Google Classroom serves as a virtual classroom where educators can create, distribute, and manage assignments. It facilitates collaboration, communication, and organization. The seamless integration of Google Workspace apps such as Google Docs and Google Drive makes it a versatile and user-friendly platform.

With AI enhancements, Google Classroom becomes even more powerful. AI algorithms can analyze students' interaction with course materials, discussions, and assignments, generating insights into their engagement and comprehension. This data can guide educators in adjusting their teaching strategies to better align with student needs.

3. Mind Maps: Enhancing creativity and critical thinking

Mind maps are visual representations of information that promote creativity and critical thinking. They help students organize ideas, make connections, and see the big picture. The interactive and colorful nature of mind maps engages students' cognitive processes, making learning more enjoyable and memorable.

When integrated into Google Classroom, mind maps can be a dynamic tool for both educators and students. Educators can use mind maps to outline lesson plans or visually summarize complex topics. Students can create their own mind maps to structure their thoughts, brainstorm ideas, or review and consolidate knowledge. These visual aids encourage active learning and improve comprehension.

Conclusion

The synergy of AI, Google Classroom, and mind maps holds immense promise for the future of education. AI-driven personalization optimizes the learning experience for each student, while Google Classroom provides a collaborative and organized digital environment. Mind maps, with their visual appeal and cognitive benefits, amplify the effectiveness of teaching and learning.

As technology continues to advance, educators and students alike should embrace these tools to enrich the educational journey. The future of education lies in harnessing the potential of AI to create personalized learning experiences, using platforms like Google Classroom to facilitate seamless communication and organization, and leveraging mind maps to stimulate creativity and critical thinking. This dynamic trio is reshaping education, ensuring that it remains relevant, engaging, and effective in the digital age.

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EXPLORING THE IMPACT OF ONLINE LEARNING AND VIRTUAL CLASSROOMS

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Abstract

The 21st century is witnessing a profound transformation in education, driven by the relentless advance of digital technology, often referred to as the "digital revolution." This transformation is reshaping how knowledge is accessed, delivered, and acquired, with online learning and virtual classrooms at its core. The fusion of education and technology has ushered in an era of unprecedented opportunities and challenges, fundamentally altering the way students learn and teachers instruct. This research article delves into the heart of this transformative phenomenon, exploring the multifaceted impact of online learning and virtual classrooms on education. It seeks to dissect the intricate relationship between technology and pedagogy, examining how digital tools are reshaping educational practices and outcomes. Through rigorous analysis and empirical investigation, it addresses questions related to the integration of digital technologies, the impact on student learning, teacher adaptation, policy implications, and the voices of students and teachers. The digital transformation of education is not a fleeting trend but an ongoing evolution, encompassing innovations from interactive online courses to immersive virtual classrooms. This transformation is driven by factors like internet ubiquity, mobile proliferation, and the recognition of lifelong learning needs. This article provides a comprehensive understanding of the digital transformation's implications for stakeholders, aiming to assist educators, researchers, and policymakers in making informed decisions that harness the full potential of digital tools to enhance education's quality and accessibility. It explores the historical context, pedagogical shifts, impacts on students, teacher perspectives, and policy considerations, recognizing that the journey of digital transformation in education is ongoing.

Introduction

The landscape of education is undergoing a profound transformation in the 21st century, driven by the relentless advance of digital technology. This transformation, often referred to as the "digital revolution," is reshaping how knowledge is accessed, delivered, and

acquired. Central to this paradigm shift is the adoption of online learning and the emergence of virtual classrooms as powerful tools in the educator's arsenal. The fusion of education and technology has ushered in an era of unprecedented opportunities and challenges, fundamentally altering the way students learn and teachers instruct.

The digital transformation of education is not a mere trend but an evolutionary leap that has reshaped traditional learning models. It encompasses a spectrum of innovations, from interactive online courses and multimedia-rich resources to immersive virtual classrooms that transcend geographical boundaries. This shift in the educational landscape is driven by a confluence of factors, including the increasing ubiquity of internet connectivity, the proliferation of mobile devices, and the recognition of the need for lifelong learning in a rapidly changing world.

This research article seeks to delve into the heart of this transformative phenomenon by exploring the multifaceted impact of online learning and virtual classrooms on education. Our objective is to dissect the intricate relationship between technology and pedagogy, examining how these digital tools are reshaping educational practices and outcomes. Through rigorous analysis and empirical investigation, we aim to shed light on the following questions:

1. How have digital technologies been integrated into educational environments, and what pedagogical shifts have emerged as a result?

2. What is the impact of digital transformation on student learning, including their academic performance, engagement, and the development of critical skills?

3. How have educators adapted to the digital age, and what challenges and opportunities have arisen in the process?

4. What is the role of policy, infrastructure, and inclusivity in shaping the digital education landscape?

5. What do students and teachers themselves have to say about their experiences with online learning and virtual classrooms?

In addressing these questions, we aim to provide a comprehensive understanding of the digital transformation of education and its implications for stakeholders, including students, teachers, policymakers, and educational institutions. By critically assessing the impact of technology on teaching and learning, we hope to contribute valuable insights to the ongoing discourse on the future of education in a digital world. In doing so, we aspire to assist educators, researchers, and policymakers in making informed decisions that harness the full potential of digital tools to enhance the quality and accessibility of education.

The following sections of this research article will delve deeper into these questions, drawing upon a diverse range of literature, empirical research, and real-world experiences to paint a holistic picture of the digital transformation in education and its profound effects.

Literature Review

1. The Evolution of Digital Transformation in Education

The digital transformation of education represents a continuum of advancements that have reshaped the traditional educational landscape. This evolution has its roots in the early introduction of computers and the internet into classrooms. With the advent of personal computers in the 1980s and widespread internet access in the 1990s, the possibilities for digitizing educational content and communication began to emerge. In the early stages, digitization focused primarily on creating digital versions of textbooks and resources. However, as technology advanced, so did the potential for more interactive and immersive learning experiences. The shift towards multimedia-rich content, coupled with the development of learning management systems (LMS) and online learning platforms, paved the way for the widespread adoption of online learning.

2. Online Learning: A Pedagogical Revolution

Online learning, often used interchangeably with terms like e-learning and distance education, has become a cornerstone of digital education. This mode of learning offers several advantages, including flexibility in scheduling, self-paced learning, and the ability to reach learners in remote or underserved areas. Garrison and Vaughan (2008) describe it as a pedagogical shift from the traditional "sage on the stage" model to a more learner-centered "guide on the side" approach. The role of the educator in online learning extends beyond content delivery to that of a facilitator, guiding students through collaborative discussions, critical thinking exercises, and independent research. This shift aligns with the principles of constructivist and connectivist learning theories, which emphasize the importance of active engagement, collaboration, and the construction of knowledge within social and digital contexts (Siemens andTittenberger 2009; Jonassen et al., 1999). The digital environment provides a rich tapestry for learners to explore, fostering self-directed inquiry and information synthesis.

3. Virtual Classrooms: Breaking Geographical Boundaries

Virtual classrooms represent a pivotal development within the digital transformation of education. They are real-time, online environments where educators and learners can interact synchronously, bridging geographical and temporal constraints. Tools such as video conferencing, screen sharing, and interactive whiteboards create an immersive virtual space where participants engage in discussions, collaborative activities, and live

demonstrations. Virtual classrooms are not limited to higher education institutions; they are increasingly being adopted in K-12 education and corporate training programs. Their flexibility enables organizations to deliver training and education to a global audience, fostering cultural diversity and promoting lifelong learning (Cavanaugh et al., 2004). Additionally, virtual classrooms can support hybrid learning models, where a combination of in-person and online instruction creates a more adaptable and inclusive educational experience (Allen & Seaman, 2016).

4. Impact on Student Learning Outcomes

The impact of digital transformation on student learning outcomes is a subject of extensive research and debate. Proponents argue that online learning and virtual classrooms offer enhanced access, personalized learning pathways, and opportunities for learners to develop digital literacy skills (Means et al., 2013). Research by Bernard et al. (2004) suggests that well-designed online courses can be as effective as traditional face-to-face instruction. However, critics highlight challenges such as the potential for decreased social interaction, issues related to student motivation and self-regulation, and concerns about the quality of online courses (Dziuban et al., 2018).

5. Adapting to the Digital Age: Teacher Perspectives

The digital transformation of education has not only impacted students but also teachers. Educators find themselves in a changing pedagogical landscape, where traditional teaching methods often require adaptation or augmentation with digital tools. Research indicates that teachers who receive adequate training and support are more likely to embrace technology and leverage it effectively in their instruction (Ertmer, 2005). Challenges faced by teachers in the digital age include the need for digital literacy and the management of diverse learning needs in online environments (Koehler & Mishra, 2009). However, technology can empower educators by providing access to vast educational resources, enabling differentiated instruction, and fostering collaboration among teachers and students (Mishra & Koehler, 2006).

6. Policy and Regulation in the Digital Education Landscape

The digital transformation of education has prompted governments and educational institutions to adapt policies and regulations to ensure quality and equity. Issues of data privacy, online safety, and intellectual property rights are central concerns (Bates, 2019). Additionally, policymakers must consider the digital divide, striving to provide access to technology and internet connectivity for all learners.

Teacher Training and Support

The digital transformation of education, characterized by the integration of online learning and virtual classrooms, brings with it a profound shift in the role of educators. Teachers are no longer just disseminators of content; they are facilitators of learning in digitally mediated environments. As education evolves in the digital age, it is imperative that educators receive adequate training and support to effectively navigate this new terrain and harness the full potential of technology for pedagogical enhancement.

1. The Need for Digital Literacy

One of the fundamental prerequisites for effective teaching in a digital era is digital literacy. Educators must be proficient in using digital tools, learning management systems, and online resources. They need to understand how to create and curate digital content, facilitate online discussions, and leverage multimedia for instructional purposes. Moreover, they must be knowledgeable about issues related to digital citizenship, online safety, and responsible use of technology. Digital literacy is not merely about technical skills; it also encompasses the ability to critically evaluate online information, adapt to evolving technologies, and model responsible digital behavior for students. Without a solid foundation in digital literacy, teachers may struggle to leverage the benefits of digital transformation in education.

2. Pedagogical Adaptation

In addition to digital literacy, educators need to adapt their pedagogical approaches to align with the affordances of online learning and virtual classrooms. Traditional teaching methods, centered on lectures and rote memorization, often require modification to suit the interactive and collaborative nature of digital environments. This adaptation includes the ability to design engaging online activities, facilitate discussions that promote critical thinking, and provide timely feedback to students. Teachers must also be skilled in managing the asynchronous and synchronous aspects of virtual classrooms, ensuring that learners remain engaged and motivated (Mishra & Koehler, 2006).

3. Professional Development Programs

Given the importance of digital literacy and pedagogical adaptation, professional development programs play a pivotal role in preparing educators for the digital age. These programs should provide ongoing training and support to teachers, helping them build the skills and confidence needed to excel in online and virtual teaching environments. Professional development can take various forms, including workshops, online courses, mentoring, and peer collaboration. These programs should be tailored to the specific needs and experiences of educators, recognizing that some may be more technologically

proficient than others. Moreover, they should be designed to accommodate the evolving nature of technology and educational best practices (Koehler & Mishra, 2009).

4. Challenges and Barriers

While teacher training and support are critical, several challenges and barriers exist in implementing effective professional development. Teachers may face resistance to change, particularly if they have long-standing teaching practices that they are reluctant to alter. Additionally, the sheer pace of technological change can be overwhelming for educators, leading to feelings of inadequacy or frustration (Ertmer, 2005). Moreover, the availability of quality professional development programs can vary widely between regions and educational institutions. Budget constraints, time limitations, and a lack of access to suitable training resources can hinder educators' ability to receive the training they need.

Conclusion

In the ever-evolving landscape of education, the digital transformation represents a seismic shift that is reshaping the fundamental dynamics of teaching and learning. This paradigm shift, often referred to as the "digital revolution," has been driven by the relentless advance of technology and its integration into education. At its core, this transformation is marked by the widespread adoption of online learning and the emergence of virtual classrooms, which are reshaping traditional educational models.

The digital transformation is not merely a passing trend but a profound and ongoing evolution. It encompasses a wide range of innovations, from interactive online courses and multimedia-rich resources to immersive virtual classrooms that transcend geographical boundaries. This transformation is propelled by a convergence of factors, including the growing ubiquity of internet connectivity, the proliferation of mobile devices, and the recognition of the need for lifelong learning in a rapidly changing world.This research article set out to explore the multifaceted impact of online learning and virtual classrooms on education. It embarked on a journey to understand the intricate relationship between technology and pedagogy, seeking answers to critical questions that define this transformative era. These questions encompassed the integration of digital technologies into educational environments, the impact on student learning outcomes, the adaptation of educators to the digital age, the role of policy and infrastructure, and the voices of students and teachers themselves.

Throughout this exploration, we delved into the historical context of the digital transformation, tracing its origins in the introduction of computers and the internet into classrooms. We witnessed the pedagogical revolution brought about by online learning, a shift from the traditional "sage on the stage" model to a more learner-centered approach.

We recognized the role of constructivist and connectivist learning theories in shaping digital education, emphasizing active engagement, collaboration, and knowledge construction.

Virtual classrooms emerged as pivotal in breaking geographical boundaries, offering synchronous, real-time learning experiences that transcend physical constraints. We explored their applications in various educational domains and their role in supporting hybrid learning models.

The impact of the digital transformation on student learning outcomes was a central focus, with proponents citing enhanced access, personalized learning pathways, and the development of critical 21st-century skills. Critics highlighted challenges related to decreased social interaction, student motivation, and the digital divide. Equally important, we examined the experiences of educators in adapting to the digital age. We emphasized the need for digital literacy, pedagogical adaptation, and ongoing professional development. These facets are instrumental in ensuring that teachers can effectively harness technology to enrich the learning experiences of their students.

Policy and regulation emerged as crucial factors in shaping the digital education landscape. We recognized the need for policies that safeguard data privacy, ensure online safety, and bridge the digital divide. Policymakers must adapt to the evolving educational landscape, recognizing the transformative potential of technology while addressing its associated challenges. In sum, this research article provided a holistic exploration of the digital transformation of education, encompassing its historical evolution, pedagogical shifts, impacts on student learning, teacher perspectives, and policy considerations. The digital age brings unprecedented opportunities and challenges to the world of education, and understanding its multifaceted effects is essential for educators, researchers, and policymakers alike.

As we navigate this transformative era, it is imperative that we continue to engage in rigorous research, fostering a deeper understanding of the complex relationship between technology and learning. In doing so, we can make informed decisions that harness the full potential of digital tools to enhance the quality and accessibility of education in the 21st century. The journey of digital transformation is ongoing, and this research represents a step forward in our collective efforts to shape the future of education in a digital world.

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उच्च शिक्षा के अध्ययन-अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता आर्टिफिशियल इंटेलिजेंसए.आई. इन एजुकेशन

अमित कुमार अब्राहम

क्रीड़ा अधिकारी, श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय, खंडवा, मध्य प्रदेश

आर्टिफिशियल इंटेलिजेंस का अर्थ है बनावटी अर्थात कृत्रिम तरीके से विकसित की गई बौद्धिक क्षमता इसके जरिए कंप्यूटर सिस्टम या रोबोटिक सिस्टम तैयार किया जा सकता है। जिसे उन्ही के तर्कों के आधार पर चलाने का प्रयास किया जाता है। जिस के आधार पर मानव मस्तिष्क काम करता है। ए.आई. का इतिहास 1950 के दशक का है, जब आर्टिफिशियल इंटेलिजेंस शब्द को जॉन मेकार्थी, मार्विन मिन्सकी, नथानिएल रोजेस्टर और डार्टमाउथ सम्मेलन में क्लाइड शैनन द्वारा गढ़ा गया था। इस सम्मेलन का लक्ष्य उन मशीनों को बनाने की संभावना का पता लगाना था। जो मनुष्यों की तरह सोच और तर्क कर सके। आर्टिफिशियल इंटेलिजेंस वर्तमान में सभी क्षेत्रों में नवीन खोजो नई जानकारी डेटा प्राप्त करने में उपयोगी साबित हो रहा है एवं इस पर लगातार कार्य हो रहा है जिस में google की डीपमांइड़ व एलन मस्क की एक्स.ए.आई. प्रमुख कंपनियां है। उच्च शिक्षा में आर्टिफिशियल इंटेलिजेंस वर्तमान में शिक्षा प्राप्त करने के महत्वपूर्ण साधन में से एक साधन के रुप में बहुत तेजी से विकसित हो रहा है। कोविड 19 के समय विभिन्न ऑनलाइन प्लेटफार्म शिक्षा रोजगार एवं अन्य महत्वपूर्ण क्षेत्रों में अत्यंत तेजी से लोकप्रिय हुए हैं एवं वर्तमान में भी ऑनलाइन लर्निंग शिक्षा को प्राप्त करने में विद्यार्थियों के बीच में अत्यंत लोकप्रिय है। यह सीखने के साथ ही कम व्यय में अधिक सूचना ग्रहण करने का उचित माध्यम हो रहे हैं। विभिन्न प्रतियोगी परीक्षाओं की तैयारी विद्यार्थी घर बैठे प्राप्त कर रहे हैं एवं नवीनतम प्रौद्योगिकी का लाभ उठा रहे हैं। यह विद्यार्थियों को उनकी रुचि, सीखने की क्षमता और लगातार सुधार करने में अत्यंत सहायक हो रहा है। आज उच्च शिक्षा में प्रौद्योगिकी का महत्वपूर्ण योगदान विभिन्न डिजिटल माध्यम जिसमें वर्चुअल चैटबाटस ,एडाप्टिव लर्निंग प्लेटफॉर्म, वर्चुअल टीचिंग असेसमेंट, इमर्जिंग क्लासरूम जैसे प्रोद्योगिकी शिक्षण संस्थानों विभिन्न विश्वविद्यालयों, कॉलेजो में विद्यार्थियों के लिए सहयोगी हो रहे है। आर्टिफिशियल इंटेलिजेंस जटिल से जटिल डेटा को एकत्र करने और उसका विश्लेषण कर बहुमूल्य जानकारी हासिल करने में मददगार हो रही है। चैट असिस्टेंट, ड्राइवर लैस कार, ट्रैफिक पुर्वानुमान , मौसम पूर्वानुमान एवं पर्यावरण, मेडिकल के क्षेत्रों में नवीन शोध एवं सायबर अपराध को रोकने एवं अपराधियों कों पहचान करने में ए.आई. उपयोगी हो रही है। नवीन शिक्षा नीति के तहत ए.आई. का कोर्स समस्त संकायो के विद्यार्थियों के लिये ऐच्छिक विषय के रूप में विभिन्न विश्वविद्यालयों के पाठ्यक्रम में सम्मिलित है। यह वर्तमान परिदृश्य में युवाओं को रोजगार प्राप्त करने की दृष्टि से अत्यंत उपयोगी है। इसमें विशिष्ट डिग्री कोर्स भी संचालित है। जिसमें मशीन लर्निंग इंजीनियर, डेटा साइंटिस्ट ए.आई. रिसर्च साइंटिस्ट , रोबोटिक्स इंजीनियर, ए.आई. एथिसिस्ट और बिजनेस इंटेलिजेंस डेवलपर कोर्स सम्मिलित है। वर्तमान और भविष्य आर्टिफिशियल इंटेलिजेंस का है। जिसमें समस्त क्षेत्रों का समग्र विकास पहले से कही तेज गति से संभव हो सकेगा। यह नया ज्ञान वर्तमान पीढ़ी को सृष्टि के नये क्षेत्रों की खोंजो में भी अत्यंत सहायक हो कर मार्गदर्शक की भूमिका निभा रहा है।

संदर्भ

1.   आर्टिफिशियल इंटेलिजेंस एवं इसके अनुप्रयोग (मध्य प्रदेश हिन्दी ग्रन्थ अकादमी ,भोपाल)।

2.   शिक्षक शिक्षा में कृत्रिम बुद्धि या आर्टिफिशियल इंटेलिजेंस भूमिका एवं विकास ,डॉ. मोहन लाल आर्य आई.एफ.टी.एम.यूनिर्वसिटी (मुरादाबाद, उत्तर प्रदेश)

3.   गूगल से प्राप्त सार ।

उच्च शिक्षा के अध्ययन-अध्यापन में आधुनिक तकनीक का प्रयोग एवं उपयोगिता

पंछीराम वर्मा

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भाव:

"परिवर्तन जीवन का अनिवार्य हिस्सा है।" परिवर्तन मनुष्य के लिए नई तकनीकों, अविष्कारों,एवं पद्धतियों से अवगत होने, और उनका उपयोग करने का अवसर प्रदान करता है। अध्ययन-अध्यापन द्वि-पक्षीय प्रक्रिया है, जिसमें अध्यापक की पहल और अध्येताओं की सक्रिय सहभागिता आवश्यक होती है। अध्ययन-अध्यापन में आधुनिक तकनीकों का उपयोग शिक्षण-अधिगम प्रक्रिया में जटिलता और नीरसता को कम कर, अधिगम को आसान और रूचिकर बनाता है। उच्च शिक्षा से विद्यार्थियों के व्यक्तित्व का बहुआयामी विकास सुनिश्चित करते हुए उन्हें लक्ष्य प्राप्ति के योग्य बनाया जाता है तथा उनमें में मानवीय गुणों का विकास किया जाता है । हमारे महाविद्यालय एवं विश्वविद्यालय शिक्षा के प्रकाश स्तम्भ हैं, जिसका प्रकाश विद्यार्थियों के माध्यम से सम्पूर्ण समाज और संसार में फैलता है। आधुनिक तकनीकें और आविष्कार, उच्च शिक्षा में अध्येताओं की सहभागिता बढ़ाकर अध्ययन-अध्यापन को परिणामोन्मुख बनाते हैं। सीखना प्रौद्योगिकी पर निर्भर हो गया है और ऑनलाइन, वर्चुअल लर्निंग आज की शिक्षण प्रणाली का अभिन्न हिस्सा बन गया है। डिजिटल उपकरणों से लेकर आर्टिफिशियल इंटेलिजेंस जैसे अत्याधुनिक उपकरण अध्ययन-अध्यापन को समग्र रूप से प्रभावित कर रहे हैं। वर्तमान समय में परिवर्तन एवं आधुनिक तकनीकों को एक दूसरे का पर्याय माना जाने लगा है। तीव्र गति से परिवर्तन, तकनीकी में बड़ी तेज गति से परिवर्तन को इंगित कर रहा है। परिवर्तन की गति के साथ कदम मिलाने के लिएअध्ययन-अध्यापन में आधुनिक तकनीकों का उचित उपयोग होना चाहिए।

मुख्य शब्द: उच्च शिक्षा, अध्ययन-अध्यापन, आधुनिक तकनीक, अविष्कार, प्रौद्योगिकी, ऑनलाइन, वर्चुअल, परिवर्तन, डिजिटल उपकरण, आर्टिफिशियल इंटेलिजेंस (AI) आदि।

प्रस्तावना:

उच्च शिक्षा का मुख्य उद्देश्य किसी व्यक्ति को व्यावहारिक समस्याओं के समाधान से निपटने के लिए समग्र व्यक्तित्व विकास के साथ अकादमिक और पेशेवर रूप से शिक्षित करना है। चूंकि नवीन तकनीकों और अविष्कारों ने जीवन के हर क्षेत्र में अपना स्थान बना लिया है। कृषि, व्यापार, पर्यटन, उद्योग, मनोरंजन, सेवा क्षेत्र और व्यक्तिगत जीवन आधुनिक तकनीकों पर निर्भर हो गया है। वर्तमान में आधुनिक तकनीकों के बिना एक पल भी चलना मुश्किल हो गया है। इस प्रतिस्पर्धी युग में बने रहने के लिए नवीन तकनीकों का उपयोग करते आना चाहिए और बदलते परिदृश्य में अद्यतन रहने के लिए भी तत्पर रहना चाहिए।विशेषकर उच्च शिक्षा के माध्यम से ही नवीन तकनीकों के प्रति जागरूकता एवं उनके उपयोग को प्रभावी बनाया जा सकता है। देश की उच्च शिक्षा व्यवस्था ने सदैव ही परिवर्तनों,तकनीकों,अविष्कारो और नवाचारों का स्वागत किया है। रेडियो और टीवी का उपयोग शिक्षा के एक माध्यम के तौर पर क्रमश: 1920 और 1950 के दशक से बड़े पैमाने पर किया जा रहा है। GSAT-3,जिसे EDUSAT के नाम से भी जाना जाता है, स्कूल स्तर से उच्च शिक्षा तक दूरस्थ कक्षा कक्ष शिक्षा के लिए है। यह पहला समर्पित ''शैक्षणिक उपग्रह'' है जिसने देश को शैक्षिक सामग्री पहुँचाने के लिए कक्षा में उपग्रह आधारित दोतरफा संचार प्रदान किया। भारत की राष्ट्रीय डिजिटल लाइब्रेरी विभिन्न विषयों और भाषाओँ में पुस्तकें, पत्रिकाएं, और अन्य संसाधन प्रदान करती है । यह उच्च शिक्षा के अध्ययन-अध्यापन में विद्यार्थियों, अध्यापकों और शोधकर्ताओं के लिए ज्ञान संसाधनों तक पहुँचने और साझा करने के लिए एक मंच

प्रदान करती है ई शिक्षा पोर्टल में सीईसी-यूजीसी एक वेब आधारित पोर्टल है जो उच्च शिक्षा के लिए ई लर्निंग संसाधन प्रदान करता है। इसमें स्नातक और स्नातकोत्तर पाठ्यक्रमों के लिए विडियो व्याख्यान, ई-पुस्तकें और संसाधन उपलब्ध हैं। प्रधान मंत्री ई-विद्या योजना के अंतर्गत एजुकेशन चैनल कम्युनिटी रेडियो से डिजिटल शिक्षा को प्रोत्साहित किया जाता है। अध्यापकों को नवीन तकनीकों एवं नवाचारों को अध्ययन-अध्यापन प्रक्रिया में उपयोग करने के लिए सरकारी और गैर सरकारी संस्थाओं द्वारा प्रशिक्षण प्रदान किया जाता है। वर्तमान समय में तकनीकों में तीव्र गति से परिवर्तन हो रहा है। सीखने और सिखाने की भौगोलिक सीमाएं समाप्त हो चुकी है। तकनीक के प्रयोग से अध्यापक और अध्येता हजारों किलोमीटर दूर होने पर भी वास्तविक कक्षा जैसा वातावरण निर्मित किया जा सकता है।

प्रविधि:

अनुसंधान पद्धति अनुसंधान समस्याओं को हल करने और एक व्यवस्थित तरीके से अनुसंधान तक पहुंचने के लिए एक दृष्टिकोण है। इसलिए अनुसंधान पद्धति में अनुसंधान विधियों और तकनीकों को शामिल किया जाता है जो उद्देश्यों के मूल्यांकन और विभिन्न विकल्पों की तुलना के आधार पर तय किए जाते हैं।वर्तमान अध्ययन में प्रयुक्त शोध पद्धति वर्णनात्मक सह आकस्मिक उपागम है। वर्णनात्मक अध्ययन का उद्देश्य अध्ययन-अध्यापन में आधुनिक तकनीकों का उपयोग और उनकी उपयोगिता का उल्लेख करना है।

आधुनिक तकनीक से आशय:

किसी भी कार्य को कुशलता और निपुणता से निष्पादित करने में उपयोग में लाई गई मशीनें, उपकरण, आविष्कार, नवाचार, या कोई पद्धति विशेष तकनीक कहलाती है। आधुनिकता का संबंध समय से होता है। वर्तमान समय की व्यवहारिक समस्याओं के समाधान हेतु नवीन आविष्कार ही आधुनिक तकनीकें हैं। उच्च शिक्षा अध्ययन-अध्यापन में आधुनिक तकनीकों से आशय सामग्री,उपकरण, और शैक्षिक दृष्टिकोण के एक एकीकृत संगठन से लगाया जाता है,जिसका प्रयोग अध्ययन-अध्यापन प्रक्रिया को आसान और रुचिकर बनाने के लिए किया जाता है |

उच्च शिक्षा अध्ययन-अध्यापन में प्रयोग की जाने वाली आधुनिक तकनीकें:

आधुनिक तकनीक का प्रयोग अब उच्च शिक्षा में बड़े पैमाने पर होने लगा है। अब स्मार्ट क्लासेस से विद्यार्थियों को पढ़ाया जाता है। लाइव विडियो, डाइग्राम और फोटो दिखाकर पढ़ाया जाता है। अब कंप्यूटर और इंटरनेट की मदद से विद्यार्थी किसी भी प्रश्न का जवाब कुछ सेकंड में ढूढ़ लेते है। उच्च शिक्षा में अध्ययन-अध्यापन को आसान, रुचिकर, और परिणामोन्मुखी बनाने के लिए ऑनलाइन शिक्षा, वर्चुअल क्लास, स्मार्ट क्लास, ई लाइब्रेरी, स्वयं पोर्टल, शैक्षिक चैनल, डिजिटल उपकरण, और आर्टिफिशियल इंटेलिजेंस जैसी आधुनिक तकनीकों के प्रयोग एवं उपयोगिता का प्रस्तुतिकरण निम्नानुसार है-

स्मार्ट क्लास (Smart Class):

इलेक्ट्रॉनिक उपकरणों जैसे; Computer, Projector, Interactive Board और Speaker का उपयोग करके किसी भी विषय वस्तु को रुचिकर बनाकर आसान ढंग से समझाने और शिक्षा प्रदान करने को स्मार्ट क्लास कहते हैं। स्मार्ट क्लासरूम एक डिजिटल क्लासरूम है जो स्कूल का एक उन्नत रूप है जो दक्षता में सुधार के लिए शिक्षण के विभिन्न तरीकों का पालन करता है, जहाँ सीखने के लिए बेहतर माहौल प्रदान करने की दिशा में काम किया जाता है, और एक स्वस्थ कक्षा को प्राथमिकता दी जाती है और छात्रों में सीखने के प्रति रूचि पैदा की जाती है ।

ऑनलाइन शिक्षा/ई-शिक्षा:

इंटरनेट व अन्य संचार उपकरणों की सहायता से प्रदान की की जाने वाली शिक्षा ऑनलाइन शिक्षा/ई-शिक्षा है। ई-शिक्षा के विभिन्न रूप हैं, जिसमें वेब आधारित लर्निंग, मोबाइल आधारित लर्निंग या कंप्यूटर आधारित लर्निंग और वर्चुअल क्लासरूम इत्यादि शामिल हैं।

स्वयं पोर्टल :

स्वयं शिक्षा मंत्रालय द्वारा विकसित एक ऑनलाइन शिक्षण मंच है जो छात्रों और शिक्षकों को मुफ्त ऑनलाइन पाठ्यक्रम और संसाधन प्रदान करता है। यह इंजीनियरिंग मानविकी और सामाजिक विज्ञान सहित विभिन्न विषयों में स्नातक से स्नातकोत्तर स्तर तक संसाधन प्रदान करता है।

शैक्षिक चैनल/शैक्षिक टेलीविज़न:

शैक्षिक चैनल टेलीविज़न पर शैक्षिक कार्यक्रमों के प्रसारण का माध्यम है। इंदिरा गाँधी राष्ट्रीय मुक्त विश्वविद्यालय ने वर्ष 2000 में अपने शैक्षिक प्रसारण चैनल ज्ञान दर्शन की शुरुआत की जो विभिन्न प्रकार के विषयों को सम्मिलित करने और दर्शकों की एक विस्तृत श्रृंखला की शैक्षिक आवश्यकताओं को पूरा करने के लिए शैक्षिक कार्यक्रमों का प्रसारण करता है। ज्ञान दर्शन चैनल भारत में शैक्षिक टेलीविज़न के क्षेत्र में मील का पत्थर है। शैक्षिक टेलीविज़न के क्षेत्र में इग्नू के चार चैनल चल रहे हैं, - ज्ञान दर्शन 1 और 2, व्यास और एकलव्य। ज्ञान दर्शन 1 और 2 विश्वविद्यालय के शैक्षिक कार्यक्रमों को प्रसारित करते हैं जबकि व्यास और एकलव्य की सामग्री क्रमशः यूजीसी और आईआईटी द्वारा योगदान की जाती है।

सहयोगात्मक अधिगम(Collaborative Learning):

एक ऐसी स्थिति है जिसमें दो या दो से अधिक लोग एक साथ कुछ सीखते हैं या सीखने का प्रयास करते हैं। व्यक्तिगत शिक्षण के विपरीत, सहयोगात्मक शिक्षण में लगे लोग एक-दूसरे के संसाधनों और कौशलों का लाभ उठाते हैं।

Spaced Learning:

स्पेस्ड लर्निंग इस अवधारणा पर आधारित है कि जब ज्ञान को निश्चित अंतराल के बाद दोहराया जाता है तो सीखने में वृद्धि होती है। अंतराल पर सीखना लंबे कर्मचारी प्रशिक्षण कार्यक्रमों को कई सत्रों या छोटी अवधि के मॉड्यूल में विभाजित करता है। संक्षेप में कहें तो, अंतरालीय शिक्षण में एक लंबे पाठ्यक्रम को कई सत्रों या सत्रों के बीच में अंतराल के साथ छोटी अवधि के मॉड्यूल में विभाजित करना शामिल है। शिक्षण के इस दृष्टिकोण से, शिक्षार्थी पाठ्यक्रम में सिखाई गई जानकारी को बनाये रख सकते हैं।

फ्लिप्ड क्लासरूम (Flipped Classroom):

फ्लिप्ड क्लासरूम अनुदेशात्मक रणनीति और ब्लेंडेड लर्निंग का एक प्रकार है| यह अनुदेशात्मक सामग्री को कक्षा के बाहर उपलब्ध करा कर परंपरागत शिक्षा व्यवस्था को बदलता है। (Flipped Classroom में छात्र प्रशिक्षक के नेतृत्व में ऑनलाइन लेक्चर देखते है, ऑनलाइन चर्चा करते है और रिसर्च करते है।

स्व-शिक्षा:

स्व - शिक्षा स्वयं को बेहतर बनाने और औपचारिक शिक्षा के बाहर नए कौशल विकसित करने का एक व्यावहारिक तरीका है। इस प्रकार की शिक्षा वयस्कों के लिए अपने कौशल सेट का निर्माण करने के लिए एक प्रभावी उपकरण हो सकती है, जबकि अगर इसे बच्चों में विकसित किया जाए, तो यह आजीवन सीखने की कुंजी बन सकती है।

मशीन लर्निंग:

एक ऐसी प्रक्रिया है जिसमें कंप्यूटर जैसी मशीनें अपने आप चीजों को सीख जाती है। इस योजना में मशीनें मानव दिमाग की तरह ही चीजों को सीख सकती है और इस प्रक्रिया में उन्हें किसी मानव की मदद की जरूरत नहीं पड़ती। अध्ययन-अध्यापन में मशीन

लर्निंग शिक्षा क्षेत्र की कई समस्याओं का समाधान कर सकती है। यह एक शिक्षक के काम को सरल बना सकता है, तनाव को कम कर सकता है और उन्हें अपने छात्रों को अधिक व्यक्तिगत शिक्षण अनुभव प्रदान करने में सक्षम बना सकता है।

आर्टिफिशियल इंटेलिजेंस:

आर्टिफिशियल इंटेलिजेंस का अर्थ है- बनावटी (कृत्रिम) तरीके से विकसित की गई बौद्धिक क्षमता। आर्टिफिशियल इंटेलिजेंस के जनक जॉन मैकार्थी के अनुसार यह बुद्धिमान मशीनों, विशेष रूप से बुद्धिमान कंप्यूटर प्रोग्राम को बनाने का विज्ञान और अभियांत्रिकी है अर्थात् यह मशीनों द्वारा प्रदर्शित की गई इंटेलिजेंस है। आर्टिफिशियल इंटेलिजेंस कंप्यूटर द्वारा नियंत्रित रोबोट या फिर मनुष्य की तरह इंटेलिजेंस तरीके से सोचने वाला सॉफ़्टवेयर बनाने का एक तरीका है। यह इसके बारे में अध्ययन करता है कि मानव मस्तिष्क कैसे सोचता है और समस्या को हल करते समय कैसे सीखता है, कैसे निर्णय लेता है और कैसे काम करता। आर्टिफिशियल इंटेलिजेंस नें शिक्षा के क्षेत्र में भी अपना महत्वपूर्ण स्थान बना लिया है । कोई भी तकनीक शिक्षक का स्थान नहीं ले सकती किन्तु, आर्टिफिशियल इंटेलिजेंस नें विद्यार्थियों की शिक्षक पर निर्भरता काफी हद तक कम कर दी है।

निष्कर्ष:

उच्च शिक्षा अध्ययन-अध्यापन में आधुनिक तकनीकों का उपयोग अध्यापक एवं अध्येता दोनों के लिए उपयोगी है । आधुनिक तकनीकें समय और श्रम बचाने में बहुत उपयोगी है। ये तकनीकें तनावमुक्त वातावरण में सिखने पर जोर देती है । सिखने-सिखाने को रुचिकर बनाकर प्रक्रिया को आसान बनाती है, छात्रों की शिक्षकों पर निर्भरता को कम करती है, समय के अनुसार अद्यतन रखती है । लेकिन आधुनिक तकनीक को शिक्षक के प्रतिस्थापन के बजाय अध्ययन-अध्यापन में सहयोग के लिए प्रयोग करने पर ही इसकी वास्तविक उपयोगिता उच्च शिक्षा में अध्यापक और अध्येता के लिए होगी।

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प्रौद्योगिकी के माध्यम से समावेशी शिक्षा

प्रेम सिंह मोरे

इतिहास विभाग, श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खंडवा,(मध्य प्रदेश)

शिक्षा जीवन पर्यंत चलने वाली गतिशील प्रक्रिया है, जो व्यक्ति में ज्ञान, कौशल एवं व्यवहार में परिवर्तन लाकर विकास करती है।शिक्षा मानव जीवन के सर्वांगीण विकास का एक महत्वपूर्ण अंग है। शिक्षा का माध्यम प्राचीन काल से वर्तमान तक निरंतर बदलता रहा है। प्राचीन समय में कोई किताब या पेन नहीं होती थी, आचार्य,अपने विद्यार्थियों को गुरुकुल में मौखिक शिक्षा ही दी जाती थी,जिन्हें छात्र श्रवण कर अपने स्मृति में कंठस्थ काट लेते थे। वक्त बितता गया फिर ,कागज और कलम का आविष्कार हुआ और धीरे-धीरे यह प्रक्रिया बढ़ती गई और आज प्रौद्योगिकी हर घर में ही मौजूद है। "प्रौद्योगिकी", शब्द का अभिप्राय है- किसी क्षेत्र में प्रयुक्त संसाधनों को नवीन वैज्ञानिक रूप प्रदान करना। आधुनिक युग प्रौद्योगिकी का युग है, विकास के प्रत्यक्ष क्षेत्र में प्रौद्योगिकी का विशेष योगदान रहा है। कृषि, उद्योग, व्यापार, संचार, शिक्षा के प्रत्येक क्षेत्र में प्रौद्योगिकी का प्रवेश हुआ है। शिक्षा के क्षेत्र में भी कई नवीन तकनीक विकसित होती जा रही है।

प्रौद्योगिकी की उपस्थिति शिक्षा के स्तर को बढ़ाती है और इसे आसान बनाती है। कंप्यूटर , लैपटॉप, मोबाइल फोन सूचना का वर्तमान समय में प्रमुख साधन बन गया है। आज इंटरनेट की आसान सुविधा से विश्व एक ग्राम के रूप में परिवर्तित हो गया है। कंप्यूटर नेटवर्क के माध्यम से विश्व के लाखों-करोड़ों कंप्यूटर आपस में जुड़े हैं,जिससे हजारों मील दूर बैठे व्यक्तियों को तुरंत सूचना प्राप्त हो जाती है। इससे समय व व्यय दोनों की बचत होती है।

वर्तमान समय में, उच्च शिक्षा के क्षेत्र में विश्वविद्यालयों और महाविद्यालयों में अध्ययन अध्यापन हेतु स्मार्ट कक्षाएं लगाई जा रही है, जो छात्रों के लिए पढ़ने में रुचि को बढ़ाती है और उन्हें पढ़ने के लिए प्रोत्साहित भी करती है, यह छात्रों के लिए एक वरदान की तरह है। इस तकनीक से आजकल छात्रों को चाहे, अपना सिलेबस की जानकारी प्राप्त करना हो या पत्र-पत्रिकाएं पढ़ना हो, शोध से संबंधित डाटा प्राप्त करना हो, यह सब कुछ ऑनलाइन माध्यम से संभव है। छात्रों को अपने विषय को पूरा करने के लिए शिक्षक की प्रतीक्षा भी नहीं करनी पड़ती है और वह विभिन्न शैक्षिक एप और प्लेटफार्म की मदद से जो कुछ भी हासिल करना चाहता है उसे आसानी से ऑनलाइन माध्यम से प्राप्त हो जाता है। गूगल मीट के माध्यम से ऑनलाइन शिक्षकों के व्यक्तिगत रूप से लाइव बातचीत कर सकते हैं, उनके लेक्चर पढ़ सकते हैं, अपने जिज्ञासाओं को पूरा करने में यह प्लेटफॉर्म महत्वपूर्ण भूमिका निभाता है।

लैपटॉप, यह ज्ञान प्राप्त करने का सर्वोत्तम माध्यम है इंटरनेट के माध्यम से लिखित या श्रवण दोनों प्रकार की जानकारी प्राप्त की जा सकती है। लैपटॉप की तुलना में स्मार्ट फोन एक छोटा उपकरण है किंतु इन्हें हम कहीं पर भी ले जा सकते हैं, यूट्यूब या प्ले स्टोर में कई शैक्षिक पाठ्य सामग्री उपलब्ध है जिसका उपयोग स्मार्टफोन के माध्यम से कर सकते हैं। इलेक्ट्रॉनिक पेन रीडर एक थर्मामीटर उपकरण है जो किताबों में लिखिए शब्दों को रिकॉर्ड करने में मदद करता है कहीं पर भी हर वक्त उसे सुनकर ज्ञान प्राप्त कर सकते हैं। पाठ्य पुस्तकों के रूप मे किंडल ऑनलाइन प्लेटफॉर्म पर उपलब्ध है, जिनकी मदद से हमें कम खर्च पर आसानी से उपलब्ध हो जाती है। बाहर के शोर से बचने के लिए आजकल उन्नत किस्म के हेडफोन उपलब्ध है,जिसकी सहायता से हमें अध्ययन करने में मदद मिलती है। शिक्षा के क्षेत्र में आधुनिक नई टेक्नोलॉजी हमारी शिक्षा प्रणाली में व्यापक बदलाव लाएगी। इससे छात्रों को पढ़ने में रुचि जागृत होगी, साथ ही कई तरीकों से अध्ययन में मदद मिलेगी। नई तकनीक हमें नई चीज सिखाती है, और हमें नए विचारों को विकसित करने में तथा हमारी रचनात्मकता को बढ़ावा देने में प्रोत्साहित भी करती है। नई टेक्नोलॉजी ने शिक्षा के क्षेत्र को काफी विस्तार किया है, इससे पहुंच विहीन छात्रों के लिए यह एक वरदान सिद्ध होगी।

संदर्भ:

1.   निर्मल सक्सेना ,शिक्षा एवं उदयमान भारतीय समाज

शिक्षा क्षेत्र में शैक्षिक शोध की भूमिका

प्रियका मालवी

वाणिज्य, श्री उमियां कन्या महाविद्यालय, रंगवासा, राऊ, जिला-इन्दौर (म.प्र.)

प्रस्तावना:

सीखने की प्रक्रिया आदिकाल से ही चली आ रही है। मानव जीवन भर सीखते रहता है, जितना वह षिक्षित होता है उतना ही वह सीखता है, जिससे उसके ज्ञान में वृद्धि होती है। शिक्षा शब्द की उत्पत्ति षिक्ष शब्द से हुई है, जिसका अभिप्राय करना। जिसके माध्यम से हम अपने संस्कारों व व्यवहारों का निर्माण करते हैं। शिक्षा एक सामाजिक प्रक्रिया है। जिसका महत्वपूर्ण उद्देष्य व्यक्ति को संस्कार प्रदान कर उनके व्यवहार, मानसिक सोच, में परिवर्तन लाना है। जिससे व्यक्ति का जीवन उन्नषील बने। ''शिक्षा भी एक सोउद्देष्य, सविचार प्रक्रिया है जिसके द्वारा जीवन के विभिन्न पहलुओं का पोषण होता है। जॉन ड्यूवी ने इसे प्रगतिषील प्रक्रिया कहा है। प्रगति के अभाव में शिक्षा अपने कर्तव्य से च्युत हो जायेगी और उसकी सुस्थिर नींव पर निर्मित मानव-सभ्यता तथा संस्कृति का विषाल भवन निष्प्राण हो जायेगा। अतः शिक्षा के अन्तर्गत प्रगति, परिमार्जन और विकास हेतु अनुसंधान की आवष्यकता निर्विवाद है।'' यह एक गतिषील अर्थात निरन्तर चलने वाली प्रक्रिया है। मानव जीवन के प्रारम्भ से लेकर अन्त तक वह शिक्षा के माध्यम से कुछ न कुछ सीखते रहते है। शिक्षा विकास का आधार है। शिक्षा के अभाव में विकास नहीं हो सकता। यह कार्य शिक्षा अनुसंधान से ही सम्भंव है। समान्यतः शिक्षा के क्षेत्र में किया जाने वाला शोध कार्य शैक्षिक अनुसंधान कहलाता है। इसका मुख्य उद्देष्य नवीन ज्ञान का सृजन कर भावी योजनाएँ बनाकर उक्त योजना को कार्यान्वित करना है। शैक्षिक अनुसंधान के कारण ही समस्त गतिविधियों के कारणों का पता लगाकर समस्याओं का समाधान किया जाता है। शैक्षिक अनुसंधान में नवीन ज्ञान के साथ-साथ उसकी उपयोगिता का भी होना आवष्यक है, यदि नवीन ज्ञान है मानव विवेकयुक्त एवं जिज्ञासु प्राणी है। सामन्यतः यह इस बात को मानकर चलता है कि जीवन, विष्व में होने वाली समस्त प्रकृतिक एवं अप्रकृतिक घटनाओं के पीछे कोई न कोई कारण अवष्य होता है। मानव प्रत्येक घटना को सत्यता की कसौटी पर कसने का अथक प्रयास करता है और तभी घटना के कारणों के संबन्ध में कोई प्रतिक्रिया करना चाहता है। अतः वह कार्य एवं कारणों को जानने का अथक प्रयास निरन्तर जारी रखता है। जिज्ञासा को शान्त करने की उत्कंण्ठा ही मनुष्य को शोध करने के लिए प्रेरित करती है। शोध ही मानव को सत्यता की ओर अग्रसर करती है। शोध के माध्यम से ही सत्यता की पुष्टि होती है। शोध से न केवल सत्यता की पुष्टि होती है बल्कि मानवीय ज्ञान के विकास के साथ-साथ सामाजिक जीवन के अनेकों क्षेत्रों में उन्नति का मार्ग भी प्रषस्त होता है। लेकिन वर्तमान युग में कोई ऐसे क्षेत्र विषय में अनुसंधान किया गया है जिसकी कोई उपयोगिता ही नहीं है तो इसे हम शैक्षिक अनुसंधान नहीं कह सकते। शैक्षिक अनुसंधान से बहुआयामी विकास होता है। मानव अपने अनुभव से तर्क की ओर जाता है यह ज्ञानेन्द्रियों द्वारा यह तो जान लेता है कि अमुक वस्तु कैसी है किन्तु वह यह नहीं जानता कि वह ऐसी क्यों है। बार- बार निरीक्षण से वह इन कारणों को भी जान जाता है। अर्थात वह अनुभव से तर्क की ओर बढ़ता है। मानव के अनुभव तथ्यों को आधार बनाकर धीरे-धीरे निरीक्षण व परिक्षण द्वारा उनकी तर्कषक्ति का विकास करने का प्रयत्न करना चाहिए।

शिक्षा में शोध के उद्देष्य: शिक्षा अनुसंधान का मुख्य उद्देष्य नवीन ज्ञान का सृजन कर भावी योजनाएँ बनाकर उक्त योजना को कार्यान्वित करना है।

तथ्यात्मक:

शैक्षिक शोध में अनुसंधान के द्वारा तथ्यों कि खोज की जाती है। तथ्यों का विष्लेषण कर सारणीयन कर निष्कर्ष निकाला जाता है। यह उद्देष्य वर्णनात्मक प्रकृति के होते है। इसमें तथ्यों को एकत्र कर उनका वर्णन किया जाता है। नवीन तथ्यों कि खोज शिक्षा प्रक्रिया के विकास व सुधार में सकारात्मक भूमिका निभाती है।

कारण एवं परिणाम पर आधारित: शिक्षा अनुसंधान के अन्तर्गत नए सिद्धांतों एवं नवीन विचारों का प्रतिपादन किया जाता है। यह उद्देष्य व्याख्यात्मक होते है। इसके अन्तर्गत नवीन ज्ञान की वृद्धि होती है। इससे शिक्षा को प्रभावषाली बनाया जाता है।

बौद्धिक स्तर पर चिन्तन: तथ्य आधारित एकत्र डाटा में बार - बार विचार स्मरण कर किसी बात को बार-बार मन में लाना बौद्धिक स्तर पर चिन्तन कर निष्कर्ष निकालना शैक्षिक शोध में महत्वपूर्ण भूमिका निभाता है।

व्यवहारिकता पर आधारित: शैक्षिक शोध का उद्देष्य व्यवहारिकता आधारित भी होता है, स्थानीय स्तर पर आने वाली समस्याओं के समाधान से भी इस उद्देष्य कि प्राप्ति की जा सकती है।

शैक्षिक शोध कि विषेषताएँ: स्वामी विवेकान्द ने कहा था '' शिक्षा एवं ज्ञान के बिना आजादी नहीं मिल सकती है। शिक्षा ही वह हथियार है जिसकी सहायता से अज्ञानता के वाहन अन्धकार से मानवता बाहर निकलकर आजादी की सांस ले पाती है''

1. ''सबल तथा कुषल शैक्षिक दर्षन, चिन्तन व प्रषिक्षण क लिए अनुसंधान की निरन्तर आवष्यकता रहती है।''

2. शैक्षिक अनुसंधान में घटना स्थल की अधिक प्रधानता होती है, जिससे कि एकत्र किया गया डाटा विष्वसनीय रहता है।

3. शैक्षिक अनुसंधान से समस्त समस्याओं का समाधान किया जा सकता है।

4. शैक्षिक अनुसंधान कारण एवं परिणाम पर आधारित होता है।

5. शैक्षिक अनुसंधान के लिए यह आवष्यक नही है कि इसे कोई विषेषज्ञ ही कर सकता है। यह अनुसंधान मानवीय व्यक्तिगत व सामाजिक होता है।

6. शैक्षिक अनुसंधान में अन्तरविषयात्मक पद्धति का प्रयोग होता है।

7. शैक्षिक अनुसंधान में नवीन प्रक्रियाओं का प्रयोग किया जाता है।

8. शैक्षिक अनुसंधान सूझ तथा कल्पना पर आधारित होता है।

9. शैक्षिक अनुसंधान बहुधा कम खर्चीले होते है।

10. शैक्षिक अनुसंधान को यान्त्रिक नहीं बनाया जा सकता।

शिक्षा में अनुसंधान की आवष्यकता: ''अनुसन्धान का तात्पर्य किसी नवीन वस्तु या ज्ञान का कुछ नवीन सिद्धान्तों के आधार पर अन्वेषण करना है। इसका उद्देष्य सरल एवं सुव्यवस्थित विधियों द्वारा किसी क्षेत्र की प्रमुख समस्याओं का समाधान प्रस्तुत करना है। इस दृष्टि से अनुसंधान एक सोउद्देष्य एवं सविचार प्रक्रिया है, जिसका उद्देष्य मानव-समाज के ज्ञान को विकासित एवं परिमार्जित कर उपयोगी बनाना है। इसके महत्व के बारे में विद्यालय शिक्षा आयोग का मत है कि अनुसंधान के बिना अध्ययन मृतप्रायः हो जायेगा। अतः ज्ञान के विकास के हेतु अनुसंधान अत्यावष्यक है, और यह ज्ञान का विकास जीवन के विकास के लिए अत्यावष्यक है।

शिक्षा में शोध की भूमिका:- शिक्षा क्षेत्र में अनुसंधान करना ही शिक्षा शोध कहलाता है।

1. बहुआयामी विकास: शैक्षिक अनुसंधान से केवल एक ही क्षेत्र में विकास नहीं होता है बल्कि बहुआयामी विकास होता है। शैक्षिक अनुसंधान से ही समस्त प्रकार की समस्याओं का आसानी से समाधान किया जा सकता है। इसके अन्तर्गत समस्याओं को समझ कर तर्क के आधार पर समसयाओं का समाधान किया जाता है। साथ ही भावी योजनाओं का भी निर्माण किया जाता है।

2. नवपरिवर्तन: नवीन परिवर्तन लाने के लिए भी शैक्षिक अनुसंधान महत्वपूर्ण भूमिका अदा करता है। शैक्षिक शोध के माध्यम से ही वास्तविक तथ्यों को एकत्र कर समस्याओं का समाधान कर नितियों-नियमों में नव परिवर्तन लाया जाता है।

3. सामाजिक विकास: शैक्षिक अनुसंधान के माध्यम से ही सामाजिक समस्याओं व सामाजिक विकास के पहलुओं का पता लगाया जाता है। तत् पष्चात विकास के कदम उठाये जाते है। अतः सामाजिक विकास में शैक्षिक अनुसंधान महत्वपूर्ण भूमिका अदा करता है।

4. वास्तविक स्थिति का ज्ञान: शैक्षिक अनुसंधान में आकडों का संग्रहण कर उसका विषलेषण कर सारणीयन किया जाता ह, तदउपरान्त निष्कर्ष निकाला जात है। जो कि विष्वसनीय रहते है। साथ ही शोध के माध्यम से वास्तविक स्थिति का भी अनुमान

आसानी से लगाया जा सकता है जो तथ्य आधारित होता है।

5. मिथ्यावादी सूचनाओं पर रोक: शैक्षिक शोध के माध्यम से मिथ्यावादी सूचनाओं पर रोक लग जाती है।

शिक्षा मानव के विकास का प्रमुख आधार स्तम्भ है जो उसे कुशल और प्रषिक्षित कर प्रगिति के पथ पर ले जाती है। शिक्षा से न केवल शहरी विकास होता है बल्कि ग्रामीण विकास भी होता है। शिक्षा के क्षेत्र में शैक्षिक अनुसंधान नवीन तथ्यों की खोज, सिद्धांतों तथा सत्यों का प्रतिपादन करना अर्थात नवीन ज्ञान की वृद्धि करने में महत्वपूर्ण भूमिका निभाता है। नवीन ज्ञान कि शिक्षा के क्षेत्र में व्यावहारिक उपयोगिता होती है, षिक्षण अभ्यास में सुधार तथा विकास करके प्रभावषाली बना सकें तथा शिक्षा अनुसंधान की समस्या का स्वरूप इस प्रकार होता है जिसका प्रत्यक्षीकरण कर उपयोग किया जाता है। शिक्षा को आर्थिक विकास की अपेक्षाओं के अनुरूप ढालना समय की मांग है। एक प्रकार से शिक्षा प्रणाली न केवल अर्थव्यवस्था तथा समाज द्वारा अभीष्ट कुशल व प्रषिक्षित व्यक्तियों का निर्माण करती है। बल्कि आधुनिक दृष्टिकोण और बेहतर तकनीक द्वारा लोगों की ग्रहणषीलता बढ़ाती है, उनके मानसिक स्तर का विस्तार कर स्वस्थ मूल्यवान विकास हेतु चेतना उत्पन्न करती है।

निष्कर्ष:

शिक्षा एक सामाजिक प्रक्रिया है। उसका मूलभूत उद्देष्य व्यक्ति में ऐसे परिवर्तन लाना होता है, जो सामाजिक विकास एवं व्यक्ति के जीवन का उन्नतषील बनाने के दृष्टिकोण से अनिवार्य होते है। शैक्षिक अनुसंधान से बहुआयामी विकास होता है। मानव अपने अनुभव से तर्क की ओर जाता है। शैक्षिक अनुसंधान से ही सामाजिक विकास सम्भव है।

संदर्भसूची:

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ऑनलाइन टूल्स के फायदे

सबा अगवान

रसायनशास्त्र विभाग, श्री नीलकंठेश्वर शासकीय स्नातकोत्तर महाविद्यालय खंडवा,(मध्य प्रदेश)

प्रस्तावना:

ऑनलाइन टूल्स क्या है?

ऑनलाइन टूल्स उत्तर में गूगल वेब आपको ऐसे ही संसाधन मुहैया कराते हैं जिनकी मदद से आप अपनी स्टडी की बनावट को गूगल सर्च में बेहतर तरीके से दिखा सके और इसके उपयोगकर्ता अनुभव क्वालिटी में सुधार ला सके ऑनलाइन तरीके से अध्ययन के कई फायदे या बहुत सुविधाजनक है और इस सुविधा के उपयोग से आप अपने घर पर ही रहकर बातचीत कर सकते हैं आप क्लासरूम की तरह यहां पर भी एक दूसरे से सवाल जवाब कर सकते हैं प्राकृतिक आपदा या आपातकाल की स्थिति में ऑनलाइन अध्ययन की स्थिति में या आपातकाल की स्थिति में ऑनलाइन अध्ययन की प्रक्रिया का महत्व और भी अधिक बढ़ जाता हैं |

ऑनलाइन टूल्स की स्टडी में शुरुआत:

इन दोनों ऑनलाइन अध्ययन का एक प्रचलन सा बन गया है कोविद-19 के चलते इस लॉकडाउन में कोई स्कूलों में पिछले कुछ महीनो से ऑनलाइन अध्ययन की प्रक्रिया को अपनाकर इसे अधिक उपयोग में लाया है

ऑनलाइन अध्ययन की सुविधा:

ऑनलाइन टूल्स की मदद से स्टडी से अपनी स्टडी संचालन की प्रक्रिया से अधिक लोकप्रिय हो रहा है इन दोनों का स्कूल छात्रों के सुविधाओं को देखते हुए ऑनलाइन टूल्स का उपयोग स्टडी में कर रहे हैं ऑनलाइन टूल्स जैसे गूगल मीट तथा ऑनलाइन क्लास और सर्च इंजन के माध्यम से अध्ययन सरल एवं रुचि पूर्ण हो गया है नंबर ।

ऑनलाइन टूल से स्टडी बेनिफिट्स:

ऑनलाइन टूल्स की हेल्प से स्टडी ऑनलाइन स्टडी में बहुत मदद मिली है ऑनलाइन टूल्स के थ्रू हम क्लासरूम की तरह यहां भी एक दूसरे से सवाल जवाब कर सकते हैं प्राकृतिक आपदा में इसका महत्व बढ़ जाता है ऑनलाइन तो उसके माध्यम से वीडियो और इमेज के द्वारा भी किसी भी टॉपिक को आसानी से समझाया जा सकता है ऑनलाइन टूल्स की हेल्प से टीचर्स को काफी सुविधा होती है ऑनलाइन तुलसी के माध्यम से आप अपने घर के कमरे में बैठकर के अध्ययन कर सकते हैं

स्टडी बेनिफिट्स ऑफ़ ऑनलाइन टूल्स:

ऑनलाइन टूल्स के माध्यम से पढ़ने की विधि स्कूली शिक्षा प्रणाली से मामले में काफी सस्ती है सबसे पहले की यह की आपको स्कूल जाने में अन्य खर्चों की आवश्यकता नहीं पड़ती वह वापस आने में ट्रांसपोर्ट वाले खर्चों की आवश्यकता नहीं पड़ती दूसरा यह की अन्य सभी खर्च कम हो जाते हैं कभी-कभी हमें पुस्तक भी ऑनलाइन उपलब्ध हो जाती है जिसकी कीमत हार्ड कॉपी की तुलना में काफी कम होती है अपनी आवश्यकता के अनुसार इसे डाउनलोड कर सकते हैं जिसमें वास्तविक किताबों की तरह सामग्री उपलब्ध होती यहां तक की आपको बस इंटरनेट कनेक्शन की आवश्यकता होती है कनेक्शन के पैसे खर्च करने होते हैं और कुछ नहीं ।

ऑनलाइन टूल्स की हेल्प से छात्रों के उपस्थिति का रिकॉर्ड:

ऑनलाइन टूल्स की हेल्प से छात्रों की उपस्थिति दर्ज करने पर काफी आसानी होती है कई छात्र दूर-दुल्हन निवास करते जिसके कारण में अपना अध्ययन जारी नहीं रख पाए तथा उन छात्रों को ऑनलाइन टूल्स की हेल्प से क्लासरूम अटेंड क्लासेस अटेंड

करने में सुविधा प्राप्त होती है तथा शिक्षा को भी उपस्थिति दर्ज करने में आसानी प्राप्त होती है ऑनलाइन तो उसके माध्यम से चलने वाली क्लासेस में छात्रोंकी क्लासेस का टाइम नोट होता है जिससे सुविधाजनक है नंबर ।

कम पेपर का इस्तेमाल:

ऑनलाइन शिक्षा की प्रक्रिया का एक और लाभ या भी है किस इसमें कागजों का उपयोग बहुत कम हो जाता है क्लासरूम प्रणाली की अपेक्षा डिजिटल टूल्स की हेल्प से स्टडी में पेपर उसे बहुत कम होता है जबकि आपका शिक्षा का आपके बिना पेपर के भी पढ़ सकता है इसके अलावा ऑनलाइन टूल्स के माध्यम से क्लासेस में स्टडी टेस्ट भी आयोजित किए जाते हैं जिसके कारण पेपर का इस्तेमाल बहुत कम हो जाता है न।

ऑनलाइन टूल्स की हेल्प से टीचिंग मटेरियल:

टीचिंग मटेरियल के माध्यम से टीचर्स स्टूडेंट का अच्छा टांगे क्लासरूम एनवायरमेंट की तुलना में ऑनलाइन टूल्स के माध्यम से स्टडी में देखा जाता है कि कक्षा आमतौर पर कक्षा में व्याकुलता मौजूद होती जबकि ऑनलाइन क्लासेस में इसकी संभावना काफी कम हो जाती है जिसके कारण छात्र शिक्षक द्वारा बताई गई बातों को ध्यान से सुनता है ।

ऑनलाइन टूल्स के माध्यम से अध्ययन अच्छी रुचि पूर्ण बनाना:

ऑनलाइन टूल्स के माध्यम से शिक्षा का अध्ययन को अधिक कृषि पूर्ण बन सकता है तथा छात्रों को अध्ययन में आसानी होती है कुछ नया करने को भी कह सकता है जिससे कि छात्रों को सब्जेक्ट के प्रति रुचि जागृत होती है।

एन ऑनलाइन लर्निंग टूल्स इस सॉफ्टवेयर था प्रोवाइड स्टूडेंट की आन अपॉर्चुनिटी तो इंगेज वर्चुअल इन क्लासरूम एक्टिविटीज थिस सॉफ्टवेयर एंड इंक्लूड मान्य फीचर्स एंड फंक्शंस तो हेल्प यू रिव्यू स्टूडेंट एंड परफॉर्मेंस एंड आईडेंटिटी इफेक्ट टीचिंग स्टडी स्ट्रैटेजिस उदाहरण गूगल मीट, ज़ूम मीट, वेब ब्राउज़र

उपसंहार:

ऑनलाइन अध्ययन का मध्य शिक्षा और तकनीकी का संलयन है जिसमें ऑनलाइन टूल्स काफी हेल्पफुल है ऑनलाइन टूल्स के माध्यम से स्टडी में टेक्निक्स के माध्यम से हम से कैसे शिक्षा प्रणाली वाला उड़ा सकते हैं और हम इससे विकास किसने प्रणाली का लाभ उठा सकते हो इससे विकास और सुधार के लिए और अधिक प्रयास कर सकते शिक्षक क्षेत्र में यह प्रणाली क्रांति लाने की दिशा में हर दिन नए कदम की ओर अग्रसर है जो कि पहले कभी नहीं हुआ है सुविधा और आसान संचालन की प्रक्रिया से अधिक हो रहा है ऑनलाइन पुलिस बहुत सुविधाजनक है ऑनलाइन टूल्स के माध्यम से आप घर पर रहकर भी स्टडी कर सकते हैं।

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