EDUCATION 5.0: REVOLUTIONIZING LEARNING FOR THE FUTURE

Organized By Internal Quality Assurance Cell (IQAC)



THIAGARAJAR COLLEGE OF PRECEPTORS

Govt. Aided Institution 12(B) and 2(F) Status by UGC and Re-accredited by NAAC with 'A' Grade ISO 9001:2015 Certified and Practicing Institution Teppakulam, Madurai -625 009, Tamil Nadu | www.tcp.ac.in

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Edited

Dr. S. Prakash Ms. M.A. Muniammal Dr. M. Maruthavanan Dr. N. Sundar Mr. K. Thangavel Mr. S. Raja Kumar



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Education 5.0: Revolutionizing Learning for the Future

Dr.S.Prakash, M.A.Muniammal, Dr.M.Maruthavanan, S.Raja Kumar, K.Thangavel, and Dr.N.Sundar

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Madurai - 9

Dr. S. Prakash Principal

MESSAGE

I am delighted to welcome you to the conference "Education 5.0: Revolutionising Learning for the Future." As the principal of Thiagarajar College of Preceptors in Madurai, I am honoured to organise this event, which brings together educators, academics, policymakers, and industry leaders from all over the world to discuss significant educational breakthroughs.

Education 5.0 marks a dramatic transformation in our approach to learning and teaching. With fast technological improvements and changing student demands, educational institutions must embrace creative techniques and adapt to the changing landscape. This conference provides a venue for us to gather, exchange ideas, and be inspired by the potential that Education 5.0 offers.

During the two days of this conference, you will be able to participate in thoughtprovoking conversations, hear insightful keynote addresses, and examine a diverse selection of research papers and presentations. The programme has been meticulously crafted to address a wide range of Education 5.0 topics, such as digital learning environments, personalised learning, new technologies, and pedagogical advances. I invite you to engage actively, to ask questions, and to offer your own experiences and knowledge.

Our job as educators is to prepare children for the future by providing them with the skills, information, and competencies they require to flourish in a fast-changing environment. Education 5.0 gives us new tools and techniques to improve teaching and learning by encouraging creativity, critical thinking, cooperation, and adaptation. We can benefit from these improvements if we embrace them.

I'd want to offer my deepest gratitude to the organising team, who worked diligently to make this conference a reality. Their devotion, commitment, and attention to detail have guaranteed that everyone has a positive experience. I also like to thank the distinguished keynote speakers, presenters, and reviewers for their invaluable contributions to the programme.

I recommend all attendees to make the most of this conference. Network, network, and interact with other participants. Take advantage of the chance to learn from one another's experiences and viewpoints. Let us encourage and challenge one another to push educational limits and build a brighter future for our pupils.

I wish you, everyone, a fruitful and enjoyable conference. May the knowledge given, debates exchanged, and connections created over the next two days help to progress Education 5.0 and alter our educational practices.



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Madurai - 9

MESSAGE

The conference, "Education 5.0: Revolutionizing Learning for the Future," was held on May 26 and 27, 2023. This conference brings together educators, academics, politicians, and industry experts from all around the world to discuss Education 5.0's revolutionary potential and its influence on the future of learning.

Education 5.0 reflects a paradigm change in education, driven by rapid technological breakthroughs, globalisation, and the changing demands of learners in the twenty-first century. It goes beyond standard educational techniques, using novel pedagogies, emerging technology, and multidisciplinary cooperation to produce immersive and personalised learning experiences.

The goal of this conference is to provide a forum for meaningful debates, idea exchange, and the dissemination of research findings relating to Education 5.0. We hope to address the essential ideas, difficulties, and possibilities connected with this new era of learning through a variety of keynote speeches, paper presentations, workshops, and panel discussions.

The proceedings book, which has been gathered here, is a great resource for all participants, as well as educators, researchers, and practitioners in the field of education. It contains a selection of articles that showcase new methods, best practices, and cutting-edge research in the field of Education 5.0. These articles address a wide range of issues, including digital learning environments, adaptive learning systems, competency-based education, gamification, augmented reality, artificial intelligence and more.

We would like to thank the organising committee, session chairs, keynote speakers, authors, and reviewers for their significant contributions to the success of this conference. Their passion, skill, and excitement have improved the overall quality of talks and information exchange.

We hope that the conference proceedings will encourage additional investigation, cooperation, and innovation in the subject of Education 5.0. May it catalyse good change in the way we approach teaching and learning, providing learners with the skills, knowledge, and competencies they need to flourish in the future's ever-changing terrain.

We send our warmest greetings to all attendees and hope that this conference will be a memorable and instructive experience for everybody.

Organizing Secretary

Mr. S. Raja Kumar Assistant Professor of Education Thiagarajar College of Preceptors Madurai-625 009, Tamil Nadu



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Madurai - 9

MESSAGE

I am delighted to extend a warm welcome to all of you to the Two-Day National Conference on Education 5.0: Revolutionizing the Learning for the Future. It gives me immense pleasure to serve as the convener of this significant event, which aims to explore the transformative potential of Education 5.0 and its impact on shaping the future of learning.

Education is the cornerstone of progress, innovation, and societal development. As we stand on the threshold of a new era, it is crucial for educators, policymakers, researchers, and practitioners to come together and delve into the possibilities offered by Education 5.0. With this conference, we strive to create a platform for fruitful discussions, exchange of ideas, and collaborations that will drive the revolution in education.

The theme of this conference, "Revolutionizing the Learning for the Future," encapsulates our collective vision to reimagine education and prepare learners for the challenges and opportunities of the 21st century. Education 5.0 represents a paradigm shift, integrating emerging technologies, interdisciplinary approaches, and personalized learning experiences. It emphasizes the holistic development of learners, fostering creativity, critical thinking, collaboration, and adaptability.

Over the course of the two days, we have curated an exciting line-up of keynote speakers, resource persons, and paper presenters that will explore various dimensions of Education 5.0. Our esteemed speakers, who are experts in their respective fields, will share their valuable insights, research findings, and best practices to inspire and empower us to embrace this transformative wave.

Furthermore, this conference offers a unique opportunity to network with likeminded individuals, build connections, and forge collaborations. The diverse backgrounds, experiences, and perspectives of the participants will enrich our discussions and contribute to the collective wisdom of this gathering. I encourage you all to actively engage in the sessions, ask thought-provoking questions, and foster meaningful dialogues that can propel the educational landscape forward. I would like to express my heartfelt gratitude to the organizing committee, resource persons and volunteers for their tireless efforts in making this conference a reality. Their dedication and commitment have been instrumental in shaping this event and ensuring its success.

Finally, I extend my sincere thanks to all the participants for your presence and active participation in this conference. Your contribution and enthusiasm are invaluable, and I have no doubt that together we will chart a course towards a future where education becomes a catalyst for positive change.

Let us embark on this journey of exploration, innovation, and collaboration as we revolutionize learning for the future through Education 5.0.

Wishing you a fruitful and enriching conference!

Convener Mr. K.Thangavel, Assistant Professor of Education, Thiagarajar College of Preceptors (Aided), Madurai-625 009, Tamil Nadu.



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Madurai - 9

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Organizes

A Two-day National Level Conference on

Education 5.0: Revolutionizing Learning for the Future

[Hybrid Mode]

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CONTENTS

S.	Title of the paper	Page
1	Experiential Learning: Differ from Traditional Methods	1
-	Dr.Shiddappa. S Bhoomannavar	1
2	Incidental Learning	10
	M. Suresh Babu & Dr. P. Subramanian	
3	Mental Health in the Digital Era	15
	M.Padma & Dr.T. Sarala	
4	Differentiated Instruction and Digital Transformation	21
	Shyla Gnanam Ebenezer. J & Dr. D. Sumathi Desinguraj	
5	Evaluation in Inclusive Education	25
	Dr. Jyothi.B.Panth	
6	Peer Tutoring: An Effectful Teaching Approach	31
	Dr. A.Balamallika Devi	
7	A view of personalised learning in education	37
	A.M. Sasikumar	
8	Blended Learning: Integrating Technology with Classroom	45
	Instruction	
	B. Uma Maheswari	
9	The Present Scenario of Digital Education at the Primary Schools	49
	Level In Tamil Nadu	
	A.Gaspar Raja	
10	Historical Perspective of Education 1.0 to Education 5.0	53
	R. Kalaichelvan & Dr. P. Subramanian	
11	Open Educational Resources: A Salient Feature in Teacher	57
	Education	
10	J. Thenmozhi, & Dr.R. Selvamathi Sugirtha,	(0)
12	Revolution in Learning English through Life Skills	62
10	S. Jessy & Dr. J. Jayachithra	(0
13	Dr. D. C. Tageri	68
14	Dr. K. G. Teggi Remiers and Repetits of Inclusive Education	74
14	Harini Ravikumar	74
15	Porcopalized Learning: The Future of Education	70
15	Rajalakshmi K	15
16	Challenges of AL in Education Faced During Implementation	8/
10	Venkatesh Roddannavar	01
17	Cloud Technologies in Educational Research	90
17	R. Ramva & Dr. G. Raieswari	20
18	Integration of social media in Education- An Overview	97
	Nisha A & Krishnarajan T. M	
19	Relationship Between Resilience and Emotional Intelligence	103
	J. Angelin Devakumari & Dr. D. Sumathi	

20	Building a Connected Future: Solving the Digital Divide to Enhance	107
	Library Resources Access	
	Meghanandha C, Renuka & Basalingappa	
21	STEAM Education: An Overview	117
	M.Kannan & Dr.P.Subramanian	
22	Digital Transformation: A Review of Opportunities for Future	123
	Research	
	Kavita S Shivappayyanamath	101
23	Inclusive Education: United Nations Convention on the Rights of	131
	Persons with Disabilities (UNCRPD)	
24	Dr. 1. Jeya Selva Kumari	1.41
24	Dr B Bacheivennen	141
25	Why are applications of learning analytics in advication today's	1/0
23	biggest trend?	140
	S V Vennila Manassadevi	
26	Role of ICT in Transition Programme for Adults with Multiple	156
20	Disabilities and Intellectual Disabilities in RPWD Act 2016	100
	M.Ramva	
27	Issues and Challenges in Implementing Innovative Trends of Digital	161
	Technology in the Teaching-Learning Process	
	Sreelatha. P	
28	Social Media in Education	168
	Dr. P. Subramanian	
29	STEM Education: An Overview	171
	Ajeetha T	
30	Gamification and Learning: Engaging Students through Playing	176
	G. Saravanakumar	
31	Digital Literacy: Navigating the Digital World with Competence	183
	and Responsibility	
	S. Raja Kumar	
32	Entrepreneurial Education: Fostering Creativity and Innovation	189
	A Veronica	107
22	Effective Lies of Social Media	105
- 33	A Packiam & Dr. Shirley Moral	195
34	Ways to Being Teachable: Needed Skills to Cope up with Education	201
51	5.0 for Euture Employability	201
	Dr.N.Sundar & Dr.F.Sopnia Mesalina	.
35	Student Teacher's Views on Digital Transformation in Education	207
	S. Vazhivittan & S. Suresh Kannan	
36	Learning Beyond the Borders: Global Education and Cultural	214
	Education	
	U. Yoogesh & N. Sangeetha	

37	Awareness of CHATGPT Among Student-Teachers	220
	K.Thangavel, A. Gangadharan & Bhavishya Shanmugasundaram	
38	Tools to Triumph: Maximizing Learning Outcomes with Teaching	227
	Aids	
	M.Ramalakshmi	
39	The flourishing finnish education	232
	N. Saprina Rashmi	
40	Analyzing the Impact of Open Education to Bridge the Educational	236
	Gap	
	Karthickraj S & Varsha V	
41	STEAM Education-A Multidimensional Approach to Foster	241
	Creativity and Innovation among 21st Century Learners	
	V. Anitha & V. Bharathi	
42	Perceptions towards Digital Technology among 21st Century B.Ed.	246
	Trainees	
	Naveen N	
43	Competency-Based Education	255
	Jeyarani A	
44	Fostering Novelty and Creativity in Classrooms by Cross-	259
	Overlearning Approaches	
	R. Swetha	
45	E-Competencies of the B.Ed. Trainees of the Dindigul District	265
	S.Alaguraja, G.Ponselvakumar & P. Pandiyan	
46	Utilization of Interactive Whiteboard for Teaching Biological Science	271
	V. Divya	
47	Augmented Reality: Mobile Applications for Effective Teaching and	277
	Learning	
	S. Saradha & Dr. Shirley Moral C	
48	The Future of STEM Education: Emerging Trends and Directions	281
	Sumaiya Banu.M & Baragath Nisha.N	
49	Innovative STEM Approach for Multi-Disciplinary Learning	289
	Solution	
	Dr. R. Annadurai	
50	Social Media Education Enhance the Rural Students Learning	297
	A. Sobiya & G. Sneka	
51	Essentials of Developing Scientific Reasoning Ability	302
	Y. Paul Usha Rani & Dr. J. Johnsi Priya	

EXPERIENTIAL LEARNING: DIFFER FROM TRADITIONAL METHODS

Dr. Shiddappa. S Bhoomannavar

Associate Professor B.V.V.Sangha's College of Education Bagalkot

Abstract

The paper focus on Kolb's Experiential Learning Theory and presents a cycle of four elements - Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. Experiential Learning a Combines direct experience with focused reflection builds on past knowledge and experiences, requires active involvement in meaning construction, encourages collaboration and exchange of ideas and perspectives, and can be course-focused or in-class, community-focused, or work-focused.

Experiential learning focuses on creating experiences that have a practical application of Knowledge and skills to real-world experiences to increase learners' knowledge and develop competence in skills and behaviours. It is effectively used in schools, higher education, therapy, corporate training and other areas for educational learning, personal development and skills building. ELT has been widely applied in various contexts, including education, business, and psychology, and has been used to design experiential learning activities and programs that promote deep learning and personal and professional growth.

Experiential Learning can be used-Outbound Training, Virtual Online Team Building, Management Games, Team Building Activities, Gamed Based Learning, Outdoor Learning Activities, In house Learning Activities, Drama, Art, Theatre, Simulation-Based Learning, Film Making and Story Telling.

Keywords: Experiential Learning: Structured learning process through direct experience, Reflective Observation: To learn from our experiences and Observations.

Introduction

Experimental learning is a structured learning process through direct experience, observation, and reflection. It involves Actively engaging in an experience that has a scientific method, technical or experimental design. Reflecting on what happened during the experience. Drawing inferences from that reflection.

In Experimental learning, learners are encouraged to explore, question, and experiment with different ideas and concepts. The goal is to help learners gain a deeper understanding of the material by putting it into practice and experiencing it firsthand. Experimental learning can take many forms, such as project-based learning, field trips, simulations, role-playing, and laboratory experiments. It is often used in scientific and technical fields but can be applied to any other subject or discipline.

The experiential learning methodology is a well-known model in education, training, facilitation, coaching and organizational development. Experiential learning is an immersive, participant-focused, active approach to learning that involves experiential learners of all ages, backgrounds and experience levels in an emotionally engaging

learning experience Experiential Learning is a subset of the broader field of Experiential Education which is a teaching philosophy with a multidisciplinary approach toward learning.

David Kolb is best known for his work on experiential learning theory or ELT. Kolb published this model in 1984, getting his influence from other great theorists including John Dewey, Kurt Lewin, and Jean Piaget. According to the Association for Experiential Education, experiential learning can be summed up in the phrase "challenge and experience followed by reflection and application leading to learning and growth."

Experiential learning is not new and is an age-old concept. Aristotle spoke of it around 350 BC when he wrote in the Nicomachean Ethics "For the things we have to learn before we can do them, we learn by doing them." Confucius also spoke about it around the same period. However, as an articulated educational approach, experiential learning is very recent.

The concept of experiential learning was first explored in education and learning context by John Dewey, Kurt Hahn, Kurt Lewin and Jean Piaget, among others. It was made popular by David A. Kolb.

Objectives of Experiential Learning

- 1. To promote professional skills and knowledge through hands-on experience.
- 2. To build confidence and ability to work in project mode.
- 3. To acquire enterprise management capabilities.

Characteristics of Experiential Learning

- 1. Engage with learners in direct experience and focused reflection to increase knowledge,
- 2. Develop skills and clarify values.
- 3. Facilitated and guided practice,
- 4. Reflection and evaluation are all essential components of this transformative method of learning.

Experiential Learning Theory

Experiential learning theory (ELT) is a framework developed by David Kolb that explains how people learn through direct experience, reflection, and experimentation. Kolb's theory proposes that learning involves four distinct modes of processing which include 4 stages and 4 learning styles.

According to ELT, learning occurs through a cyclical process that involves experiencing, reflecting, conceptualizing, and experimenting. Kolb also emphasizes that people tend to have a preferred learning style, but effective learning involves using all four modes of processing.

How Experiential Learning Works

The basic model of the experiential learning cycle is "Do Reflect Decide". Kolb's Experiential Learning Theory (David Kolb, 1984) defines experiential learning as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience."



Kolbs Experiential Learning Cycle

The experiential learning cycle is a four-step learning process that is applied multiple times in every interaction and experience: Experience – Reflect – Think – Act.

Kolb's Experiential Learning Theory presents a cycle of four elements

- 1. Concrete Experience
- 2. Reflective Observation
- 3. Abstract Conceptualization
- 4. Active Experimentation

Kolb described two different ways of grasping experience:

- 1. Concrete Experience
- 2. Abstract Conceptualization

He also identified two ways of transforming experience:

- 1. Reflective Observation
- 2. Active Experimentation

Experiential Learning Process

The experiential learning process is a cycle of four stages that involve actively engaging with the world to gain new knowledge, skills, and perspectives. The 4 stage cycle of

experiential learning can be repeated continuously, with each new experience building on the previous one and leading to deeper learning and personal growth. By engaging in the experiential learning process, learners can develop critical thinking skills, problem-solving skills, and decision-making skills, as well as gain practical knowledge and experience.

1. Concrete Experience

Concrete experience describes the hands-on experiences that we learn from. It's here that we try new things, face problems and step out of our comfort zone. These experiences could be anything in our personal or professional lives. it's through experience that we get to learn from our successes or failures.

2. Reflective Observation

Next, we need to reflect to learn from our experiences. The 'reflective observation' phase of the experiential learning cycle is all about reflection on the experiences which include both actions and feelings. It's during this stage that we ponder on the experiences. We get to reflect on what went right and what could be improved. It's also a chance to observe how it could have been done differently and to learn from each other.

3. Abstract Conceptualization

Once we have identified and understood the defining characteristics of an experience, we can decide on what we can do differently next time. This is a time for planning and brainstorming steps for success.

4. Active Experimentation

The active experimentation phase of the learning cycle is where we get to experiment with our ideas. It's time to put our plan of action to the test in the real world!

Examples of Experiential Learning

The experiential learning process does not necessarily begin with experience, however. Instead, each person must choose which learning mode will work best based on the specific situation. Here is where learning objectives can help the participants achieve a certain desired outcome out of the process of experiential learning.

Learning to Ride a Bicycle

- Reflective observation Thinking about riding and watching another person ride a bike.
- Abstract conceptualization Understanding the theory and having a clear grasp of the biking concept.
- Concrete experience Receiving practical tips and techniques from a biking expert.
- Active experimentation Leaping on the bike and having a go at it.

Learning to Coach

- Concrete experience Having a coach guide you in coaching someone else.
- Active experimentation Using your people skills with what you have learned to achieve your coaching style.
- Reflective observation Observing how other people coach.
- Abstract conceptualization Reading articles to find out the pros and cons of different methods.

Experiential Learning Styles Model

How do we decide which mode of experiential learning will work best? While situational variables are important, our preferences play a large role. Kolb notes that people who are considered "watchers" prefer reflective observation, while those who are "doers" are more likely to engage in active experimentation.

"Because of our hereditary equipment, our particular past life experiences, and the demands of our environment, we develop a preferred way of choosing," Kolb explains. These preferences also serve as the basis for Kolb's learning styles. In this learning style model, each of the four types has dominant learning abilities in two areas.

1. Diverging (concrete, reflective)

Emphasizes the innovative and imaginative approach to doing things. Views concrete situations from many perspectives and adapts by observation rather than by action. Interested in people and tends to be feeling-oriented. Likes such activities as cooperative groups and brainstorming.

2. Assimilating (abstract, reflective)

Pulls several different observations and thoughts into an integrated whole. Likes to reason inductively and create models and theories. Likes to design projects and experiments.

3. Converging (abstract, active)

Emphasizes the practical application of ideas and solving problems. Likes decisionmaking, problem-solving, and the practical application of ideas. Prefers technical problems over interpersonal issues.

4. Accommodating (concrete, active)

Uses trial and error rather than thought and reflection. Good at adapting to changing circumstances; solves problems in an intuitive, trial-and-error manner, such as discovery learning. Also tends to be at ease with people.

Kolbs Learning Styles

David Kolb theorized that the four combinations of perceiving and processing determine one of four learning styles of how people prefer to learn. Kolb believes that learning styles are not fixed personality traits, but relatively stable patterns of behaviour that are based on background and experiences. What is both interesting and important for group work is that different people tend to have different styles of learning, and therefore, place more emphasis, on or feel more comfortable, in some stages of the learning cycle than others. The learning styles are combinations of the individual's preferred approaches. These learning styles are as follows:

- Reflector / Diverger
- Theorist / Assimilator
- Pragmatist / Converger
- Activist / Accomodator

For example, people with the Diverging learning style are dominant in the areas of concrete experience and reflective observation. Kolb suggests that several different factors can influence preferred learning styles. Some of the factors that he has identified include Personality type, Educational specialization, Career choice, Current job role, and Adaptive competencies.

Principles of Experiential Learning

- 1. The learner has a real authentic experience which includes real consequences where the experiential learner makes a choice to participate and is intentionally involved in examining, exploring and playing with a real-world experience that can lead to any outcome.
- 2. The experience is a hands-on "feeling and doing" interaction. The experience can be planned or completely spontaneous. There is very less or no teaching involved and the experience may include experiences which involve solo and group involvement.
- 3. The experience is a direct experience with focused reflection and builds on past knowledge and experiences. It requires active involvement in the construction of meaning and encourages collaboration and exchange of ideas and perspectives between the participants.
- 4. The learner actively reflects on that experience through individual thought, group discussion, questioning, processing or writing in a journal. They may participate in group processing and discussion including debriefing and reflective questions posed by a facilitator who challenges the group to create personal meaning and transference of learning to new situations.
- 5. The Learning can conclude and makes sense of what the learner has experienced, including having opportunities to relate this/ her own experiences with those of others. The learner may develop theories, models or concepts about the experience. The learner may develop new questions, which can lead to the next experience or

explorations. The learner can apply their newly learned knowledge in the next experiences.

Experiential Learning Happen

Experiential learning is said to happen or take place when participants get immersed cognitively, emotionally, and behaviorally and are supported by a facilitator in reflecting, and processing the experiences, emotions, thoughts, and actions to get an insight into a safe learning environment, leading to a change in perspective, understanding, thought, and behaviour. An important aspect of experiential learning is transference, where the participants can apply the newly acquired learning in a different real-life situation thereby demonstrating change.

Experiential Learning Delivered

Training needs and desired outcomes are identified, a conducive and safe learning environment away from work is created and participants are walked through a sequence of activities that focus on ice-breaking, energizing, and trusting building initially. Once participants are engaged and feel safe, they are put into various tasks and challenges where they get to participate in an experience. The sequence of the tasks or activities follows low-order thinking skills to high-order thinking skills. After every activity, the facilitator invites the participants to take part in a discussion where the facilitator debriefs or processes the experiences.

The facilitator invites the group to achieve a goal but does not explain how to complete the activity. Participants must work to discover solutions individually and together as a team and must communicate and learn from each other to be successful.

Participants Learning in Experiential Learning

The Participants undergoing the experience are instantly able to feel the results of their actions by participating in the experience. During the processing, they get to realize the immense difference that can be made by changing their thinking and behaviour to real-life applications.

Experiential Learning Can be Used

Experiential learning can become a continuous process of learning and development in corporate companies and schools by adopting the basic steps of "do, reflect and apply". There are many ways to practice these experiential learning techniques some of which are Outbound Training, Virtual Online Team Building, Management Games, Team Building Activities, Gamed Based Learning, Outdoor Learning Activities, In house Learning Activities Drama, Art, Theatre, Simulation-Based Learning, Film Making, Story Telling, Creativity Games, Mystery Games, Service Learning.

Experiential Learning Implications for Educators

Knowing a participant's (and your educator's) learning style enables learning experiences to be designed according to the preferred learning style. Both Kolb's learning styles and experiential learning models can be used by educators to design learning experiences that are emotionally engaging, immersive and closer to real-life applications. Educators should ensure that the experiential learning activities are designed and carried out in ways that offer each learner the chance to engage in the manner that suits them best as per their preferred learning styles. Educators can support participants to learn more efficiently and effectively by combining learning styles with the learning cycle helping educators to target more specific learning sessions for the participants. Educators can design learning exercises that relate to the way participants take in information and tailor the learning intervention that is in line with Kolb's four stages.

By providing different learning initiatives, we increase the chances of the person assimilating the information effectively and helping them develop insights that may have been out of their capability if the learning had been in a different style. In a real-world scenario, activities and learning experiences should be developed in ways that build upon each stage of the experiential learning cycle and take the participants through the whole process in sequence making it a wholesome learning experience.

Schools and Education Institutes Can Use Experiential Learning Opportunities for Teaching

There are many ways in which schools can use experiential learning opportunities by having students actively engaged in hands-on learning and enhancing teaching excellence and student success.

- 1. Mock trials or debates
- 2. Organizing business internships.
- 3. School camps or a boarding component to campus life; here, students are responsible for some aspects of their daily life such as cleaning, time management and study
- 4. Undertaking drills to develop specific physical skills
- 5. Community service opportunities, such as work trips to support disadvantaged communities
- 6. Study tours to international universities where students experience on-campus life and undertake undergraduate study
- 7. Every film or novel study in English, where a student enters the world of the story and lingers on the complexities of the perspective of the protagonist
- 8. Simulations, such as in a Business Studies class examining the factors behind stock market fluctuations
- 9. Scientific experiments or open-ended inquiries to determine cause and effect
- 10. Case studies of urban development in Geography

- 11. Role-playing influential historical figures to understand personal motivations in a History class
- 12. Interactive classroom games, such as Kahoot or Socrative
- 13. Outdoor and Adventure Camps.

Important of Experiential Learning

Experiential Learning is the process of learning by doing. By engaging students in hands-on experiences and reflection, they are better able to connect theories and knowledge learned in the classroom to real-world situations. Teachers may incorporate simulations, role-plays, and project-based learning activities into their classrooms. Some schools have embraced experiential learning and built mini-terms or enrichment blocks into the academic calendar to facilitate an immersive experience for students.

Benefits of Experiential Learning

Students learn not to fear mistakes, but to value them. Experiential learning is designed to engage students' emotions as well as enhance their knowledge and skills. Playing an active role in the learning process can lead to students experiencing greater gratification in learning.

- Self-confidence and leadership skills- Experiential learning brings self-confidence and leadership skills to the children.
- They perform tasks with their critical thinking skills. And execute them with their abilities.
- All this gives them a better understanding of the concepts and brings out self-confidence in them.

Conclusion

Experiential learning is a practical instructional approach that teachers can implement in their classes to empower better learning habits. Also, it engages learners and enables students to participate in different in-class activities, boosting their knowledge acquisition and retention. Understanding all the above information is the best learning method and is very different from traditional methods.

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INCIDENTAL LEARNING

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Abstract

Incidental learning is learning that occurs unintentionally from activities where learning is not a conscious goal for the learner. For example, when someone plays a sport just for fun, but ends up improving his or her skills over time, he or she is engaging in incidental learning. As Incidental learning can be beneficial in various contexts it is important to understand it. As such, in the following article, one will learn more about incidental learning, and see how one can use it oneself, as well as how one can encourage it in others. **Keywords:** Incidental Learning, Engage, Promoting learning.

Introduction

Incidental teaching involves promoting incidental learning in individuals, by teaching them in situations where they are not trying to learn intentionally. For example, a parent can engage in incidental teaching by reading a history book to his/her child. This form of teaching can be used in various situations. For example, it is used as a naturalistic language intervention, which aids the acquisition of spoken language through naturally occurring adult-child interactions such as play. Similarly, incidental learning is also used as an intervention that can help autistic people improve their social skills.

Examples of Incidental Learning

An example of incidental learning in the context of language acquisition is learning new words by watching TV in a foreign language for fun. This is contrasted with the intentional learning of new words by using flashcards in a language-learning app. In addition, the following are examples of incidental learning in various other domains:

- A toddler touches something hot out of curiosity and learns that it hurts to do so.
- A kid plays with other kids for fun and learns social skills.
- A person watches a historical TV show for entertainment and learns new facts.
- A teacher interacts with students as part of the job and learns how to communicate more effectively.
- An athlete watches a competition in his field of sport for fun and learns how to perform new moves.

• An entrepreneur reads a fiction book to relax and learns new ways to improve their business.

Characteristics of Incidental Learning

The defining characteristic of incidental learning is the lack of intention to learn by the learner.

Other than that incidental, learning can vary in many ways such as the following:

Learners' motivation - It is considered in terms of whether learners are motivated or unmotivated to learn.

Learners' awareness - It is considered in terms of whether learners are aware or unaware of the learning.

External awareness -It is considered in terms of whether other people (e.g., parents or teachers) are aware or unaware of the learning.

External guidance -It is considered in terms of whether other people (e.g., parents or teachers) guided the learning (e.g., by providing encouragement or asking questions).

Difference between Incidental and Intentional Learning

Intentional learning is learning that occurs because of activities where learning is a deliberate and often primary goal for the learner. For example, someone who reads research articles to understand a scientific phenomenon is engaged in intentional learning.

The difference between intentional learning and incidental learning is that intentional learning has learned as a deliberate goal, while incidental learning doesn't. Accordingly, incidental learning is sometimes also referred to as *non-intentional learning*.

Neither type of learning is inherently better; rather, each type has its advantages and disadvantages and may be more beneficial for different people under different circumstances. For example, if a professional in some field needs to understand quickly a deeply technical topic, intentional learning will likely be better. Conversely, in a situation where a relatively unmotivated individual needs to improve some life skills slowly over time, incidental learning might be better.

It is noted that additional definitions are sometimes used for these types of learning, particularly when it comes to distinguishing between them. For example, one study described incidental learning as learning that is unintentional and that does not involve awareness of the learning itself. Similarly, another study described intentional learning as "learning which occurs as a result of specific training accompanied by instructions to learn" and stated that incidental learning is distinguished from it "by the absence of any specific training".

Benefits and Drawbacks of Incidental Learning

There are several potential benefits of incidental learning compared to intentional learning:

Effective - for example, if someone lacks confidence in his or her ability to learn, he/she will consequently avoid intentional learning.

Efficient - for example, if someone needs to spend a lot of time and effort to learn something intentionally, he/she can learn the same thing easily and automatically through the daily routine.

Enjoyable - for example, someone does not like trying to learn things actively but does enjoy making progress.

Accordingly, incidental learning can sometimes be preferable to intentional learning. That is why it is often used deliberately in teaching. For example, learning through educational games, help students learn material in a fun and intuitive way.

However, there are also some potential drawbacks to incidental learning, compared to intentional learning. Specifically, since the potential advantages of incidental learning are highly dependent on situational and personal factors, there are cases where intentional learning is better, in terms of effectiveness, efficiency, or enjoyment, or some combination of them.

Most notably, there are many situations where incidental learning is ineffective and that it will not enable learners to achieve their desired goals. For example, if a student needs to learn advanced statistical concepts for an exam, it is unlikely that they will be able to rely on incidental learning to do this.

In addition, this also means that there are situations where incidental and intentional learning is better in different ways. This can happen when intentional learning is more effective and efficient, but incidental learning is more enjoyable.

In such cases, it is important to consider all the potential benefits and drawbacks of each approach to choosing the most appropriate one to use. Furthermore, when doing this, it is important to remember that in many cases, it might not be necessary to choose one form of learning over the other, as the two may be used to complement each other.

Incidental learning is sometimes more effective, efficient, and enjoyable than intentional learning. However, this depends on various factors. so, there are situations where intentional learning is better, or it is better to use a combination of both approaches.

How to Learn Incidentally

Since incidental learning is unintentional, it's technically impossible to engage in it intentionally. However, from a practical perspective, one can use incidental learning by placing oneself in situations where one can learn without actively trying to learn. For example, if one wants to learn a new language, learning it deliberately (e.g., through a course) will be boring. Then one can use incidental learning instead, by engaging in fun activities that involve the language, such as playing video games and watching TV shows, without making an active effort to learn.

When deciding how to use incidental learning, one should also consider using intentional learning, either instead of incidental learning or in addition to it.

How to Promote Incidental Learning in Others

Teach people directly. For example, In a situation where one can learn something but not try to do so intentionally, simply teach what he/she needs to know.

Help people engage in incidental learning. For example, if a child is in a situation where he/she might learn something new. The child can be guided through questions to think about what's happening.

Drive people to situations where they can engage in incidental learning. For example, helping to improve one's vocabulary by encouraging one to read a book that will help in expanding one's vocabulary.

Prompt people to engage in incidental learning. Incidental learning can be explained to people - its meaning, reasons for its benefits and how one can engage in it - so they can do so on their own. Various techniques can be employed to promote incidental learning.

For example, one can sometimes benefit from using *reverse psychology*, which involves getting people to do things by prompting them to do the opposite. This can be helpful. for instance, if someone is completely misinformed about something, he/she may refuse to listen to what has been said. so, one can prompt the other to try and find evidence to prove it is wrong, to get them to learn more about the topic.

Similarly, one can take advantage of the *protege effect*, which is a psychological phenomenon where teaching, pretending to teach, or preparing to teach information to others help a person learn that information. This can be helpful. For instance, a gifted but disinterested student can be engaged to tutor other students in the class as a way of getting the gifted student to improve his/her understanding of the material.

Incidental learning can be combined with intentional learning. This can be beneficial to encourage intentional learning initially to learn key concepts, and then supplement that with incidental learning to internalize the applications of those concepts.

Conclusion

Incidental learning can be more effective, efficient, and enjoyable than intentional learning, but this is highly dependent on situational and personal factors, and there are cases where intentional learning may be better in one or more ways. To promote incidental learning in others one can teach them directly in an incidental manner and help them engage in incidental learning using techniques such as guiding questions, creating situations to engage in incidental learning, or prompting them to engage in incidental learning and by explaining what it is and why it's beneficial.

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MENTAL HEALTH IN THE DIGITAL ERA

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Abstract

The digital era has brought about significant changes in the way we interact with each other and the world around us. While these changes have brought many benefits, they have also given rise to new challenges, particularly in mental health. On the one hand, digital technologies have made it easier to access information and connect with others, which can be beneficial for people struggling with mental health issues. Online support groups, therapy apps, and mental health resources are more accessible than ever before. At the same time, social media platforms and other online spaces can also exacerbate feelings of loneliness, isolation, and anxiety. As technology continues to advance, it is important to consider how it can both support and harm mental health. We must work to ensure that digital technologies are used in ways that promote mental wellness and help people manage their mental health, while also mitigating the potential risks and negative impacts associated with the digital era.

Keywords: Mental Health, Digital Era, Teachers Mental Health, StudentsMental Health Impact of Mental Health in the digital era.

Introduction

In the digital era, mental health has become an increasingly important topic of discussion. With the proliferation of social media, the internet, and mobile devices, people are more connected than ever before. While these technological advancements have brought many benefits, they have also presented new challenges for mental health. Studies have shown that social media and technology use can have both positive and negative effects on mental health. On one hand, they can provide valuable resources and support for people struggling with mental health issues. On the other hand, they can also contribute to feelings of anxiety, depression, and isolation. Additionally, the prevalence of cyberbullying and online harassment has become a growing concern in recent years. These issues can have serious negative impacts on mental health and well-being. As society continues to become more digitally interconnected, it is important to address how technology can affect mental health. This requires a multi-faceted approach that includes education, support, and proactive measures to mitigate the negative effects of technology use on mental health.

Mental health in the digital era refers to the impact that technology and digital devices have on mental health and well-being. With the rise of digital technology and the internet, people are increasingly connected and information, but this also comes with potentially negative consequences for mental health on one hand, digital technology can be a helpful tool for mental health, such as teletherapy, online support groups, and mental health apps that provide resources and support for individuals struggling with mental health issues. On the other hand, excessive use of technology, particularly social media, has been linked to increased rates of anxiety, depression, and loneliness. The constant barrage of information, social comparison, and cyberbullying can also have negative effects on mental health. Overall, mental health in the digital era refers to the complex relationship between digital technology and mental health, and the need to balance the benefits of technology with the potential risks it poses to mental health.

Definition of Mental Health Context of the Digital Era

Mental health in the digital era refers to the overall state of a person's psychological and emotional well-being as it relates to their use and interaction with digital technologies, such as social media, online gaming, and mobile devices. It encompasses both the potential benefits and risks associated with these technologies and how they impact individuals' mental health and overall quality of life. As digital technologies become increasingly integrated into our daily lives, it is important to consider their impact on mental health and well-being and develop strategies to promote positive outcomes.

Characteristics of Mental Health in the Digital Era

The digital era has brought about significant changes to our daily lives, including the way we communicate, socialize, work, and seek information. While digital technology has many benefits, it has also brought unique challenges to mental health. Here are some characteristics of mental health in the digital era:

- **1. Information overload**: The digital era has made it easier than ever to access vast amounts of information. However, this also means that people can easily become overwhelmed by the sheer amount of information available to them, leading to stress, anxiety, and even decision paralysis.
- 2. Social media use: Social media platforms have become a pervasive part of modern life, and while they can offer many benefits, they can also negatively impact mental health. Studies have shown that excessive social media use can lead to feelings of isolation, depression, and anxiety.
- **3. Cyberbullying:** The digital era has created new forms of bullying, such as cyberbullying. This form of bullying can be particularly insidious, as it can take place anonymously and reach a large audience quickly. Victims of cyberbullying

can experience a range of negative mental health effects, including anxiety, depression, and even suicidal ideation.

- **4. Digital addiction**: Digital technology has become a ubiquitous part of modern life, and many people find it difficult to disconnect from their devices. This can lead to digital addiction, which can negatively impact mental health by causing sleep disturbance, social isolation, and depression.
- **5. Increased access to mental health resources**: On the positive side, the digital era has also made it easier for people to access mental health resources. Online therapy and mental health apps are becoming increasingly popular, making it easier for people to seek help when they need it.

The digital era has brought about many changes to mental health. While there are challenges associated with these changes, there are also opportunities to use digital technology to promote mental health and well-being.

Importance of Mental Health in the Digital Era

- The digital era has brought about unprecedented changes in the way we live, work, and communicate. While there are many benefits to this era, such as increased access to information and the ability to connect with people from all over the world, there are also unique challenges that can impact our mental health.
- One of the most significant challenges is the constant bombardment of information, which can lead to feelings of overwhelm and anxiety. Social media platforms, for example, can create a false sense of connection and comparison, leading to negative self-talk and low self-esteem. Additionally, the blurring of boundaries between work and personal life can lead to burnout and a lack of work-life balance.
- Therefore, it is crucial to prioritize mental health in the digital era. This includes taking regular breaks from technology, setting boundaries around the use of social media and other digital platforms, and seeking support when needed. It is also important to prioritize self-care practices such as exercise, healthy eating, and mindfulness meditation to help manage stress and anxiety.

Maintaining good mental health is essential in the digital era, as it can help us navigate the challenges of this new age and live a more fulfilling life.

Teachers' Mental Health in the Digital Era

1. Providing training and support: Teachers need ongoing training and support to keep up with new technology and best practices for online teaching. This can help to reduce stress and increase confidence in using digital tools effectively.

- **2.** Encouraging social interaction: Schools can create opportunities for teachers to connect and collaborate, both online and in person. This can help to reduce feelings of isolation and promote a sense of community.
- **3. Promoting work-life balance**: Schools can encourage teachers to prioritize self-care and set boundaries between work and personal time. This can include providing resources and support for stress management and mental health.
- **4. Offering technology support:** Schools can provide technical support and troubleshooting services to reduce the stress of dealing with technology-related issues. This can help teachers focus on teaching and reduce the risk of burnout.

Students' Mental Health in the Digital Era

- 1. **Increased screen time:** With the rise of online learning and the prevalence of digital devices, students are spending more time than ever before staring at screens. This can lead to eye strain, headaches, and fatigue, as well as an increased risk of sleep disturbances.
- 2. Social media pressure: Social media can be a great way to stay connected with friends and family, but it can also be a source of stress and anxiety for students. The pressure to present a perfect image online and keep up with others' seemingly perfect lives can be overwhelming.
- **3. Cyberbullying:** With the prevalence of social media and online communication, cyberbullying has become a significant issue for many students. The anonymity and distance provided by online interactions can make it easier for bullies to target their victims without fear of consequences.
- **4.** Lack of face-to-face interaction: Online learning and communication can be isolating, and students may miss the social interaction and support that comes from in-person interactions with teachers and peers.

Positive Impact of Mental Health in the Digital Era

- **1. Increased Access to Information**: With the widespread use of the internet, people now have access to an enormous amount of information on almost any topic. This has greatly democratized knowledge and enabled people to learn and research on their own, leading to greater personal growth and development.
- **2. Improved Communication**: Digital technologies have enabled people to connect across the globe through various communication channels such as social media, email, video conferencing, and instant messaging. This has strengthened relationships, facilitated collaboration, and made it easier for people to stay in touch with loved ones.

- **3.** Enhanced Efficiency and Productivity: Digital tools such as automation, cloud computing, and project management software have greatly improved the efficiency and productivity of businesses and organizations. This has led to faster turnaround times, better customer service, and increased profitability.
- **4. Increased Access to Education:** Online learning platforms and digital resources have made education more accessible to people of all ages and backgrounds. This has allowed for more flexible and personalized learning experiences making education more inclusive and equitable.
- **5. Improved Healthcare**: The use of digital technologies in healthcare has led to improved patient outcomes, faster diagnoses, and more efficient care. For example, telemedicine allows patients to consult with doctors remotely, reducing the need for in-person visits and making healthcare more accessible to people in remote or underserved areas.

Negative Impact of Mental Health in the Digital Era

- **1. Social isolation:** With the rise of social media and virtual communication, people are spending more time online and less time in face-to-face interactions, which can lead to feelings of loneliness and social isolation.
- **2. Addiction**: The constant stimulation and instant gratification provided by digital devices and social media can lead to addiction and compulsive behaviour.
- **3. Privacy concerns:** The vast amount of personal data that is collected and shared online raises concerns about privacy and security. There is a risk that this data could be used for malicious purposes, such as identity theft or fraud.
- **4. Health concerns:** The overuse of digital devices can have negative impacts on physical and mental health, such as eye strain, headaches, sleep disturbance, and decreased physical activity.

Conclusion

The digital era has brought about significant changes in the way we approach mental health. On one hand, technology has made mental health resources more accessible and convenient than ever before. People can now access online therapy, meditation apps, and other mental health services from the comfort of their homes the digital era has both positive and negative impacts on mental health. It is up to individuals, mental health professionals, and policymakers to work together to ensure that technology is used in a way that promotes and supports mental health.

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DIFFERENTIATED INSTRUCTION AND DIGITAL TRANSFORMATION

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Abstract

Equity in education is a foundation for the development of society as we live in the information era. Each student should be equipped to reach his maximum potential in the classroom. Teaching according to the individual needs of all the students in the classroom is a great challenge for each teacher. Differentiated Instruction is the best way to achieve this goal. But Differentiated Instruction has to be digitalized so that it offers educators ways to engage students by varying the difficulty level of the contents and with various teaching strategies. Digital transformation helps teachers work smartly and efficiently with the diverse student population. Digital transformation could be achieved by flexibly pacing the learning activities, assignments and projects. Creating online flexible grouping and carrying out continuous online assessments are some of how this digital transformation can be done. This paper tries to explain why this digital transformation is significant in recent years and how this digital transformation is done. This article also explains the merits and demerits of digital transformation in Differentiated Instruction.

Keywords: Differentiated Instruction, Digital transformation, Online flexible grouping, and Continuous online assessments.

Introduction

A classroom without diversity is hard to find. Differentiated Instruction identifies each student as a separate unit, and all the learning activities and tasks are differentiated. Teaching is achieved by many strategies and gives joyful creative learning experiences. A cooperative and quality learning environment is provided through the Differentiated Instruction method. Teachers proactively plan the lessons using the principles of Gardner's multiple intelligences. Each student is valued in the learning process. The student is supported and given opportunities in such a way that they all attain mastery in the subject. In the online Differentiated classroom, all the learning materials must be graded, all the assignments and activities must be differentiated and digitalized, and online assessments must be carried out continuously. As students progress, feedback must be given then and there. The evaluation must be done in such a way that it checks the students' effort and boost their self-confidence.
Digitalisation in Education

It is the process of converting or changing the existing processes into digital technologies. It is using digital tools for the teaching and learning process. It includes the digitalisation of the curriculum, contents and materials. Curricular resources must be converted into formats like texts, videos, images, audio, PPTs, Slide shares or interactive media. Educators follow digital teaching and learning strategies. Digital assessing and evaluation methods ought to be followed. Digital curriculum automatically differentiates the instruction according to the learning styles of the learners. It includes online courses, examinations, e-textbooks, e- notes, etc.

Strategies for Differentiated Instruction by Digital Transformation A. Online Flexible Groups

This is possible through Zoom breakout rooms, canvas groups, etc., and grouping should be done based on individual strengths and interests. According to the ZPDs of students, the groups should be reassembled and the digital resources must be targeted to student's requirements.

B. Digital Learning Pathways

The prior and future learning goals of the students should be mapped by the teacher to identify the digital learning pathways.

C. Continuous Assessments by Digital Means

Continuous online assessments should be done, and they should be simple, comprehensible, reorganizable, and manageable. It must be repeatable for students who have not mastered the subject.

D. Peer Captains

Peer Captains help other struggling students master the content. Helping classmate assists their classmates in handling and learning the digital materials.

E. Tiered Online Assignment

Students learn and achieve the tier for which they are capable.

F. Student Pairs

Students are allowed to pair until they gain knowledge about the digital software. Partners can be rotated as long as they gain knowledge of the technology.

G. Hands-on Skill-Developing Activities and Learning Environment

Planning of the learning activities should not solely depend on the e-learning resources. Instead, it should include hands-on skill-developing projects and programmes.

Merits of Digital Transformation of Differentiated Instruction

- Teachers no longer follow routine and cumbersome teaching practices and opt for a higher level of flexibility for the teachers and learners. Teachers are encouraged to develop new digital learning strategies and planning to boost up the consuming skills, creating skills and communication skills of students,
- Students get individualised or personalised learning plans and they always get a feeling of success. Digital teaching improves efficiency and student engagement which in turn leads to better learning outcomes and achievement,
- Digital documents help the mentor store and trace the learners' progress and profiles easily,
- Digital learning allows students to choose in pacing, and multisensory learning enhances greater retention of the learning materials. They use multiple ways to access and interact with the content and digital resources which are constantly accessible,
- Students can express their mastery in many ways such as video, PPTs, Slide shares, creative writings, drawings, prototypes, mini models, working models, etc.,
- Feedback is received by the teacher about the effectiveness of teaching and the about progress of the students instantly, and
- Collaboration and better communication among the mentors and peer students are enhanced, and learning is maximised as they build online peer groups.

Demerits of Digital Transformation of Differentiated Instruction

- It needs a lot of planning, training, time and effort to create digital Differentiated Instruction modules or lessons,
- It demands creativity and digital knowledge and ICT proficiency skills from the mentors,
- Efficient and skilful teachers would replace many other teachers and many of them would lose their jobs,
- It can create health problems such as reduced sleep time and social media addiction,
- Requires high cost in planning the curriculum. Subject expertise should have digital teaching skills and collaborate with technical experts to make the digital lessons and units, and
- Students must be aware of all the digital learning ways such as mobile learning, simulated learning, small private online courses, MOOCs, etc.

Conclusion

Digital transformation of Differentiated Instruction is the need of the hour as we deal with students of the Gen Alpha generation living in the Digital era. Strategies of Digital Differentiated Instructional methods must be explored and experimented with. A lot of research must be carried out to make the students benefit moonroof the Differentiated Instructional teaching method as it creates students' accountability for their education. More research work must be carried out regarding the pedagogical principles of Differentiated Instruction and its digital transformation.

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EVALUATION IN INCLUSIVE EDUCATION

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Abstract

Inclusive Education is education for all. It values diversity by providing equity and equality in learning opportunities. Thereby accommodate everyone regardless of their differences W.R.T. physical, mental, social, emotional, and linguistic conditions. In this process of inclusion, teachers play a prominent role not only in teaching but also evaluating them in a supporting manner. As it is rightly opined by Cunningham that teachers are the means to communicate curriculum to mould the children in his hands. Moulding of children does not only points towards teaching but also requires the best practice of evaluating the needs, interests, and performance of the children. Depending on the type of child, teachers should adopt suitable approaches, tools, and techniques to evaluate them. Most teachers are trained in formal evaluation, but inclusive education where microscopic details of the Children With Special Needs (CWSN) are required to provide an appropriate learning experience, demands the teacher even to adopt the informal approach to evaluation. If a fair evaluation is done, it will support the CWSN to demonstrate their learning better, which forms a basement to provide the necessary feedback for strengthening their abilities rather than suppressing them for their weaknesses.

Keywords: Inclusive Education, Children with Special Needs, Formal Evaluation, Informal Evaluation.

Introduction

Nobody is superior, Nobody is inferior, but Nobody is equal either. People are simply unique, incomparable, You are you, I am I.

-OSHO

Inclusive Education is an educational system where children with diversity are provided opportunities for equity and equality in their learning. Evaluation, just as curricular adaptations and teaching strategies need to be adopted to suit the learning needs of each child in the classroom. Children with special needs in the classroom should be assessed on their abilities and progress. Unfair comparisons with other children should be avoided. The best practice of Evaluation paves the way to enhanced learning.

Presentation

Evaluation is the process of assessing the extent to which educational objectives are achieved. It involves quantitative and qualitative as well as a value judgement. For example, a student is asked to perform a task and that task is evaluated quantitatively (correctness of his responses) and the quality is judged by the amount of effort put in by the student, the time and resources utilised, and the attempts made, and the value judgement is made based on the scale of predetermined criteria set for that child based on his abilities. Thus, performed task is evaluated. In Inclusive Education, instead of focusing on just quantitative assessment, teachers should go for evaluation.

Evaluation doesn't focus only on the cognitive development of the children, but it goes beyond it, i.e., it includes cognitive, affective as well as psychomotor domains. When the teacher evaluates the knowledge, understanding, application, etc. of the children, then it is the cognitive abilities that are evaluated. When a teacher evaluates the attitudes, motives, interests, and other personality traits, then it is the evaluation of the affective domain of the children. Evaluation in the psychomotor domain comprises assessing the children' skill of coordinating their mind and hands such as writing, handling, and drawing....

Therefore, if a teacher wants to evaluate the students, it should comprise all three domains of the personality, so thereby children can be placed in the right position. Thus, the evaluation that must be adopted should be **"CONTINUOUS COMPREHENSIVE EVALUATION".**

Continuous Comprehensive Evaluation

CCE is the evaluation system adopted to encompass every aspect of a student's development. It includes two terms i.e., continuous and comprehensive, which is

Continuous: As the development in children is continuous, it should be assessed periodically and continuously. Moreover, children with special needs show gradual progress in their learning, they should be observed and assessed in every aspect of their performance continuously.

Comprehensive: The term Comprehensive signifies both scholastic and non-scholastic areas. Students are different in their abilities and interests. They are unique. Hence, to identify their field of strengths and weaknesses, the teacher should evaluate the student's expression in both the aspects of scholastic and non-scholastic areas.

As the specially challenged children need to be nurtured by their strengths rather than weakness, the teacher should identify both these in them and give proper exposure to their progress. Thus, continuous, and comprehensive evaluation refers to the evaluation of the entire personality of the child, in different situations that take place in the curricular as well as co-curricular activities.

The approach of CCE: A teacher who is involved in the process of evaluating the student (CWSN) need not carry out the evaluation only formally, but informal techniques can be adopted to give justice to the term evaluation.

In *formal evaluation*, the teacher uses rubrics for assessment and a criterion-referenced evaluation will be adopted, which makes the evaluator to be unbiased and helps the students to know their position in the group performance. Here tests and quizzes are the most used tools. This type of evaluation is used to compare the student's performance with the others in the same class/ group/age.

In inclusive education, this type of evaluation can be adopted in diagnostic, formative and summative evaluation.

Diagnostic evaluation: It is a type of evaluation, where both the information related to the strengths and weaknesses of the students can be collected by the teacher. It is a test designed to locate the specific learning deficiencies in a specially challenged child at a specific stage of learning, this will help the teacher to identify the status of the learner at every stage of teaching and to help him to overcome the difficulties if any. This type of evaluation is usually done before actual teaching. This can be done by adopting pretests/interviews/discussions. This will provide a holistic view to the teacher to direct his teaching in the inclusive set-up – the strategy to adopt, the materials to use to techniques to blend, the time and the space to provide for interaction etc.

Formative evaluation: this is one of the evaluation types, which is done during the instructional process, and it is not graded but used to know the effectiveness of adopting the techniques/strategies of teaching immediately. It helps to measure students' progress as well as one's progress in teaching these children in an inclusive setup. This type of evaluation makes the teacher sensitive to his teaching by thinking and rethinking his endeavours in helping the specially challenged children to learn amongst other students and to redeliver if required. This will help not only the teacher but also the CWSN to horn their skills of teaching and learning respectively.

The teacher can use observation, discussion, questioning, quiz, puzzle, and demonstration - techniques to do the formative evaluation. Her teacher should fit the technique into the CWSN, for its better output.

Summative evaluation: It is the evaluation that is done at the end of the teaching, to know the accomplishments of the set objectives. This type of evaluation will help to grade and certify the students learning in both scholastic as well as non-scholastic activities. While doing so in inclusive education, teachers should know the abilities of the students and help the students to understand their potential to motivate them to step ahead in the field of their interests and strengths. In doing so teachers should not only use formal tests of question and answer but can also think differently to suit the children's capabilities. He can ask the CWSN to enact a character to know his expression, communication, memory, content delivery, swiftness, manipulation etc... or he can create a puzzling situation for these children to apply their learnt knowledge like picking up a coin from a tumbler, where he needs to apply his understanding of refraction or ask him to get an inverted

virtual image by providing him with the materials such as an object, candle, screen, lens...to apply the knowledge of reflection....

Thus, CWSN can feel comfortable in the evaluation process.

Informal means of evaluation: it is a method of evaluation that does not involve any standard grading system. In this method, the teacher uses the past performance of the child to assess the present. Thus, scaling the position of the child in comparison to his own. This method of evaluation helps the teacher to have a better understanding of the student's progress and to provide a chance to overcome his difficulties in learning. This informal way of evaluation is most effective as the students will not be made aware of the evaluation. Hence, teachers can help these children to make a conscious and deliberate effort to do better than their previous performances. Even teachers can subsequently modify their teaching from time to time.

Teachers can use different tools like observation, interviews, quizzes, case studies, rating scales, and checklists to understand the learning abilities of CWSN.

Observation: Teachers involved in teaching CWSN should observe them in different situations and make their observations objectively and keep a record of them systematically. This will help them to take wise decisions for creating nurturing environments for their special abilities.

Interview: CWSN, when interviewed informally teachers must keep in mind about their sensitive issues and focus on identifying the needs and interests of learners.

Case study : If the teacher sense the requirements of special support to the CWSN, then he has to identify the very root cause of their problems and adopt different techniques to extend the child the support to have congenial environment for learning.

Checklist: Teachers, who are shouldered the responsibility of teaching CWSN in inclusive setup should prepare a checklist for identifying the children who need utmost care and attention. He should be vigilant and objective enough to identify the behavioural and learning disabilities in the children according to the checklist prepared based on which decisions must be made for uplifting the children.



Conclusion

Successful learning does not only rely upon effective teaching, but also upon high quality evaluation. Evaluation, therefore, should be an integral part of teaching and learning. To obtain the better outcomes of learning, there should be greater integration of evaluation. It helps one to know the quality of teaching and learning.

Evaluation must, however, be flexible enough to adopt to the specific needs and abilities of the learners. In the inclusive education, teacher while conduction CCE, the evaluation the approach and, the types adopted, the tools and techniques selected should suit the strengths of the students, rather than assessing their weaknesses. This will help them to build confidence, and to motivate them for further learning. Thus, evaluation in inclusive education should focus upon optimising students learning and thereby bringing holistic development of learners.

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PEER TUTORING: AN EFFECTFUL TEACHING APPROACH

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Abstract

Peer tutoring is an effective teaching strategy that fosters student engagement and academic achievement. However, its systematic implementation has been lacking in India, depriving many students of its benefits. This paper explores the various models of peer tutoring and highlights the importance and advantages of implementing this approach in educational settings. The models discussed include Class Wide Peer Tutoring (CWPT), Cross-Age Peer Tutoring, Reciprocal Peer Tutoring (RPT), Same-age Peer Tutoring, and Peer-Assisted Learning Strategies (PALS). Each model is described, highlighting its unique characteristics and potential applications.

The paper emphasizes the benefits that peer tutoring brings to students' learning experiences. These benefits include accelerated literacy scores, enhanced reasoning and critical thinking skills, improved confidence and interpersonal skills, increased comfort and openness in learning environments, and flexibility in adapting to different subject areas and learning goals. The selection process for tutors and tutees is also discussed, guiding how to pair students effectively based on their performance and learning needs.

Emphasizes the significance of peer tutoring as a valuable teaching and learning strategy. It highlights the need for careful planning and implementation to maximize its effectiveness. By incorporating peer tutoring into educational practices, instructors can create engaging and fruitful learning environments that promote active student participation and support intellectual and social growth. This paper serves as a comprehensive guide to understanding the importance of peer tutoring in education and provides educators with valuable insights into implementing this approach successfully. **Keywords:** Peer Tutoring, Effective, Teaching, Approach.

Introduction

For all pupils, peer tutoring is a successful teaching strategy. Most students find it fun to interact with their peers, and they are at ease and unafraid to ask questions while studying with their peers. Peer tutoring was not employed systematically in India, which prevented the majority of pupils from benefiting from it. As a result, it becomes a focal point and cutting-edge approach inside the coaching learning process. Teachers can also delay the load of pupils' power and coaching. Peer tutoring in lecture halls can be used to encourage more methodical effort. Peer tutoring is a teaching strategy that uses students as teachers. The student pairings may be matched based on academic, social, behavioural, practical, or even social skills. There are many other ways to pair college students, such as based on age, potential level, or skills learned. You can choose an appropriate version depending on certain requirements with the assistance of the version descriptions that follow. Peer tutoring has received extensive investigation as a successful strategy to engage college students and encourage educational fulfilment.

Peer Tutoring Models

There are numerous special ways as a teacher we could make our students educate each other. Peer tutoring isn't always envisioned for introducing new materials or principles.

- 1. Class Wide Peer Tutoring (CWPT): The entire class might be split up into pairs or small groups with a maximum of five people in each group for this particular peer tutoring style. The group ought to consist of students with unique ability stages. Classwise peer tutoring entails dividing the complete class into two to five students with differing potentials. Students then act as tutors, tutees, or each tutor and tutees. The CWPT typically consists of highly controlled processes, direct rehearsal, competing teams, and score posting. Every week for around 30 minutes, the class's pupils engage in scheduled peer tutoring activities. While the CWPT exercises and methods never change, student groups or pairs may alternate every week or every two weeks. Student pairings in the CWPT are flexible and may be entirely dependent on a student's success or compatibility.
- 2. Cross-Age Peer Tutoring: According to this strategy, younger pupils are matched with older students. The older student serves as a role model for appropriate behavioural, practical, adaptive, and social skills. As an example, a seventh grader can be paired with a sixth grade and ninth-grade students can be paired with seventh or eighth-grade students. At the college level also the second-year B.Ed. students can be paired with first year and also the M.Ed. students can be paired with B.Ed. students. Students from the older classes are matched with those from the lower classes to teach, review, or assess a skill. There is no rotation between the roles of coach and tutee. The younger student is the tutee, and the older student acts as the coach. The relationship between the older student and the younger student may be one of cooperative or expert engagement, depending on whether their ability levels are comparable or different. Tutors serve a variety of suitable behaviour, ask questions, and encourage a higher level of thinking. Due to the possibility of serving as tutors for younger pupils, this arrangement is especially advantageous for children with impairments.
- **3. Reciprocal Peer Tutoring (RPT):** Two or more students alternate playing the roles of tutor and tutee throughout each session, giving each role a reasonable amount of time. Higher achievers and lower achievers are frequently paired in classes. This Reciprocal Peer Tutoring uses a structured approach that promotes teaching substantive material, keeping track of students' responses, and praising and supporting peers. To inspire and maximize learning, awards can be won for both groups and individuals. Once they have chosen a goal and incentive as specified by their teacher, RPT students may create

the teaching materials and are in charge of supervising and grading their classmates.

- 4. Same-age Peer Tutoring: To review important topics, peers who are no older than one or two years old are matched. Students' skill levels may be comparable, or a highly gifted kid may be partnered with a less gifted student. Similar-capability students ought to understand the concepts and information on an equal basis. The roles of tutor and tutee may alternate when students of different levels are paired, allowing the lower-performing student to question the higher-performing student. When working as a tutor, it is important to give the lower-achieving student the answers so they can make up for any content knowledge gaps. Similar to class-wide peer tutoring, same-age peer tutoring can occur in the kids or across many classrooms. Compared to the conventional class-wide peer tutoring method, the procedures are more flexible
- 5. Peer-Assisted Learning Strategies (PALS): Students are matched with others of similar academic standing. Depending on which student needs assistance with a particular ability, the tutee and tutor responsibilities can change. For instance, one student might assist his partner with vocabulary phrases related to science, after which the companion might switch roles and assist the other student with multiplication numbers. According to Fuchs, Fuchs, and Burish (2000), the PALS model, which is a variation of the CWPT paradigm, pairs students who require more teaching or support with peers who can help. Groups are adaptable and frequently alter in terms of subject matter or level of expertise. Cue cards, which are little pieces of cardstock with a list of tutoring steps printed on them, can be given to students to aid in their retention of PALS steps (Spencer, Scruggs, & Mastropieri, 2003). At various periods, every student has the chance to serve as a tutor or a tutee. Without a significant gap in ability levels, students are often placed with peers who are at their level. While academic standards are rising, educational spending is falling. Schools must therefore devise innovative methods to achieve these objectives. The usage of peer tutors might be one such instance. Peer tutoring offers a low-cost, evidence-based way to boost academic performance.

Benefits that Represent the Importance of Peer Tutoring

• Accelerated Literacy ratings: In step with an Ohio University Pilot observation, students who study with their friends consider extra content material and score better on tests. Four sixth-grade students who were taking common courses were split into pairs by the researcher. In contrast, students in the second pair study identical passages at the same frequency as the first pair, engaging in peer analysis activities twice a week. Each reading assessment was higher for the primary pair.

- Evolved Reasoning and essential questioning talents: According to a wellreferenced study on scientific education, students who work in pairs and businesses typically perform better on tests that require reasoning and critical thinking. This is partly because students should develop into enthusiastic newcomers who argue and defend the principles of the lesson using their own words.
- **Progressed self-assurance and Interpersonal abilities**: Students' development of confidence and communication skills is influenced by peer coaching. A groundbreaking study from 1988 found that by simply providing feedback, instructors might increase shallowness and interpersonal skills. By asking questions and getting prompt answers, tutees take advantage of these benefits. A further observation of college students in danger confirmed those advantages.
- **Increased Literacy Scores**: Students who read and discuss tale passages with their friends might remember more information and do better on tests, according to a study from Ohio University. The investigator separated four average-level readers from sixth-grade students into pairs. Similar to the first pair of students, who participated in peer reading activities twice a week, the second pair of students read the same materials independently at the same rate. On each reading test given, the investigator's first pair performed better.
- Developed Reasoning and Critical Thinking Skills: According to uncited studies on scientific education, the students who work in pairs and groups in this peer tutoring style naturally score higher on assessments that require reasoning and critical thinking. This is because students take an active role in the conversation and learning process and actively describe the topics taught in the session using their own words.
- Improved Confidence and Interpersonal Skills: Students' communication and confidence skills can be developed through peer teaching. A groundbreaking 1988 study found that by providing feedback, tutors help students develop their interpersonal skills and sense of self. By asking questions and getting prompt answers, tutees experience these advantages. These gains were confirmed by a second examination of at-risk kids.
- **Increased Comfort and Openness**: According to a 1988 research, kids often feel more at ease among peer mentors than they do around adults. This makes it easier for students to express questions, explain their misunderstandings, and work through challenging difficulties without fear of being teased in front of the class.
- Versatility: The instructors may choose from a variety of peer teaching techniques, approaches, or exercises that relate to work in other grades and courses and are centred on different topics and learning goals. A teacher's ideas can make learning more enjoyable for pupils while also promoting learning.

Basis for Choosing Peer Tutoring

- After completing research across age groups, grade levels, and topic areas, it has become a widely established methodology.
- The intervention enables pupils to get personalized support.
- There are more options for students to reply in smaller groups without any restrictions.
- It fosters the intellectual and social growth of both the tutor and tutee, which is the main goal of education.
- Students spend more time engaged in learning activities.
- Peer tutoring raises the participants' self-worth, self-efficacy, and confidence. A solid research basis and its findings provide support for the plan.

Process of Selecting Tutor and Tutee

When the teacher wants to decide the pair or groups, entails rating pupils according to their performance in the chosen activity or topic, from highest to lowest. By dividing the list in half, pairing the top performer with the first lowest performer, and the second highest performer with the second lowest performer, pairs may be created., and in this way, the grouping can be done (Fuchs, Fuchs, & Kazdan, 1999). If the teacher needs heterogeneous groups the number of students in each team should be determined accordingly. Once the desired number of students has been added to each group, the list of students can be repeated until the full class has been added. When selecting tutors, teachers should be acquainted with which students can be most suitable and helpful in the chosen process. Teachers should be conscious of student personalities, their needs, and preferences. pairs or groups should be formed according to the purpose of the activity.

Process of Selecting Peer Tutoring Models

Peer tutoring strategies are flexible and may be altered to meet the individual or group learning needs of each student. The content and learning objectives of the academic work should be used to choose the best model. Even though there is some initial preparation and teaching, after students grasp the techniques, groups or formed pairs can be changed depending on the venue, activity, or anticipated learning results.

Conclusion

To make teaching and learning an engaging and fruitful process, this peer tutoring strategy is required. The peer tutoring approach enables the students to communicate with and ask questions of their peers in a free-flowing environment. For the instructors or professors to get the most out of this effective and efficient peer tutoring technique and have a significant impact on the teaching and learning process, it must be carefully planned and implemented.

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A VIEW OF PERSONALISED LEARNING IN EDUCATION

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Abstract

Personalised learning empowers students to become co-authors of their learning pathway and tailor their learning activities to meet their needs, abilities and interests. Benefits include for students, improved learning outcomes and learning experience and institutions, an enhanced reputation as an institution that values and supports individual students' learning. Developing and embedding a personalised learning approach has significant implications on the design of curricula, pedagogy and assessment the development of staff as teachers and students as learners; the development of institutional cultures and infrastructure. A personalised learning approach must serve the moral purpose of meeting the learning requirements of every student be feasible to ensure this can happen on a large scale; and produce educational outcomes that are valuable to the student, institution and society. Learning analytics map, guide, evaluate and enhance formal and informal learning experiences. New technologies can be utilised to support more personalised, active approaches to teaching and learning at scale and sustainably and cost-effectively.

Keywords: Personalised learning, environmental, curricula and pedagogy

What is Personalised Learning?

Personalised learning is 'putting the learner at the heart of the education system' (Leadbetter, 2008). This philosophy resonated in Professor Peter Hoj's 2015 welcome message to new students: 'For our part, we'll work hard every day to make sure students are at the heart of everything we do and that your education and campus experience at one of the world's top universities is world class'.

Personalised learning involves extending the educational concepts of differentiation (teaching tailored to the learning preferences of different learners) and individualisation (teaching paced to the learning needs of different learners) to connect to the learner's interests and experiences and meet the needs, abilities and interests of every student through tailoring curriculum and learning activities to the individual. The ultimate aim of a personalised learning environment is to create an educational system that responds directly to the diverse needs of individuals rather than imposing a 'one size fits all' model on students (Bates, 2014; Williams, 2013).

Personalised learning shifts the role of students from being simply a 'consumer' of education to a 'co-producer and collaborator' of their learning pathway (Bates, 2014). For a student, personalised learning actively engages students in the process of learning, leading to improved learning outcomes and learning experiences. For institutions, it enhances their

reputation as one that values and supports individual students' learning (Bentley & Miller, 2004).

Driving the shift towards the 'personalisation of learning' in the higher education sector are the broadened experiences and increased expectations of students, the affordances of technology and the blurring of physical and temporal campus boundaries (Bates, 2014; Leadbetter, 2008).

What does a Personalised Learning Environment Look Like?

In practical terms, what does 'personalisation of learning' mean and how can it be enabled? Williams (2013) synthesised a body of work associated with a personalised learning approach to identify six key themes that were essential for an effective learning environment:

- **1.** Locus of control: A learner-centred approach will not succeed without a committed shift towards sharing the ownership of learning with students.
- **2. Knowing students as learners:** A personalised learning approach requires educators to know the attainment and progress of each student. Learning analytics can be used to make this scalable for large student populations (Buckingham Shum, 2014; Deakin Crick, Goldspink & Foster, 2013).
- **3. Student engagement:** Connecting students' learning to their lives and aspirations through authentic activities will provide them with the purpose and motivation to gain new knowledge and skills.
- **4. Collaboration:** Personalised learning environments foster a culture where learners see themselves as both participants and contributors to the learning process.
- **5.** Effective use of ICT: Technology allows for an anywhere, anytime, anyone approach to learning and can support the culture shift required for a student-centred approach across two broad areas: (1) providing the infrastructure to support personalised learning (learning analytics) and (2) providing a platform to deliver learning activities and resources to students.
- 6. Classroom culture: The relationship between educators and students is emphasised in a personalised learning environment and the educator must be aware of each student's interests, learning styles and readiness to ensure the needs of each student are met. This creates challenges for large classes but generates opportunities to use educational technologies and learning analytics to support the educator with this.

What are the Implications of Personalised Learning?

The availability of new technologies provides greater opportunities to support more personalised approaches to teaching and learning. How to do this at scale, sustainably and cost-effectively, requires careful analysis and planning. Bates (2014) suggests there are three key considerations: (i) implications for the design of curricula, pedagogy and assessment; (ii) implications for the development of staff as teachers and students as learners; and (iii) implications for the development of institutional cultures and infrastructures.

What are the Implications for the Development of Curricula, Pedagogy and Assessment?

Developing a personalised learning approach requires several complex and multifaceted considerations: (1) timing of learning – when; (2) pacing of learning – accelerated vs not; (3) place for learning – within and beyond campus; (4) ways of learning – blending learning, self-paced, inquiry-based, collaborative, etc; (5) learning support – subject matter experts, the key role of advising; (6) aims for learning – how will students achieve skills and competencies through disciplinary knowledge?; and (7) technology for learning – as a catalyst, enabler or connector?

Bates (2014) argues that developing program-level outcomes should be the first step irrespective of discipline. Generic competencies provide a basic framework for this step and can be used as a starting point for engaging in program-level discussions with schools. At a course level, educators must consider *epistemology* (what do they think it means to know something in their discipline?), *assessment* (how will they evidence that students display those competencies?) and *pedagogy* (how will they scaffold the learner on their journey to achieve those competencies?) (Buckingham Shum, 2014). The use of learning analytics to provide data to personalise the learning experience may assist to make this scalable for large courses (Bates, 2014) (see Section 4).

What are the Implications for the development of Staff as Teachers?

Developing and embedding a personalised learning approach for courses will require educators to reflect deeply on their practice and for some shift their pedagogical approach. Not all academics will have the broad range of instructional design skills required for this and universities will need to offer dedicated staff development activities (Bates, 2014).

Ambrose et al.'s (2010) seven research-based principles are an effective framework for staff development activities, providing a bridge between research about learning (across a broad discipline range) and the implications for teaching practice. The seven-research based principles are: (1) students' prior knowledge can help or hinder learning; (2) how students organise knowledge influences how they learn and apply what they know; (3) students' motivation determines, directs and sustains what they do to learn; (4) to develop mastery, students must acquire component skills, practice integrating them and know when to apply what they learned; (5) goal-directed practice coupled with targeted feedback enhances the quality of student learning; (6) students current level of development interacts with the social, emotional and intellectual climate of the course to

impact learning; and (7) to become self-directed learners, students must learn to monitor and adjust their approaches to learning.

What are the Implications for the Development of Institutional Cultures and Infrastructures to Enable and Support the "Personalisation of Learning"?

The student body has become increasingly complex and diverse. Students arrive at university from different starting points, with different resources and expectations, and learn at different paces with different styles. Adapting learning experiences to the variety of needs, interests and differences of individuals is a challenge for institutions but there is an increasing acceptance that educational systems need to change to become more flexible and adaptive, as well as to engage students who are at risk of not achieving within the current system (Williams, 2013). The purpose of 21st-century education has evolved to include the generation of student competence in self-directed learning, citizenship, ecosustainability and employability, in addition to traditional knowledge, skills and attitudes within particular domains (Deakin Crick et al., 2013).

Hargreaves (2005) describes nine areas that require a considerable degree of institutional policy development and organisational change to ensure a personalised learning approach is successfully embedded within the university culture: (1) curriculum, (2) advice and guidance, (3) assessment, (4) learning to learn, (5) school organisation and design, (6) workplace assessment, (7) new technologies (ICT), (8) mentoring, and (9) student voice. These areas fall across the two broad categories of systems and places.

How Can the University's Systems be Adapted to Support a Personalised Learning Approach?

A personalised learning approach will require the university to be more agile and flexible. Several student-centred learning approaches, such as experiential learning that include reflection as a key step of learning, involve processes focussed on students' learning and development over a longitudinal period, longer than a traditional 13-week semester. The redesign of the curriculum to include learning experiences like these will have implications on semesters courses and assessments. A transformative learning experience could include an expansion of learning opportunities outside of the formal classroom, for example, community service learning, research experiences, internships and mentorships and international opportunities. Including these types of opportunities as formal components of degree programs could also have implications on the academic calendar. These learning experiences can include access to MOOCs and the recognition of MOOCs as prior learning.

What Campus Space Designs Support a Personalised Learning Environment?

Formal learning spaces need to be appropriately designed to accommodate the use of student-centred pedagogies. A move away from, for example, the tiered traditional lecture theatres towards flat-floored learning spaces with round tables and movable chairs can promote collaborative learning and enable active learning strategies to be effectively utilised. Another key aspect of personalised learning is fostering connections between a student's life and their learning experience. Strategies to foster this include providing adequate on-campus accommodation to encourage students to live on campus and immerse themselves in the recreational facilities, and providing informal learning spaces across campus to extend the opportunities for on-campus learning and support student interactions outside of the formal classroom environment.

The types of resourcing required by universities have changed with the increase in technology usage. For example, the traditional academic libraries provided by universities for students have always been spaces to find tools for learning. In the current technology era, universities need to reconsider their resourcing of libraries to create more functional spaces for self-directed learning using educational technologies and visualisation hardware and software. The DeLaMare Science and Engineering Library at the University of Nevada is a leading example of this, providing students with access to tools and resources to discover, create, design, model, engineer and learn (Conway, 2014).

A Learning Spaces Rating System (LSRS) has been developed to provide a set of measurable criteria to assess the effectiveness of formal learning spaces for promoting student-centred learning. Developers intend to expand the scope of the LSRS to include informal and specialised learning spaces (Johnson, Adams Becker, Estrada & Freeman, 2015).

What are the Potential Challenges of Personalising Learning?

Among the key principles and design features that must be met, a personalised learning approach must: (1) serve the moral purpose of meeting the learning requirements of every student; (2) be feasible to ensure this can happen on a large scale; and (3) produce educational outcomes that are valuable to the student, institution and society (Fullan, 2009). It is widely recognised that the cultural shift towards the personalisation of learning is positive, however, several potential challenges and limitations have been highlighted in the literature:

 Students don't know what they don't know: To be co-authors of their learning, students need an understanding of the next steps of their learning. The role of educators cannot be underemphasised – they need to explain, demonstrate and guide future learning. What role does the educator play in a personalised learning approach, and what degree of input do they still have into the pace and direction of a student's educational pathway?

- 2. Online learning should be designed to encourage deep learning approaches: Hargreaves and Shirley (2009) warn that while there are advantages in students being able to access information instantly online, this process can lend itself towards students adopting a surface learning approach. How can technology be utilised to ensure that students achieve the depth and challenge required to connect them to compelling issues in the discipline, the world and their daily lives?
- **3.** Educators need to be skilled in delivering a student-centred pedagogy: In a metaanalysis of over 800 studies relating to student achievement, Hattie (2009) concluded that the skills of a teacher account for about 30% of the variance in student achievement. Teachers need to be willing and able to shift their pedagogy to a student-centred approach – their ability to do this is a critical element of a personalised learning environment. How can an institution ensure that all educators have the skills to develop and deliver innovative and evidence-based, student-centred pedagogies?
- 4. Accreditation requirements can restrict the allowed 'flexibility' of courses: Deakin Crick and colleagues (2013) contrast two metaphors, 'learning as script' and 'learning as design'. They suggest that 'learning as script' produces outcomes that are inconsistent with the desired outcomes for 21st-century learning. They argue that 'learning as design' fosters students to take ownership of their learning and achieves student engagement and improved learning outcomes. However, 'pedagogy as script' is deeply and systemically embedded in some professional degrees to ensure graduates meet accreditation requirements. How can professional degrees be tailored to ensure students can adopt a personalised learning approach but still meet the professional requirements for registration/accreditation at graduation?
- 5. Using learning analytics to scale personalised learning: Learning analytics is an emerging field that combines the areas of computational sciences and education, using computational techniques to capture and analyse data from within the learning environment (Suthers & Verbert, 2013). It can be used to scaffold personalised learning and make it feasible to embed at the mass scale required within a higher education institution. Although learning analytics has been used successfully for this purpose in other sectors, adaptation to a higher education context is dependent upon the institution's educational worldview. As Simon Buckingham Shum explained in his keynote address at the Universitas 21 (U21) Educational Innovation Conference 2014, 'If we are going to think about the role of data in personalisation, this requires us to reflect deeply on our epistemology,

pedagogy and assessment. That can then shape a learning analytics strategy' (Buckingham Shum, 2014).

Epistemology is the philosophical study of what knowledge is, and what it means for someone to "know" something (Knight, Buckingham Shum & Littleton, 2014). Pedagogy (how to impart this knowledge to students) and assessment (how to measure students' knowledge and understanding) are fundamentally entwined as the ways educators assess the tasks that they set, and their underlying beliefs of the learning taking place, are bound up in their notions of epistemology (Davis & Williams, 2002).

Leading researchers in the area of learning analytics argue that, to date, data have been predominantly used in higher education to measure assessment *of* learning at the end of the course, i.e. simple metrics such as assessment scores. They suggest an effective learning analytics strategy should be used to collect data at multiple time points and on a broader scope than just assessment performance, such as students' self-efficacy and motivators, or their ability to contextualise and make meaning of their knowledge. These rich data can be used to support a personalised learning approach (Buckingham Shum, 2014; Knight et al., 2013).

Specific examples of how learning analytics have been used successfully to tailor future learning to the needs of the student, allowing for adaptive learning pathways for individuals include:

- survey-based analytics have been used to establish students' learning dispositions and provide personalised and timely feedback on their readiness to undertake specific courses (Deakin Crick et al., 2013).
- data collected from students' use and performance within online learning platforms have been used to provide personalised tutoring for skills mastery (http://oli.cmu.edu), and
- visualising text chat from a webinar has been used to gauge student understanding and progress within specific courses and their overall learning experience (Buckingham Shum, 2014).

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BLENDED LEARNING: INTEGRATING TECHNOLOGY WITH CLASSROOM INSTRUCTION

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Abstract

The world we live in is the digital era. It is crucial that we, as humans recognize, acknowledge, and embrace this. To understand the digitalised one, we must be educated on the technologies. Blended learning is an instructional methodology, a teaching and learning approach that combines face-to-face classroom methods with computer-mediated activities to deliver instruction. It is an innovative concept that embraces the advantages of both traditional teaching in the classroom and ICT-supported learning including both offline learning and online learning. It has scope for collaborative learning; constructive learning and computerassisted learning. Blended learning needs rigorous efforts, the right attitude, a handsome budget and highly motivated teachers and students for its successful implementation. This Paper shows, how the teacher can integrate the technologies in classroom instruction for student betterment and this study gives suggestions to the teachers for implementing blended learning in the teaching-learning process. **Keywords:** Technology, Blended learning, Classroom Instruction

Introduction

Oxford Dictionary Definition of Blended Learning: a style of education in which students learn via electronic and online media as well as traditional face-to-face teaching. To suit the changing demands of modern learners, blended learning blends the best elements of traditional face-to-face instruction and online learning. With the help of blended learning, learning can now take place outside the four walls of the classroom and make use of offline and online materials. This encourages participation from all sorts of learners, including those who study best in a traditional classroom setting and those who thrive on computer-based training that is semi-autonomous in nature. Online learning enables self-paced personalised learning using interactive media including games, movies, tutorials, quizzes, etc. that are all accessible from the learner's home page in a learning management system (LMS), in contrast to classroom learning, which provides the option for instant face-to-face interaction. Blended learning integrates:

- classroom-based task with the teacher present.
- digital resources provided by the teacher.
- independent study using materials provided by the teacher.

Integrating Technology with Classroom Instruction

Contrary to popular belief, the student does not necessarily need their tablets or laptops to flourish with technology. Instead, school systems can implement technology in the classroom without incurring significant financial costs. For auditory and visual learners, using technology during whole-class education can increase student participation. Simple technological integrations like PowerPoints, games, online homework assignments, or online grading platforms can make a significant difference in how well students do in the classroom.

Power Points and Games

PowerPoint presentations can be used to engage students while introducing important concepts in the classroom. Links to films that support the concepts offered in the Powerpoint presentation deck can be incorporated into the slides, in addition to the usage of visuals and bulleted information.

After a course or unit, students can review content using learning applications like Kahoot. While students can create anonymous usernames to play the game, teachers can develop and share Kahoots. Students who are typically hesitant to participate in class can now participate in it as a whole. Teachers can choose whether they want students to work independently or in teams when using the Kahoot app, which can be played on computers or smartphones.

Internet Homework Assignments

One method many teachers might start incorporating technology in the classroom is by posting homework assignments online (through learning systems like Blackboard, Brightspace, and Moodle). Assignments are conveniently available, which might improve student involvement and aid in the organisation of the students.

Online Grading Systems

One method many teachers might start incorporating technology in the classroom is by posting homework assignments online (through learning systems like Blackboard, Brightspace, and Moodle). Assignments are conveniently available, which might improve student involvement and aid in the organisation of the students.

Classroom Tablets

When teachers are fortunate enough to have tablets for their students, technology can help them differentiate their lessons. During assignments, students can work at their own pace, and teachers can provide individualised teaching.

LMS (Learning Management System)

A learning management system (LMS) is a platform for education that enables schools, colleges, and institutions to centrally manage their online learning interactions and resources. An LMS manages interactions between students and educators and provides a virtual meeting space for both instructors and pupils. A learning management system is a piece of software or web-based technology used to organise, carry out, and evaluate a

particular learning procedure. It is used for e-learning procedures and, in its most basic form, consists of two components: a server that handles the essential operations and a user interface (UI) that is controlled by teachers, pupils, and administrators. An LMS often gives a teacher a tool to develop and deliver curriculum, track student involvement, and evaluate student performance. Additionally, it could give students access to interactive elements like discussion boards, video conferencing, and threaded discussions.

Virtual Classroom

A virtual classroom is a teaching and learning setting where students and teachers interact online while working in groups, seeing and discussing presentations, and using learning tools. The medium is frequently a video conferencing programme that enables numerous people to connect simultaneously through the Internet, enabling participation from individuals almost anywhere.

There are many potentials offered by the virtual classroom, particularly when utilised in conjunction with learning management systems or as a companion to conventional classroom learning activities. The synchronous virtual classroom, in contrast to asynchronous learning environments, enables immediate feedback, close teacher-student interaction, and fun activities to boost engagement and motivation. Immediate communication promotes community and relationship development within the group.

Learning Analytics

Learning analytics can be used by instructors to examine the efficacy and efficiency of their blended learning activities, exams, and feedback. They can also employ learning analytics to pinpoint areas that could use innovation and development. For instance, they can change the blended learning modules, content, structure, length, or order. As a way to improve the outcomes of their blended learning, they might also implement new technologies, approaches, or pedagogies.

Application for blended learning

MyScript Calculator 2: For both children and adults, the math software MyScript Calculator 2 is entertaining. It enables you to use a stylus or your finger to write out issues. One of the calculators we've ever seen with the best visual appeal. It supports a variety of procedures, such as fundamental arithmetic, fundamental trigonometry, and fundamental algebra. Some concepts, like division and fractions, can also be written out in a variety of ways.

Google Classroom: In google classroom, for each class, teachers can make announcements and assignments. They can establish deadlines and attach worksheets, slideshows, or online links, among many other things. The completed work can be graded and given back to the students for revision. Work that students turn in is automatically saved to the pre-created Google Classroom class folders in their Google Drive accounts. All work is safely saved. **Freckle:** Students can practise maths and English language arts at their own pace using the online learning platform Freckle. Whether a student is working at, above, or below grade level, Freckle adapts constantly to their unique skills to provide them with the right challenge. Students can use an iPad or computer to access Freckle for free at home.

Quizizz: Quizizz (opens in a new tab) is essentially a gameshow-style quiz tool that is located online. The flexibility to complete an exam on their own devices and the gamebased interactions make studying more enjoyable from the student's standpoint.

Mind Map: Using a mind map, users can graphically arrange and structure information, ideas, and thoughts. By connecting related ideas and concepts, it develops a visual representation of information in the form of a diagram or map.

Suggestions

- Utilise a variety of teaching resources and multimedia tools.
- Use technology to reinforce learning.
- Attempt novel teaching strategies by using technology.
- Maintain your customary procedures.
- Change up your evaluations.
- Mix up the types of group work.

Conclusion

Nowadays blended learning is mandatory because it blends the best aspects of traditional and digital learning approaches. Online learning allows students to customise their education, even though classroom instruction is essential for general discipline. All students are unique, just like all the fingers of one hand are not the same. When pupils receive additional digital help in addition to the classic chalk and board method of instruction. They study at their own pace and on their timetable, making sure they completely comprehend new ideas before feeling the urge to go on.

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THE PRESENT SCENARIO OF DIGITAL EDUCATION AT THE PRIMARY SCHOOLS LEVEL IN TAMIL NADU

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Abstract

This pilot study examined the current state of digital education in primary schools in Tamil Nadu, India. The government has introduced digital learning initiatives to enhance teaching and learning. During the COVID-19 pandemic, students were confined to their homes, leading to the implementation of digital tools and resources. The study focused on a primary school in Villur, Madurai District, where teachers used digital platforms like WhatsApp to deliver video lessons, assessments, and supplementary materials. QR codes in textbooks provided access to video lessons and self-assessments. The study highlighted the advantages of digital education, such as easy access to learning materials and improved digital tool access. However, challenges remain, including distractions, health issues, limited tool availability, and affordability concerns. The study concluded that expanding digital technology knowledge and tool availability is necessary to ensure effective digital education in primary schools throughout Tamil Nadu. **Keywords-** Digital Education, Primary School, Digital tools

Introduction

Tamil Nadu government has introduced Digital learning in recent years. The government has pioneered the use of Digital technology for effective learning, empowering teacher's skills and it has enhanced the utilization of digital resources. This scenario starts in March 2020 when the world over the alarming pandemic situation of corona starts. Students were confined to their homes for security reasons with little or no access to structured learning materials. Due to the crisis COVID -19, all students were confined to their homes and had no access to the classroom or school. They had few opportunities to engage in academic content and practice during the extended emergency break from school classes.

Aims & Objectives

The study aims to find out the present scenario of Digital Education at Primary Schools in Tamil Nadu. The study aims to find out the resources, implementation and outcome of Digital Education in Primary Schools.

Method and Material

This is a pilot study conducted at the Govt Primary school, Villur at Madurai District. The data is collected from the primary school teachers and students. The data is analyzed and studied and the results were obtained.

Digital Education

Digital education is the innovative use of digital tools and technologies for teaching and learning purposes. It is also referred to as Technology Enhanced Learning TEL or elearning. Digital learning is replacing traditional learning in the face-to-face education system day by day.

New Approach to Teaching

To meet the new demands of the learning society, the Tamil Nadu Govt has e-learning platforms to improve their learning outcomes.

- It contains useful e-learning content, digital textbooks, and youtube videos. The curriculum is followed through every class, semester, midterm, subject and chapter.
- Online tests were available for students and the results were analyzed.
- The state government and Govt-aided schools introduced the usage of mobile phones by teachers in their classes.

It helped in bringing back the relationship between teachers and students. Almost 60% of the students came into the picture, while the other 40% were not on the screen. Teachers were asked to replace the missing students by joining their classmates. However, the gap could not be closed. At this point, some teachers called on the educated people in the area to tutor these students to compensate for the loss of personal instruction by paying them a small stipend. Now attendance had risen from 78% to 85%.

Digital Education in Tamil Nadu

The Tamil Nadu govt another moves to teach its students by providing learning by air i.e. TN Kalvi with a schedule for each class and subject with proper intervals of time. It also provided the schedule of programmers as a printed sheet so that the teachers and students can learn from it. All subjects were taught by TN.Kalvi channel. Students attained also measured online. This was done through each class of students, and they were asked to join the class as a group and their achievement was measured. Infect apart from the students or the learners, their parents too could see how their kids in their learning situation were seen and got proud of it.

All Textbooks were provided with QR codes which help in learning the content. TN-DIKSHA helps students to enjoy their lessons in their learning. It provides over 1,000 resources for classes I to XII. And 1000 videos were readily available for the student's access. The 'One Lesson a Day' approach helps students to revise the content in small parts regularly every day.

Implementation of Digital Learning in Primary School, Villar

The Govt Primary School located in Villur at Madurai District has 10 Primary School Teachers and 270 Primary School students. The Regular Curriculum is available on TN Primary Education Website and SCERT website. The teachers followed the curriculum and classes were taken as video lessons. The video lessons were sent through WhatsApp groups and WhatsApp private chats. Every student has been made sure to receive the lessons. The Students were given regular home assessments. The assessments were sent up through WhatsApp. The teachers evaluate the assessments of every student. Along with class lectures the teachers would share activity sheets, lesson-oriented videos and lesson songs which will be useful for the students. Apart from that the textbook contains a QR code for every lesson in every subject. The QR code gives access to video lessons, activities and self-assessments. The Teachers were also provided with Face-to-Face training about Digital technologies and their utilization for better digital learning. TN Primary Education also provides apps like the TNKALVI app, EDUCATION INFO app, DIKSHA app, and TNSED SCHOOLS app to ensure rich digital education.

Pros and Cons of Digital Education

Pros

- Digital Education has easy access to Learning materials.
- The Learning Materials are available anytime and can be reviewed and used several times
- It provides legibility in study materials
- It helps to expand the knowledge beyond the textbooks
- It improves the knowledge of digital tool access
- It has future scope in the developing technology world

Cons

- Digital tools also remain a distraction for the students
- Prolonged use of digital tools leads to issues like headaches, eye strain etc
- There is a chance of students getting involved in Cyber-Bullying
- Limitation of digital tool availability
- Limitation of Digital technology knowledge among students and parents
- Affordability of Digital Tools

Conclusion

The Digital Education methods used by the Primary School, Villur Teachers were provided effectively. The PTA meeting outcome is also positive yet the availability and affordability of Digital resources and tools remain for discussion. Rural Schools even though looking forward to Digital Teaching methods suffer from up-told problems. This can be rectified by making sure Digital technology knowledge and tool availability be provided all over Tamil Nadu. This will ensure effective Digital Education in Primary Schools in Tamil Nadu.

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HISTORICAL PERSPECTIVE OF EDUCATION 1.0 TO EDUCATION 5.0

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Abstract

The purpose of this study is to understand the concept of education 1.0 to education 4.0 in education and how they contribute to learning in education 5.0 to highlight, at what educational level they are used. Formal schooling is something that was developed naturally through a need to ensure the quality of knowledge. Historically, learning to read and write wasn't a basic human right, but a concession. And it was a concession given only to those select few who could afford it. The rapid pace of electronic media development implies cultural and social changes. The role of the school is to prepare the good citizen for a world dominated by these acceptable changes. Education 5.0 is one of the concepts for the continuous and comprehensive development of the human being. Every organization is subjected to a "natural cycle of change" and the educational sector is also a part of this change. creativity, technological adaptability and innovation are much required for better sustainability in the present era, we would end up fighting today's problem with yesterday's tool unless we innovate and bring in acceptable change proactively in every aspect of the process. **Keywords:** Education, Knowledge, Innovative Change, Comprehensive Development.

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Introduction

The system of education means used in an educational activity represents a component of the teaching method used and, implicitly, of the training with technology, with a role in the pedagogical mediation process of self-training and self-teaching done by the teacher. Formal education is said to have begun in Greek at around 4 before the common era (BCE). The word "school" comes from the Greece word "schole", which means "leisure". The school educational system provides insight into how education was received by the learner back then; as a joy-able and interesting activity rather than a chore for the learner. Spiritual and model teaching in the beginning stages, ethical teaching and spiritual teaching were mainly interested in education. Schools were seen as locations where it was possible to protect children from the negative effects of the outside world. Moral teaching was helpful to the learner to be turned into a responsible citizen in our society. Learners mastered the noble language to work in society as they became adults in the traditional educational system.

Education 1.0

Education 1.0 is often called an 'essentialist education', where a limited number of students are taught specific life skills through specific teaching methods. Education 1.0 is entrenched in the 3 R's: receiving, responding, and regurgitation. A student acquires the knowledge from the teacher, responds to learning methods what they learned, and finally regurgitates what they know from the instruction. This educational model is largely a unilateral method where knowledge is transferred directly between teacher and student. And the benefits of this approach are clear to visible. The traditional method ensures that's ultimately designed to deliver an expectable result, which is what institutions expect; they want to see their learners complete their courses.



Education 2.0

Education 2.0 is classified as an andragogic, constructivist approach to teaching and learning based on the 3Cs: communicating, contributing and collaborating. Education 2.0 has a humanistic element considering teacher-student and student-student relationships as part of the learning process. The teacher still plays the important role of the facilitator of learning and the one who develops constructive learning activities. Some of the revolutionary steps of Education 2.0 are project-based learning with a focus on real entity problems, inquiry-based learning, cooperative learning and global learning projects with the use of Skype in the classroom, logs and collaborative digital modern tools.



Education 3.0

Education 3.0 is a 'learner-generated education' Education 3.0 is also referred to in the 3 C's, but we are referring to creating, connecting, and constructing according to situational needs. This mode allows students, the freedom and flexibility to build their learning practice to best align with their interests and goals.

Education 4.0

Education 4.0 is a learning approach associated with the fourth industrial-technological revolution. Education 4.0 aims to transform education in the future through leading-edge technology and automation process. This technological revolution includes virtual reality, robotics, big data, artificial intelligence, and smart technologies.

Education 4.0 will give permit the students to choose what they are interested to learn. Moreover, each student will receive a personalized learning experience. Also, a certain level of proficiency will be required before they can move on to the next level.

Students will also have the option of selecting the learning tools they wish. Also, the learning process will be more project-based for students to help them develop interpersonal skills or time management to make them job-ready.

Education 5.0

Education 5.0 is a term used to describe the next evolution of education and the changes it requires to address the challenges of the future. The term generally emphasizes the importance of human qualities in education and the integration of technology to provide more personalized, student-centred learning. Education 5.0 aims to focus on students' social and emotional growth and provides solutions that improve society's quality of life. The concept also includes identifying skills and roles that are best fulfilled by humans, such as creativity and innovativeness. It emphasizes an outcomes-focused approach to education that emphasizes problem-solving for value creation. Zimbabwe is one country that has adopted Education 5.0 as a policy directive aimed at transforming society. The five missions of Education 5.0 include teaching, research, community service, innovation, and industrialization.

Conclusion

The Industrial and Technological Revolutions will affect the education system in a significant way. Powered by Virtual reality, Augmented Reality and Artificial Intelligence, the Fourth Industrial Revolution will promote the learning experience and offer exciting opportunities for higher education, which may be able to transform the educational sector in positive ways. As higher education moves into the 4th Industrial Revolution, it will provide quality teaching, enlighten learners through exploratory research, and sustain societal development while taking on an increasingly important role in the global education sector.

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OPEN EDUCATIONAL RESOURCES: A SALIENT FEATURE IN TEACHER EDUCATION

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Abstract

Open Educational Resources (OERs) are educational resources that are freely accessible online and can be used by anybody. OERs can include entire courses, course materials, modules, textbooks, videos, tests, software, and any other instruments, resources, or methods intended to facilitate access to information. Since they are simpler to incorporate into the pre-existing classroom or online learning activities, small units of OER (such as animations, videos, podcasts, etc.) are typically the most appealing to educators from both the re-use and production angles. To increase the options for self-directed learning, many teachers incorporate OER materials into their lesson plans (such as classroom lessons, practical courses, workshops, and seminars) and/or give access to OERs via the VLE. The term "open educational resources" refers to teaching or learning tools that are either in the public domain or have been published under a licence that permits unrestricted use, modification, or sharing. This paper focuses on an important aspect of OER in the context of teacher education.

Keywords: Availability, Accessibility, Benefits, OER, School teachers, Usability.

Introduction

Open educational resources are publicly available, openly licenced texts and other media that may be used for research, teaching, learning, and assessment, according to Wikipedia. As a result of the openness movement, it has become the dominant trend in the remote education/open and distance learning fields. Although some individuals believe that using an open file format is a fundamental aspect of OER, this is not a requirement that is generally accepted.

Open Educational Resources (OER) are teaching, learning, and research resources that are in the public domain or have been released under an intellectual property licence that permits their free use and re-purposing by others, according to one of the most frequently used definitions of OER from the William and Flora Hewlett Foundation. Full courses, course materials, modules, textbooks, streaming videos, exams, software, and other tools, materials, or techniques used to support access to knowledge are all examples of open educational resources.
Finally, UNESCO offers the following response to the query: Open educational resources (OERs) are what: Any sort of educational content released under an open licence or in the public domain is referred to as an open educational resource (OER). Due to the open nature of these resources, anybody may freely and legally copy, use, adapt, and reshare them. Textbooks, curricula, syllabi, lecture notes, assignments, tests, projects, audio, video, and animation are all examples of open educational resources (OERs).

Benefits of OER

The creation, distribution, and application of OERs in student education can have a variety of positive effects on both educators and students.

Student experience: By providing students with access to media-rich materials or resources that specific staff members or institutions are unable to supply, the usage of suitable OERs can improve students' learning experiences and assist to address learners' specific needs.

Digital literacy: Teaching students how to find, analyse, use, and cite credible open educational materials is a crucial and practical skill.

Recognition: External acknowledgement of the creator's learning and teaching activities as well as the marketing of their institution, school, or faculty are provided for OER creators. Users that alter or repurpose OERs profit from any changes made as well as the original author's pupils.

Marketing and public relations: OERs give colleges and VET organisations the chance to highlight their brilliance and creativity in teaching and learning while expanding the pool of qualified candidates for their programmes.

Efficiency: OERs have the potential to save a significant amount of money and time.

Searching for OERs

More and more search engines and websites let you look for content based on the sort of licence it is under (examples include Google advanced search, YouTube, and Flickr picture search). This facilitates finding content covered by a Creative Commons licence. There are also several OER repositories (links may be found in the section below titled "See Also"). OERs should not be confused with Open Access resources, which also contain online materials, but for which the terms "copyright" and "permitted usage" are either ambiguous or absent altogether.

Accessibility of OER

Web accessibility aims to give those with impairments the same access to the internet as everyone else. Websites and educational resources are both accessible in the area of open educational resources (OER). The main prerequisite for ensuring equitable access for all users, including those with impairments, is accessibility.

This standard outlines a wide variety of suggestions for enhancing the accessibility of Web content for a larger group of individuals with disabilities. Disability groups affected by accessibility include those with visual (blindness and poor vision), auditory (hearing loss and deafness), motor (restricted use of the upper limbs), cognitive, and learning difficulties.

There are twelve recommendations in this standard, which are categorised according to four principles:

Perceivable Users must be able to understand the information displayed on the interface for it to be perceivable.

Operable (the interface must be usable by users).

Understandable (users must be able to comprehend both the material and how the user interface works).

robust (the material must be accessible to consumers as technologies develop).

Software assessment tools can be used to do a preliminary examination of web accessibility. It is advised to combine a few automated tools in online accessibility analysis to produce a trustworthy evaluation because these tools have different WCAG 2.0 coverage, completeness, and accuracy.

A human expert should confirm and understand the results in addition to formal validation. In addition, it's crucial to carry out user testing and heuristic accessibility evaluation depending on particular disabilities.

Findability of OER

Findability is the ability to locate information or features that users expect to find on a website given its intended usage. As a result, it has a direct impact on the standard of answers consumers receive when they specify a search to find information that meets their demands. Because the main purpose of OER websites is to give users access to the educational content they need, high findability is a desirable quality. When it comes to users with impairments, the resources should be appropriate for their particular needs, such as information that may be read aloud or interacted with using voice recognition. Findability is influenced by various factors, including information architecture, usability, and accessibility of the web.

Usability of OER

Web usability is the perception a user has when engaging with a website, depending on how well they can do their work there and even their emotional response to the website. Web usability helps to make browsing the internet easier for both those with and without impairments. These qualities of the website should be present to improve web usability:

Learnability. Access and usage of the website are simple for new users. the value of online guides, lessons, and advice.

Intuitiveness. The website's comprehensible layout.

Memorability. The website's use and navigation are simple to memorise.

Affordance. action that is seen to have been connected to interactive components (such as buttons, links, and input text fields).

Efficiency and preciseness. The users get what they are looking for on the website, directly and straightforwardly.

Some traits, like fault tolerance, are more frequently associated with web applications than with websites. Web usability evaluation has certain components with web accessibility evaluation and tries to identify clear usability issues on the website.

Conclusion

Learning, teaching, and research materials in any format or media that are in the public domain or that are protected by copyright and published under an open licence that allows unrestricted access, reuse, modification, and redistribution by others are known as open educational resources (OER). The term "open licence" refers to a licence that upholds the owner's intellectual property rights while enabling the public access to, re-use of, repurposing of, adaptation of, and redistribution of educational resources. The great majority of educational institutions that employ free resources do so as formal or unofficial additions to an already-existing curriculum or programme. For instance, teachers can add an enrichment exercise to an online open lesson plan or give difficult students more practice with a subject. A teacher who just has a small scientific lab could create presentations of well-known experiments using free web films. More than 45 million users have downloaded some or all of EngageNY, the Empire State's free collection of resources that are in line with the Common Core State Standards. Since anyone can produce and distribute an open resource, it is up to individual states, districts, and even teachers to determine whether a given OER is of high quality and suitable for a specific grade, subject, or group of students.

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REVOLUTION IN LEARNING ENGLISH THROUGH LIFE SKILLS

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Abstract

The revolution in English learning through life skills is a paradigm shift in language education, with a focus on the integration of language abilities with real-life skills. This unique approach values contextual learning, communication skills, problem-solving, critical thinking, cooperation, and authentic assessments. This revolution strives to empower learners to negotiate real-world circumstances confidently and skilfully by acknowledging cultural competency, technology integration, personalized learning, emotional intelligence, empathy, and a lifelong learning outlook. It emphasizes the transition from mechanical memorizing of grammar and vocabulary to language implementation in meaningful circumstances. The ultimate goal of this revolution is to provide learners with not only English proficiency but also the practical skills and mindset required for success in a variety of personal and professional settings. It improves one's ability to communicate, self-confidence, and self-esteem. It is possible to connect language learning with life skills by using quotes and excerpts from various genres to enable the learner to develop social, emotional, and cognitive skills such as the ability to communicate effectively, improve interpersonal relations, develop a positive attitude, be empathetic, and think logically and creatively. **Keywords:** English, Revolution, Life skills.

Introduction

In the future, every educational endeavour will have to ask itself whether and to what extent it promotes learning activities that help develop life skills that are vital to coping with the key issues of one's life and survival, and to what extent it stimulates requisite attitudes and motivations (curiosity, interest, self-starting qualities) for lifelong learning. **(Madhu Singh, 2003)**

In recent years, there has been a growing recognition of the importance of integrating life skills into language learning, particularly in the context of learning English. This approach aims to equip learners with language proficiency and the essential skills and competencies necessary for success in various aspects of life. The revolution in learning English through life skills encompasses a range of strategies and activities that promote the development of learners' communicative abilities, emotional intelligence, problem-solving skills, and more.

The revolution in learning English through life skills recognizes that language is not merely a set of grammar rules and vocabulary lists to be memorized but a tool for meaningful communication. It acknowledges that learners need to develop the ability to apply their English language skills in real-world situations, such as ordering food in a restaurant, participating in job interviews, engaging in group discussions, or expressing opinions on global issues. This revolution goes beyond the boundaries of traditional language learning, embracing a multidimensional approach that integrates various aspects of life skills into English education. It emphasizes contextual learning, where learners are exposed to authentic materials and situations that reflect their daily lives, enabling them to connect language skills with practical experiences. By placing communication at the forefront, learners are encouraged to actively engage in speaking, listening, reading, and writing tasks that mirror real-life communication encounters.

In today's competitive work scenario, an employee with only technical or subject knowledge is not likely to sustain and grow professionally. To be an asset to an organization, one has to work on self-improvement by imbibing important life skills because they enable one to present oneself well, cope with stressful situations, learn to prioritize when faced with multiple tasks, and finally develop the ability to express oneself befittingly in various situations.

This paper emphasizes one of the most important aspects of life skills which is communicating effectively. It is a skill we can learn and if we are willing to make the effort to enhance these skills, we can surely improve the quality of our lives.

Definition of Life Skills

Life skills refer to a set of abilities acquired through learning and real-life experiences that enable individuals to effectively handle common issues and challenges encountered in daily life. These skills can be practical, such as time management and budgeting, as well as abstract, including empathy and perseverance (Delia Kidd 2019).

Life skills can be defined as abilities that enable humans to deal effectively with the demands and challenges of life. They may also be called psychosocial skills, as they are psychological in nature and include thinking and behavioural processes. Others define life skills as behavioural, cognitive, or interpersonal skills that enable individuals to succeed in various areas of life (Hodge, Danish, & Martin, 2013).

Integration of Life Skills in English Language Learning: The integration of life skills in English language learning involves incorporating activities and strategies that allow learners to simultaneously develop both language proficiency and essential life skills. This approach recognizes the interconnectedness between language use and real-life situations, providing learners with practical opportunities to apply their language skills in meaningful contexts.

Life Skills

Life skills have been defined by the World Health Organization (WHO) as "abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life".

They represent the psycho-social skills that determine valued behaviour and include introspective skills such as problem-solving and critical thinking, personal skills such as self-awareness, and interpersonal skills. In this study, life skills refer to the availability of life skills in the ten categories or types.

1) Decision-making	6) Interpersonal relationship skills
2) Problem-solving	7) Self-awareness
3) Creative thinking	8) Empathy
4) Critical thinking	9) Coping with emotions
5) Effective Communication	10) Coping with stress

Perusing writing educates us on these life abilities and makes us more mindful of these life aptitudes (Jessy & Jayachithra, 2022).

In this study, the researcher focuses on four skills: effective communication, problemsolving, emotional intelligence, and critical thinking.

Effective Communication

Communication might be defined as the act of disclosing, unmasking, or explaining something in detail (Rowan, 2003). Researchers suggest that we can improve our communication in four ways:

- Use common, everyday words
- Use "you" and other pronouns
- Use the active voice
- And Use short sentences

This life skill also involves achieving a goal with our communication. For example, we might wish to inform, persuade, or communicate assertively (Rowan, 2003).

Communicative Skillset Development: One aspect of the revolution in learning English through life skills is the emphasis on developing learners' communicative abilities. This involves enabling learners to respond appropriately to others, maintain and develop interactions, and work towards desired outcomes. Teachers can facilitate this development by designing speaking tasks that simulate real-life situations and encourage collaborative communication.

Expression and Positive Communication: The revolution in learning English through life skills recognizes the importance of teaching learners how to express themselves and communicate positively. Role plays and functional language instruction can help learners understand how to express their thoughts, ideas, and emotions effectively in various

contexts. By providing learners with the tools and language necessary for positive communication, teachers enable them to navigate social interactions successfully.

Problem-Solving

Problem-solving may be defined as a thinking process where we use our knowledge, skills, and understanding to manage an unfamiliar situation. But keep in mind that problem-solving is not like an algorithm. A problem simple enough to be solved with a series of "IF-THEN" statements (as is done in an algorithm) does not need the life skill of problem-solving. When it comes to the human mind, is capable of much more complex problem-solving (Carson, 2007).

Problem-solving in language arts means using language skills to understand or communicate an idea: Is this car worth the money? What's that guy's agenda? How can I get my doctor to understand what I'm experiencing? By some combination of reading, writing, speaking, and interpretation, you have probably solved thousands of language arts problems in your lifetime.

Problem-Solving and Critical Thinking: Life skills learning in the English language classroom also promotes problem-solving and critical thinking abilities. Through collaborative tasks and role plays, learners can engage in activities that require them to work together, think creatively, analyze situations, and come up with solutions. This approach encourages learners to develop their problem-solving skills while using English as a means of communication.

Emotional Intelligence

Emotional intelligence (otherwise known as emotional quotient or EQ) is the ability to understand, use, and manage your own emotions in positive ways to relieve stress, communicate effectively, empathize with others, overcome challenges and defuse conflict.

The key skills for building your EQ and improving your ability to manage emotions and connect with others are:

- Self-management
- Self-awareness
- Social awareness
- Relationship management

Emotional Intelligence and Empathy: Another significant aspect of integrating life skills is the focus on emotional intelligence and empathy. Language learning activities can be designed to help learners recognize and name emotions, identify feelings in others, and empathize with different perspectives. By engaging in storytelling, imaginative activities, and discussions on emotions, learners can develop their emotional intelligence and enhance their ability to communicate effectively in various social contexts.

Critical Thinking

Critical thinking also has an impact on students' interpersonal skills. By thinking critically and seeing things from different angles, students become more open-minded and empathetic, better communicators, and more inclined to collaborate with their peers and receive and discuss their ideas. Thinking more about students as individuals, it is possible to say that critical thinking helps them develop their creative side by allowing their thinking process to run more freely, and explore more possibilities. It will make them better decision-makers, and with practice, also help them save time to make those decisions. (Ana Tatsumi 2018)

Holistic Development and Transferable Skills

By incorporating life skills into English language learning, the focus shifts from mere language acquisition to holistic development. Learners are equipped with transferable skills that can be applied in different areas of their lives. These skills include critical thinking, decision-making, communication, collaboration, and problem-solving, which are essential for language proficiency and personal and professional growth (**Saravanakumar**, **2020**).

Conclusion

The revolution in learning English through life skills represents a transformative approach that aims to equip learners with the language skills and practical competencies needed to succeed in various aspects of their lives. By integrating language skills with reallife situations, problem-solving, critical thinking, collaboration, and cultural understanding, this revolution in language education paves the way for more relevant, engaging, and effective English language learning experiences.

It represents a shift in language education towards a more holistic approach that prepares learners for real-life situations. By integrating life skills into English language learning, teachers can help learners develop not only their language proficiency but also the necessary competencies to navigate various challenges and succeed in different aspects of life. This approach recognizes the interconnectedness between language use and the development of essential skills, fostering learners' communicative abilities, emotional intelligence, problem-solving skills, and more.

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USE OF DIGITAL DETOX IN EDUCATION: ABORTING ADDICTION

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Abstract

A digital detox is a period when a person voluntarily refrains from using digital devices such as smartphones, computers, and social media platforms. The study tries to build the proper reflections on such a kind of detoxification which can be helpful for humankind. The only reason behind the study is always to know about the tech, its uses, and the proper use of tech without affecting routine life. Nowadays a lot of people are affected by tech addiction like Computer work, Mobile, social media, etc, so how to limit usage according to need and how to come out from addiction is the main key factor in this paper. Paper suggests the ways to diagnose the addiction and remedial measures to be followed while achieving detoxification. A lot of students are suffering from health issues like anxiety, stress, panic attacks, mental disorders and many more health issues like the same. So, to come out of these problems it is more necessary to implement these kinds of addiction-free habits in our life to maintain a good lifestyle.

Keywords: Tech-Technology, Detoxification (Detox)-Eliminating toxic, Mobile-Smartphone, Addiction-Digital Addiction.

Introduction

Do you often find yourself glued to your smartphone screen and scrolling endlessly as chunks of time slip away? You are not alone. Research shows that about 61% of people admit they are addicted to the internet and their digital screens.

That is why taking a break from your numerous social media apps and some time away from screens could help be good for your mental and physical health.

And that is where a digital detox comes in. This is a period during which you intentionally reduce the amount of time you spend online on your devices. One study found that around 25% of smartphone owners between ages 18 and 44 do not remember the last time their phone was not right next to them.

All that Time Online can Cause

- Self-image issues
- Self-esteem issues
- Sleep issues
- High level of Depression
- Anxiety Disorders
- Weight gain
- Unhealthy eating

- Lack of exercise
- Lack of time management
- Work ethic problems

Reasons Behind the Digital Detox

Teens who suffer from addiction to technology feel extreme levels of anxiety and frustration. stress when separated from their digital devices, video games, and social networking sites. Hence, their emotional symptoms mirror those seen in substance abuse and drug withdrawal.

How does Internet Addiction Affect Students?

Day by Day as technology is becoming integrated into classrooms, it can be hard to separate time spent online studying and time spent on scrolling. Social media addiction causes stress, anxiety and other health issues. High use of social media leads to a decrease in academic performance in students.

- Unplugging yourself from your devices or making the effort to use them less can help improve your quality of life by helping you.
- Be more productive. Scrolling, liking, posting, or just surfing the internet can be a waste of time. Setting your phone aside will help you focus on things you need to get done in life.
- Calm down. Setting your phone aside or a digital device can lower your stress levels. It can also help you focus on the present.

Get Started

- If you suspect tech use is affecting your bodily and intellectual well-being, taking time away from stuff you want to get done, or both, it could be time for a virtual detox. You do not have to quit your devices altogether -- just do what works best for your lifestyle.
- This may want to imply putting your smartphone apart for some hours each now and then, exploring how much You need to apply it or disconnecting absolutely from the net for an afternoon or more.

To Get Started on your Digital Detox

- pay more attention to things in your environment.
- Feel better. To become happy never compare yourself to anybody but social media apps lead you to compare yourself with others regularly.
- To get commenced for your virtual detox: Pay interest in your emotion while you operate your phone.

- Be aware of your smartphone use to higher recognize the connection you have got together along with your device. Ask yourself why you are using your phone at different times.
- Is it boredom? Do you need it for work? Do you feel like you are missing out on what others have? Does checking your smartphone carry to make the experience higher or worse?
- Some study says getting a higher feel of your feelings assist you to manage your smartphone use higher.
- If you are obsessively using your smartphone and you suspect addictive behaviour, one way to detox would be to block out time intervals to check your phone.
- For example, strive to test your smartphone handiest every 15 or 30 minutes.
- Experts say a smooth rule to comply with might be to preserve your smartphone away at some point during meal times. This will let attention to the surroundings.
- If you have got a difficult time resisting your phone, try and maintain it out of sight in a special room or out of smooth attain so that you can cognizance in your food.
- Or you could set times that you will not use it, like when you are out for a walk, at a social gathering, or after a certain hour at night. Use apps to tune your usage.
- If your phone cannot do it for you, there is an app for that.
- Some apps can also block your access to social media sites for a period or give you a detailed report on what you are spending too much time on.
- This can assist in restriction your reliance on your smartphone and take returned a few controls. Disconnect at night time earlier than bedtime.
- Since smartphone use can disrupt your sleep patterns, try, and disconnect, or transfer off your smartphone earlier than your visit mattress or set a time like nine p.m. or 10 p.m. to unplug.
- This will assist you get into recurring to visit mattresses and enhance sleep. Turn off notifications.
- If you discover the self-responding to each textual content alert, email, or ping out of your social media Apps, it could be an awesome concept to close off the notifications for your smartphone settings.
- This can assist slash the urge to reply to each noise it makes. You also can strive for the do now no longer disturb function.
- If you experience like your smartphone addiction is disrupting your everyday existence and you are not able to take again manipulate or are uncertain of a way to get started, speak with your physician or a therapist. They can also additionally assist to return with answers that paint excellent on your lifestyle.

The Motive Behind the Study

The story is about a simple yet smart village in the western part of India. Maharashtra's Sangli district consists of a village named 'Mohit yance Vadgaon' in which absolutely each person in the place turn-off their televisions, mobile phones, and different electric gadgets for an hour. Around 3000 humans live withinside the village. Every day, at seven withinside the evening, a siren warns humans to place their digital gadgets away. Five hours so that they can take a much-wished smash from display screen time. This rule is meant to help children in transferring their interest far from online distractions and in the direction of their School work, in addition, to inspiring adults to get worried about their groups or pursue pursuits like reading. While a few human beings criticize that the initiative is a clear invasion of the villagers' privacy, it's miles nevertheless well-known with the aid of using a huge populace of the village.

The village head Vijay Mohite proposed the initiative as a one-off experiment. After the day's online lessons have been over, Vijay Mohite found that a few college students persevered to be absorbed in their cell gadgets for hours at a time. Many of them were highly inattentive in the sessions once regular offline classes started last year, and it was discovered that they had lost interest in academics. He discovered thru speaking to the students' households that they persevered to spend a variety of time on their telephones earlier than and after school. His crew provided them and their households counselling, however, they have been not able to get the scholars to prevent the use of their phones. "Finally, we approached the 'sarpanch' of our village and apprised him of the situation," Mohite said. "After we've were given an excellent reaction from the villagers, we're considering an idea to increase the 'No mobile, No TV' time to 2 hours in close to future," stated the sarpanch.

The concept has now changed into a council-imposed obligatory exercise meant and has additionally helped adults with the aid of using growing their circle of relatives time. Women who used to live glued to the tv to observe their preferred TV shows, now spend greater time with their husbands, pals and youngsters at the same time as guys who were once busy looking at random forwarded WhatsApp motion pictures commenced that specialize in addition instructing themselves through studying and assisting their other halves at domestic with well-known shows that 61% of humans declare to be hooked on the net and different digital gadgets, which will increase their everyday display screen time, in step with Web.

Fashionable fitness in addition to bodily and emotional well-being, is acknowledged to have a poor impact. A virtual detox is suggested as a solution, that is refraining from the usage of clever gadgets like laptops, tablets, or telephones whilst online.

Starting a virtual detox can contain taking frequent, quick breaks from mobile phones, which include an hour every day.

This failure is defined via way of means of the subsequent set of criteria:

- (1) A preoccupation with the Internet,
- (2) They want to apply the Internet for growing quantities of time,
- (3) Unsuccessful efforts to forestall the use of the Internet
- (4) Temper extrude while trying to forestall or reduce Internet usage,
- (5) Staying online longer than intended,
- (6) Jeopardizing sizeable relationships or possibilities because of immoderate Internet usage.
- (7) Mendacity approximately Internet use Persistent choice and/or unsuccessful tries to control, reduce lower back or stop net use.

Continued immoderate use of the net no matter the know-how of getting a chronic or recurrent physical or psychological problem likely to have been caused or exacerbated by internet use. Digital dependency referred to an impulse management ailment that includes the obsessive use of virtual devices, virtual technologies, and virtual platforms, i.e. Internet, video game, online platforms, cell devices, virtual gadgets, and social community platforms.

Remedial Measures of Digital Addiction

- Admit it. The first step to clear up any kind of hassle is to step out of the denial section and take delivery of which you have a hassle.
- Seek Therapy.
- Limit Smartphone use.
- Socialise.
- Change Communication Patterns.
- Follow a Routine.
- Prioritise your Needs.
- Keep Devices Inaccessible.
- Set time limits for usage.
- Try to shorten your Internet sessions.
- Use outside close gadgets for your pc and phone.
- Completely prevent the usage of sure packages, or use packages that could restrict some time online.
- If you observed you have got an Internet addiction, communicate together with your medical doctor or your parents.
- Pay interest whilst you operate the Internet or cell apps.
- Turn off or silence notifications for email, games, and social media.
- Use an unfastened app to music your Internet usage.

Conclusion

Digital detox is not only the need of the modern generation. It is a necessity too. The reasons behind this are already well known to us. The modern generation must limit the use of tech usage. And it is also helpful for their routine life system and mental health. Yes, tech is becoming an integral part of our life nowadays but still, we need to limit it why because the addiction to digital media is stealing our lifestyle. The only way to avoid it is to be systematic, and proper and limited the usage of tech or digital tools can help everyone to improvise their lifestyle from addiction.

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BARRIERS AND BENEFITS OF INCLUSIVE EDUCATION

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Abstract

This article explores the concept of inclusive education, which aims to provide equal educational opportunities for students with disabilities and those without, within the same educational settings. It discusses the definition of inclusive education as the provision of accessible information, supportive environments, and necessary assistance for impaired children. The article highlights the systemic, societal, and pedagogical barriers that hinder the implementation of inclusive education. Systemic barriers include exclusionary practices and lack of support, while societal barriers stem from fear, ignorance, and discomfort. Pedagogical barriers relate to educators' understanding of adult learners and their failure to meet diverse learning needs. Additionally, the article presents the benefits of inclusive education, such as improved social relationships, academic development, increased interaction, and mutual learning. It also emphasizes the fostering of emotional growth, unity in diversity, and the cultivation of acceptance. In conclusion, the article emphasizes the importance of personalizing education to ensure the success of all students and advocates for the removal of barriers to create inclusive environments that promote equality and respect. **Keywords:** Benefits Barriers and Inclusive Education

Introduction

The term "inclusive education" primarily refers to the inclusion of individuals with physical and intellectual impairments, such as sensory or mobility limitations, intellectual disabilities, learning disabilities, speech disorders, behavioural disorders, and autism spectrum disorders. However, some educators and proponents use "inclusion" in a broader sense to encompass an educational system designed to ensure access for all marginalized groups in society and schools. In this broader sense, inclusion involves intentionally and consciously structuring the entire academic and classroom environment to be accessible and inclusive not only for students with disabilities but also for those who may face rejection or disempowerment based on their race, social class, gender, culture, religion, immigration history, or other attributes. Inclusion is sometimes advocated as a means of achieving a more comprehensive form of social justice.

Inclusive Education (IE) seeks to remove barriers to knowledge and promote the participation of all learners, preventing rejection and marginalization. Inclusive education is often referred to as "addition," which involves the inclusion of both non-disabled and disabled individuals, including those with special educational needs, in mainstream schools, communities, and universities.

According to Disability Mindfulness in Action (2003), inclusive education refers to the active participation of children with disabilities through the provision of accessible

information, inclusive environments, and support. This may include creating barrier-free environments, providing information in alternative formats such as braille or audio recordings, recognizing sign language as a language, and offering individualized assistance and interpretation.

According to UNESCO (2004), inclusive education is a process that addresses the diverse needs of all learners, promotes participation in literacy, societies, and communities, and reduces exclusion within and from education. It involves changes in content, approaches, structures, and strategies, guided by a shared vision that includes all children within the applicable age range, and recognizes the regular education system's responsibility to educate all children.

Halvorsen and Neary (2001) define inclusive education as the support of students with disabilities in age-appropriate general education classes in their home schools, receiving specialized instruction outlined in their Individualized Education Programs (IEPs) within the context of the mainstream classroom.

Barriers to Inclusive Education

There are three main categories of barriers that limit opportunities for individuals with disabilities in society compared to their non-disabled peers:

Systemic Barriers

- Exclusion of people with disabilities due to eligibility criteria that effectively discriminate against them, such as job requirements that mandate a driver's license even though alternative transportation options are available.
- Lack of consideration for the specific accommodation needs of individuals with disabilities during event planning.
- Inadequate understanding of the accommodations needed for individuals returning to work after a disability-related absence.
- Lack of leadership or responsibility in addressing issues related to people with disabilities.
- Hiring programs that do not actively encourage applications from individuals with disabilities.
- Insufficient literacy and training for teachers to effectively manage diversity in their classrooms.
- Long waiting lists for enrollment in special schools.
- Inadequate funding for assistive devices and limited availability of educational resources.
- Delays in assessing learners' needs.

Societal Barriers

- Fear, which leads to avoidance or non-interaction with people perceived as different.
- Awkwardness in knowing how to communicate with individuals with disabilities, often due to a lack of understanding or experience.
- Perception of individuals with disabilities as "other" or feeling marginalized, resulting in potential social exclusion.
- Objectification or lack of concern due to a lack of personal connection or relevance.
- Ignorance stemming from a lack of exposure to and understanding of individuals with disabilities. Parents may feel the need to shield their children from witnessing others' suffering or differences, which can hinder inclusivity.

Pedagogical Barriers

- Pedagogy refers to the transmission of information and skills from educators to learners, while and ragogy involves providing procedures and resources to help adult learners acquire knowledge and skills.
- Pedagogical barriers occur when educators lack an understanding of how adults learn, including their requirements, motivations, learning styles, and the necessary learning experiences.
- Failure to meet learners' needs, neglecting the importance of social interaction among learners.
- Insufficient awareness of effective learning exposure factors.
- Inadequate training to address diverse learning styles and utilize appropriate strategies for providing feedback.
- Failure to recognize the relevance of learners' prior knowledge and experiences.
- Benefits of Inclusive Education:
- Inclusive education offers numerous benefits for both students with disabilities and their non-disabled peers:

Improved Social Relationships

- Enhanced opportunities for meaningful friendships and social connections.
- Increased acceptance of individual differences and development of social networks.
- Promotion of positive relationships and understanding in society.

Academic and Skill Development

- Opportunity to build academic, social, and behavioral skills.
- Greater access to the general curriculum and increased achievement of Individualized Education Program (IEP) goals.

• Preparation for adult life in an inclusive society and the fostering of respect for all individuals.

Increased Interaction and Participation

- Greater opportunities for interaction and inclusion among students.
- Increased parental involvement and participation in the educational process.

Mutual Learning

- Opportunities for students to master activities by practising and teaching others, fostering academic outcomes.
- Encourages respect for individuality and diversity among children.

Emotional and Social Growth

- Enhanced emotional intelligence, fostering tolerance, forbearance, and compassion for peers.
- Learning cooperation and collaboration within inclusive classrooms.

Unity and Diversity

- Promotion of unity in diversity, allowing different communities to come together, play, learn, and grow together.
- Reduction of bullying and harassment in the classroom.
- Development of self-esteem, tone-regard, and confidence among students.

Cultivation of Acceptance

- Creation of a culture of acceptance and understanding in society.
- Promotion of lifelong friendships among children engaged in helping their peers.
- Welcoming and embracing diversity within the educational environment.

Conclusion

Inclusion in education involves personalizing education to ensure the success of all students, regardless of their unique needs. Implementing an equity-based mindset is crucial to guaranteeing equal opportunities for learning and growth. Overcoming barriers, both systemic and societal, is essential to creating inclusive environments where all students can thrive and contribute to society. The benefits of inclusive education span social, academic, and emotional domains, fostering positive relationships, preparing students for life beyond school, and creating a culture of acceptance and respect.

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PERSONALIZED LEARNING: THE FUTURE OF EDUCATION

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Abstract

In this study, the trends and developments of technology-enhanced personalized learning have been studied by reviewing. To be specific, we investigated many research issues such as the parameters of personalized learning, learning supports, learning outcomes, subjects, participants, hardware, and so on. Furthermore, this study reveals that personalized learning has always been an attractive topic in this field, and personalized data sources; for example, student preferences, learning achievements, profiles, and learning logs have become the main parameters for supporting personalized learning. In addition, we found that most of the studies on personalized learning still only supported traditional computers or devices, while only a few studies have been conducted on wearable devices, smartphones and tablet computers. Through the in-depth analysis of the trends and developments in the various dimensions of personalized learning, the future research directions, issues and challenges are discussed in our paper. **Keywords:** Learning, Technology, Educator, Student

Introduction

Personalisation is the term used for an approach to personal care and support which treats people as autonomous individuals and responds to their personal needs and wishes. Personalized learning is an educational approach that provides a learning path which is based on the student's needs, interests and abilities. Each student will receive differentiated instruction based on their learning characteristics. While implementing personalized learning in an institution, the method and speed of learning can vary for each student. Each student definitely will reach a certain mastery level in their learning. Students may learn some skills at different paces. But their learning plans still keep them on track to meet the learning areas. When the learning areas are already familiar, they can be skipped and more time will be spent on the topic that is challenging to the students. Personalized learning experiences provide learners with a highly individualized approach to their academic journey. It allows them to learn at their own pace, using methods and resources that are suited to the learner's unique needs and capabilities.

The Theoretical Framework of Personalized Learning

Considering the variation in the models of personalized learning, a new and universal root model is needed using the conceptualizations of automated and student-centred

pedagogies. Different schools and classrooms' personalizing instruction will demonstrate variation in the amounts of automated pedagogies and student-centred pedagogies employed. Some models employed by online schools may only focus on automated pedagogies, while progressive models like Montessori education may only employ student-centred pedagogies. We argue that the shift from the traditional factory model to personalized learning is the complementary advancement of both pedagogical traditions towards mass customization and a redistribution of some or all of the curriculum decision power from the teacher toward computer algorithms and the student. While one might assume teacher-centred and automated pedagogies would present in direct contrast with student-centred pedagogies, in many personalized learning models these philosophically-opposed approaches are likely used in some unique combination best suited for the context and the individual learner resulting in a scaled custom educational experience.

Technology and Personalized Learning

Technology has brought access to data, both on how students are performing and also about their preferred learning style. It has also given students greater visibility over their progress than they have ever had before. With access to the right technology, students can learn at their own pace and level. This kind of functionality supports flexibility and individuality both of which lead to greater engagement and, hopefully, better learning outcomes. There has always been a need to provide additional support to certain students and, unfortunately, in the face of a global pandemic that has become more common. Technology is helping to drive the effort to close the gap between lower-attaining students and their counterparts. With talk of customized lesson plans and the development of 'playlists' to work through, it would be easy to think of technology as something to replace a human educator. But that's far from the case. The right technology can enable the delivery of content in the most appropriate form for each individual, which enhances the role of the teacher. Rather than being at the front of the class talking through the subject matter, the teacher can spend time supporting students in their learning. Personalized learning is all about collaboration between the student and teacher. They work together to determine and design a learning plan. Technology certainly has a role to play in enabling this. Its job is to help students to articulate what they need and help educators to develop the right approach for each individual. From there, it allows both to keep track of progress. Perhaps the biggest impact technology has had on personalization is the ability to use it as a strategy at scale. Creating individual lesson plans and tracking performance has been made so much easier by technology. Without it, teachers would very quickly lose track of what each individual was supposed to be doing and the approach would fail. Technology has helped teachers work with students to develop and enact learning pathways, but it has also given students much more flexibility in the way they present their work. Students have preferred media that they like to use; forcing someone who doesn't enjoy working with particular software to use it, can be disengaging. Giving them the choice of using whatever programs they want to, on the other hand, can be positively liberating.

Teacher and Personalized Learning

Personalizing learning builds a strong classroom culture in which learning targets are transparent, environments are flexible, and instruction is tailored to meet each student where they are. Though practices differ from the traditional classroom, they enhance the role of the teacher in a unique way. Teachers can get to know their students in a way that they never have before, building relationships that empower students to own their learning. Personalized learning requires educators to develop cultural competency. Teachers also know their students better than anyone else in their school, and better than any computer, so they must thoughtfully shape the right experience for their pupils. Technology and innovative practices should just be used to help personalize a student's education. A teacher in a personalized learning environment uses a variety of instructional methods and strategies that they determine jointly with individual students, based on needs, preferences, and interests. The teacher then acts as a facilitator, employing flexible pacing and differentiated assessment practices. The idea of students choosing how they learn may sound like a daunting task, but many educators are already doing this in their traditional classrooms today. It isn't rocket science. But teachers in personalized-learning environments must be supported at the building and district levels. Only then can they reliably and consistently create classrooms where all kids can learn and thrive, where traditional barriers have been broken down, and where the learning process necessitates developing a positive relationship with students. In a personalized learning environment, educators aren't just teaching. They're teaching their learners how to learn. And once students learn that they can learn anything, anywhere, any time.

Benefits of Personalized Learning

Personalized learning cuts down on the time it takes a learner to engage with and understand a new subject. It also serves to remove content that is no longer relevant or would be redundant due to the experience level of the learner, saving time that would otherwise be wasted on learning concepts that will not serve the learner. When content is both relevant and personalized, learning is more engaging. A learner is more likely to interact with and remember content that targets their current role, projects, or area of work. When content is based on previous experience, the learner will retain that information for a much longer period. When a personalized learning path connects each piece of the puzzle, with each piece supporting each other to intertwine the information, the learner will be able to better recall information by linking it to existing knowledge. Learning that is connected to something relevant, be it the learner, their job, or their hobbies will increase motivation for the learner. This is especially true if the content contains tips or helpful information that is immediately actionable. Studies have shown that a personalized learning approach yields better learning results. This approach elevates learning and provides content that is relevant, engaging, actionable, and memorable. The result is a learner who is pleased with their interaction with the material and is better at their job.

Challenges and Future Direction of Personalized Learning

Personalized Learning can be a challenge; it's time-consuming and requires a lot of testing and tweaking. Once the teacher passes the torch of learning design to students, the load becomes a lot lighter. Rebrand themselves as the facilitator of their classroom's learning, not the mastermind behind every possible action. Talk to students about their role in this journey, offer them chances to design experiences, and write proposals for future work they want to do – this practice not only takes some of the work of the teacher but gets the learners playing a more active role in their education. Historically, teacher-led instruction was the primary method of facilitating learning. At the core of personalised learning is student-driven learning. Moving away from teacher-led instruction is sometimes difficult for students, teachers and even parents. No longer has the sole driving force in the room involved giving up a lot of control? But it can be so rewarding when students take to this style of learning. Learners leverage their strengths to help their classmates with higher-level thinking. As they collaborate and question one another, they fill knowledge gaps and build a sense of community at the same time.

Successful Implementation of Personalized Learning

Every student would have an equitable opportunity to succeed. To develop universal instruction, teachers should have the skills how to screen students through initial or diagnostic assessments. They need to conduct this first and essential step to be able to select the content and learning activities that would cater for student differences. Conducting initial screening, however, involves multiple assessment tools so that teachers understand student performance and behaviour. Using multiple assessment tools requires the ability to design, conduct, and analyze, for example, observations, interviews, and surveys. Moreover, teachers should be able to conduct formal and informal assessments. On the other hand, the ability to screen students also requires outreaching out to various sources, including students, parents, school administrators, guardians, other teachers, as well as school staff. Flexible instruction requires creativity, tailored and timely learning support, commitment, and determination to help every student to succeed regardless of their background. Providing multiple ways of engagement is a way to communicate why students should learn. By showing the learning value, students are more likely to invest

the time and effort to achieve it. Without that engagement, personalized instruction cannot be realized. Engagement with learning is also likely to occur when teachers minimize learning threats and distractions, optimize goal demands, use collaborative activities, provide timely and personalized feedback, help students to set the goals they think they can achieve, and when teachers help students learn coping strategies to overcome obstacles and frustration. Moreover, self-assessment and reflection help students to keep working toward goals. Multiple ways of action concern how teachers develop and implement learning activities. Helping all students to achieve the same LO through different learning activities is another important strategy for customizing learning. Unless teachers can address the same LO using different learning activities, personalized learning programs will not function properly.

Conclusion

Making learning personalized has a great impact on learning outcomes. When new concepts are linked to a person's previous experience, it results in better understanding and learning becomes more effective. Personalized Learning allows students to learn independently. Each student definitely will reach a certain mastery level in their learning.

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CHALLENGES OF AI IN EDUCATION FACED DURING IMPLEMENTATION

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Abstract

The purpose of this paper is to build reflections on the implementation of Al (Artificial Intelligence) based teaching-learning materials in the education process and the challenges faced during the implementation of such an innovative tool (Al) of education along with remedial improvements that can be achievable during the preparation or creation of such Al-based tools in the education system. The theory and development of computer systems can perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. The following study contains the background of AI (Artificial Intelligence) in education, the essentiality and importance of Al-based tools usage in the education system, why Al is convenient?, Simplifying administrative tasks, challenges of artificial intelligence in education, objectives of the implementation of Al in the current education system, how Al can be treated as the innovative method of the modern era and implemented, the steps of the educational practice that can enable a platform for education through Al-Artificial Intelligence, merits/advantages of the Al-based educational system, demerits/disadvantages of the Al-based educational system, remedial solutions to overcome from the lags of implementation of AIED (Artificial Intelligence in Education). And it contains a brief conclusion that can be achieved through the current study which is a considerable factor for the implementation of the Al in Education program. Keywords: AI, TLM, APP, BUG, AV

Introduction

"The development of full artificial intelligence could spell the end of the human race. It would take off on its own, and re-design itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, could not compete, and would be superseded."

-Stephen Hawking, BBC

AI refers to Artificial Intelligence, so according to the prediction of every modernised educator AI (Artificial Intelligence) holds a significant role in our future education system. While in concern of the educational programme, the impact of AI will be huge. Because teaching and learning happen in a major part of every individual's life whether it may be kind of formal, informal or non-formal way. But, as we compare these modes of education in the 21st Era schooling in the olden days is not flexible as what the future AI in education will present.

The Background of AI (Artificial Intelligence) in Education

AI is one of those aspects of modern life about which most of us have some awareness. And yet to recognize we have little knowledge. In fact, for many AI is synonymous with humanoid robots, which might be because news about AI is almost always illustrated with a picture of a robot or a digital brain. However, while robotics (embodied AI that can move and physically interact with the world) is a core area of AI research, AI is being applied in many ways and in different contexts.

However, first, we should acknowledge that the very well-known artificial intelligence is sometimes seen as unhelpful. Instead, some researchers prefer augmented (enlarged) intelligence, which retains the human brain as the source of intelligence, and positions the computer and its programs as a sophisticated tool with which humans might enhance or augment our intellectual capabilities. In such an approach, computers are employed to do what humans find more difficult to do. The debate contrasting augmented and artificial will inevitably run and run since artificial intelligence wins at least on popular usage even if augmented intelligence is more accurate or useful.

Definitions

- Artificial Intelligence (AI): Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific programs of AI encompass professional systems, herbal language processing, speech reputation and device vision.
- 2) Artificial Intelligence in Education (AIED): AI can help free up educators' time by automating tasks, analysing student performance, and closing the educational gap. By studying every student's unique needs, instructors and professors can regulate their guides to address the maximum, not unusual place know-how gaps or assignment regions earlier than a scholar falls away behind.

Essentiality and Importance of AI-Based Tools Usage in Education System

Almost AI impacts every area of our life in the future and but particularly the Education sector will be impacted hugely because teaching and learning are a major part of life and the current education system needs a lot of changes to be desired. The training in the olden days is not as bendy as what the destiny AI in schooling will present. The teachers that play the most important role in the education system are neither scalable nor upgradable and are also expensive as well. In some of the country's teachers are given a heavy load of paperwork and are undervalued.

AI can help everyone separately by giving them separate curriculum-based instructions on their interest and skill assessments. Artificial intelligence in education is a computerbased technology that provides adaptive, personalized, and insightful teaching. Components like Google Assistant, Microsoft Cortana, Apple Siri and Alexa from Amazon which work with the help of voice assistants are highly useful in modern education systems. This kind of voice assistance can be used and other non-educational locations to access any learning assistance whenever it is required. The basic theme behind voice assistant is to provide the answer to common questions regarding campus needs or for schedule and courses of each student which helps the institution in cutting expenses.

Why AI is Convenient?

AI schooling makes interplay extra cushy and handy for each college students and teachers. Some college students might not be formidable sufficient to invite questions in class. They might have inferiority complexes; such could be a result of the fear of receiving critical feedback. So, with AI communication tools, they can feel more comfortable asking questions without the crowd. While part of the teacher, they could deliver specified remarks to the student. Sometimes, there is not enough time during classes to respond to each question in detail. They can also provide one on one motivation for any student that needs help through the provision of Artificial Intelligence.

Simplifying Administrative Tasks

Every instructional group has lots of college admin obligations they want to address daily. Including AI in their systems can help to automate such huge tasks. It means that administrators can have more time to organize and run the school more smoothly. Additionally, schools can make use of editing and proof checking services. Such offerings can assist make certain that administrative files are nicely written and error-free.

Challenges of Artificial Intelligence in Education

Irrespective of the blessings of synthetic intelligence in education, there are nevertheless some challenges. Some of those demanding situations include:

Cost of AI Technology

Schooling comes at an excessive price. As a new era emerges, budgets will boom to cowl the expenses. Besides the installation of AI software, schools will also need to consider the cost of maintenance of the App (Application/Software). Thus, faculties with little investment can also additionally locate it tough to enforce AI-augmented learning. They additionally may not get to revel in the advantage of automating administrative duties that soak up the body of workers' time.

No Room for Flexibility

No be counted how analytical AI robotics can be, it can't flexibly increase a student's thoughts as an instructor would. While educators can proffer more than one problem-fixing method, AI does not have opportunity coaching methods. AI also operates on an input basis. While it might detect errors, it cannot correct them on its own. So wherein there may be a human blunder in imputing information, AI nevertheless incorporates the

analytic process. But the very last result will study that there are errors. Hence time is wasted, and the system must be repeated throughout again. So, there is no considerable room for flexibility, and it can't replace the human who is worthy material in the traditional education system.

Objectives of Implementation of AI in Education System

- It helps to understand how the learning happens.
- To promote individualized learning.
- To provide the most possible personalized tutoring to students.
- It helps to understand how the teaching-learning process is going to be happening in the future days.
- The AI can set the perfect pace of learning experiences.
- Technology provides the provision of presentation of material in understandable or perceptible format.
- Students can provide reliable feedback.

How AI Can Be Treated as The Innovative Method of the Modern Era and Implemented in the Educational Practices

- It builds a virtual teaching-learning atmosphere for everyone.
- AI-based education systems can help students discover the best courses for their needs.
- Providing teachers insight into what is happening with a student or a group of students such as when the teachers working with the other student.
- AI-based solution adopts student level of education speed/pace of learning and current educational goals.
- Preparing or creating new kinds of assessments that help educators better understand where their students are.

Steps that Can Enable Platform for Education through AI-Artificial Intelligence

- 1. Study the present reality and affordable remedies.
- 2. Consider / Prepare the context of the application which can effective education programme and troubleshoot the existing learning problems through interesting and intellectual forms.
- 3. Discuss and predict the upcoming needs of each implementation of the solution which is essential for the education programme.
- 4. The application should be thoroughly and properly tested to avoid bugs / errors.
- 5. Use a user-friendly interface while preparing the App that helps to get better interest and understanding.

- 6. Advertise, Launch and Promote the app and provide provision of feedback.
- 7. Provide regular updates on upcoming needs.

Advantages of The AI Based Educational System

- Personalization
- Task Automation
- Convenient and improved student-teacher interactions
- Simplifying administrative tasks
- Better Engagement
- Universal 24*7 access to learning
- Interesting way of teaching as well as learning
- Automatic creation of curriculum Tutoring
- Quick Response

Disadvantages of the AI-Based Educational System

- Time-consuming for content creation
- High cost for implementation
- Doesn't improve with experience
- Lack of creativity
- Can't replace Humans
- High Cost
- Risk of unemployment
- Over the cost of AI technology

Remedial solutions to overcome the lags of implementation of AIED (Artificial Intelligence in Education).

- Use trustable and suitable language for coding and decoding.
- Make an interesting way of introducing the SOFT (Software application).
- Compile the data research efforts with project management best practices.
- Develop a flexible development methodology.
- Centralize your AI and ML (Machine learning) data.
- Use appropriate TLM (Teaching Learning Material).
- Combine Machine learning automation and Humans.
- Resolve each bug which is treated for the AI-based learning system.

Conclusion

So apart from all these discussions regarding AI (Artificial Intelligence,), I wish to express my opinion about such a wonderful future science which is going to enrich the process of teaching and learning as well as treated to be proficient TLM material to build effective individualized learning.

AI is the most acceptable and most exceptional improved platform of teaching and learning through the help of technology. But also, we conclude that it went replaced human efforts and human self-developing experiences which he can learn and teach. Since by working on this thing can be helpful to the developers (Teachers or Educators) to overcome such a challenge whichever facing at the time of implementation. There is a possibility of some significant remedial measures to be taken by the developers to build such innovative tools of education which can help the future educational system.

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CLOUD TECHNOLOGIES IN EDUCATIONAL RESEARCH

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Abstract

The purpose of this article is to discuss the prospects of cloud technologies in educational research. With the advent of cloud technologies, educational research has changed forever. It offers new possibilities and transforms traditional research methods. The cloud also offers researchers flexibility and scalability, allowing them to expand their computing and storage resources as their research demands grow. By utilizing the cloud, researchers can adapt their resources to their evolving research needs without having to invest heavily in local infrastructure. Researchers can gain valuable insights from their data by analyzing large amounts of data, running complex simulations, and applying machine learning algorithms to cloud computing. Cloud technologies in educational research are discussed in this paper in terms of their advancements, implications, and opportunities, as well as their benefits to researchers and the field in general. An analysis of cloud-based tools and infrastructure in educational research is presented in this paper, which examines how they have improved accessibility, collaboration, scalability, data analysis, and data management. Researchers have improved access to research resources and findings as a result of cloud technologies. Several additional implications arise from the use of cloud technologies for the management of data and the collaboration of teams. Cloud storage allows researchers to share research data, articles, and findings with colleagues, students, and the wider academic community, regardless of location or affiliation. To conduct effective research that has a lasting impact on the area of education and its stakeholders, researchers can make use of cloud-based tools and infrastructure.

Keywords: Cloud computing, Cloud technologies, Educational Research, Cloud-based tools.

Introduction

The term "cloud computing" describes the accessibility of computing resources on demand via the internet, including storage spaces, databases, servers, software, and applications. The National Institute of Standards and Technology (NIST) in 2011, defines Cloud computing as "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Ho et al., 2017; Bello *et al.*, 2021). The way that organizations and people access and manage computing resources has been completely transformed by cloud technologies. Today's most common

definition of the term "cloud technologies" is the usage of a program or collection of programs on a service provider device over the Internet rather than on a consumer device (Khodjayeva & Sodikov, 2023). Studies have shown that using cloud technology in education can give students access to a larger variety of learning opportunities. Utilizing cloud technology in an educational organization has several benefits and opens up new possibilities for involvement in the educational process as well as for developing a management structure for the educational organization following new possibilities (Zaslavskaya et al., 2018). By blending IT resources in the cloud, educational institutions may outsource non-essential duties and focus more on providing students, instructors, faculty, and staff with the tools they need to succeed (Nodira et al., 2023). Research collaborations become seamless, geographical barriers are broken down, and interdisciplinary work is fostered by using the cloud. Research data and documents can be securely stored, managed, and shared through cloud-based tools such as Google Drive, Dropbox, and Microsoft OneDrive. The real-time collaboration functionality improves research efficiency and quality by enabling researchers to work on documents simultaneously, exchange feedback, and track changes throughout the research process. Researchers can also analyze and process data using cloud-based services like Amazon Web Services (AWS) and Microsoft Azure. Research can perform complex statistical analyses, run machine learning algorithms, and conduct simulations using these platforms because they are scalable, enabling researchers to use them without having to invest in extensive local infrastructure. Through platforms like Google Forms, cloud technologies also facilitate remote data collection, allowing a greater variety of participants to participate in research. Research findings can be shared more widely due to the accessibility and inclusivity of the cloud. Researchers can upload and share their research data with cloud-based repositories such as Zenodo and Figshare.

Cloud Tools for Educational Research

Data analysis, collaboration, and project management are all supported by cloud-based tools for educational research. Cloud-based platforms can be used by researchers to store and manage research data securely. These platforms offer functions like automatic backups, access controls, and version control to guarantee the availability and integrity of research data. This encourages effective teamwork, expedites the research process, and raises the standard of research products. The selection of tools is based on the needs and interests of the researcher. Researchers can improve information, speed up research procedures, and assist in developing educational practices by utilizing cloud-based tools and platforms. Several popular cloud-based resources for educational research are listed below:

Google Drive: Research documents, datasets, and multimedia files can all be stored, managed, and shared by researchers using Google Drive, a platform for cloud storage and file sharing. It also offers teamwork capabilities like real-time editing and commenting, which makes it a useful tool for collaboration.

Google Forms: A insightful and widely utilized cloud-based tool called Google Forms can be used for data collection, surveys, and feedback gathering in research projects. It offers a simple user interface that enables researchers to easily design forms with several question formats, such as multiple-choice, open-ended, Likert scales, and more. The responses are automatically gathered and arranged in a Google Sheets spreadsheet, making it simple to manage and evaluate the data. Researchers can access the data, which is safely kept in the cloud, and export it in other forms for additional study.

Microsoft Office 365: Cloud-based tools versions of well-known productivity applications like Word, Excel, and PowerPoint are available through Microsoft Office 365. Researchers can use tools like repository management and co-authoring, work simultaneously on documents, access files from any location, and more. Microsoft OneDrive further offers online storage for research data.

Dropbox: Dropbox is a platform for file synchronization and cloud storage that enables researchers to safely store and share materials. It is helpful for research teams working on collaborative projects since it includes features like file versioning, access controls, and collaboration tools.

Adobe Creative Cloud: Photoshop, Illustrator, and InDesign are just a few of the cloudbased creative tools that are part of Adobe Creative Cloud. These tools allow researchers to improve their study presentations and publications by adding pictures, infographics, and data visualizations.

A*mazon Web Services (AWS):* Data storage, data analysis, and computing resources are just a few of the capabilities provided by Amazon Web Capabilities, a comprehensive cloud computing platform. Large-scale data processing, intricate simulations, and the use of machine learning methods can all be done by researchers using AWS.

GitHub: GitHub is a cloud-based platform that is mostly used in software development for version control and collaboration, but it is also used in academic research. Researchers can interact with team members, save and manage code, and keep track of changes to code repositories using GitHub.

Overleaf: A cloud-based platform for collaborative writing and publishing, called Overleaf, was created especially for academic and scientific researchers. For authoring and preparing scientific articles, it offers a LaTeX-based environment that enables researchers to work together on manuscripts, track changes, and assemble documents in real-time.

Mendeley: Mendeley is a cloud-based referencing management program that facilitates citation creation and organization for researchers. It is a useful tool for doing literature

reviews and creating research papers because it has capabilities including document storage, PDF annotation, collaboration, and interaction with word processing applications. **Implications of Cloud Technologies in Educational Research**

Cloud technologies have had some significant implications on educational research, providing numerous benefits and opportunities for collaboration, data storage, analysis, and accessibility. Here are some ways cloud technologies are being utilized in educational research:

Data Storage and Management: Cloud storage platforms like Google Drive, Dropbox, and Microsoft OneDrive offer researchers a secure and scalable solution for storing and managing research data. Cloud storage allows for easy access and sharing of large datasets among research teams, regardless of their physical location.

Collaboration and Communication: Cloud-based collaboration tools such as Google Docs, Microsoft Office 365, and cloud-based project management platforms enable researchers to work together in real-time, editing documents simultaneously, leaving comments, and tracking changes. These tools facilitate seamless communication and foster collaboration among researchers, irrespective of their geographical locations.

Data Analysis and Processing: Cloud-based data analysis platforms, such as Amazon Web Services (AWS) and Microsoft Azure, provide powerful computing resources for researchers to analyze large datasets. These platforms offer scalable processing capabilities, allowing researchers to perform complex statistical analyses, machine learning algorithms, and simulations without the need for extensive local computing infrastructure.

Virtual Research Environments: Cloud-based virtual research environments (VREs) provide researchers with a web-based interface to access and utilize a wide range of tools and resources. VREs enable researchers to conduct experiments, run simulations, access specialized software, and analyze data within a controlled and collaborative environment, regardless of their physical location.

Data Sharing and Open Science: Cloud technologies promote open science and data sharing by providing platforms for researchers to publish and share their findings. Cloud-based repositories, such as Zenodo and Figshare, allow researchers to upload and share research data, making it accessible to the wider scientific community and promoting reproducibility.

Scalability and Cost Efficiency: Cloud technologies offer scalability, allowing researchers to scale their computing and storage resources as needed. This flexibility eliminates the need for maintaining and upgrading local infrastructure, reducing costs associated with hardware and maintenance.

Remote Access and Mobile Learning: Cloud-based educational platforms and Learning Management Systems (LMS) enable researchers to conduct studies remotely and offer online courses. Students and researchers can access course materials, participate in virtual
classrooms, and engage in collaborative activities from anywhere with an internet connection, promoting accessibility and inclusivity.

Enhanced Research Dissemination: Cloud technologies offer innovative ways to disseminate research findings. Researchers can utilize cloud-based platforms to create interactive data visualizations, publish research papers and reports, and share multimedia content such as videos and presentations. These platforms enhance the accessibility and visibility of research outputs, reaching a wider audience and potentially impacting educational practices and policies.

Integration with Analytical Tools: Cloud technologies integrate seamlessly with various analytical tools, such as statistical software, data visualization tools, and machine learning frameworks. Researchers can leverage cloud-based computing resources to run computationally intensive analyses, visualize data, and apply advanced analytical techniques to their research data.

Long-term Data Preservation: Cloud technologies provide long-term data preservation solutions for educational research. Researchers can store research data in the cloud, ensuring its preservation and availability for future reference and potential reuse. Cloud storage platforms typically offer robust data backup and disaster recovery mechanisms, reducing the risk of data loss over time.

Integration and Future Directions

Integrating cloud technologies in educational research involves a systematic approach that starts with assessing research needs and identifying specific areas where cloud technologies can be beneficial. This assessment should consider various aspects such as data collection, collaboration, data analysis, storage, and accessibility. Once the research needs have been identified, the next step is to choose the appropriate cloud-based tools and services. This selection should be based on factors such as the features and functionalities offered by the tools, compatibility with existing research workflows, security and privacy considerations, and scalability options. It is important to carefully evaluate and select the tools that best align with the research objectives and requirements. After selecting the cloud tools, the next step is to integrate them into the research workflow. This may involve setting up user accounts, configuring permissions and access controls, and migrating existing data and documents to the cloud. Researchers should also familiarize themselves with the features and functionalities of the chosen tools to maximize their effectiveness. Training and support may be necessary to ensure that all team members are comfortable using the cloud technologies. Collaboration is a crucial aspect of educational research, and cloud technologies offer excellent opportunities for seamless collaboration. Lastly, it is important to ensure security and privacy when integrating cloud

technologies into educational research. Researchers should carefully review the security measures and privacy policies of the chosen cloud tools and services.

By widely and effectively implementing cutting-edge educational technologies and pedagogic models built on information and communication technologies, the educational system must be changed to accommodate the digital generation (Gayratovich, 2022). The future of cloud technologies in educational research holds great promise, with several exciting directions for development. One area of focus is advanced data analytics. As cloud technologies continue to evolve, researchers can explore the potential of leveraging advanced analytics techniques such as machine learning, natural language processing, and predictive analytics. By harnessing the vast computing power and storage capabilities of the cloud, researchers can gain deeper insights from large-scale educational datasets, leading to more accurate predictions, personalized learning recommendations, and evidence-based decision-making in education. IoT devices can collect vast amounts of data in educational settings, ranging from student performance data to environmental factors. By connecting these devices to the cloud, researchers can analyze and interpret real-time data to understand student behaviours, learning patterns, and environmental influences on education. This integration can enable adaptive and context-aware learning environments, supporting personalized and immersive educational experiences.

Conclusion

Researchers from all disciplines have long been intrigued by cloud services (Popel & Shyshkina, 2018). As demand surges, researchers can also automatically increase their technical capabilities by using the cloud. Complex scientific workloads can be processed by cloud providers using high-performance computers. To further explore the potential of cloud technologies in educational research, several research recommendations can be considered. There is a need for empirical studies that investigate the effectiveness of cloudbased tools and platforms in enhancing learning outcomes. Researchers can conduct controlled experiments or comparative studies to examine the impact of cloud technologies on student engagement, collaboration, and knowledge acquisition. Such studies can provide valuable insights into the pedagogical benefits and best practices of incorporating cloud technologies in educational settings. Also, researchers can delve into the ethical and privacy considerations associated with cloud technologies in educational research. This includes exploring issues related to data ownership, privacy protection, and data governance. Examining the perceptions, attitudes, and concerns of stakeholders such as learners, educators, administrators and career aspirants towards the use of cloud technologies can provide valuable insights for developing policies and guidelines that ensure ethical and responsible use of cloud-based tools and services. Additionally, researchers can explore the potential of cloud technologies in supporting lifelong and

informal learning. Investigating how cloud-based platforms can facilitate personalized and self-directed learning experiences beyond the traditional classroom setting can open up new avenues for research. Understanding how cloud technologies can enable access to educational resources, foster collaboration among learners, and support lifelong learning journeys can contribute to the design and development of innovative learning environments. As cloud technologies continue to evolve rapidly, researchers can explore emerging trends such as edge computing, serverless architectures, and augmented reality/virtual reality (AR/VR) integration with cloud platforms.

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INTEGRATION OF SOCIAL MEDIA IN EDUCATION-AN OVERVIEW

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Abstract

A human being is a social being. Socialism is considered one of the most significant components in the life of humans. Information and communication technology has a great role in developing interpersonal relationships. Now -a- days most people in the world are using technology for communicating with others, such as friends, family, online, relatives, officials etc. and can maintain a fruitful relationship with others. It is because of the emergence of social networking sites and the expansion of internet facilities. It was not getting for previous generations. The main aim of the study is to evaluate the significance of social media in the dayto-day life of human beings, to analyze the role of social media in education, to study the need for innovative teaching methods and tools in the teaching-learning process and to study about the advantages and disadvantages of using social media in educational processes. Here is an attempt to make a conceptual analysis on the topic 'Integration of Social Media in Education'. **Keywords:** Integration, Social-media, Education.

Introduction

Human beings are part of society. They are social beings and they establish social relationships with each other. For establishing a fruitful relationship, communication is a prominent tool, with which every relationship becomes fruitful. So social media is a channel through which one can communicate ideas or anything from one area of the world to another area of the world very soon. With the advent of the latest technology, offline communication is replaced by online communication. For establishing online communication, for which the medium used is social media. Social media provides different forms of services such as blogs, social networking sites, wikis, virtual world content (online gaming sites), social book marketing and media sharing sites i.e., Instagram, YouTube etc. Merriam- Webster dictionary defines social media as "forms of electronic communication (As websites for social networking and blogging) through which users create online communities to share information, ideas, personal messages, and other content (as videos)".

Objectives

- 1. To evaluate the significance of social media in the day-to-day life of human beings.
- 2. To analyze the role of integration of social media in education
- 3. To study the need for innovative teaching methods and tools in the teachinglearning process.

Significance of Social Media in Daily Life

The developments in the field of communication have changed every sphere of life. It brought about precious developments in every area of human life. But the continuous usage of the internet and communication technology leads to addiction to social media by people. Social media is one of the fastest communication channels or media used by men for transferring information from one area to another area of the world very soon. Social media helps to transmit information in the form of words, pictures, videos, audio etc. Social networking sites play a prominent role in social media such as Flickr, Facebook, WhatsApp, Instagram, Twitter etc. These have become a major part of the daily life of human beings. With the increased use of social media among learners, faculties and researchers, most of them have a greater interest in using social media for teaching, and learning processes.

Relationship Between Social Media and Education

Social media has a great role in all spheres of human life such as economic, social, educational and political. Now social media increases the learning environment for pupils. It also develops teacher-pupil interaction for twenty-four hours daily. Social media has played a wide role in developing learning facilities and this self-learning focused on the following points.

1. Fast curriculum delivery system

When integrating social media with the education system, helps to fast delivery of curriculum and establish a fruitful learning environment in the world of reality filled up with pupils' learning experiences with the experiences of real life.

2. Flexibility in Learning

While using social media networks for learning, there will be the possibility of flexibility in learning. Flexibility is an element of learning through social media. The students could be able to select the learning material from the educational site according to their interests and knowledge.

3. Self-paced Learning

Educational sites are designed to develop learning opportunities for children. These sites allow self-paced learning because the content can be read by the student at his or her convenience, from any place and at any time.

4. Rapid spread of information and a higher level of engagement

The social networks will be accessible to all parts of the world. So, any information from educational sites will get to any person at any time. So social media is a greater tool for spreading information regarding any particular topic for preparing for exams, paper presentations in seminars, conferences etc.

5. Self-knowledge

The educational sites make the students engaged in various discussions through social media, through discussion forums on different topics. This allows the learners to interact with each other and gain knowledge without any disturbance of place and increases their self-knowledge.

6. Enhancement in student interaction

The interaction of technology in social media increases the learner's participation and interaction with others and develops their writing skill and literacy. "This media can enhance teacher-student interaction and serve as a 'communication' forum in educational settings". (Williams, 2012).

7. Getting educational experience without any geographical constrain

Social media allows people to participate in seminars and conferences in any part of the world.

8. Skill development

With the increased use of social media students can develop communication and computing skills. Practical work like blogging can increase the individual's communication skills.

9. Collaborative Learning

"Social media provides support for collaborative learning" (Lockyer & Patterson,2008). Collaborative learning helps the students in critiquing each other's work and creating worthwhile content can accept the questions from others and the teacher and to engage in the discussion.

10. 24x7 scope for teacher-student interaction

"Social media provides a platform for 24x7 teacher-student interaction, 62% of the students believe that social media is an extended opportunity to communicate between students and teachers".

11. Inclusive learning

Social media with its easy access and use can establish an inclusive learning environment. Disabled students can experience the same learning through social media with their non-disabled peers.

The selection of the right social media is a significant factor in integrating social media with education. Today most of the young generation use online communication channels for formal education for attaining the attention of students. Because the most innovative learning methods and tools are available in the classroom by using technology. This provides the best creative and winning experiences to the learners.

Use of Social Media in Education

Before introducing technology in our classroom, students and teacher should be aware of the proper usage of social media, and it will make learning better and make them interested in integrating social media with education.

1. Use of Social Media to Get Student Feedback

For educational purposes, there are several social media applications are used. For getting immediate feedback from a large number of students at a time, social media can do it very quickly.

2. Share Classroom Updates

Facebook, Twitter, Google Docs, Internal collaboration tools etc. are great ways for getting the latest updates in the classroom or any other.

3. Non-Classroom Teaching through Social Media

Today we can see that teachers have great pressure to complete the syllabus and couldn't provide a creative learning environment in the classroom because of limited working hours. So social media helps give instructions regarding creative activities and can do the activities by using additional hours.

4. Add value to education by using social media and apps

There are several social media applications available for educational purposes. Teachers suggest the students use the original apps that add value to education. There are a lot of paid apps available there, students can use these applications for developing their content related to the subject and also helps them to make the original wiki and blogs etc. This adds value to education.

5. Social media for internships and exchange programs

Different types of foreign exchange program selection are conducted by many of the schools in social communities. Students have to discuss the syllabus, further study opportunities and other spheres of life with the foreign country that the school has connected with. Social media is a platform for such discussions.

There is a wide variety of tools used by social media that create content by using technology and it proceeds social interaction. These tools contain blogs, media sharing, social networks, bookmarking, RSS, microblogs and wikis etc. Studies in Western countries proved that the use of online social media for collaborative learning has a great result on learners' curriculum performance and satisfaction (zhu,2012).

Today educational institutions adapt the technological developments in the area of education and establish group discussions and creative activities to enrich student's life. In education, the use of social media guides the learners, faculties and parents for availing more useful information and to establish a relationship with learning groups and other educational institutions that make learning convenient. Social network tools provide several opportunities for students and teachers to improve learning methods. Through social networks, we can integrate social media that helps with sharing and interaction. Students are used to online tutorials through YouTube, different online courses delivered by universities abroad through Skype and wide resources delivered through social networks. When we are using social media, we can identify the persons who are experts in various fields. Then we can follow the experts and get high results.

Social media widens our views and get instant and latest content very soon. The learning colleges develop a connection with learners through social media networks such as YouTube, Face book and Google Plus groups. The Campus news, announcements and useful information are provided to students through these channels. Social media is an effective channel for sharing informative and useful videos with students and that will inspire the students in their learning process. Social media such as YouTube, Facebook, Instagram etc. helps to share live videos on the different engagement of experts, projects, seminar presentations etc. The schools can hold a meeting with parents through social media for sharing the school news and can take any significant decisions relating to the academic and administrative sections of the school. Faculties also use social media to get new updates, and new resources, find out activities that support their teaching process, get information on new applications, ideas about bulletin boards etc.

For research scholars too, social media is very beneficial for preparing assignments, and projects, developing the content, searching the topics etc. Social media will give more information and more insight into the content and extracts better results for them.

Conclusion

In our ongoing life, we cannot think of a day without social media. Most of the time in our lives, we use this for announcing or communicating something. For getting better resources for learning, a large number of schools use social media, and technology paves the way to enhance the effective learning process. Social media doesn't break the relationship with students. It is a motivating tool to get new updates, new resources, awareness about new technology, awareness of new apps, and activities that support teaching and learning. Considering all these benefits, social media provides an additional benefit in that it boosts up collaborative learning that gives a single platform for teachers and students where their discussions are carried on, each one comes up with their ideas, check them with others and finally published them by doing necessary corrections. Finally, we can say that social media is the inevitable channel in the new teaching-learning environment for getting the latest updates with the latest technology.

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RELATIONSHIP BETWEEN RESILIENCE AND EMOTIONAL INTELLIGENCE

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Abstract

This paper explores the interplay between resilience and emotional intelligence, highlighting their mutual influence. Resilience refers to the ability to thrive in the face of adversity, while emotional intelligence involves effectively understanding and managing emotions. Both constructs contribute to well-being and success across various domains. The paper discusses the components of resilience and emotional intelligence, emphasizing their association. Research suggests that higher emotional intelligence enhances resilience by fostering adaptive coping strategies, problem-solving abilities, and positive relationships. Similarly, resilience promotes the development of emotional intelligence by equipping individuals with the capacity to navigate challenges and maintain a positive outlook. Understanding this relationship informs interventions to foster resilience and enhance emotional intelligence, benefiting personal growth, well-being, and success. **Keywords:** resilience, emotional intelligence, adaptation, coping, well-being.

Introduction

Stress is commonly faced by individuals everywhere and at every time. There are so many sources of stress: caring for children, disabled persons and elderly parents, holding down a job, and making time for social life are all everyday sources of stress. Stress can overwhelm your defences despite the best efforts at coping. In the short term, you may lose your temper, your blood pressure may soar, and you may even feel sick to your stomach. Over the longer term, the cumulative nature of stress can keep you on edge long after individual stressful events have passed, and can even contribute to medical problems. There is no escaping stress, but there are ways you can learn to handle stress better when it is present and to 'bounce back' faster from its impact. The collection of skills, characteristics, habits and outlooks that make it possible to remain maximally flexible and fresh in the face of stress is often referred to as "**emotional resilience**", which is the topic of this document. Learning to become more emotionally resilient can dramatically improve your attitude and your health in the face of inevitable stress.

Resilience

Resilient students are highly optimistic, they can anticipate problems, solve problems logically, and have the ability to foster creative solutions to problems. These students are high on self-esteem, and such students are eager to learn from their experiences. They are highly durable, flexible and independent (Bernard, 1993). Academic resilience is a dynamic developmental process that involves the student's internal and external protective factors that contribute to effective adjustment, academic competence and academic success (Luthar, Cicchetti, & Becker, 2000). Internal protective factors focus on individual characteristics such as skills, attitudes, beliefs and values. Some of the internal protective factors are cooperation and communication, empathy, strong problem-solving skills, aspirations and self-efficacy (Constantine, Bernard, Diaz, 1999; Wested, 2003). These protective factors are related to positive developmental outcomes and psychological well-being whereas external protective factors include the environmental support and opportunities available at home, school, community and from peer groups in the form of care, and encouragement for participation in school activities (Wested, 2000).

Components of Resilience

- 1. Self-Awareness is having a clear perception of who you are.
- 2. Mindfulness is a state of active, open attention to the present.
- 3. Self-care is our ability to function effectively in the world while meeting the multiple challenges of daily life with a sense of energy, vitality, and confidence.
- 4. Positive Relationships are the bonds we have with others, creating a happier and more fulfilled, supported, supportive, and connected life.
- 5. Purpose is a recognition that we belong to and serve something bigger than ourselves. Our purpose helps to shape the mindset and attitude we have toward others and the events we experience.

Emotional Intelligence

Emotional intelligence is a kind of social insight that includes the capacity to screen one's own and others' feelings, to segregate among them, and to utilize the data to manage one's reasoning and activities (Salovey and Mayer, 1990). The extent of emotional intelligence incorporates the verbal and nonverbal examination and articulation of feeling, the guideline of feeling in oneself as well as other people, and the usage of enthusiastic substance in critical thinking. Daniel Goleman also provides a perspective on how emotional intelligence can be a critical factor affecting a person's resilience during crises.

Components of Emotional Intelligence

Important components of emotional intelligence include:

- an understanding of self,
- a desire to know and understand others,
- the ability to empathize,
- the motivation to persist and overcome challenges, and
- the ability to regulate and manage one's emotions.

Association Between Resilience and Emotional Intelligence

A person who is self-aware, socially adaptable, and empathetic will be able to survive and thrive on the other side of a life crisis because they have the social and relational skills to be able to handle unexpected and unfortunate circumstances. They know how to advocate for themselves, problem-solve, and seek support when they need it the most.

In addition, emotionally intelligent individuals know how to provide empathy to those around them who may also be affected by a crisis or dire situation. Being supportive and compassionate to others can have a positive impact on our emotional adjustment when we feel needed and believe that we can help others, we also become stronger and more resilient.

Conclusion

The relationship between resilience and emotional intelligence is significant and intertwined. Both constructs play a crucial role in promoting individuals' ability to cope with stress, adapt to challenges, and thrive in various aspects of life. Resilience, with its components of self-awareness, mindfulness, self-care, positive relationships, and purpose, provides a foundation for individuals to bounce back from adversity and maintain well-being. Emotional intelligence, encompassing self-understanding, empathy, motivation, and emotion regulation, enhance individuals' capacity to navigate and manage their emotions effectively.

The interplay between resilience and emotional intelligence is dynamic and reciprocal. Emotional intelligence skills contribute to the development of resilience by enabling individuals to engage in adaptive coping strategies, problem-solving, and maintaining positive relationships. Conversely, resilience fosters the growth and application of emotional intelligence by providing individuals with the ability to navigate and learn from challenging experiences. Understanding the relationship between resilience and emotional intelligence has practical implications for personal development, education, workplace environments, and mental health interventions. By recognizing and cultivating these constructs, individuals can enhance their capacity to handle stress, build positive relationships, and promote their overall well-being. Moving forward, further research and practical applications are needed to explore effective strategies for developing resilience and emotional intelligence in individuals of all ages and backgrounds. By integrating these constructs into educational and intervention programs, we can empower individuals to thrive in the face of adversity and lead fulfilling and successful lives. Ultimately, the relationship between resilience and emotional intelligence underscores the importance of emotional well-being and adaptive skills in navigating life's challenges. By embracing and fostering these qualities, individuals can open doors to personal growth, resilience, and success.

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BUILDING A CONNECTED FUTURE: SOLVING THE DIGITAL DIVIDE TO ENHANCE LIBRARY RESOURCES ACCESS

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Abstract

This paper highlights the importance of building a connected future by addressing the digital divide and enhancing access to library resources. The digital divide refers to the unequal access to technology and digital resources among individuals and communities, leading to disparities in information access, education, employment, civic participation, and healthcare. This divide exacerbates existing societal inequalities and hinders individuals' ability to fully participate in the digital age. To bridge the digital divide and enhance access to library resources, several strategies and solutions are proposed. These include infrastructure development, digital literacy programs, providing accessible hardware and devices, implementing digital inclusion policies, fostering partnerships and collaborations, and focusing on diverse digital content and resource development. These initiatives aim to ensure equitable access to information and empower individuals with the necessary skills to navigate the digital landscape.

However, implementing these strategies may face certain barriers and challenges, including financial constraints, technological accessibility, digital literacy gaps, equity and inclusion considerations, and navigating policy and regulatory frameworks. Overcoming these challenges requires innovative approaches, collaboration among stakeholders, and strategic resource allocation.

Keywords: Digital divide, Library Resources, Digital gap, Content analysis.

Introduction

Libraries are an integral part of the community which means that their impact can be felt well beyond their four walls. Libraries can ensure access to information, resources and education for every individual. The pandemic such as COVID-19 has reminded their critical function in providing essential information resources and educational materials beyond their physical footprints. Many libraries strived to mitigate the effects of the digital divide that the user community experienced during the pandemic. Digital divide' is the term used to describe inequalities in access to, and use of, digital technologies and content. The term digital divide has traditionally been defined as "the gap between those with Internet access and those without." Such access is influenced by whether or not an individual possesses the needed technology to get online, the ability to access an Internet connection itself or a combination of both. Within these dynamics, the role of libraries has shifted beyond the value of the print materials in their stacks to creating onramps into the digital world and supporting citizens who are stepping into it.

Review of Literature

Sipre and Malik (2017) highlighted the physical access to technology, skills and resources which could be used to solve the digital divide at the public level as well as in libraries. The paper also discusses some initiatives taken by the government, private sectors and also through libraries to mitigate the digital divide. Some barriers to the Digital divide are discussed such as Low Literacy Rates, Education System and languages. Many libraries have developed digital and institutional repositories to make the literature free and accessible to users apart from providing Internet terminals in their libraries.

Soni (2017) discussed the negative impact of the digital divide on the education system and library and information centres. And also discussed what action had been taken by the Indian government to bridge the gap. The author opines that libraries and Information centres have a special role in providing information, to reduce the digital gap between those who have the facilities to access digital technologies and those who have not.

Vijayalaxmi and Thirumagal (2018) carried out a study to find out the reasons for the digital divide among students. Students of Arts and Science Colleges of Madurai and Tirunelveli District are the target population of the study. Findings reveal that imparting information literacy skills among college students along with their regular study is very much important for building lifelong learning skills and Libraries can connect the digital divide by facilitating information communication technology and imparting information literacy skills.

An attempt has been made to review the following research articles:

Impact of Digital Divide and Public Libraries (Gautham, 2014).

Digital Divide Factors in Indian Management Libraries (Singh, 2012).

Digital Divide: Bridging the Gap through ICT in Nigerian Libraries (Nkanu & Okon, 2010).

Objectives of the Study

This study focused on the following objectives:

- To explore and understand the concept of the digital divide and its impact on accessing library resources;
- To analyze the consequences of the digital divide on information equity and the exacerbation of existing societal inequalities;

- To propose practical strategies and solutions for bridging the digital divide and enhancing access to library resources;
- To examine potential barriers and challenges in implementing these strategies and provide recommendations to overcome them; and
- To emphasize the role of libraries as crucial community institutions and advocate for sustained efforts in building a connected future for all individuals and communities.

Methodology

This study aims to investigate the impact of the digital divide on access to library resources and propose strategies for bridging this divide. The research methodology involves a comprehensive literature review to gather relevant information and insights from existing studies. Data is collected from the selected research articles, conference papers, and handbooks identified during the literature review. Key findings, recommendations, and insights related to the impact of the digital divide on accessing library resources are extracted from these sources. The collected data serves as the foundation for analyzing the research objectives and addressing the study's research questions. The collected data is analyzed using qualitative research methods. The thematic analysis method is employed to identify common themes, patterns, and trends in the literature related to the impact of the digital divide on accessing library resources. The analysis helps in understanding the barriers, challenges, and potential solutions for bridging the digital divide. It also contributes to identifying the consequences of the digital divide on information equity and societal inequalities.

Unravelling the Digital Divide by Investigating its Impact on Access to Library Resources

The digital divide refers to the unequal distribution of access to digital technologies and the Internet based on various socio-economic, geographical, and demographic factors (Norris, 2001). It encompasses disparities in individuals' ability to acquire, utilize, and benefit from digital resources and services. In the context of library resources, the digital divide presents a significant barrier for individuals in accessing and utilizing the wealth of information and educational materials available online (Ngwenyama & Lee, 2019). Understanding the impact of the digital divide on accessing library resources is crucial in recognizing the inequalities and challenges faced by marginalized communities (Katz & Aspden, 2019). Limited access to technology, lack of digital literacy skills, and inadequate infrastructure hinder individuals' ability to utilize library resources effectively (DiMaggio et al., 2004). This results in a disparity in information access, research opportunities, and educational advancement (Perrin & Duggan, 2015). By investigating the impact of the digital divide on accessing library resources, this study aims to shed light on the barriers individuals face and identify strategies to bridge the divide. Findings from this research will contribute to the development of effective interventions, policies, and initiatives to enhance equitable access to library resources, empowering individuals in their pursuit of knowledge and information (Lopez & Roberts, 2020).

Digital Divide's Impact on Information Equity, Exacerbating Societal Inequalities

Understanding the consequences of the digital divide on information equity and its role in exacerbating societal inequalities is crucial for developing effective policies and interventions. By bridging the digital divide, equitable access to information resources can be promoted, empowering individuals from all backgrounds and contributing to a more inclusive society.

Limited Access to Information

The digital divide has a significant impact on information equity, creating disparities in access to digital resources and information. Individuals who lack access to technology and the Internet face barriers to obtaining up-to-date information, educational materials, and research resources (DiMaggio et al., 2004). This inequality in access contributes to a knowledge gap and further exacerbates existing societal inequalities.

Educational Disadvantages

Marginalized communities are particularly affected by the digital divide, as it perpetuates educational disadvantages. Students without adequate access to digital tools and online resources encounter challenges in acquiring the necessary skills and knowledge for academic success (Warschauer, 2002). Consequently, the digital divide widens the educational achievement gap and limits opportunities for socioeconomically disadvantaged individuals.

Employment and Economic Inequality

The unequal access to digital technologies and information further deepens employment and economic inequalities. Limited digital literacy skills and a lack of access to online job opportunities hinder socioeconomically disadvantaged individuals from accessing high-skilled employment and participating in the digital economy (Katz & Aspden, 2019). Consequently, the digital divide contributes to the persistence of socioeconomic disparities.

Civic and Political Participation

The digital divide has implications for civic engagement and political participation, resulting in unequal representation and influence. Marginalized communities with limited access to online information and digital platforms face barriers to fully participating in democratic processes and expressing their concerns (Chadwick, 2006). As a result, power imbalances are reinforced, and underrepresented groups are further marginalized.

Health Disparities

The digital divide also impacts health information access and contributes to healthcare disparities. Limited access to digital health resources and telemedicine services hampers marginalized individuals' ability to obtain timely medical information and access healthcare services (Robinson, 2009). Consequently, health inequalities are exacerbated, and an individual's capacity to make informed health decisions is limited.

Bridging the Digital Divide and Practical Solutions for Enhanced Access to Library Resources

By implementing these practical solutions, policymakers, libraries, and organizations can work towards bridging the digital divide and enhancing access to library resources for all individuals, thereby fostering a more inclusive and equitable society.

Infrastructure Development

Investing in the development of robust digital infrastructure, including broadband connectivity, is crucial for bridging the digital divide (Van Dijk, 2006). Governments, policymakers, and organizations need to prioritize infrastructure development, especially in underserved areas, to ensure reliable and affordable Internet access for all individuals (Riggins & Dewan, 2005).

Digital Literacy Programs

Implementing comprehensive digital literacy programs is essential to empower individuals with the skills necessary to effectively navigate and utilize digital resources (Warschauer, 2010). These programs should focus on improving basic digital skills, information literacy, online safety, and critical thinking to bridge the gap in digital competencies (Hargittai & Hinnant, 2008).

Accessible Hardware and Devices

Providing access to affordable hardware and devices is vital for individuals with limited resources. Governments, libraries, and community organizations can establish programs to loan or provide subsidized devices, such as laptops or tablets, to individuals who cannot afford them (DiMaggio et al., 2004). Accessible hardware options, such as assistive technologies for individuals with disabilities, should also be considered (Warschauer, 2006).

Digital Inclusion Policies

Developing and implementing digital inclusion policies can help address the barriers faced by marginalized communities. These policies should focus on promoting equal access to digital technologies, reducing affordability barriers, and ensuring inclusion in digital initiatives and programs (Katz & Aspden, 2019). Collaboration among government agencies, libraries, educational institutions, and community organizations is essential for effective policy implementation (Taylor, 2017).

Partnerships and Collaboration

Building strong partnerships and collaborations among libraries, community organizations, and technology companies can leverage resources and expertise to bridge the digital divide. Collaborative initiatives can include joint programs, resource sharing, and knowledge exchange to enhance access to library resources and digital services (Lopez & Roberts, 2020).

Digital Content and Resource Development

Ensuring the availability of diverse and culturally relevant digital content is crucial for promoting equitable access to library resources. Efforts should be made to develop and curate digital resources that cater to the needs and interests of diverse communities, including multilingual resources and materials that reflect different cultural perspectives (Tang & Tseng, 2019).

Navigating Implementation Challenges and Overcoming Barriers to Bridging the **Digital Divide and Enhancing Access to Library Resources**

By addressing these implementation challenges and incorporating the following recommendations, stakeholders can enhance the effectiveness of strategies aimed at bridging the digital divide and ensuring access to library resources for all individuals.

Financial Constraints

One of the primary challenges in implementing strategies to bridge the digital divide is financial constraints. Funding limitations can hinder the development of digital infrastructure, provision of accessible hardware, and implementation of digital literacy programs (Van Dijk, 2006). To overcome this challenge, governments and organizations should explore partnerships with private entities, seek grant opportunities, and allocate resources strategically to prioritize digital inclusion initiatives (Hoffman & Novak, 2018).

Technological Accessibility

Ensuring technological accessibility for all individuals, including those with disabilities, is crucial for bridging the digital divide. Implementing accessible hardware and assistive technologies may pose technical challenges and require specialized expertise (Warschauer, 2006). Organizations should collaborate with accessibility experts, engage in user testing, and adopt universal design principles to create inclusive digital environments (World Wide Web Consortium, 2018).

Digital Literacy Gaps

Addressing digital literacy gaps is essential to enable individuals to fully utilize digital resources and services. However, designing and implementing effective digital literacy programs that cater to diverse populations can be challenging (Hargittai & Hinnant, 2008). To overcome this barrier, it is crucial to involve community members in program development, offer personalized learning opportunities, and provide ongoing support and mentorship (Warschauer, 2010).

Equity and Inclusion

Ensuring equity and inclusion in bridging the digital divide requires considering the specific needs and challenges of marginalized communities. It is essential to recognize and address systemic barriers, such as language barriers, cultural biases, and geographic disparities (Katz & Aspden, 2019). Collaborative partnerships with community organizations, cultural institutions, and grassroots initiatives can help tailor strategies to specific populations and ensure their active participation (Lopez & Roberts, 2020).

Policy and Regulatory Frameworks

Navigating complex policy and regulatory frameworks can pose challenges in implementing strategies to bridge the digital divide. Policies related to infrastructure development, digital literacy, privacy, and data protection need to be aligned to promote equitable access to library resources (Taylor, 2017). Stakeholders should engage in advocacy efforts, participate in policy discussions, and work towards policy reform to create an enabling environment for digital inclusion (Chadwick, 2006).

Empowering Communities through Libraries: Building a Connected for Future

By recognizing the crucial role of libraries as community institutions and advocating for sustained efforts in building a connected future, we can ensure that all individuals and communities have equal opportunities to access information, technology, and educational resources.

Libraries as Community Centres

Libraries play a vital role as community centres by providing inclusive spaces for individuals of all backgrounds to access information, engage in learning, and connect with others (Shuman, 2012). They serve as hubs for community activities, hosting events, workshops, and programs that foster social interaction and cultural enrichment (Small, 2010).

Promoting Digital Inclusion

Libraries actively promote digital inclusion by providing access to technology and digital resources for individuals who may not have such resources at home (Jaeger et al., 2012). They offer free Internet access, computer facilities, and digital literacy training programs to bridge the digital divide and empower individuals with the necessary skills to navigate the digital landscape (Bertot et al., 2012).

Equalizing Information Access

Libraries strive to equalize information access by offering a wide range of resources in various formats, including books, e-books, databases, and online journals (Levine-Clark,

2006). They ensure that individuals, regardless of their socioeconomic status or location, have access to valuable educational and research materials (Buckland, 1992).

Supporting Lifelong Learning

Libraries serve as lifelong learning centres, supporting individuals in their pursuit of knowledge and personal growth (Yoon, 2015). They offer educational resources, study spaces, and assistance from knowledgeable librarians who can guide users in their research and learning endeavours (Lipinski, 2015).

Advocating for Accessible Technology

Libraries advocate for accessible technology and digital resources to ensure that individuals with disabilities can fully participate in the digital world (McDermott et al., 2015). They collaborate with technology providers and organizations to promote inclusive design and support initiatives that make digital content accessible to all (Saxton & Dong, 2016).

Sustaining Community Engagement

Libraries actively engage with their communities, seeking feedback, and understanding the evolving needs of their users (Kranich, 2011). They establish partnerships with local organizations, schools, and businesses to develop programs and services that address community-specific challenges and foster social cohesion (Matarazzo, 2003).

Conclusion

To conclude, addressing the digital divide and enhancing access to library resources is essential for building a connected future. By implementing practical strategies, overcoming implementation challenges, and recognizing the role of libraries as community institutions, we can foster a more inclusive and equitable society. Sustained efforts in bridging the digital divide and ensuring access to library resources will empower individuals, enhance information equity, and promote lifelong learning for all.

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STEAM EDUCATION: AN OVERVIEW

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Abstract

The present education system has been conducting a few innovative courses and new teaching methods and techniques. The current scenario consists of the following major disciplines Science, Technology, Engineering, Arts and Mathematics. This education system is called STEAM education. STEAM education is mainly focused on various science fields as like as following disciplines as Technology, Engineering, Arts and Mathematics. The aim of this paper exists an overview of STEAM education, its components of STEAM education and the advantages of STEAM education. The paper revealed that technology is fully occupied in all fields of education and also the major five disciplines are a vital role in STEAM education. **Keywords:** STEM, STEAM education, overview

Introduction

Greater population density, global interconnection, technological advancement, and large-scale problems than at any other time in human history necessitate complex problems requiring complex solutions and sophisticated problem-solving techniques (Margaret E. Madden et al 2013). STEAM education has been around long enough to catch the attention of eminent educators worldwide. Although the acronym STEAM stands for Science, Technology, Engineering, Arts, and Mathematics, it is not necessary to be an expert in any of these fields. It enables instructors to implement project-based learning that incorporates all 5 disciplines and creates an engaging learning environment for students so they can apply what they learn to real-world situations. The learner may simultaneously activate both sides of their brain by combining STEAM.

A broad concept STEAM aims to integrate education in the fields of science, technology, engineering, the arts, and mathematics. It combines technological design methodologies typical of engineering and technology fields with the inquiry-based learning methodology used in mathematics and science and the divergent thinking style originating from the arts. With the help of STEAM practices, educators can move away from traditional lecture-based teaching methods and towards inquiry- and project-based approaches that also encourage other social skills, such as collaborative learning. Students are educated to be innovative, creative, critical-thinking, effective communicating,

collaborative, and, of course, new-knowledge-based citizens of the world of tomorrow. The integration of STEAM-related activities into formal education settings has gained popularity in recent years. Other courses, such as history, music, and geography, could profit from the STEAM approach in addition to science and the arts (Ivan Sanchez Milara et al 2020).

Meaning of Steam Education

STEAM Education is an approach to teaching and learning that combines science, technology, engineering, the arts and mathematics to guide student inquiry, discussion, and problem-solving skills. **Georgette Yakman** is the founding researcher of the STEAM educational framework. She developed the framework in 2006 and began implementation in 2007.

Stem to Steam

The STEAM framework for education spans multiple fields and is relatively new. To support an innovative educational theory, it has been changing. The foundation of STEAM is STEM education, which emerged from the urgent need to help more students succeed in comprehending the systems and relationships. The recent focus on this idea has led to the creation of a new educational branch called STEAM, which may be described in two ways:

The more conventional approach, which we like to refer to as STEM education, is comprised of the four distinct 'silo' areas of STEM (Science, Technology, Engineering, Mathematics), each of which has developed to formally incorporate components of the others within its standards and practices.

The idea of integrated STEM education is the more recent trend. It also covers instructional techniques where subjects are deliberately mixed, one field may be the primary base field during instruction, or all may be blended unilaterally (Lee et al 2012).

Understanding how the social, fine, manual, physical, and liberal arts fields spread outward to impact and be influenced by the study and practices of the S-T-E-M fields came from dissecting their many domains. The STEAM framework was created as a result of all of this research to assist educators in teaching subjects more naturally connected in the real world. The following picture was made from all of these relationships to develop a framework for structuring and analysing the interactive character of both the study and practice of the formal domains of science, technology, engineering, mathematics, and the arts.

A more engaging and deeply ingrained delivery of STEAM-style instruction is possible within the existing well-established context of education. According to Yakman (2008), STEAM is the ideology behind science, technology, engineering, and the arts as expressed through mathematical aspects. Each main division stresses the need for pupils to gain the necessary skill in the topic to enable them to continue adapting to and learning about the fundamental advancements that the field undergoes. We may cite a substantial amount of research on how to teach students scientific literacy, technical literacy, the design process, mathematical literacy, and linguistic literacy when examining the breadth of the categories (Driver et al., 1994). In addition to developing their literacy in a specific (silo) sector, students who participate in STEAM programmes develop into lifelong learners who are far better prepared to integrate into and advance the global community.

This helps individuals interact and collaborate while yet maintaining their own identities by helping them better comprehend people and things based on various disciplines, viewpoints, and cultures.

Focus on Steam

Education in STEAM fields (science, technology, engineering, art, and mathematics) is referred to as "education for increasing students' interest and understanding in scientific technology and for growing STEAM literacy based on scientific technology and the ability to solve problems in the real world."



Figure: Fields of Steam Education

Science: Scientists are skilled in speculating, conducting experiments, and analysing and evaluating their findings.

Technology: Pupils improve their lives with **technology**. One illustration of this is the simple fact that the epidemic has increased our reliance on technology.

Engineering: Engineers are problem solvers, who work on some of the world's largest issues,

Arts: Children who study the **arts** discipline, learn to concentrate, develop their motor skills, and become more creative since there is no right or wrong when it comes to art.

Maths: Pupils learn how to quantify facts and how physics governs our surroundings through **mathematics**.

Advantages of Steam Education

The value of STEAM education can be emphasized, particularly when it comes to preparing youngsters for problems in the real world. Students are better prepared to adapt to a variety of settings and obstacles because of STEAM education's integrated and comprehensive approach.

The following advantages of STEAM education are given below

Improves Critical Thinking

To complete STEAM projects, students must methodically approach challenges and use the engineering and technology knowledge they acquire along the route to choose the most effective solutions. By activating multiple regions of their brains, students who are working on cross-curricular projects can view the subject from many angles, focusing on the specifics while also learning to take a step back and see the wider picture.

Improves Problem-Solving Ability

Because they must employ a range of techniques to address issues that arise during these kinds of activities, STEAM projects provide students with the opportunities to problem-solve in novel ways. Students move away from the conventional method of using a known method or formula to answer a series of issues in a step-by-step manner by experiencing trial and error, learning how to take chances, and learning how to truly "think outside the box." When using STEAM, they must come up with more original, non-linear solutions.

Provides Practical Learning Opportunities

Students get the opportunity to participate in immersive, hands-on learning through STEAM projects. Students frequently use a variety of supplies and equipment to learn how things operate, how to construct things, and how to repair them. This equalizes the playing field so that all kids, regardless of gender, financial background, or race, gain these critical abilities.

Collaboration in Multidiscipline

Students in STEAM classes work closely together to learn new material through a variety of entry points. Working together on multidisciplinary group projects teaches them to compromise and share responsibilities.

The success of STEAM comes as no surprise to Creegan-Quinquis since "science, technology, engineering, mathematics, and the arts all have very similar intellectual ancestors: some of the same philosophical underpinnings, some of the same inquiry questions." There has always been a relationship between the arts and these other fields; the difference now is that there is more intentional than accidental cross-pollination, and a lot of it is aimed at making learning more approachable.

It emphasizes that one of the key advantages of STEAM is that it offers several entry points, offering students with various backgrounds and learning styles plenty of possibilities to study in the way that works best for them.

Applications in the Real World

In addition to theoretical and academic principles, students are taught how their knowledge and abilities may be used in the actual world. Students can be taught how to employ mathematical ideas in practical contexts, such as home budgeting, even when the ideas are abstract. Logical and computational abilities Students' computational and logical skills are improved when the arts are included in science-focused curricula. Along with technical aspects, other factors are taken into account. For instance, addressing the issue of climate change necessitates a multidisciplinary approach while also taking important socioeconomic and geopolitical factors into account. As a result, while addressing issues, "computation" must take into account additional nuances and indirect factors.

Conclusion

STEAM education is an integrated educational system in the field of education. It consists of the science, technology, engineering, arts and mathematics disciplines. This article is described the STEAM education' concept, its components and its advantages. This study will help to improve critical thinking skills and divergent thinking skills among students as like as it will assist to improve problem-solving ability and enhance practical skills. Further, it will help to understand the multidisciplinary approach in various fields of education and to apply the applications in all fields.

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DIGITAL TRANSFORMATION: A REVIEW OF OPPORTUNITIES FOR FUTURE RESEARCH

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Abstract

In the last years, scholarly attention was on a steady rise leading to a significant increase in the number of papers addressing different technological and organizational aspects of digital transformation. In this paper, we consolidate existing findings which mainly stem from the literature on information systems, map the territory by sharing important macro- and micro-level observations, and propose future research opportunities for this pervasive field. The paper systematically reviews 58 peer-reviewed studies published between 2001 and 2019, dealing with different aspects of digital transformation. Emerging from our review, we develop inductive thematic maps which identify technology and actor as the two aggregate dimensions of digital transformation. For each dimension, we derive further units of analysis (nine core themes in total) which help to disentangle the particularities of digital transformation processes and thereby emphasize the most influential and unique antecedents and consequences. In a second step, to assist in breaking down disciplinary silos and strengthen the management perspective, we supplement the resulting state-of-the-art of digital transformation by integrating cross-disciplinary contributions from reviewing 28 papers on technological disruption and 32 papers on corporate entrepreneurship. The review reveals that certain aspects, such as the pace of transformation, the culture and work environment, or the middle management perspective are significantly underdeveloped.

Keywords: Digital transformation \cdot Digital disruption \cdot Technological disruption, Corporate Entrepreneurship \cdot Literature review \cdot Research agenda.

Introduction

Digital transformation, defined as transformation 'concerned with the changes digital technologies can bring about in a company's business model, ... products or organizational structures' (Hess et al. 2016, p. 124), is perhaps the most pervasive managerial challenge for incumbent firms of the last and coming decades. However, digital possibilities need to come together with skilled employees and executives to reveal their transformative power. Thus, digital transformation needs both technology and people. In the last years, scholarly attention, particularly in the information systems (IS) literature, was on a steady rise leading to a significant increase in the number of papers addressing different technological and organizational aspects of digital transformation. In light of this development, we are convinced it is the right time to map the territory and reflect on the current state of knowledge. Therefore, in this paper, we aim at providing a descriptive, thematic analysis of the field by critically assessing where, how and by whom research on digital transformation is conducted. Based on this analysis, we identify future research opportunities. We approach this objective in two steps. First, we adopt an inductive approach and conduct a systematic literature review (following Tranfield et al. 2003;

Webster and Watson 2002) of 58 peer-reviewed papers dealing with digital transformation. By applying elements of grounded theory and content analysis (Corley and Gioia 2004; Gioia et al. 1994) we identify important core themes in the literature that are particularly pronounced and/or unique in transformations enabled by digital technologies. In a second step, to assist in breaking down disciplinary silos (Jones and Gatrell 2014) and avoiding the building of an ivory tower (Bartunek et al. 2006; Fuetsch and Suess-Reyes 2017), we supplement the pre-dominantly IS-based digital transformation literature with a broader management perspective. Accordingly, we integrate cross-disciplinary contributions from reviewing 28 papers on technological disruption and 32 papers on corporate entrepreneurship. We find these research fields particularly suitable for informing digital transformation research for two reasons. First, by reviewing the literature on technological disruption we hope to derive implications regarding technology adoption and integration. Burdened with the legacy of old technology, bureaucratic structures and core rigidities (Leonard-Barton 1992), incumbents may face major challenges in this respect during their digital transformation journey. Second, we expect corporate entrepreneurship to add a more holistic perspective on firm internal aspects during the process of transformation, such as management influence or the impact of knowledge and organizational learning. Our findings and related contributions are threefold: First, based on a systematic and structured analysis we develop digital transformation maps which inductively categorize and describe the existing body of research. These thematic maps identify technology and actor as the two aggregate dimensions of digital transformation. Within these dimensions, we reveal nine core themes which help to disentangle the particularities of digital transformation processes and thereby emphasize the most influential and unique antecedents and consequences of this specific type of transformation. Thus, it becomes possible to identify the predominant contextual factors for which research would create the strongest leverage for a better understanding of the challenges inherent in digital transformation. Second, we contribute to the advancement of this field by elaborating opportunities for future research on digital transformation which integrate the three perspectives mentioned above. In particular, informed by corporate entrepreneurship, we find that the important middle management perspective on digital transformation has thus far been largely neglected by researchers. Also, emerging from our review we call for more studies on the various options for integrating digital transformation within organizational architectures and existing processes. Third, in reviewing the adjacent literature on technological disruption and corporate entrepreneurship, we strengthen the valuable management perspective within the primarily IS-based discussion on digital transformation. This way we avoid the reinvention of the wheel while at the same time enabling the identification of cross-disciplinary research opportunities. We hope to

stimulate discussion between these different but strongly related disciplines and enable mutual learning and a fruitful exchange of ideas.

Research Methodology

A systematic review is a type of literature review that applies an explicit algorithm and a multi-stage review strategy to collect and critically appraise a body of research studies (Mulrow 1994; Pittaway et al. 2004; Crossan and Apaydin 2010). This transparent and reproducible process is ideally suited for analyzing and structuring the vast and heterogeneous literature on digital transformation. In conducting our review, we followed the guidelines of Tranfield et al. (2003) and the recommendations of Denver and Neely (2004, p. 133)1 as well as Fisch and Block (2018) in order to ensure a high-quality review. The nature of our review is both scoping and descriptive (Rowe 2014; Paré et al. 2015) as we aim to provide an initial indication of the potential size and nature of the available literature as well as to summarize and map existing findings from digital transformation research. By developing opportunities for future research, our review further contributes to the advancement of this field and stimulates the theory development. For data collection, we exclusively limit our focus to peer-reviewed academic journals as recommended by McWilliams et al. (2005). Thus, we opted to exclude work in progress, conference papers, dissertations, or books. First, based on discussion among the authors and the reading of a few highly-cited papers, we designed our search criteria using combinations of keywords containing 'digital* AND transform*', 'digital* AND disrupt*', 'digitalization', and 'digitization'. Then, we manually searched each issue of each volume of the leading journals in the management2 and IS fielding (AIS Basket of eight).3 In addition, we run our search query against five different electronic databases: Business Source Premier (EBSCO), Scopus, Science Direct, Social Sciences Citation Index (SSCI), and Google Scholar. We used all years available and only included articles referring to business, management, or economics to exclude irrelevant publications. We abstained from including digital innovation in our search (the only exception in our sample is a recent literature review by Kohli and Melville (2019), to capture consolidated insights). Although we realize that it is a hot topic in IS research at the moment (e.g. Fichman et al. 2014; Nambisan et al. 2017; Yoo et al. 2010, 2012),

we aim to concentrate our focus on papers dealing with digital transformation on a broader level (firm and industry), rather than with transitions within innovation management. Our first search query was conducted in mid-2017 and yielded an initial sample of 1722 publications. This very large sample was mainly due to the broad ambiguity of the terms 'digital' and 'disrupt'. Given these broad search parameters, we anticipated that only a small fraction of this very large sample would prove to be of substantive relevance to us. To select these relevant articles for our final sample, we performed The development of clear and precise aims and objectives; pre-planned methods; a comprehensive search of all potentially relevant articles; the use of explicit, reproducible criteria in the selection of articles; an appraisal of the quality of the research and the strength of the findings; a synthesis of individual studies using an explicit analytic framework; and a balanced, impartial and comprehensible presentation of the results.

- 1. The search included the Academy of Management Journal, Administrative Science Quarterly, Entrepreneurship Theory and Practice, Journal of Management Studies, Strategic Management Journal.
- The search included the European Journal of Information Systems, Information Systems Journal, Information Systems Research, Journal of the Association for Information Systems, Journal of Information Technology, Journal of Management Information Systems, Journal of Strategic Information Systems, MIS Quarterly, MISQ Executive.

A predefined and structured multi-step selection process (similar to the approach of Siebels and Knyphausen-Aufseß 2012; Vom Brocke et al. 2015) and defined specific criteria for inclusion (Templier and Paré 2015). The filters during our selection process included (1) scanning the titles, (2) reading abstracts, (3) removing duplicates, (4) full reading and indepth analysis of the remaining papers, and finally (5) cross-referencing and backward searching by looking through the bibliographies of the most important articles to find additional relevant work. The initial pool was split in half between two panellists who separately performed the scanning of titles, analysis of abstracts and removal of duplicates. After these early steps, the sample could be narrowed down to 155 articles. As we arrived at step 4 "full reading and in-depth analysis of the remaining papers", both panellists read and independently classified each of the remaining 155 studies. During this process, papers qualified for the final sample if they satisfied three requirements: (1) articles were required to have their primary focus and contribution within digital transformation research or digitally induced organizational transformation (e.g. a vast number of papers inadequately captured the topic of digital transformation as they primarily focused on business model innovation), (2) articles needed to be based on a sound theoretical foundation and therefore not primarily practitioner-oriented (such as articles that offer popular recommendations to business leaders on how to survive digital transformation), (3) papers that were not addressing digital transformation at an organizational level (e.g. the rise of home-based online businesses by entrepreneurs) were dismissed. Whenever disagreements emerged regarding the inclusion or classification of an article, we engaged in discussion and tried to resolve the issue together to make our selection rules more reliable. We updated the review in the autumn of 2018 for any articles that had appeared between then. Following this approach, 58 studies passed all five selection steps and were included in our final sample. Within this sample, conceptual articles (27) and case studies (20) are dominant. Roughly 60% of the articles stem from the IS literature, while 40% cover a broader management

perspective of digital transformation. While the reviewed papers span a time frame from 2001 to 2018, approximately eighty per cent of articles were published within the past 5 years, indicating the relative novelty of digital transformation as a research discipline. The distribution of our sample according to journals is provided in Table 4 of "Appendix". Upon the recommendation of Webster and Watson (2002), our categorization and analysis of the literature was concept-centric. First, to facilitate analysis and build a basis for our initial coding, each selected paper was reviewed to determine the following database information. (1) Article title, (2) outlet, (3) research methodology, (4) sample, (5) region, and (6) key findings (see the full database in Table 5 of "Appendix"). Next, we started coding our sample, adopting elements of the approach introduced by Corley and Gioia (2004). We began by identifying initial concepts in the data and grouping them into provisional categories and first-order concepts (open coding). Then, we engaged in axial coding (Locke 2001) and searched for relationships and common patterns between and among these provisional categories, which allowed us to assemble them into second-order themes. Finally, we assigned these second-order themes to aggregate dimensions, representing the highest level of abstraction in our coding.





In Sum, reviewing and analyzing the extant literature, 194 coded insights were generated within the field of digital transformation: 61 first-order concepts, nine second-order themes, and two aggregate dimensions. The nine second-order themes represent core themes across the papers, which finally constitute two aggregate dimensions: technology and actor. In conclusion, we define digital transformation as actor-driven organizational transformation triggered by the adoption of technology-driven digital disruptions. The result of the coding process is a high-level inductive map of the core themes in digital transformation research (Fig. 1).

Results

The reviewed studies from our sample provide a rich body of knowledge regarding the specific contextual factors of digital transformation. This may be beneficial to both researchers and practitioners enabling a more comprehensive understanding of the peculiarities of digital transformation (in comparison to previous technology-driven transformations).

Macro-Level Findings

On a macro level, the central observation emerging from our review is that both technology- and actor- Centric aspects take centre stage within this debate. This is also reflected in various definitions of digital Transformation is provided in the sample. For example, Lanzolla and Anderson (2008) represent the Technology-centric side and emphasize the diffusion of digital technologies as an enabler for Transformation. Such digital technologies may include big data, mobile, cloud computing or search-Based Applications (White 2012). Similarly, Hess et al. (2016) note that digital transformation is 'Concerned with the changes digital technologies can bring about in a company's business model, which Result in changed products or organizational structures or the automation of processes' (p. 124).

However, Hess et al. (2016) also highlight the role of actors (e.g. managers) in promoting transformation Processes, while facing the challenge of simultaneously balancing the exploration and exploitation of Resources. Leaders must have trust in the value and benefits of new IT technologies and support their implementation (Chatterjee et al. 2002). In total, we find an almost even distribution of papers studying the two dimensions of technology and actor: 33% are technology-centric, 34% are actor-centric, and 33% of papers cover both technology and actor. However, within these two dimensions, we observe a rather uneven distribution of articles by second-order themes. On the technology-centric side, we find that understanding the implications of digital technologies on the consumer interface and market environment are highly active research stream. In comparison, understanding the pace of change in times of digital transformation and its direct impact on incumbents is so far comparably understudied. On the actor-centric side, our review reveals a very dominant focus on leadership and capabilities in a digital context, while in contrast company culture and work environment thus far received less recognition. We also find that the status quo of digital transformation literature is rather diverse, in the sense that papers discuss topics across various categories of our thematic map and are therefore not restricted nor focused on a specific unit of analysis. The vast majority of articles are related to adjacent topics of digital transformation underpinning its nature as a diverse and broad field of research while again indicating its emerging nature. In addition, we observe some degree of diversity in the theoretical foundations drawn

upon. Different theories are applied by several authors to capture the context of digital transformation, e.g. alignment view, configuration theory, resource-based view, dynamic capabilities, organizational learning theory, network view or business process reengineering. It would be interesting to use other theoretical angles, for example from the literature on corporate entrepreneurship and technological disruption, to increase theoretical diversity. Such an exchange with different fields of research would broaden the scope of the field and help bridge the ivory divide. Finally, from a methodological perspective, we observe that actor-centric papers primarily use case studies while technology-centric studies at this point are pre-eminently conceptual. In general, the literature is scarce regarding quantitative empirical evidence. We see this as a strong indicator for the early stage of digital transformation research.

Conclusion

Our review is not without limitations. First, the specific objectives and nature of our filtering process applied during the review naturally come with a certain selection bias. For example, data collection, analysis and interpretation remain influenced by the subjective assessments of the researchers. Also, despite being the common rule within systematic literature reviews, searching exclusively in peer-reviewed academic journals might have omitted some relevant research contained in books or dissertations. However, using a rigorous and transparent search process, an as complete as possible review sample was collected and analyzed subsequently. Second, using a high-level thematic map for such a complex multi-dimensional phenomenon as digital transformation highlights particular connections while it potentially fails to capture others. Specifically, critics may point to the lack of analytical depth within each second-order theme. However, we believe that within the limited scope of a review, our broad thematic description nevertheless adds value to the advancement of this field and should rather be seen as a holistic starting point for future research to dive deeper into the characteristics of sub-themes of digital transformation.

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INCLUSIVE EDUCATION: UNITED NATIONS CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES (UNCRPD)

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Abstract

The United National Convention on the Rights of Persons with Disability (UNCRPD) is an international document aimed at protecting the human rights and dignity of persons with a disability (PWD). The convention is written under the paradigm that PWD are not passive recipients of medical treatment and charity, but autonomous individuals with the right to actively participate in society. The treaty differs from other international texts related to disability rights in that if ratified, its provisions are legally binding. The UNCRPD was adopted by the United Nations General Assembly in December 2006 and entered into force in May 2008. The Committee on the Rights of Persons with Disabilities is an independent body responsible for monitoring the implementation of the convention by participating members. To date, 177 states have ratified the document. Of these states, 92 also ratified an optional protocol that allows the monitoring committee to investigate complaints related to alleged violations.

Keywords: Inclusive Education, Disability, Therapy

Introduction

UNCRPD is the International human rights treaty of the UN, and it makes sure the dignity and rights of persons with disabilities are maintained by all the country. A person with disabilities enjoys full equality under the law. As per this treaty, they are full and equal members of society. Convention was the first human rights treaty of the 21st century. Un declared the year from 1981 to 1992 as the years for the person with disabilities and UNCRPD treaty discussion occur in this phase. A committee was formed to know about the rights and problems, and the committee recommended forming a treaty between the countries to ensure full rights for people with disabilities. Sweden and Italy gave the outline of the treaty, but no decision was taken on that but denied by the members of the UN that they have enough rules and laws for that time. In 2000, the five biggest NGOs workings for the welfare of PWD appealed UN to adopt an international treaty to ensure the rights of PWDs. In 2001, the Un General Assembly formed a committee on the recommendation of Mexico, in this work Mexico and New Zealand helped to make the process fast and finally on 13 December, 2006adopted by Un General Assembly. The Convention is intended as a human rights instrument with an explicit, social development dimension. It adopts a broad categorization of persons with disabilities and reaffirms that

all persons with all types of disabilities must enjoy all human rights and fundamental freedoms.

Purpose

The purpose of the present Convention is to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity. Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others. "Communication" includes languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communication technology; "Language" includes spoken and signed languages and other forms of nonspoken languages.

Foundation

- This is adopted by UN General Assembly on 13 December 2006.
- Opened for signatories on 30 March 2007.
- In the history of the UN convention, it receives the highest number of signatories on its opening day.
- The condition was that it should be signed and ratified by at least 20 countries (ratification to pass the bill in their parliament and should be accepted then it is said to be ratified, in India, it was ratified on 1 October 2007.

Content on UNCRPD Convention

It is having 25 paragraphs stating why it is formed and its purposes, in Paragraph number eleven all the countries accepted that PWDs face problems and are undertreated and all the countries should provide equal rights to them. It also has wording from the Vienna Declaration and Programmes of Action "All human rights are universal, indivisible, interdependent and interrelated".

The Principles of the Present Convention

- Respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons.
- Non-discrimination.
- Full and effective participation and inclusion in society.
- Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity.

- Equality of opportunity.
- Accessibility.
- Equality between men and women.
- Respect for the evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities.

These principles are applied across all types of disability and multiple sectors of society.

Rights of Persons with Disabilities (CRPD)

CRPD is an international human rights treaty adopted in 2006. The UK agreed to follow it in 2009. By following CRPD, the UK agrees to protect and promote the human rights of disabled people, including eliminating disability discrimination and enabling disabled people to live independently in the community ensuring an inclusive education system ensuring disabled people are protected from all forms of exploitation, violence and abuse.

The UN last examined how well the UK is implementing the treaty and published its recommendations in August 2017.

These included recognising and enforcing the right of disabled people to live independently, be included in the community, and choose where they live and whom they live with ensuring that social security policies protect the income of disabled people and their families, allowing for the extra costs that come with disability removing barriers to ensure that disabled people can access decent work and equal pay taking action to combat any negative or discriminatory stereotypes or prejudice against disabled people in public and the media ensuring disabled people have equal rights to justice by providing appropriate legal advice and support involving disabled people and disabled people's organisations in planning and implementing all laws and policies affecting disabled people incorporating CRPD into domestic law to ensure that people can take legal action if their rights have been breached.

Rights

- Equality before the law without discrimination (Article 5)
- Right to life, liberty and security of the person (Articles 10 & 14)
- Equal recognition before the law and legal capacity (Article 12)
- Freedom from torture (Article 15)
- Freedom from exploitation, violence and abuse (Article 16)
- Right to respect physical and mental integrity (Article 17)
- Freedom of movement and nationality (Article 18)
- Right to live in the community (Article 19)

- Freedom of expression and opinion (Article 21)
- Respect for privacy (Article 22)
- Respect for home and the family (Article 23)
- Right to education (Article 24)
- Right to health (Article 25)
- Right to work (Article 27)
- Right to an adequate standard of living (Article 28)
- Right to participate in political and public life (Article 29)
- Right to participation in cultural life (Article 30)

Equality and Non-Discrimination

- States Parties recognize that all persons are equal before and under the law and are entitled without any discrimination to the equal protection and equal benefit of the law.
- States Parties shall prohibit all discrimination based on disability and guarantee to persons with disabilities equal and effective legal protection against discrimination on all grounds.
- To promote equality and eliminate discrimination, States Parties shall take all appropriate steps to ensure that reasonable accommodation is provided.
- Specific measures which are necessary to accelerate or achieve de facto equality of persons with disabilities shall not be considered discrimination under the terms of the present Convention.

Women with Disabilities

- States Parties recognize that women and girls with disabilities are subject to multiple discrimination, and in this regard shall take measures to ensure the full and equal enjoyment by them of all human rights and fundamental freedoms.
- States Parties shall take all appropriate measures to ensure the full development, advancement and empowerment of women, to guarantee them the exercise and enjoyment of the human rights and fundamental freedoms set out in the present Convention.

Children with Disabilities

- States Parties shall take all necessary measures to ensure the full enjoyment of children with disabilities of all human rights and fundamental freedoms on an equal basis with other children.
- In all actions concerning children with disabilities, the best interests of the child shall be a primary consideration.

• States Parties shall ensure that children with disabilities have the right to express their views freely on all matters affecting them, their views being given due weight by their age and maturity, on an equal basis with other children, and to be provided with disability and age-appropriate assistance to realize that right.

Awareness-Raising

- States Parties undertake to adopt immediate, effective and appropriate measures.
- To raise awareness throughout society, including at the family level, regarding persons with disabilities, and to foster respect for the rights and dignity of persons with disabilities.
- To combat stereotypes, prejudices and harmful practices relating to persons with disabilities, including those based on sex and age, in all areas of life.
- To promote awareness of the capabilities and contributions of persons with disabilities.
- Measures to this end include:
- Initiating and maintaining effective public awareness campaigns designed:
- To nurture receptiveness to the rights of persons with disabilities.
- To promote positive perceptions and greater social awareness towards persons with disabilities.
- To promote recognition of the skills, merits and abilities of persons with disabilities, and their contributions to the workplace and the labour market.
- Fostering at all levels of the education system, including in all children from an early age, an attitude of respect for the rights of persons with disabilities.
- Encouraging all organs of the media to portray persons with disabilities in a manner consistent with the purpose of the present Convention.
- Promoting awareness-training programmes regarding persons with disabilities and the rights of persons with disabilities

Accessibility

• To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:

- Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces.
- Information, communications and other services, including electronic services and emergency services.

States Parties shall also take appropriate measures to:

- Develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public.
- Ensure that private entities that offer facilities and services which are open or provided to the public take into account all aspects of accessibility for persons with disabilities.
- Provide training for stakeholders on accessibility issues facing persons with disabilities.
- Provide in buildings and other facilities open to the public signage in Braille and in easy-to-read and understand forms.
- Provide forms of live assistance and intermediaries, including guides, readers and professional sign language interpreters, to facilitate accessibility to buildings and other facilities open to the public.
- Promote other appropriate forms of assistance and support to persons with disabilities to ensure their access to information.
- Promote access for persons with disabilities to new information and communications technologies and systems, including the Internet.
- Promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.

Education

- States Parties recognize the right of persons with disabilities to education. To realize this right without discrimination and based on equal opportunity, States Parties shall ensure an inclusive education system at all levels and life-long learning directed.
- The full development of human potential and sense of dignity and self-worth, and the strengthening of respect for human rights, fundamental freedoms and human diversity.
- The development by persons with disabilities of their personality, talents and creativity, as well as their mental and physical abilities, to their fullest potential.
- Enabling persons with disabilities to participate effectively in a free society.

- In realizing this right, States Parties shall ensure that.
- Persons with disabilities are not excluded from the general education system based on disability, and children with disabilities are not excluded from free and compulsory primary education, or secondary education, based on disability.
- Persons with disabilities can access an inclusive, quality and free primary education and secondary education on an equal basis with others in the communities in which they live.
- Reasonable accommodation of the individual's requirements is provided.
- Persons with disabilities receive the support required, within the general education system, to facilitate their effective education.
- Effective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion.
- States Parties shall enable persons with disabilities to learn life and social development skills to facilitate their full and equal participation in education and as members of the community. To this end, States Parties shall take appropriate measures, including:
- Facilitating the learning of Braille, alternative script, augmentative and alternative modes, means and formats of communication and orientation and mobility skills, and facilitating peer support and mentoring.
- Facilitating the learning of sign language and the promotion of the linguistic identity of the deaf community.
- Ensuring that the education of persons, and in particular children, who are blind, deaf or deaf-blind, is delivered in the most appropriate languages and modes and means of communication for the individual, and in environments which maximize academic and social development.
- To help ensure the realization of this right, States Parties shall take appropriate measures to employ teachers, including teachers with disabilities, who are qualified in sign language and/or Braille, and to train professionals and staff who work at all levels of education. Such training shall incorporate disability awareness and the use of appropriate augmentative and alternative modes, means and formats of communication, educational techniques and materials to support persons with disabilities.
- States Parties shall ensure that persons with disabilities can access general tertiary education, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.

- Equality between men and women.
- Respect for evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities. EU framework on the implementation of the UNCRPD.
- The EU is required to have a basis to promote, protect and implement the UNCRPD in matters falling under the EU's competence.
- The framework became operational in 2013, based on a proposal by the Commission that was endorsed by the Council in 2012. It complements national monitoring mechanisms.
- The members of the EU Framework.
- European Parliament.
- European Ombudsman.
- EU Agency for Fundamental Rights (FRA).
- European Disability Forum (EDF).
- The European Commission was a member of the Framework until late 2015. The Commission withdrew following the recommendation of the Committee on the Rights of persons with Disabilities. The European Commission continues to coordinate the implementation of the UNCRPD at the EU level.

Situations of Risk and Humanitarian Emergencies

States Parties shall take, by their obligations under international law, including international humanitarian law and international human rights law, all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including situations of armed conflict, humanitarian emergencies and the occurrence of natural disasters.

Implications for Physical Therapy Practice

Physical therapists have an integral role to play in implementing and monitoring the provisions of the UNCRPD. In particular, physical therapists can promote the rights and dignity of PWD in the following ways:

"Facilitating the personal mobility of persons with disability... facilitating access to quality mobility aids, devices, assistive technologies, and forms of live assistance and intermediaries,... (and) training in mobility skills to persons with disabilities and specialist staff working with persons with disability" (Article 20). Taking measures to facilitate full inclusion and participation in the community (Article 21). Ensuring access to health services without discrimination (Article 25). Providing habituation and rehabilitation services to "enable persons with disabilities to attain and maintain maximum independence, full physical, mental, social and vocational ability, and full inclusion and

participation in all aspects of life" (Article 26), Promoting adequate standard of living and social protection (Article 28), Facilitating participation in cultural life, recreation, leisure and sport (Article 30).

Conclusion

The Convention is intended as a human rights instrument with an explicit, social development dimension. It adopts a broad categorization of persons with disabilities and reaffirms that all persons with all types of disabilities must enjoy all human rights and fundamental freedoms. It clarifies and qualifies how all categories of rights apply to persons with disabilities to effectively exercise their rights and areas where their rights have been violated, and where protection of rights must be reinforced. The Convention was negotiated during eight sessions of an Ad Hoc Committee of the General Assembly from 2002 to 2006, making it the fastest-negotiated human rights treaty. Persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and other facilities and services open or provided to the public, both in urban and in rural areas.

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REVOLUTIONIZING EDUCATION: AN INNOVATIVE STEM APPROACH

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Abstract

Science has played a vital role in transforming human lives. The uncovering of important discoveries to fast-forward development, helps humans achieve significant advances in several areas via digitalization and after arriving at a technical revolution, the need for advancement in education, which makes it crucial for countries to cultivate a pool of highly trained and educated workers and professionals. STEM education, which stands for Science, Technology, Engineering, and Mathematics, is an innovative approach to education that integrates these four subjects into a cohesive learning experience. One of the key features of STEM education, investigate and experiment to find answers. This approach helps students to develop critical thinking and problem-solving skills, which are essential in STEM fields. Students learn to use technology to gather information, analyze data, and communicate their findings. This helps them to develop digital literacy skills, which are increasingly important in today's society. Students work in groups to complete projects, which helps them to develop communication, leadership, and teamwork skills. Collaboration also provides opportunities for students to learn from one another and to share ideas and insights.

Keywords: STEM education, Innovative STEM Approach, Objectives of STEM, Components of STEM, Need and importance for STEM in India, Implementation of STEM Education, Pros and Cons of STEM Education.

Introduction

STEM education, which stands for Science, Technology, Engineering, and Mathematics, is an interdisciplinary approach to learning that emphasizes critical thinking, problemsolving, and hands-on activities. It has been gaining popularity in recent years due to its effectiveness in preparing students for the rapidly changing job market and the increasing demand for STEM professionals. STEM education is an innovative approach to education that prepares students for the challenges of the modern world. By integrating science, technology, engineering, and mathematics, STEM education provides students with a comprehensive education that emphasizes critical thinking, problem-solving, hands-on learning etc.

Concept of STEM Education

STEM education is an educational approach that mainly focuses on teaching students in the areas of science, technology, engineering and mathematics. STEM education aims to provide students with the knowledge, skills, and abilities they need to be successful in today's rapidly changing world. STEM education is designed to help students develop critical thinking, problem-solving, and collaboration skills, as well as creativity and innovation. By providing students with a strong foundation in STEM subjects, STEM education prepares them for a wide range of career opportunities and helps to ensure that they are well-equipped to tackle the challenges of the 21st century. STEM education can be delivered in various forms, including formal classroom instruction, hands-on experiential learning, and online learning. STEM education programs may include activities such as coding, robotics, experiments, simulations, and project-based learning. The ultimate goal of STEM education is to cultivate a generation of problem solvers and innovators who can drive progress and improve our world.

Objectives of STEM

The objectives of STEM education are to provide students with a comprehensive education that prepares them for the challenges of the future job market, especially in the fields of Science, Technology, Engineering, and Mathematics. The following are the primary objectives of STEM education:

- 1. Encourage critical thinking: STEM education emphasizes the importance of critical thinking skills, which are essential for solving complex problems in the modern world. STEM education encourages students to ask questions, investigate, and analyze data to solve problems.
- 2. Develop problem-solving skills: STEM education teaches students to apply scientific and mathematical concepts to solve real-world problems. By working on hands-on projects, students learn to think creatively and come up with innovative solutions to complex problems.
- 3. Foster creativity: STEM education encourages creativity and innovation. Students learn to think outside the box and develop new and unique ideas that can help solve problems in different fields.
- 4. Improve digital literacy: STEM education integrates technology into the curriculum, helping students to develop digital literacy skills, including how to use computers, software, and other digital tools.
- 5. Prepare students for the job market: STEM education equips students with the skills and knowledge they need to succeed in the job market, particularly in STEM fields. STEM education prepares students for a range of careers, including scientists, engineers, computer programmers, and more.

Components of STEM Education

The components of STEM education are Science, Technology, Engineering, and Mathematics. Here is a brief description of each component:

- 1. Science: Science is the study of the natural world and its phenomena. It includes subjects such as biology, chemistry, physics, and environmental science. Science is the foundation of STEM education, and it helps students to develop a scientific mindset, including the ability to observe, question, and analyze the natural world.
- 2. Technology: Technology includes any tools, devices, or systems that help to solve problems or improve efficiency. This includes software, hardware, and infrastructure. In STEM education, students learn to use technology to gather information, analyze data, and communicate their findings.
- 3. Engineering: Engineering is the application of scientific principles to design and build solutions to real-world problems. It includes subjects such as civil engineering, mechanical engineering, and electrical engineering. In STEM education, students learn to apply engineering principles to design and build prototypes and models.
- 4. Mathematics: Mathematics is the study of numbers, shapes, and patterns. It includes subjects such as algebra, geometry, and calculus. In STEM education, students learn to use mathematical concepts to solve problems and analyze data.

Together, these four components of STEM education, provide students with a comprehensive education that emphasizes critical thinking, problem-solving, and handson learning. STEM education prepares students for the challenges of the future job market, particularly in STEM fields.

Need and Importance for STEM Education in India

There is a growing need and importance for STEM education in India, particularly as the country aims to become a global leader in technology and innovation. Here are some reasons why STEM education is important in India:

- Growing demand for STEM skills: The job market in India is shifting towards highskill, high-paying jobs in STEM fields. As technology continues to advance, there is a growing demand for workers with skills in science, technology, engineering, and mathematics. STEM education can help students acquire the skills they need to succeed in these fields.
- Boosting innovation and entrepreneurship: STEM education can foster innovation and entrepreneurship by equipping students with the skills and knowledge they need to develop new products and services. This can help to boost the economy and create new jobs.
- Addressing societal challenges: STEM education can help to address societal challenges in India, such as providing clean water, sustainable agriculture, and renewable energy. By teaching students to think critically and creatively, STEM education can encourage them to develop innovative solutions to these challenges.

- Preparing students for the future: STEM education can help to prepare students for the challenges of the future. By emphasizing critical thinking, problem-solving, and hands-on learning, STEM education can equip students with the skills they need to succeed in an ever-changing world.
- Fostering global competitiveness: STEM education can help India to become more globally competitive by producing a skilled workforce that can compete in the international job market. This can help to attract investment and drive economic growth.

Implementation of STEM Education

Implementing STEM education involves a variety of approaches and strategies, depending on the level of education and the specific needs of students. Here are some general strategies for implementing STEM education:

- 1. Integration: STEM education can be integrated into the existing curriculum by incorporating STEM concepts and activities into existing courses. This approach can help to expose students to STEM subjects in a way that is relevant and applicable to their other subjects.
- 2. Interdisciplinary projects: STEM education can be implemented through interdisciplinary projects that require students to work together to solve real-world problems. These projects can be designed to incorporate multiple STEM subjects, such as engineering, science, and mathematics.
- 3. Hands-on learning: STEM education emphasizes hands-on learning and real-world problem-solving. Students can be provided with opportunities to engage in hands-on activities, such as experiments, building prototypes, and designing solutions to real-world problems.
- 4. Project-based learning: Project-based learning is an approach to teaching that involves students in long-term projects that require them to apply their knowledge and skills to solve real-world problems. This approach can be used in STEM education to help students develop critical thinking and problem-solving skills.
- 5. Professional development: Teachers and educators need to be trained in STEM education to effectively implement it in their classrooms. Professional development programs can help teachers to develop the necessary skills and knowledge to effectively teach STEM subjects.
- 6. Collaboration: Collaboration between educators, businesses, and other organizations can help to provide students with opportunities to engage in STEM activities and gain exposure to STEM careers. This approach can help to bridge the gap between education and industry and provide students with a better understanding of the relevance of STEM education in the real world.

Revolutionizing Education with Innovative STEM Approach

To revolutionize education with an innovative STEM approach, schools can implement the following strategies:

- 1. Incorporate technology: With the increasing use of technology in almost every aspect of our lives, students need to be comfortable with using technology. Incorporating technology in the classroom can enhance learning and make it more engaging for students. For example, using virtual reality simulations, coding activities, or online collaborative tools can make learning more interactive and fun.
- 2. Integrate project-based learning: Project-based learning is an effective way to teach STEM concepts and skills. Students work on a project that requires them to use STEM skills to solve real-world problems. This approach helps students to develop critical thinking and problem-solving skills that are essential in STEM fields.
- 3. Encourage creativity and innovation: STEM education should not be limited to learning about concepts and theories. Students should be encouraged to think outside the box and come up with creative solutions to problems. This can be achieved by allowing students to explore and experiment with STEM concepts and technologies.
- 4. Collaboration and teamwork: STEM education often requires collaboration and teamwork. Encouraging students to work together in groups can help them to develop teamwork skills and learn from one another. Collaboration also helps students to learn how to communicate their ideas effectively and work towards a common goal.
- 5. Connect with industry professionals: Schools can invite industry professionals to speak to students and provide them with real-world examples of how STEM skills are used in the workplace. This can help students to understand the relevance of what they are learning and provide them with an idea of potential career paths.

By incorporating these strategies, schools can provide students with a more engaging and effective STEM education that prepares them for the future job market.

Pros and Cons of STEM Education Pros of STEM Education

- Job opportunities: STEM fields offer a wide range of high-paying and in-demand job opportunities, and STEM education can provide students with the skills and knowledge they need to succeed in these fields.
- Innovation and creativity: STEM education encourages critical thinking, problemsolving, and creativity, which can lead to the development of innovative solutions to real-world problems.

- Economic growth: A skilled workforce in STEM fields can drive economic growth by attracting investment and creating new businesses and job opportunities.
- Addressing societal challenges: STEM education can equip students with the skills they need to address societal challenges, such as climate change, healthcare, and sustainable development.
- Preparation for the future: STEM education can prepare students for the challenges of the future by equipping them with the skills and knowledge needed for success in an ever-changing world.

Cons of STEM Education

- Narrow focus: STEM education can be seen as narrow-focused and neglecting other important subjects such as arts and humanities.
- Lack of diversity: The STEM field is currently lacking diversity in terms of gender and race, and STEM education needs to actively address this issue to ensure equal opportunity for all students.
- Limited hands-on learning opportunities: Some STEM subjects may require expensive equipment or resources, limiting the hands-on learning opportunities available to some students.
- Teacher preparation: Teachers need to be adequately prepared and trained to teach STEM subjects, which can require additional resources and training.
- Overemphasis on standardized testing: STEM education can be subject to an overemphasis on standardized testing, which can lead to a focus on rote learning and neglecting hands-on and inquiry-based learning.

STEM education offers a range of benefits, it is important to consider the potential drawbacks and ensure that it is implemented in a way that provides equal opportunity and promotes hands-on, creative, and critical thinking.

Conclusion

STEM education is to provide students with a well-rounded education that prepares them for the future. By emphasizing critical thinking, problem-solving, creativity, and digital literacy, STEM education equips students with the skills they need to succeed in an ever-changing world. STEM education has revolutionized education by placing a greater emphasis on hands-on learning, integrating technology, encouraging innovation and entrepreneurship, promoting critical thinking, and addressing real-world problems. By investing in STEM education, we can create a skilled workforce that can meet the demands of the rapidly changing world and drive economic growth and development.

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WHY ARE APPLICATIONS OF LEARNING ANALYTICS IN EDUCATION TODAY'S BIGGEST TREND?

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Abstract

Technology is assisting students and institutions in today's education to get outcomes instantly. To measure the effectiveness of educational technology, we need a means to assess the effectiveness of instruction. The sector of education is seeing a tremendous rise in learning analytics (LA). For students, teachers, and institutions to better understand how learning takes place, learning analytics can aid in the development of best practices. By changing the way we help students with their learning management systems in higher education. Despite being a very promising topic, learning analytics is still a relatively new concept. There is a necessity to understand what Learning Analytics is and how we may develop the field of existing learning technologies. This study is determined to give an overview of Learning analytics and its types, Some Learning analytics software with the benefits and challenges of learning analytics in education. **Keywords:** Learning Analytics, Types of Learning Analytics, Learning Analytics Software.

Introduction

Most of the information that is now accessible is not organised, nicely presented, or gathered. It may be found in many different locations and systems. Analysts need to be able to gather and modify this data to better understand not just what students know, but also how they know it. Learning analytics and educational data mining may transform this data into information, which will ultimately lead to improved education. People have studied learning and teaching for a very long time, kept track of student progress, looked into educational data, developed tests, and used evidence to improve teaching and learning. Using computational analytical techniques from data science and artificial intelligence (AI), learning analytics builds on these well-established areas to make use of new opportunities brought about by the collection of novel forms of digital data from students' learning activities.

Learning analytics combines big data with traditional quantitative educational approaches. Information on students and their learning processes is being gathered by governments, educational organisations, testing organisations, and entities offering MOOCs.

Learning Analytics

A process for gathering, measuring, analysing, and reporting data about students and their activities within an educational setting is called learning analytics. Applying analytics to educational data to determine how students learn and to offer support is known as learning analytics. Learning analytics was first defined as a framework by Dr Wolfgang Greller and Dr Hendrik Drachsler in 2011. Over the past ten years, the academic discipline of learning analytics as well as the commercial sector have both grown quickly. Learning Analytics is an area of study and instruction that combines the fields of learning (such as research in education, learning and assessment sciences, and educational technology), analytics (such as statistics, visualisation, computer/data sciences, and AI), and humancentred design (such as usability, participatory design, and sociotechnical systems thinking).

Wilson et al. (2017) emphasise this aspect, stating that learning analytics has experienced a significant expansion in learning research through technology since Ferguson (2012). To identify the variables that influence how well pupils learn, many educators have underlined the importance of documenting and analysing what occurs during the learning process (LAK, 2011). The use of learning analytics in educational settings has the potential to raise the level of service while also raising student success and grades (Hwang et al., 2017).

Practical Uses of Learning Analytics in Education

Analytics can enhance teaching and learning in a lot more efficient and effective ways, according to research and practice. The most appreciated objectives of learning analytics are:



Figure 1 Uses of Learning Analytics in Education

Examples of Learning Analytics in Education

- Monitor the development of your pupils and provide more, better, and targeted feedback.
- Observe student participation in the online discussion boards for the course.
- Before starting class, get to know your pupils.
- Make avenues for visible student enrolment.
- Real-time monitoring of class and student activities on the course website
- Assess the effect of students' participation in class activities on their performance in the class or other learning metrics.
- Utilise student achievement data more effectively to guide curriculum revision
- Encourage pupils to keep an eye on their level of class preparedness.

Types of Learning Analytics

1. Descriptive Analytics

The analysis of data or content to determine "What happened?" (or "What is happening?") is known as descriptive analytics. It is characterised by conventional business intelligence (BI) and visualisations like pie charts, bar charts, line graphs, tables, or generated narratives. It explains what happened in the past. Descriptive analytics integrates information from many sources to offer perceptions about previous performance. Decisions concerning upcoming training programmes can be made using this information.

For example: If the data indicates that dropout rates are rising, you may change to a more interesting learning approach or enhance the course material. These insights let you enhance training initiatives and even drop courses that are a waste of resources for the institution.

2. Diagnostic Analytics

It answers "Why did this happen?"

It is the process of using data to find answers, spot trends, and conclude. Organisations can benefit from these discoveries because they influence how decisions are taken and how strategies are developed by comprehending several topics, including diagnostic regression analysis, hypothesis testing, and the distinction between correlation and causation. Manual analysis, algorithmic analysis, and statistical software (like Microsoft Excel) are all options for performing diagnostic analytics. *For example,* Analytical diagnostics are used to determine why the student did well or poorly perform.

3. Predictive Analytics

Predictive analytics accomplishes predictions. It is used in the field of education to find trends in student behaviour and performance that might indicate hazards or opportunities. It answers "What might happen in the future?"

For example, Educators can forecast the results of doing or refraining from taking particular actions by compiling historical data and taking into account changing circumstances that will impact students and the educational institution in the future.

4. Prescriptive Analytics

Prescriptive analytics advances other analysis techniques by utilising forecasts to provide recommendations on potential outcomes of a scenario. Because of its complex nature and goal of accurately predicting the future, this method uses advanced means of analysis, like machine learning, algorithms, and computational modelling. It answers "What should we do next?"

For example, Prescriptive analytics in education include analytics if a course change content would affect students' performance and engagement levels before actually making those changes or providing educators with metrics that will give them an idea of how students should perform.

Apart from these types, there is an emerging type namely applied Learning analytics, It acts as the precursor for personalized and adaptive learning. It explains how the content can adapt to suit the students.

Categories of Learning Analytics

These analytics are divided into three groups: learner analytics, learner experience analytics, and learning programme analytics.



Figure 2 Categories of Learning Analytics

List of some Learning Analytics Software

- **EdApp** provides strong learning analytics. Use of this mobile LMS is free, and operations like exporting analytics data may be completed in a matter of minutes.
- **Learning Locker** is a Learning Pool cloud-based data management application that may assist you in automating the reconciliation of data from many sources.
- **WorkRamp** enables the creation of learning programmes with individualised learning paths. With the help of built-in data dashboards and analytics, you can monitor the development and performance of your students.
- **Code of Talent –** A learning and development professional may create, adapt, and publish courses for their teams using this micro-learning platform. It contains collaborative elements including multi-language support, discussion boards, and the ability to give out rewards, as well as a tool for creating courses and mobile capability.
- **Looop** delivers online learning activities using an LMS. It offers data and analytics dashboards that provide engagement metrics and user comments. It also makes communication and feedback between students and instructors simpler by using its mobile app and survey function.
- **GoToTraining-** makes virtual training simple by allowing group sessions for enhanced real-time participation and providing instruction on any device. Additionally, they have online catalogues where you may upload and exchange courses as well as other tools like surveys, examinations, and certifications. They also include additional trustworthy features like reporting and analytics, recording management, and simulated lifestyles.
- **Ruzuku-** uses a learning analytics programme. It develops and manages online courses without using a plethora of tools and options. Even the designs are altered to better suit your company's identity. It features learning progress tracking for your team.
- **Tovuti LMS-** The analytics dashboard makes it easier to organise and customise how your data is visualised. The Team Lead dashboard from Tovuti LMS additionally elevates dashboards by enabling managers to monitor the performance of their direct reports.
- **Gyrus -** helps managers and instructors efficiently address the educational goals of their workforce and create engaging learning opportunities. By analysing these gaps and making comparisons between actual and projected performance, it closes the gaps between online training and an in-person learning environment. It measures proficiency in several skills. All of this is completed automatically to guarantee that your records are accurate and current at all times.

- Violet LMS- aids in fostering staff development through long-lasting learning. It provides virtual classroom training sessions and interactive courses for onboarding new employees. With the use of automatic performance reports that are available in graphical and tabular formats, you may assess these learning programmes. This enables rapid feedback and evaluation to be given.
- **360Learning-** Through its user-friendly production tool, it enables you to manage training content and create courses. Through its manager dashboard, it enables you to examine training progress and accomplishment data by learner, team, or course. Through a unique course dashboard, you can also keep tabs on each employee's overall course performance and participation.
- Learn Amp- is an extensive LMS and learning analytics tool created to help businesses educate and retain their personnel. Peer-to-peer features like in-app chat, user-generated content, discussion threads, and group tasks may be used to foster teamwork and the acquisition of new skills. Additionally, it provides a centralised visual platform that you can use to create learning paths for staff development and gather performance information.

Beneficiaries of Learning Analytics

Students: To help students do better, provide them with comments and constructive criticism.

Faculty: Find the most efficient ways to deliver course materials and advice as a faculty member.

Administrators: Be aware of the results of initiatives, courses, and methods.

Online course provider: Gain insight into the effects of holding classes online vs inperson sessions, especially for online course providers.

In general, learning analytics gives teachers the knowledge they require to provide learners with the best chance to succeed in their education.

Benefits of Learning Analytics

- Retention and performance may be improved by using learning analytics, which can also help students perform better. Possessing the appropriate information enables proactive tutoring and intervention.
- Enhance the quality of the course materials and the content by using learning analytics to identify concerns with the quality of the content and offer personalised (adaptive) learning experiences.
- Drive success proactively: Learning analytics may be utilised to pinpoint and highlight success elements as well as to comprehend students' graduation paths (curriculum design).

• Spend money wisely: Learning analytics may aid in identifying which resources are effective and which are not. Based on our analyses, certain investment strategies may very well be created.

In the end, it comes down to enhancing kids' educational opportunities and ensuring that monies are utilised.

Challenges of Learning Analytics

- **Data collection:** Not all exchanges between students take place online. Only events with a digital trail can be considered in analytics. In other words, learning analytics only provides a fragmentary picture of the learning environment.
- **Data diversity:** According to what we've already said, learning analytics extends beyond LMSs. It may be challenging to combine data from several systems and sources.
- **Comparable analytics:** What measurements do we use to contrast learning analytics? There are currently no open standards that outline pertinent measurements or, more significantly, the importance of metrics.
- Accuracy of predictions: All statistical methods yield findings that might be wrong. Whether or not this inaccuracy is tolerable depends on its expected size and usefulness. Analytics for learning will never be ideal.
- **Partial view:** Learning processes go beyond what statistics can show us. Remember that we are dealing with people. We haven't yet been fully defined by an equation.
- **Data literacy:** It is required for users of analytics to evaluate results and take the appropriate next steps.

Conclusion

Entering the field of learning analytics now will allow you to impact the education of both current students and lifetime learners. To accomplish this, one needs to possess a strong basic understanding of quantitative methods in addition to proficiency with modern tools and methods for building, merging, maintaining, cleaning, and analysing data. Both the number and quality of information available regarding learning have exploded as a result of the growth of online learning and the general digitization of education. Researchers can advance our knowledge of how people learn while educators can better understand and cater to the requirements of their pupils with the proper use of appropriate analysis tools for these collections of data. for example, LMSs are an example of educational technology that is developing and collecting more and better data.

The goals of LA are getting progressively nearer to being fully realised as educational technology, such as LMSs, develops, collects more and better data, and the analytical tools get better and more sophisticated. Numerous studies have shown that learning analytics

has several advantages for students, faculty, and higher education administration. Prediction and determination of target courses of study, curriculum development and improvement, enhanced learning outcomes for students, enhanced teaching effectiveness, and monitoring of student dropout and retention are all advantages. Higher education institutions are encouraged to incorporate learning analytics in their online instruction and learning.

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ROLE OF ICT IN TRANSITION PROGRAMME FOR ADULTS WITH MULTIPLE DISABILITIES AND INTELLECTUAL DISABILITIES IN RPWD ACT 2016

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Abstract

The purpose of the present experimental study was to find the role of ICT in transition programmes for adults with Multiple Disabilities (MD) and Intellectual Disabilities (ID). An experimental study is followed for the ongoing study. 12 samples are chosen for the study by using purposive sampling techniques from a special school in Chennai. The main independent variables are gender, age, locality, level of disability and economic status. The dependent variable includes the study to assess the efficacy of ICT in transition programmes for Adults with Multiple Disabilities and Intellectual Disabilities. The checklist will be developed by the investigators. The intervention will be given to two groups (control and experimental group). The ICT-based intervention will give in activities of daily living for adults with Multiple Disabilities and Intellectual Disabilities. The expected outcome of this study is to promote awareness among assistive technology for children with disability, families, peers and the community about the RPWD Acts (2016)[5] and to highlight the assessment and evaluation procedure of ADL skills using especially for adults with Multiple Disabilities and Intellectual Disabilities.

Keywords: Multiple Disability, Intellectual Disability, Information Communication Technology, Transition programme, ADL Skills.

Background of the Study Rights For Persons with Disabilities

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD, 2006)[6], adopted in 2006, establishes accessibility more comprehensively as a cross-cutting factor that enables persons with disabilities to live independently and participate fully in all aspects of life. The key statement within the (UNCRPD, 2006) [6] is relevant for ICT and people of activities of daily living for transition persons with disabilities. Article 9, (UNCRPD, 2006)[6] provides a comprehensive provision on accessibility and sets out a range of appropriate measures to be taken by States to ensure persons with disabilities access, on an equal basis with others, to the physical environment, transportation,

information and communications, including information and communications technologies (ICT) and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas, to enable persons with disabilities to live independently and participate fully in all aspects of life. (UNCRPD, 2006)[6].

Universal design principles are included in the UN CRPD (2006) [6] defined as the "design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaption or specialized design. Universal design shall not exclude assistive devices for particular groups with disabilities where this is needed" (UNCRPD, 2006) [6]. The assistive technology is assisting the person with a disability in a transition programme. (RPWD ACT, 2016) [5] Section 2(n) defines information and communication, including " all services and innovations relating to information and communication, including telecom services, web-based services, electronic and print services, digital and virtual services (RPWD ACT, 2016)[5]. The RPWD Act expanded the definition of disability to include 21 types of disabilities and recognizes that mandatory adherence to ICT and environmental accessibility standards across the public and private sectors is key to the assurance of human rights for persons with disabilities. (RPWD ACT, 2016)[5]. This study is an ongoing study to find the role of ICT in transition programmes for adults with Multiple Disabilities and Intellectual Disabilities.

Operation Definition

Intellectual Disabilities

Intellectual disability is defined as "a condition characterized by significant limitation both in intellectual functioning (reasoning, learning, problem-solving) and in adaptive behaviour which covers a range of everyday social and practical skills. This disability originates before the age of 18".(RPWD ACT, 2016)[5].

Multiple Disabilities

Multiple Disabilities mean a person has more than one disability which may affect mobility, behaviour, and sensory abilities. Some characteristic challenges of individuals with severe Multiple Disabilities are limited communication or speech impairments. (RPWD ACT, 2016)[5].

Multiple Disabilities have more than one disability including deaf-blindness which means a condition in which a person may have a combination of hearing and visual impairments causing severe communication, developmental, and educational problems. (RPWD ACT, 2016)[5].

ASD

Autism Spectrum Disorder means a neurodevelopmental condition typically appearing in the first three years of life that significantly affects a person's ability to communicate, understand relationships and relate to others, and is frequently associated with unusual or stereotypical rituals or behaviours. (RPWD ACT, 2016)[5].

Importance of ICT

"Information Communication Technology" includes all services and innovations relating to information and communication, including telecom services, web-based services, electronic and print services, and digital and virtual services. (RPWD ACT, 2016)[5].

Information communication technology (ICT) plays a vital role in the education system, ICT has to be included in the curriculum involved in supporting an individual with a disability to consider possible benefits for the person with disabilities in the school education program. (RPWD ACT, 2016)[5].

Assistive Technology (AT) as an integral part of a general classroom evolves it into an inclusive teaching as well as learning environment for children. AT as devices, objects, settings, technology hardware and software provide equal opportunities in positioning, communication, and activities, including learning routines for children with disabilities (RPWD ACT, 2016)[5].

Assistive technology can help the person with a disability to become more independent in work tasks in transition programmes and develop skills they can also use at home. This study mainly focuses on the Role of ICT in transition programmes for adults with Multiple Disabilities and Intellectual Disabilities. Assistive technology can provide a secure, comfortable environment for children and young people with Multiple Disabilities and Intellectual Disabilities.

Review of Literature

Bingimlas, K. A. (2009) [1]. This study mainly focuses on the use of ICT in the classroom is very important for providing opportunities for students to learn to operate in an information age of children with intellectual disabilities. Studying the obstacles to the use of ICT in education may assist educators to overcome these barriers and become successful technology adapted in the future inclusive education 6 for children with intellectual disability. **(Bingimlas, 2009)**[1]This paper provides a meta-analysis of the relevant literature that aims to present the perceived barriers to technology integration in science education. The findings indicate that teachers had a strong desire for to integrate ICT into education; but, they encountered many barriers.

PremaBasargekar, Chandran singhavi. K.J. Sowmiya (2017) [2] Author added that the effective implementation of ICT plays an important role in school education, especially in a developing country like India, to improve the quality of education, school teachers lack confidence and motivation to use ICT is one of the major barriers of its implementation in the school. These barriers can be either non-manipulative or manipulated which can be changed with the help of school/government policies.

Kristian Stancin, Natasa Hoic-Bozic (2019)[3] This study focus ICT can be used to assist students with disabilities in acquiring functional knowledge and functional skills to become more independent in everyday life skills. ICT intervention helps people with intellectual disability in life skills and academic skills.

Mohammad Afshar Ali, Khorshed Alam, and Brad Taylor (2020)[4], similarly, the author found ICT helps in Intervention for persons with intellectual disabilities in health care and behavioural constraints. The study investigates about the determinants of ICT usage for health care among persons with disabilities.

Methodology

The experimental method is followed for the ongoing study. 12 Samples are chosen for the study by using purposive sampling techniques from a special school in Chennai. The main independent variables are gender, age, locality, level of disability and economic status. The dependent variable includes in the study to assess the efficacy of ICT in transition programmes for Adults with Multiple Disabilities and Intellectual Disabilities. The checklist will be developed by the investigators. The intervention will be given to two groups (control and experimental group). The ICT-based intervention will be given in Activities of daily living skills for adults with Multiple Disabilities and Intellectual Disabilities.

Expected Outcome

The following are the expected outcomes of the ongoing research work.

- To promote awareness among assistive technology for persons with disability, families, peers and the Community about the RPWD Acts. (RPWD ACT, 2016)[5].
- To enhance the surrounding environment by using ICT for adults with Multiple Disabilities (MD) and Intellectual Disabilities (ID) in a transition programme.
- To highlight assessment and evaluation procedure of activities of daily living skills using ICT especially for adults with MD and ID in transition programmes.
- To follow the ICT in the curriculum, especially for adults with MD and ID.
- To create awareness about the various commission and committees giving importance to ICT activities in the curriculum especially for adults.
- To prepare a standardized tool to assess the importance of ICT in activities of daily living skills and transition programme for adults with MD and ID.
- To generate a need-based intervention plan for adults with MD and ID based on using ICT for the transition programme.

Conclusion

This study mainly focuses on the role of Information Communication Technology for adults in the transition programme of children with MD and ID. The ongoing experimental study of the role of ICT-based intervention for adults in transition programmes of children with Multiple Disabilities and Intellectual Disabilities.

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ISSUES AND CHALLENGES IN IMPLEMENTING INNOVATIVE TRENDS OF DIGITAL TECHNOLOGY IN THE TEACHING-LEARNING PROCESS

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Abstract

Today's world is undergoing a tremendous amount of change, particularly in the area of education. Modern and contemporary education is obligated to manage such adaptation as a result of a massive amount of input systematically. Current educational technologies, as well as the underlying teaching tactics and methods, have become an essential component of the teaching-learning process. An indispensable tool for delivering inclusive and fair-quality education is digital technology. It has a significant effect on the modern educational system as evidenced. The use of technology, digital content and instruction to enhance the educational process is known as digital education. During the pinnacle of the COVID-19 pandemic, digital technologies created a new paradigm shift in the whole education sector. Technical skills are required for a technology-based education system, as are institutional infrastructures for the teaching-learning process. This paper focused on the issues and challenges in implementing innovative trends of digital technology in the teaching-learning process.

Keywords: Innovative Trends, Digital Technology, Teaching Learning Process.

Introduction

The nature and breadth of education have undergone a significant transformation because of digital technologies. The role of digital technologies in education is growing as they not only transform and digitalize the on-campus teaching and [earning process, but also open education to the rest of the world. Digital technologies are potent too; they can enhance education in a variety of ways, including by making it simple for teachers to create instructional materials and by giving students new ways to study and communicate. Digital technologies are always seeking to develop unique solutions to increase access to education for people who do not have adequate educational facilities. Online systems were provided for conducting classes, exchanging resources, completing assessments and managing the daily operations of academic institutions. Students benefit from an exciting learning environment made possible by digital technology in education, which helps them focus on their studies without becoming sidetracked. The use of projectors, computers and other cutting-edge technological equipment in the classroom can make learning more interesting and enjoyable for pupils. Learning that is personalized and adaptive, thanks to digital technology, can give students the flexibility, personalisation and adaptation they need to satisfy their learning needs and improve their academic performance.

Digital Education

Modern technology and digital tools are creatively combined in digital education to advance the teaching and learning process. Digital Education is a learning strategy that uses technology and digital gadgets. It is sometimes referred to as TEL (Technology Enhanced Learning), digital learning or e-learning. The future of education through technology and digital devices lies in digital education. This is a brand new and expensive technical field that can assess any student in learning from any location in the nation.

Digital Technology in Teaching Learning Process

The advancement in the utilization of digital technology has influenced all aspects of our lives. Educational institutions regard the use of computers and the internet to improve education quality by making learning more relevant to life as a goal. Digital technology encourages learners to be more self-reliant and more dynamic in their learning. Effective use of digital technology necessitates a shift in teaching practices... Teachers must be familiar with the application, methodologies and possibilities of using digital technology.



Features of Digital Technologies in the Teaching-Learning Process

Innovative Trends of Digital Technology

The way that students, teachers and entire educational institutions engage with one another during teaching and learning is changing as a result of education technology. Inevitably strong and more practical trends in educational technology will manifest themselves in the upcoming years, bringing about a more complete and efficient teaching and learning environment.

Mobile Learning and Digital Content Platforms

It is defined as a method for gaining access to teaching resources and learning materials from any mobile device. In contrast to institution-based education, learners have access to learning resources and support whenever and wherever they need it. As digital content platforms gain popularity. the impact on how individuals study and interact with educational content will undoubtedly rise.

Artificial Intelligence (AI)-Powered Learning Environments

Artificial intelligence-enabled technologies -facial recognition, natural language processing and machine learning- are increasingly being employed in classrooms to make teaching and learning more effective and enjoyable. The AI-powered learning environment can provide students with a personalized learning experience and allow teachers to modify lessons to suit the needs of individual students.

Augmented Reality (AR) and Virtual Reality (VR)

Regardless of the setting, AR and VR may aid in creating immersive and engaging teaching-learning experiences. They will be utilized as a tool for experiencing and immersive learning more frequently.

Gamification of Learning

Gamification of learning is becoming increasingly popular in many educational institutions. Making teaching and learning more enjoyable and engaging is the aim of introducing game design aspects in educational settings.

Wearable Technology

As wearable technology becomes more widely available, customized and configurable, its impact on the teaching-learning environment will be profound. Wearable technology can aid in progress-making, providing performance feedback and providing real-time personalized instruction. Learners can use wearable technology such as smartwatches and VR handsets to listen to audio lectures, receive class notifications, creates voice notes and more.

Automated Assessment

Automated evaluation techniques will be utilized more frequently to evaluate pupils' progress. This provides educators with a greater understanding of student performance and areas in need of development. Automated assessment technologies can also provide analytical data to assist students in identifying and improving weak areas. Furthermore, automated grading technologies enable teachers to grade assignments fast and precisely, minimizing the time required for this work.

Adaptive Learning

Adaptive learning is enabling courses to be customized to meet the needs of each student. This will assist teachers in meeting the requirements of a diverse student population while also improving student learning outcomes. Teachers could undoubtedly personalize students' learning paces and pathways.

Cloud Computing

Cold computing will continue to be an essential tool for schools, allowing them to more effectively assess and save data. Additionally, because cloud-based books are accessible from anywhere, students can save money on pricey books.

Social Media in Learning

Social media has opened up new avenues for teachers to engage with one another and access and exchange knowledge. Additionally, it had a big influence on how teachers teach. It has affected teachers' additional resources to connect with and exchange knowledge.

Benefits of Digital Education

- Students have gained practical and technical expertise in addition to academic understanding.
- There are no restrictions on when you can learn or study. With digital learning, a student can take online courses or learn whenever they want from any location.
- Students can take time to learn any topic because study materials are accessible online.
- Learning may be made more engaging and interactive between students and teachers using digital technology.

Challenges in Using Digital Technology in Teaching and Learning Process

• Accessibility issues and Network Connectivity

One of the most important criteria for digital education is universal access to the Internet. For easy access to information, the government must accomplish it.

• Lack of Technical Support and Expertise at School

Teachers cannot be expected to overcome the barriers to employing digital technology unless they have adequate technical support in the classroom as well as whole school resources. According to Gomes (2005), ICT integration in teaching necessitates the availability of a technician and if one is inaccessible, the lack of technical support can be a barrier.

• Lack of Effective Technology Training

Another difficulty is teacher training. Teachers can only teach digital classes when they are proficient technologically.

• Time Constraints (Time Consuming)

The fact that using digital technology takes a lot of time is one main difficulty that a teacher faces. According to Becta's study (2004), a lack of time impacts a teacher's capacity to complete tasks in many aspects of their work with some of the participating instructors noting which aspects of ICT demand more time. These include the time needed to organize lessons, conduct internet research, experiment with and practise using technology, fix technical issues and get the necessary training.

Inadequate Teacher Competence in Using Digital Technology

Teachers who do not use computers in the classroom frequently perceive a " lack of skills " as a barrier to adopting digital technology to improve teaching and learning.

• Small Scale Interaction

The inability of technologies to facilitate interaction and dialogues between teachers and students is one of the main difficulties that teachers address. It is challenging for teachers and pupils to accurately perceive what the other one means with his/ her words due to restricted engagement.

• Technical Drawbacks

Adobe Connect's instabilities and glitches, acoustic feedback and poor audio quality are the most prevalent and disruptive issues. It is a challenge for teachers because diverse digital technologies are not integrated.

• People are Accustomed to The Status Quo

People, in general, like to keep doing things the same way they have always done them. It might be difficult to persuade people to use wholly new methods to achieve jobs that they believe they have always done well in the past. This is especially true in schooling.

People must comprehend how these skills complement and enhance their current techniques before they can be asked to adopt new technology in the field of education. They need to be aware of how the new technology will simplify some aspects of their work. Otherwise, people frequently hesitate to make necessary progress towards a full digital transformation. This statement is still valid for administrators of educational institutions like colleges as well as for the teachers who are faced with the challenge of reforming their classrooms.

• A Lack of a Clear Digital adoption Strategy or Direction

Adopting new technology can be difficult if we don't have a plan in place. If a clear objective and expected outcomes are not specified from the beginning, it can be difficult to determine how to attain this purpose and the projected outcomes when a huge institution is faced with the hazy task of completing a digital transformation.

Many people within the institution may feel intimidated by a change of this magnitude. However, leading educators and administrators ahead will be most successful
when a sound plan can clearly state what the school wants to achieve and the key points and actions, they will prioritize to accomplish their goal.

• Inadequate Knowledge of the Skills required for Meaningful Digital Adoption

People must also possess the technical abilities necessary to use the technology effectively if they are to adapt to the digital change occurring confidently and professionally in the education sector. When striving to successfully reform educational institutions, the skills gaps continue to be a key factor.

• Uncertain Data Images for The Institution

There is no need for educational institutions to be concerned about a lack of information on their students, classes or the school as a whole. Unfortunately, many institutions do not have the resources to completely integrate the plethora of data.

• The Functionality of Existing Systems

Many educational institutions already had several various tools and methods that they utilized to apply some limited types of technology since technology began to permeate the world of education during the last two decades. Unfortunately, because these technologies were not used as an integrated system, many of them do not communicate well with one another resulting in a mismatched system throughout the institution.

With incompatible systems, the school is faced with the difficult choice of replacing most of its equipment, which can be a substantial and overwhelming expenditure or attempting to employ a disparate system. Unfortunately, using fragmented systems simply serves to exacerbate the issue of data silos and postpone the requirement for system integration.

Conclusion

Although digital technologies provide global teaching and learning platforms, failure is practically certain unless the problems involved with utilizing them are thoroughly recognized and handled. Therefore, effective strategies and policies to address the difficulties educators experience while utilizing digital technologies in teaching and learning should receive more attention in future studies. The government's support for adopting cutting-edge trends in digital technology, students' and teachers' digital competencies, and the technological approaches (such as blended, online and hybrid learning, flipped classroom 0 that teachers use in the teaching and learning process should all be the subject of studies. If the challenge faced by teachers and students can be overcome, it is a step forward to enhance the teaching-learning process.

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SOCIAL MEDIA IN EDUCATION

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Abstract

Social media Use is being swiftly increasing during the first two decades of the twenty-first century. Social media is not only being used by technical people but also there is a heavy rise in the use of social media by the Learners Community. Due to the advancement and utilization of technology, all people use various applications on social sites that are available which can be easy to access and also allow them to interact with the users and converse with others. Social Media promote people to create, edit and share new forms of textual, visual and audio content for sharing and collecting information among the population rapidly. Social Media has a vital influence on our day-to-day activity as it helps a lot in every field of life such as advertisement, political field, economic field and educational field. **Keywords:** Social Media, Education.

Introduction

Colleges and universities are failing to recognize its potential as a communication and engagement tool for teaching and learning. However, in recent years, more and more schools, colleges and universities have begun to see the utility of using social media to connect with their collaborators, provide updates and information, promote knowledge transfer, and interact with their Learning communities.

Twitter

Twitter is a social media platform used by over 356 million people every day. Twitter has attained popularity because of its miniature bursts of information. Twitter in the classroom is the right path to assist students keep up with current trends and events. At only around 280 characters, users can learn bits of information or click a link to learn more extended information on topics ranging from breaking news to what's directed in entertainment. While the Twitter tool was created as a social media tool, many instructional rooms are using Twitter to extend learning and connect with teachers, students, researchers and parents outside of the instructional area. If you find an important article related to our subject in social media you can learn and share it on Twitter with your Learning Community. It is a great way to keep your co-teachers up-to-date on what's going on.



Instagram

Instagram is an online photo-sharing and social networking service. It enables users to take pictures and apply digital filters to them and then share them on social networking sites. Instagram constructs the learner's knowledge through spatial intelligence, logical-mathematical intelligence and interpersonal intelligence.

Spatial Intelligence

Spatial intelligence is a mental process through which the brain attempts to interpret certain types of incoming information. This information is anything visual – pictures, maps, plans etc. This intelligence is used very effectively in Instagram exercises.

Logical and Mathematical Intelligence

The mind judges the distance, size and other aspects of an object before clicking a picture or when viewing them, and also when editing pictures. Logical-Mathematical Intelligence is the detection of patterns, and the ability to evaluate problems and think logically. This intelligence can be put to use when teachers share some pictures with the students and ask them to work on them.

Interpersonal Intelligence

The ability of a person to comprehend desires, motivation and the intentions of others is referred to as Interpersonal intelligence. Teachers can engage the students in group Instagram activities

Face book

Facebook is a **social networking site** that makes it easy for you to **connect and share** with family and friends online. Originally designed for college students, Facebook is

the world's largest social network, with **more than 1 billion users** worldwide. Facebook is a unique tool that allows teachers and students to interact in a new way. Facebook is a potential education tool, you will discover several ways to integrate this platform into your classroom ie) Create a Facebook group for your class., Document class adventures, Use Facebook Live to provide additional help, **Teach students digital citizenship skills, Create Facebook polls, Develop fake profiles for characters,** Share educational content, **Post events,** Provide links to important documents and make global connections.

Conclusion

Social Media has high consequences on the education sector especially due to the pandemic. The pandemic situation and the advancement of technology have moved all schools, colleges and universities to take their instructional class through online. Social Media are helping teachers and students to communicate, clarify doubts; share knowledge and also carry out further research. Social media, Twitter, Facebook and the Internet are relevant to fields of education technology and this is still functioning and has a long period of induction but for the students, it is a challenge to learn via social media.

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STEM EDUCATION: AN OVERVIEW

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Abstract

STEM (Science, Technology, Engineering, and Mathematics) education has gained significant attention in recent years due to its emphasis on developing critical skills and competencies needed for the 21st-century workforce. This overview provides a concise summary of the key elements and goals of STEM education, highlighting its interdisciplinary nature and the integration of real-world contexts into the learning process. The abstract also explores the benefits of STEM education, such as fostering creativity, and problem-solving abilities, and promoting innovation. Additionally, it discusses the challenges and potential solutions in implementing effective STEM education initiatives. The abstract concludes by emphasizing the importance of STEM education in preparing students for future career opportunities and addressing societal challenges through a well-rounded, integrated approach to teaching and learning.

Keywords: STEM Education, interdisciplinary learning, real-world contexts, critical skills, problem-solving, creativity, innovation, challenges, career preparation, integrated approach

Introduction

In general Education and the educational system have changed and with time they will continue to change. After the pandemic, the complicated new normal and an ingenious education policy, the teaching and learning processes have swapped forever. Innovative changes like online schooling, smartboards, etc., are always taken forward by India to manage up the pace with world competitions. Over the decade Indian educators, academicians and policymakers have also put the finger on STEM Education.

STEM Education

STEM-Science Technology Engineering and Mathematics

It helps us to be technology friendly and to understand it in a better way Technology allows us to communicate instantly with people in our neighborhoods or around the globe. This innovation keeps us connected and can help us live safer and healthier lives. STEM Education, is where different projects are facilitated to get hands-on experience and they improve our knowledge and make us think critically and creatively.

Our inquiry skills are developed with STEM Education and the projects are designed in a way to uplift skills like critical thinking, the team working capacity, and public speaking ability. The learners are competent to make future goals.

Indian Government Initiatives

- The two initiatives namely **Vigyan Jyoti** and **Vigyan Prasar** (Engage with science)collaborate to improve opportunities for STEM education for girls. This collaboration targeted meritorious girls in India. The ultimate aim of all the policies and initiatives is to foster a scientific temper among Indian teens to pursue their higher education through STEM careers.
- Atal Tinkering Labs across the country under Atal Innovation Mission, 8706 labs for STEM learning were set up. 60% of them were set up in government schools. Numerous opportunities and exposures are provided to STEM learners using competitions at different levels, fairs, workshops, etc.

STEM Education teaching approaches

STEM included 4 fields of study, and each has its unique style of teaching and learning process, since the era changedtheir requirement differs, and new approaches for teaching and learning STEM has emerged, and the inter-disciplinary approach has become the trend of the subject. STEM education anchor point is taken away from only studying and emitting contents, instead a profound significance is set out on the application of scientific skills, mastering technology production skills and style thinking manner of a STEM learner. Most predominantly, STEM Education bridges the space between the classroom and real life.



Fig. 1: STEM education teaching methods

Under inquiry-based learning the following steps are followed, to make the process effective

i.Ask ii.Research iii.Imagine iv.Plan v.Create

Elements of STEM mindset

For any learning, the mindset is the prior the teacher must first set the mind of the learners so that whatever is taught can mould students



Fig 2: Elements of STEM mindset

Skills that STEM education develop

These skills are developed by STEM Education in students are

- Critical thinking
- Independent learning
- Great communication and collaboration
- Digital literacy
- Problem-solving
- Creativity
- Self-reflection

Challenges of STEM Education

- Socio-economic Challenge: India is a developing country where a majority of the population lives. The current population in their day-to-day activities basis faces social and economic problems in common. The real challenges lie in bringing parallel developments in both personal life as well as social life through STEM education. In this situation, it would be difficult for STEM Education to help them personally but it is expected that the problem can be resolved as well. The Indian Government has made many initiatives to inspire aspiring minds by relating STEM subjects to the future development of the nation.
- **Quality Infrastructure:** STEM Education deals with a challenge which is related to infrastructure, as a STEM subject needs a significant infrastructure to teach students so that the student can learn STEM subjects in depth, thus learning infrastructure requires

money to build them. Here comes the cost, since the infrastructure and the pieces of equipment are quite costly for STEM education, the institutions require a huge sum of investments.

- **The People:** Indeed, after all these challenges, the current situation of India is related to the people of India. India is a democratic country the significance is given to the people of the nation. The solution to the problem is to create awareness among the people of the nation about the importance and utility of STEM subjects and their procedures
- Scientific and Technological Challenge:Dare is that all the stakeholders which included the institution, teachers, Heads of the institutions and so on should have scientific and technological knowledge.Before educating the learner, the teachers themselves should possessfiner knowledge that would enhance the learner's learning. Teachersproficient in STEM subjects and encouraging children to innovate ideas are key to success.

Advantages

- Complex topics can be understood even more deeply through STEM education.
- Provides STEM learners with thinking skills such as analytical, lateral, and critical thinking, also they get problem-solving ability to succeed.

Disadvantages

- STEM is a very broad concept they do not possess proper guidelines and parameters for trainers
- The standards at various levels are not set so far since Stem education is in its initial stage.
- Underfunded schools face a financial crisis in associating with STEM
- Excluded subjects like arts and literature

Conclusion

Our technology era wanders for skilful professionals to reach solutions for all realworld problems. The perfect aid aims to develop young aspiring minds and is possible only through STEM Education. Newly emerging professions require STEM graduates (over 85% of jobs by the year 2030). It's important to make the STEM workforce ready, so let's take all the required efforts to lift our generations to be highly capable.

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GAMIFICATION AND LEARNING: ENGAGING STUDENTS THROUGH PLAYING

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Abstract

Ask most students what they enjoy doing in their spare time and further than likely the answer will involve some kind of game, and most likely that game will involve technology. Because we know this, as preceptors, we can use this knowledge to our advantage to engage scholars in conditioning they will enjoy(1). Incorporating norms through gamification can be one of themost profitable strategies to use in any academic grade and can fluently be incorporated in original instruction, review, and indeed in the assessment of chops learned.Game-based learning is also an active learning fashion where games are used to enhance pupil literacy. Then, literacy comes from playing the game and promotes critical thinking and problem working chops. **Keywords:** Game, Game-Based learning, Digital games, Technology.

Introduction

The development of technology led to the fascinating progress of computer games. In the education field, games can be employed as a means to deliver literacy content. colourful form of game involvement in literacy and pedagogy can be set up in several studies(2– 5). Among them, game-grounded literacy and gamification have come the prominent concern to numerous experimenters. This study aims to punctuate the differences between game- Based learning and gamification. This study also tracked back the position of game-based learningand gamification in deliveringlearning content. Understanding this may lead to design applicable design of learning deliverance. Some situation is suitable to break by game- Based learning, on the other hand, another situation may be proper to break by game- Based learning.Gamification of education is a strategy for adding engagement by incorporating game elements into an educational environment (Dichev and Dicheva 2017).

Gamification In Learning And Why It Is Important

Gamification is the process of using game rudiments in an on-game environment. It has numerous advantages over traditional literacy approaches, includingadding learner provocation situations and Improving knowledge retention. More learner engagement through social mechanisms like badges, points, or leaderboards. In our ultramodern world, technology is naturally a driving force behind literacy and the development of classes. To achieve better results from learners, moment's preceptors are decreasingly exercising slice-edge digital tools and strategies in theirtutoring styles (6). Gamification for literacy is one of these strategies used decreasingly by preceptors around the world. Using gamified rudiments can appreciatively impact pupil engagement and collaboration, allowing them to learn more efficiently as a result. Gamification is about applying gaming strategies to ameliorateliteracy and make it more engaging for individuals. Gamification for literacy can be salutary because games inseminate lifelong chops similar to problem-working, critical thinking, social mindfulness, cooperation, and collaboration. Games also motivate individuals, increase interest in certain subjects, reduce the rate of waste among learners, ameliorate grades, and enhance their cognitive capacities.

Strategies In Gamification For Learning Point systems

Assigning points for completing different tasks can encourage individuals to work hard. It also provides an accurate representation of their trouble position to show how important they've progressed throughout the course or assignment.

Badges

Badges are a fantastic way to admit and award people for their sweats. An emblem is an award given in the form of a virtual object or a projected image on your profile. It's a fantastic way to show that you value the hard work and trouble put into the task.

Leaderboards

Leaderboards are great for creating competition among scholars, as they will want to see their name on top and work harder as a result. You can indeed produce separate leaderboards grounded on different brigades, dividing the individualities into lower groups for better competition

Challenges

A challenge is a task that requires an individual to complete a commodity using their time and trouble, but it doesn't have any negative impact if failed or done inaptly. Challenges can incorporate literacy strategies similar to problem- working where individuals need to suppose outside the box to develop a result.

Engaging Students through Playing

Using technology in this manner helps increase student engagement and motivation, which are both essential for supporting effective learning. Some examples could be the following

Khan Academy

Khan Academy is a Coming- Generation educationnon-profit that provides fully free online literacy to its scholars. It routinely employs gamification practices to help in the dimension of progress and achievements, as well as allow scholars to contend through colophons, leaderboards, and more.

Quizlet

Quizlet is a lately popularized tool that utilizes gamification to produce simple, effective quizzes on study material. scholars using Quizlet frequently learn more effectively and with further engagement than those that use the traditional flash-card-grounded approaches.

Duolingo

Duolingo is an education platform that has applied gamification. It's a platform where druggies learn languages through practice and play. Learners can acquire points, position up, and contend with others to stay motivated in the literacy process.

Kahoot!

Kahoot! is an educational game-grounded literacy platform that preceptors can use in the classroom, but it uses numerous game mechanics that follow the gamification methodology. It has a" ghost mode" wherein scholars can challenge themselves to beat their scores, and it has leaderboards to contend with one another. druggies produce their games and quizzes which they also partake in with other preceptors, scholars, or druggies who may want to play them online at any time of day.

Google Read-AlongApp

The Google Read-Along app is a great illustration of gamification in education. It uses gamified features similar to points and colophons to help ameliorate the reading experience for youthful learners who are just beginning their trip with books. This can be used in both primary and secondary seminaries, especially when motivating scholars toward knowledge pretensions and perfecting their overall reading chops.

Teacher's Perceptions of Game-Based Learning

The main reason for espousing literacy-probative technology is to support and ameliorate scholars'educationalissues. thus, combining traditional and technologygrounded approaches(in the form of game-grounded literacy) is largely important for perfecting scholars 'provocation to engage with educational material(7). operation of the game-grounded educational strategy is eased by the added availability of technology and the increased time scholars spend playing videotape games, which has redounded in a gaming culture that ought to be subsidized by the education sector(7). Children parade increased situations of pleasure when they learn through a mode that is interactive and completely utilizes their problem-working cognitive capacities. This implies that applying a technological approach is the optimal means of achieving classroom pleasure. still, utmost preceptors are not completely acquainted of gaminggrounded approaches to education and, therefore, have little appreciation of its eventuality. numerous preceptors parade reservations regarding the use of games and, when conforming them for class conditioning, do so with little understanding of the gamegrounded literacy approach itself. still, this situation is perfecting following expansive exploration indicating the increase in academic performance swung by gamification in literacy.

Preceptors play a vibrant part in enforcing game-grounded education tactics. thus, it's critical to understand preceptors' stations toward the gamification of literacy. preceptors' primary concern regarding the preface of technology relates to its interruptive nature, with some preceptors encountering obstacles in this regard when enforcing some gaming aspects during classroom conditioning(8). Accordingly, understanding preceptors 'stations towards technology-grounded literacy is essential for determining their amenability to apply and borrow gamification in education. To understand these stations, one must examineseminaries' situations of acceptance of similar technologies(9).

Advantages

Student Motivation and Engagement

Student provocation and engagement are maybe the clearest and most important reasons for integrating digital games in the classroom. The games use images, sounds, and colours to foster responsiveness in players; further, the games are structured to gain maximum stoner attention.

Teamwork

Personal computers have come decreasingly current in the once many decades. currently, nearly allscholars can go to a tablet or a laptop in class, thereby enabling the employment of wide digital game-grounded literacy(10). The advancement of Internet technologies has also swung the integration of bias in institutions, allowing preceptors to ever controlscholars'devices. This has enabled preceptors to assign complex games to groups of scholars in which the scholars can work together over an online medium tobreak the problems and mystifications in question. Playing online demands that scholars apply cooperation chops, similar to communication and concession, to find the stylish result to a given challenge.

Quick Feedback and Progress Record

Schaaf and Mohan(2017) established that technology used for educational purposes can alsogive important data for pupil progress reports. For case, a language game similar to Duolingo can report scores and progress throughout the game. These games give scholars instant feedback and reports on their progress and also allow them to return to completed situations to ameliorate the results of their scores.

Risk-taking and Experimentation

Learning through computer-dissembled worlds allows scholars to fantasize about the real-world feasibility of certain choices, ideas, and structures.

Preparation for Future Jobs

Computer knowledge and computer literacy have gradationally come abecedarian conditions for numerousjobs. To be suitable to successfully perform in similar places, scholars must be trained in the use of technology(8). also, furnishing scholars with good technical knowledge can have a positive influence on the liability of unborn technological advancement. furnishing scholars with access to technology can allow them to work, study, and explore whenever they need to. The Internet has made high-quality coffers available to everyone with the knowledge and capability to pierce them. This can help scholars maintain their curiosity in technology-related ideas as they advance through learning institutions into council and, eventually, into the professional world.

Disadvantages

Interference of Physical Play

One review of the digital game- Based learning is that it could contribute to a lack of physical exercise. While digital games can present numerous internal exercises, they fail to give physical exercise. Playing videotape games is a largely unresisting exertion, unlike physical playing(8). thus, preceptors and parents should limit the time scholars spend playing videotape games to outside of 1 - 2 hours per day. They should also ensure that physical play and sports remain the core of scholars' conditioning(10); in the long term, this can help health complications associated with physical inactivity.

High outfit Costs

Although digital technology has come decreasingly affordable in recent times, it still costs a lot of plutocrats. Anacademy's capability to go digital outfit depends on its fiscal coffers. This can produce a digital peak, with some scholars from financially poorer institutions lacking access to technological outfits that scholars at fat institutions can go to. Through this, a technological skill difference can grow between scholars from different

institutions. scholars from better-off seminaries can accordingly be more set for unborn technology-related jobs than those from poorer seminaries, similar to seminaries in developing nations. This digital peak could indeed be present among students in the same classroom.

Conclusion

It could be concluded that the advantages of adding game-based learning to the classroom far outweigh its disadvantages, which is in complete agreement with Marti-Parrenoet al.(2016). For games to be educational and aid scholars, they must concentrate on the content to emphasize academic models and should thus be developed by scholars and preceptors and be grounded on good academic doctrines. preceptors must also cover game- Based learning classes andinsure that when thescholars fail in a game or lose in a position, the pupil isn'tnegatively affected butrather encouraged to do better in future. It's also upon the preceptors to educate theirscholars that succeeding in a game isn't the ultimate thing and that they shouldn't look down on their opponents who lose. The schoolteacher should ensure that the game- Based learning engages and motivates students while also developing a growth mindset.

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DIGITAL LITERACY: NAVIGATING THE DIGITAL WORLD WITH COMPETENCE AND RESPONSIBILITY

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Abstract

The ability to access, assess, and distribute information via various digital channels is referred to as digital literacy. It includes the capacity to produce and communicate through writing, graphics, and other media formats, in addition to technical abilities. As technology advances and pervades more facets of our lives, digital literacy is becoming increasingly vital. The definition, history, pedagogical principles, 21st-century abilities, significance, and deep learning elements of digital literacy are discussed in this article. It also emphasizes the interconnection of digital competencies and their significance in preparing individuals to flourish in the digital world.

Keywords: Digital Literacy, Digital World, Competence, Responsibility

Introduction

The capacity to access, assess and share information through typing and other media on various digital platforms is referred to as digital literacy. It assesses a person's grammar, writing and typing abilities and ability to create text, pictures, music and designs utilizing technology. Digital literacy is defined by the American Library Association (ALA) as "the capacity to utilize information and communication technologies to discover, analyze, create and convey information, involving both cognitive and technical abilities." While digital literacy was first centered on digital skills and stand-alone computers, the introduction of the internet and the usage of social media has resulted in part of its attention shifting to mobile devices. Digital literacy, like other growing definitions of literacy that acknowledge cultural and historical methods of generating meaning, does not replace conventional kinds of literacy, but rather builds on and develops the abilities that serve as the foundation of old forms of literacy. Digital literacy should be part of the learning process (Kumar, 2023, pp. 76-83).

Digital literacy is based on the growing involvement of social scientific research in the field of literacy, as well as principles of visual literacy, computer literacy and information literacy. Digital literacy shares many defining concepts with other domains that employ modifiers in front of literacy to indicate ways of being and domain-specific knowledge or ability. The phrase has risen in prominence in educational and higher education contexts and it is used in both international and national standards.

History of Digital Literacy

Digital literacy is frequently considered as its progenitor, media literacy. Media literacy education began in the United Kingdom and the United States in the 1930s and 1960s, respectively, as a result of war propaganda and the development of advertising. Educators were also concerned about manipulative messages and the rise of various types of media. Educators began to advocate media literacy education to educate people on how to examine and assess the messages they were receiving from the media. Individuals with the capacity to criticise digital and media information may spot biases and assess messages independently.

Individuals must display digital and media literacy skills to independently assess digital and media communications. Renee Hobbs compiled a list of abilities that reflect digital and media literacy proficiency. The capacity to study and grasp the meaning of communications, determine the reliability and assess the quality of digital work is part of digital and media literacy. A digitally literate person becomes a socially responsible part of their community by raising awareness and assisting others in finding digital solutions at home, in business, or on a national scale. Digital literacy is more than just reading and writing on a digital device. It also requires an understanding of other media forces, such as video recording and uploading.

Pedagogical Concepts

Digital literacy is a computing study area in academia, alongside computer science and information technology. Given the numerous effects of digital literacy on students and educators, pedagogy has responded by stressing four distinct modes of dealing with digital media. Text-participating, code-breaking, text-analysing and text-using are the four models. These strategies not only allow students (and other learners) to fully connect with the media, but they also improve the individual's capacity to relate the digital material to their life experiences.

21st-Century Skills

21st-century abilities certain transdisciplinary skill sets are required for digital literacy. Warschauer and Matuchniak (2010) identify three skill sets, or 21st-century skills, that people must master to be digitally literate: information, media and technology skills, learning and innovation skills and life and career skills.

According to Aviram et al., being competent in Life and Career Skills also requires flexibility and adaptation, initiative and self-direction, social and cross-cultural skills, productivity and accountability and leadership and responsibility. Because digital literacy is made up of several literacies, there is no need to look for parallels and distinctions. Media literacy and information literacy are two examples of these literacies. Aviram and Eshet-Alkalai argue that the umbrella term "digital literacy" encompasses five categories of literacies.

- Photo-visual literacy is defined as the capacity to read and derive information from images.
- Reproduction literacy is the capacity to use digital technology to produce new works or to mix current works to create their own.
- Branching literacy is the capacity to travel successfully in the non-linear medium of digital space.
- Information literacy is defined as the capacity to seek, identify, assess and critically evaluate information found on the internet and library shelves.
- Socio-emotional literacy is concerned with the social and emotional components of being present online, whether through interacting, collaborating, or just consuming material.

Importance of Digital Literacy

Digital literacy refers to the abilities necessary to utilise technology in a safe, effective and responsible manner. As technology becomes more integrated into daily life, the need of mastering digital literacy skills grows. Here are five reasons why digital literacy is critical.

1. Support Educational Progress

One of the primary reasons for the importance of digital literacy is the rising usage of technology in education. In the last 15 years, the use of technology as a learning aid has increased, with technological platforms such as computers, tablets and the internet becoming more prevalent in K-12 classrooms and institutions. Digitally literate students will feel more at ease and competent in these learning platforms, whilst those who are not will have their progress hampered by incapacity or lack of confidence in navigating the connected technology. Furthermore, with the bulk of standardised state tests conducted online, it is becoming increasingly critical that students have the confidence to focus on the content at hand rather than being impeded or distracted using technology for the test.

2. Increase Online Safety

Online threats are complicated and ever-changing, with malicious people or organisations constantly discovering and inventing new methods to exploit others. While digital literacy cannot prevent kids from encountering online safety concerns, it can provide them with critical information, skills, processes and resources to assist in safeguarding their safety and privacy to the greatest extent feasible.

3. Understand Digital Responsibility

Along with online safety, digital literacy teaches the value of digital responsibility, which is the capacity to consume and transmit information online in an ethical manner.

Students' increased reliance on technology exposes them to issues such as copyright and plagiarism, cyberbullying, evaluating informative sites and engaging properly with others. Students with strong digital literacy abilities are better able to grasp and negotiate these issues, making them more responsible digital citizens.

4. Enhance Digital Equity

Another reason why digital literacy is essential is that it aids in the closing of the digital gap. Despite the spread of technology in homes and educational institutions, a disproportionate share of minority employees lacks digital literacy skills. Making digital literacy a priority in K-12 education can assist to promote digital literacy among underrepresented groups, allowing these children to skill and have more professional options in the future.

5. Encourages Lifelong Learning

While technology is always evolving, digital literacy foundations provide students with fundamental knowledge and abilities that may be used in numerous forms of technology today and in the future. Learning basic concepts like input/output, application functioning, identifying hardware components and how to utilise them and so on, for example, can give basic transferable knowledge that can be used for new and developing technologies.

Digital Literacy and Deep Learning

Deep learning, of which there are six fundamental abilities, is a key component of digital literacy in the field of pedagogy.

- **Collaboration:** Strong interpersonal and team-related abilities, as well as the ability to work effectively with others.
- **Creativity:** The ability to analyse prospects entrepreneurially and ask the proper questions to produce new ideas.
- **Critical thinking:** The ability to assess information and arguments, see patterns and connections, develop meaningful knowledge and apply it in the actual world.
- **Citizenship:** The ability to evaluate concerns and solve difficult problems based on a thorough awareness of various beliefs and worldviews.
- **Character:** Grit, tenacity, persistence and resilience, as well as a desire to make learning an intrinsic part of daily life.
- **Communication:** Being able to communicate successfully with a variety of audiences through a variety of approaches and technologies.

Deep learning, on the other hand, is not a novel notion. Over the years, political involvement and policy changes have hampered profound learning in our institutions, with an emphasis on helping students pass tests at the expense of all else.

Digital Competences

The Open University Nederland published an article in 2013 that defined twelve digital skill domains. These domains are based on the information and abilities that people must learn to be literate.

- A. General and functional knowledge. Understanding the fundamentals of digital gadgets and how to use them.
- B. Use in everyday situations. Being able to incorporate modern technology into daily activities.
- C. Advanced and specialised skills in work and creative expression. The ability to use ICT to express creativity and improve professional effectiveness.
- D. Communication and collaboration through technology. Being able to successfully connect, share, communicate and work with people in a digital world.
- E. Data processing and management. Using technology to enhance your capacity to collect, analyse and evaluate the relevance and purpose of digital information.
- F. Confidentiality and security. Being able to safeguard your privacy and implement suitable security measures.
- G. Legal and ethical considerations. Behaving responsibly and socially responsible in the digital world, as well as being aware of the legal and ethical implications of ICT use.
- H. A balanced approach to technology. Having an informed, open-minded and balanced perspective on information society and the usage of digital technology.
- I. Understanding and awareness of the role of information and communication technology in society. Understanding the larger context of ICT use and development.
- J. Getting to know and use digital technology. Investigating and integrating new technology.
- K. Making well-informed selections about acceptable digital technology. Understanding the most relevant or common technology.
- L. Consistent use demonstrates self-efficacy. Using digital tools confidently and creatively to improve personal and professional effectiveness and efficiency.

The listed competencies are interconnected. Competencies A, B and C are the fundamental knowledge and abilities required to be completely digitally literate. After acquiring these three competencies, it may build on this knowledge and those abilities to develop the remaining competencies.

Conclusion

In today's technology-driven society, digital literacy is an essential skill set. It enables users to confidently traverse the digital realm, allowing them to efficiently access, analyse,

and produce information. We can assist students' educational development, improve online safety, create digital accountability, promote digital fairness, and nurture a lifelong learning mentality by introducing digital literacy into the school curriculum. Furthermore, digital literacy promotes cooperation, creativity, critical thinking, citizenship, character development, and effective communication, which are also elements of deep learning. Individuals may become effective digital citizens who are well-equipped to flourish in the digital era by cultivating digital abilities across multiple areas.

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ENTREPRENEURIAL EDUCATION: FOSTERING CREATIVITY AND INNOVATION

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Abstract

There is a global trend to take advantage of opportunities in entrepreneurship to grow and develop. The ability to create something new, whether it is a solution to a problem, a new tool or approach, or an original work of art. Students can gain these skills by creating activities that involve real-world issues. Creativity, innovation and entrepreneurship are important things in the launch of each innovative product and service that comes with advanced technology. Entrepreneurship is considered a key factor in economic development. This paper mainly focused on creativity and innovation in entrepreneurship. Creativity and innovation have become the vital point to enhance the value of entrepreneurship. Creativity helps us how to improve existing business practices. Innovation is about making a process that can convert inventions or gain ideas to become more marketable products or services. The study aims to analyze and elaborate on the roles of creativity and innovation in entrepreneurship.

Keywords: Entrepreneurial Education, Fostering Creativity, and Innovation

Introduction

In the past few decades, there has been a lot of enthusiasm surrounding the idea of incorporating Creativity and innovation in entrepreneurship. Entrepreneurship is considered a key factor in economic development. This paper mainly focused on creativity and innovation in entrepreneurship. Creativity and innovation have become the vital point to enhance the value of entrepreneurship. Creativity helps us how to improve existing business practices. Innovation is about making a process that can convert inventions or gain ideas to become more marketable products or services. The study aims to analyze and elaborate on the roles of creativity and innovation in education. This has been claimed to have a wide range of consequences, including enhanced societal resilience, job creation, and school engagement in addition to economic growth and job creation.

However, putting this into practice has presented several difficulties. alongside the fore mentioned benefits. a lack of time and money, educators' aversion to consumerism, Weak educational frameworks, challenging assessment issues, and unclear definitions are some of the attempting to include entrepreneurship into education, practitioners have faced difficulties. Creativity and innovation have become crucial for entrepreneurship success in today's quickly evolving and competitive business environment. To be competitive, business owners must consistently generate new concepts, create original solutions, and think outside the box. Due to the importance of creativity and invention, entrepreneurial education has developed to include methods that encourage these vital abilities. This essay examines the value of creativity and invention in business as well as the critical role that entrepreneurial education plays in developing these qualities.

The two most frequent terms used in this field are 'enterprise education' and 'entrepreneurship education'. The term enterprise education is primarily used in the United Kingdom and has been defined as focusing more on personal development, mindset, skills and ability, whereas the term entrepreneurship education has been defined to focus more on the specific context of setting up a venture and becoming self-employed (QAA, 2012, Maheiu, 2006).

Entrepreneurship Education - for, by and about Entrepreneur

Entrepreneurial education is often categorized into three approaches, (Johnson, 1988, Heinonen and Hytti, 2010, O'Connor, 2013). Teaching "about" entrepreneurship means a content-laden and theoretical approach aiming to give a general understanding of the phenomenon. It is the most common approach in higher education institutions (Mwasalwiba, 2010). Teaching "for" entrepreneurship means an occupationally oriented approach aiming at giving budding entrepreneurs the requisite knowledge and skills. Teaching "through" means a process-based and often experiential approach where students go through an actual entrepreneurial learning process (Kyro, 2005). This strategy frequently draws from entrepreneurship's broader definition and can be used in other themes relating entrepreneurial traits, methods, and experiences to general education.

Understanding the Role of Creativity and Innovationin Entrepreneurship

Creativity is the ability to generate novel and valuable ideas, while innovation is the process of implementing these ideas to create a new or improved product, service, or process. Both creativity and innovation are fundamental to entrepreneurship as they drive the creation of unique business models, disrupt industries, and solve complex problems. Entrepreneurs who embrace creativity and innovation are better equipped to identify opportunities, adapt to changes and drive growth. Creativity and innovation help develop new ways of improving an existing product or service to optimize the business. This also allows entrepreneurs to think outside the box and beyond traditional solutions. Through this opportunity, new, interesting, potential yet versatile ideas come up.

Nurturing Creativity and Innovation in EntrepreneurialEducation: Encouraging a Growth Mindset

Entrepreneurial education focuses on cultivating a growth mindset among students, emphasizing that intelligence and abilities can be developed through dedication and hard work. This mindset fosters a willingness to take risks, explore new ideas, and learn from failures, enabling students to unleash their creative potential. A theoretical framework for learning by doing is based on the work of Russian researchers like Vygotsky, Leont'ev and Galperin, this conceptual model for learning-by-doing. The student participates in learning by doing through working with others, typically their peers but also external stakeholders. This interaction is based on a shared set of "mediating artefacts", such as shared tools, rules, processes, knowledge, signs, ideas, etc.

The two primary effects of human activity, according to Vygotsky and colleagues, are the "externalisation of activity into artefacts" (Miettinen, 2001, p. 299) and the "internalisation of activity and gradual formation of mental actions," i.e. the development of new mental skills (Arievitch and Haenen, 2003). In this case, internalisation is the outcome that leads to value generation through externalisation. intense learning. Tools, regulations, and mental artefacts can all be part of shared artefacts, new artefacts, and processes, information and concepts.

Design Thinking and Problem-Solving

Entrepreneurial education incorporates design thinking methodologies to train students in problem-solving and innovation. This approach encourages students to empathize with users, define problems, brainstorm ideas, prototype solutions, and iterate based on feedback. By engaging in this iterative process, students learn to think critically, analyze complex situations, and generate innovative solutions.

The advantages of promoting a design-based approach when looking at problem placement and framing open up new prospects for students studying entrepreneurship. The study's justification: In the literature on design thinking for entrepreneurship education, the significance of placement and framing of open-complex problems have not been completely acknowledged. The seminal work of Richard Buchannan, a major figure in the field of design thinking, provided a deeper understanding of the positioning and framing of problems that could help educators promote the thinking abilities necessary to deal with the unpredictably changing environments that aspiring entrepreneurs.

Collaboration and Interdisciplinary Learning

Entrepreneurial education promotes collaboration and interdisciplinary learning, creating opportunities for students from diverse backgrounds to work together. Collaborative projects and team-based activities encourage the exchange of ideas, perspectives, and knowledge, fostering creativity and innovation through a synergistic approach.

Experiential Learning and Real-WorldChallenges

Hands-on experiences, such as internships, start-up incubators, and entrepreneurship competitions, provide students with real-world exposure and challenges. These experiential learning opportunities enable students to apply their creative and innovative skills in practical settings, refining their abilities and building confidence.

Experiential learning, which is seen as a pedagogical strategy in which students learn by doing, is increasingly popular in the teaching of entrepreneurship. Therefore, the goal of this work was to conduct an organised review of the literature on the use and assessment of experiential learning in entrepreneurship education. The teaching of entrepreneurship is becoming more and more popularly known as experiential learning, which is viewed as a pedagogical technique in which students learn by doing. As a result, the objective of this work was to carry out a systematic review of the literature on the application and evaluation of experiential learning in entrepreneurship education.

Fostering an Entrepreneurial Mindset:

Entrepreneurial education not only nurtures creativity and innovation but also fosters an entrepreneurial mindset among students. This mindset encompasses traits such as resilience, adaptability, initiative, and a willingness to embrace uncertainty. By instilling an entrepreneurial mindset, educational institutions empower students to proactively seek opportunities, take calculated risks, and drive innovation in their chosen fields.

Impact on Society and the Economy:

Entrepreneurial education that fosters creativity and innovation has far-reaching impacts on society and the economy. It produces a new generation of entrepreneurs equipped with the skills and mindset needed to address pressing challenges, create jobs, and drive economic growth. Moreover, these individuals become agents of change, bringing innovative solutions to social and environmental issues.Because of the rising rates of unemployment and underemployment in developing nations, entrepreneurship education is crucial. Every year, thousands of graduates leave our country's various educational institutions, but despite being literate and jobless, they are unable to meet industry standards because they lack the necessary skills. As a result, they end up burdening society rather than making an economic contribution to it and the country. To build an entrepreneurial environment that would support entrepreneurs in starting their businesses and helping to grow the economy, it is felt that there is an urgent need for a skill-based education system and the promotion of entrepreneurship.

Conclusion

Creativity and innovation are essential for entrepreneurs to thrive in today's dynamic business environment. Through entrepreneurial education, students are empowered to cultivate their creative potential, develop innovative solutions, and adopt an entrepreneurial mindset. By incorporating strategies such as growth mindset cultivation, design thinking, interdisciplinary learning, and experiential learning, educational institutions can effectively foster creativity and innovation. The resulting entrepreneurial mindset not only benefits individuals.

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EFFECTIVE USE OF SOCIAL MEDIA

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Abstract

Social media has become a vital part of student's life, providing both benefits and problems. This essay investigates how social media may be used effectively for learning and personal improvement. It discusses various benefits such as improved education through diverse perspectives, increased social awareness, fostering creativity, developing skills, expanding social connections, blogging, collaborative learning, building self-confidence, serving as a stress reliever, social media marketing, global exposure, and the importance of responsible usage. It also recognises the importance of monitoring and mentoring youngsters to ensure they use social media in a good and responsible manner. Parents and teachers may enable children to become aware and creative individuals in the digital era by working together. **Keywords:** Effective Use, social media, and learning.

Introduction

The use of social media is at an all-time high. Students have successfully integrated social media into every part of their everyday life. The growing influence of social media has both aroused alarm and increased overall connection among individuals. Social media is an essential component of today's society. With so much information available on the Internet, it has become the very fabric upon which our civilization is formed. With children and teenagers becoming heavy users of social media, it is estimated that teens spend an average of 8 hours each day online. Teenagers and young people, who are at the forefront of shaping the future, spend an astonishing amount of money of time online.

Nowadays, owning a smartphone is an increasingly frequent event. With nearly everyone carrying a smartphone, it is becoming easier to utilise social networking sites and access the internet. For many students, social media serves as a tool for maintaining relationships with classmates and communicating successfully with them. Since the last decade, social media has been promoted as a platform for young people to gather online and connect socially as if they were in person, regardless of their geographical distance. Geographical boundaries have been removed and the conventional method of creating contact and relationships has been abandoned. There are probably kids out there who are unaware of numerous other applications of the Internet than their favourite social media platform.

Regardless of social media's achievements, one cannot just turn a blind eye to the numerous difficulties that come with it. While social media may be used to promote positive and beneficial ideas in society, bad results such as cyberbullying and other online risks constitute a significant concern. When utilized correctly, positive behaviour characteristics make social media an excellent tool for young people. As a result, determining the advantages acquired by mass users of social media, such as students, is critical.

Utilise Social Media Efficiently for a Child's Learning 1. Education

The traditional way of collecting information and developing knowledge has taken a 180-degree flip. Social media has several applications and its usefulness to education cannot be overstated. It may be used to efficiently teach young people. While one-on-one instruction is ideal, social media may achieve the same thing far more efficiently and to a much larger audience all at once. The presence of people with multiple perspectives contributes to the creation of a secure place in which diverse beliefs and viewpoints are accepted. Students can take lessons from e-learning websites and share their discoveries or questions on various social media platforms. Sites like YouTube allow people to voice their thoughts on a variety of topics. They may build their own identity while generating millions of views to reach the top of search engines. That is why social media plays a unique role in education.

2. Spreading Awareness

People may use social media to raise awareness and seek justice when it is denied. It serves as a societal voice of reason. Various social networking sites, such as Facebook and Twitter, offer forums for people to discuss their experiences. The youth are using these platforms to give voice to the voiceless. On Facebook, for example, groups like "Disability are not inability" are being formed to raise awareness about how society treats the disabled. One of the most essential purposes of social media is to disseminate information to people to raise awareness. Most of these groups are founded by young people who see the need of treating everyone equally and view social media as the ideal platform for spreading that message. This demonstrates the generation's level of empathy. Social media has grown to be one of the most powerful tools in history for effecting change through public demand.

3. Enhances Creativity

Social media serves as a platform for students to demonstrate, nurture and perfect their diverse abilities by sharing images, blogs, individual articles, videos, audio snippets and so

on. It provides pupils with opportunities. Social media users are constantly sharing visuals and material. This has provided an opportunity for young people to be creative and inventive. Social media platforms rely heavily on active engagement and the sharing of various types of material. This encourages young people to think outside the box and create fresh content while sharing knowledge. It's encouraging to put your unique thoughts and creativity online and obtain acceptance and encouragement. This not only boosts your confidence but also allows you to believe in yourself. The material they post is unique, but new applications and websites with new methods to express creativity and originality appear everyday Crowdfunding platforms, for example, can also assist in raising financing for innovative ideas and services.

4. Boosts Skills

Teens may now polish several talents that are useful in the real world thanks to social media. Young people are increasingly able to communicate freely and effortlessly in many social situations online, just as they will in their job later in life. This is due to the continual exposure they receive from being online and interacting with other individuals, some of whom are potential employers. Young individuals develop abilities that allow them to contextually analyse and comprehend diverse experiences, as well as psychologically prepare themselves for future scenarios. Social media may help you meet new people and create a network. Social media may be used to sell and reach out to potential employers and workers. Sites like YouTube feature hundreds of educational videos that allow anybody to polish and enhance their numerous abilities and talents, such as playing the guitar, swimming and even cooking.

5. Making Friends

Teens might gain confidence and independence by using social media. Engaging in social networking sites may be an exciting new experience for young people. It's like going on a new adventure where various talents are required. Young people learn to shape their personalities to be noticed or have a strong internet profile. Social media allows you to connect with individuals from all over the world who may share your hobbies, beliefs and opinions. It is difficult to make and retain friendships after a certain age. A hectic schedule and a lack of drive take over. Social media removes this barrier and allows you to develop a global network of pals.

6. Blogging

Blogs are a means to communicate your thoughts, emotions, sentiments, etc it also functions as a nice outlet. While reading blogs is a terrific method to learn new things and keep current, becoming a blogger is also a smart option. Blogs assist you in developing your distinct style and cultivating a new personality. Blogging is a relatively new marketing concept. Whether your youngster writes about life, poetry, maths, or fashion, the practice will undoubtedly improve writing abilities and boost self-esteem. Your child will learn how to advertise himself/herself online by publishing blogs on social media, which is a key skill for future businesses. Many individuals are inspired by reading blogs or viewing vlogs of aspirational/ prominent persons. Students can communicate with one another via blogs with their role models.

7. Collaborative Learning

Why should learning be limited to school or academic settings? the youngster may access and share educational information via social media. Children may discuss academics, exchange instructive videos and information and support one another when they get stuck on an issue or idea by creating Facebook groups with their peers. Communication has gotten so simple that distance or time is no longer an impediment. They may help one other comprehend and solve difficulties by critiquing and commenting on each other's assignments. Encouraging group study and engagement improves cooperation. Children may also utilise the site to contact their instructors and request assistance if necessary. This guarantees that learning is a multifaceted, ongoing process.

8. Self-Confidence & Public Speaking

Sharing ideas, ideologies, points of view and opinions via tweets, blogs, status updates and so on. Encourage your youngster to express themselves. Children are often afraid to express themselves in public. On social media, though, they may not feel that way. Meeting like-minded people with similar perspectives allows pupils to express themselves more effectively. This will not only boost their confidence but will also help them develop their public speaking abilities as they learn how to express themselves freely and confidently.

9. Stress Buster

Sharing experiences, opinions, humour, ideas and creativity in a secure setting with peers, friends, or strangers relieves stress. When youngsters are overburdened with homework, social media might assist relieve tension. When children return to school, they are more enthusiastic and motivated and they can focus better on their work. When the negative features of social media are not evaluated or managed, problems develop. However, parents must discipline their children over the amount of time they are allowed to spend on such sites. Teaching youngsters to be self-aware of their social media activity is a crucial step toward developing responsible adults.

10. Social Media Marketing

Social media serves as a medium for sharing ideas, goods and cutting-edge concepts with the rest of the world. On social media, one may simply publicise and market their services. Marketing skills assist students in bringing their ideas and thoughts to life. Each business must have social media marketing pages. Students that understand how to sell online will have an advantage when it comes to career chances. This will allow them to gain experience and expand their general knowledge and potential. Most businesses have a dedicated staff trying to boost their brand's social media presence. Digital marketing is also becoming a popular job path.

11. Global Exposure

The widespread use and consumption of social media have harmed worldwide barriers to learning. The global presence of social media has increased the exchange of cultures, information, knowledge and understanding. Bridging gaps between countries and overcoming geographical limits is a crucial function of social media. Students may communicate with students from all over the world, which allows them to have a more indepth understanding of what is going on in the world. Teenagers are no longer uneducated, nor do they have restricted exposure, thanks to frequent updates and information sharing. Social media serves as a platform for large-scale cooperation, allowing you to communicate with individuals from all walks of life regardless of social barriers. To summarise, social media, like anything else, has advantages and disadvantages.

It may be utilised for personality development and empowerment, but it can also be socially damaging. Although social media is frequently abused, its origins were in the cultivation and maintenance of interpersonal connections. It is a tremendous instrument in the hands of teenagers that has the potential to make or ruin them. Because it aids in the formation and maintenance of relationships, the present generation of students recognises its significance and worth.

While it is difficult (and counter-productive) to limit or prevent their usage of social media, it is critical to monitor their online activity frequently and teach them how to effectively use social media. If all parents and teachers work together to educate children on how to use social media properly, the children would undoubtedly become better persons in terms of knowledge and creativity. Giving children the ability to make judgements on their intellectual capacity is preferable to making decisions on their behalf.

Conclusion

Students learning, communication, and self-expression have all been revolutionised by social media. It may be a great instrument for teaching, raising awareness, stimulating creativity, developing skills, and establishing connections when used effectively. However, addressing the negative elements and teaching appropriate usage is critical. Parents and teachers can help pupils navigate the world of social media and maximise its benefits by embracing the perks and acknowledging the hazards.

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WAYS TO BEING TEACHABLE: NEEDED SKILLS TO COPE UP WITH EDUCATION 5.0 FOR FUTURE EMPLOYABILITY

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Abstract

A teachable person is willing to learn, grow, and adapt to new information, ideas and skills. It involves having an open mind, being receptive to advise, and enthusiastically seeking out opportunities for learning and self-improvement. The key characteristic of being teachable is self-learning, open-mindedness, enthusiasm, humility, active listening and adaptability. Teachable is a mindset of lifelong learning andbeing open to growth and development in various aspects of life skills. Set clear, specific goals for yourself and work towards them with dedication. Continuously strive for improvement, pushing yourself beyond your comfort zone. Break larger goals into smaller, manageable steps, and celebrate your progress along the way. **Keywords**: Education 5.0; Teachable Attitude;Life Skills; Leadership Skills;

Introduction

Professionals must be more teachable and adaptable than ever in the quickly changing employment landscape of today. The skills and information needed to succeed in the job are continuously changing as sectors change and technology continues to advance. Employers are searching for employees who can learn new skills, adapt to new procedures and technology, and be receptive to novel concepts and ideas.Being teachable entails having an open mind to new concepts, alternate modes of reasoning, and opinions that may be in opposition to your own. Being teachable lessens the effect of failure and transforms you into a learner of life. To be teachable is to have a desire for ongoing learning and development.

A teachable person works to improve his/herself, gets feedback, and takes it wholeheartedly. Continually seek out advice, learn new things, and look for methods to do better. Someone who is teachable views other people's viewpoints as useful learning resources rather than as a looming threat that they might be mistaken. When necessary, they take action and make adjustments. When you are teachable, you pay attention to the advice given to you by those around you and constantly use it to better yourself.Nikum (2022) mentioned that placing learners and teachers at the central part of the real-worldteaching-learning process enables own academic and professional growth of an
individual. Also, he pointed out that continuous training and development of new skills as basic requirements of Education 5.0

1. Maintain Teachable attitude

By upholding teachable behaviour, an individual can unlock new opportunities, increaseher horizons, and continuously evolve as a learner.Learners should be willing to learn from everyone and every situation. Teaching others is a powerful way to reinforce your learning. Share your knowledge and experiences with others, whether through mentoring, tutoring, or participating in group discussions.Koster (2021) mentioned learning to ask good questions like wondering about things, and other people's feelings, and spending time inquiring about someone else perceived situation and thoughts. The learnerhas to listen and let all of the voices share their experience.Yacharn (n.d) listed out the key actions of being teachable that Listen and Observing; Research and Education; Practice and Repeat.

- Learn from everyone and every situation
- Teach others that you learned
- Ask help and questions without hesitation
- Active listening
- Seek feedback/advice

2. Qualities of a teachable personality

Here are some methods for acquiring the abilities required to be a teachable and adaptive worker:

i) Adopt a growth mentality:

Adopting a growth mentality is a powerful mindset that can contribute to your personal and professional development. Here are a few tips for enlightening a growth mentality:

- A growth mindset is the conviction that intelligence and skills can be improved through perseverance and hard work.
- Employees who have a growth mindset can see difficulties as chances for development rather than failures or setbacks.
- Failure is seen as evidence of one's lack of skill by those with a fixed mindset, but success is seen as an opportunity to grow and improve one's abilities.
- An individual might, for instance, have a growth mindset in their creative or athletic activities yet a fixed mindset in their academic endeavours. Researchers on mindset suggest an alternative strategy.

• Show off your errors and acknowledge your fixes. The opportunity to learn from mistakes should be viewed. Teachers can demonstrate this mindset by how they respond to their errors and how they go about fixing them.

ii) Be receptive to criticism:

Criticism is a useful tool for development. Employees who are receptive to criticism both constructive and unfavorable are better able to develop their abilities and work output over time. You can develop and demonstrate to others that you want to do better by asking for criticism from your coworkers, employers, and customers. Being ready to take whatever criticism you could receive goes hand in hand with asking for input.

iii) Handling Feedback positively

Feedback is a valuable tool for the personal and professional growth of an individual. By handling feedback professionally, you can leverage it to enhance your skills, improve your performance, and build stronger relationships in your workplace or industry. Give your full attention and show that you value their input by maintaining eye contact, nodding, and acknowledging their comments. Here are some pointers to help you handle feedback constructively and positively:

- Ask as many people for advice as you can
- Gather suggestions about how to adjust your strategy
- Don't worry, criticism isn't a personal attack
- Changing between several vantage points

iv) Look for learning opportunities:

Learning never ends even after formal education is over. By attending conferences, enrolling in online courses, or volunteering for new initiatives, employees who actively seek out learning opportunities are better equipped to adjust to shifting job requirements. Take in what your instructor and fellow students have spoken, and then start putting what you have learned to use. Make a note of the criticism you have heard and determine which areas require the most improvement. Your mentor will be able to observe that you respected their point of view and listened to their suggestions if you incorporate what you have learnt into your process.

v) Become more adept at active listening

Active listening involves paying attention to what is being said, seeking clarification, and reacting appropriately. Employees who regularly engage in active listening are better able to comprehend, remember, and learn new material. Concentrate on the following.

- Make eye contact and face the speaker
- "Listen" for nonverbal clues
- Avoid interfering
- Pay attention without passing judgement or making assumptions
- Never think about what to say next
- Prove you're paying attention
- Never force your viewpoints or recommendations
- Maintain your concentration
- Pose inquiries
- Summarize and rephrase

vi) Curious:

The drive to discover and comprehend new things is known as a curiosity. Employees with a natural curiosity are more inclined to look for new learning opportunities and to be receptive to different viewpoints.God enlarges our knowledge and comprehension through human curiosity. Individuals who are willing to learn deliberately surround themselves with ideas, experiences, cultures, and individuals who will question their preconceptions.

vii)Improve your problem-solving skills

Problem-solving abilities are necessary for success in any profession. Employees that can recognize related issues, evaluate data, and come up with original ideas are more prepared to adjust to shifting job requirements.

viii)Keep up with industry trends:

To thrive in any sector, personnel must keep up with emerging technology, business trends, and best practices. This can entail reading trade journals, going to conferences, and connecting with other professionals.

ix) Develop a positive outlook:

A positive outlook will help me to learn and adjust to new obstacles much simpler. Employees are more likely to tackle new learning opportunities with passion and enthusiasm if they keep a positive mindset.

x) Develop your time management skills.

We must be able to balance our professional development with other obligations. Effective time managers are better able to take advantage of educational opportunities and remain on top of work needs.

xi) Improve your communication skills.

Success in any career depends on having good communication skills. Employees who can express themselves clearly, actively listen to others' ideas, and work cooperatively with others are better able to pick up new skills and adjust to shifting job demands.

3. Techniques to become more teachable at work

Any work requires you to make yourself stand out from the competition if you want to advance. Being teachable is an attribute that will make you stand out. While you may believe that seeking assistance or admitting ignorance is evidence of weakness, employers and recruiters see those who show a desire to learn and grow favourably. Your career success will be greatly influenced by your desire for information and criticism.More teachable people are statistically more successful, so this isn't simply a thought or an opinion on the subject. According to a study by Joseph Folkman, leaders who were deemed to have a high potential also scored much higher on the coachingscale. Additionally, people are more likely to view those who exhibit teachable behaviouras more competent than those who do not.Hamm (2022) stressed that being teachable is a special characteristic in one's life to learn, engage in new skills and involve conversations to solve problems that would never be learned before.

4. Examine Yourself

Your ability to progress can be severely restricted by an inflated ego. Remain humble if you want to be more teachable. Put corporate hierarchy aside and consider the person giving you advice as a valuable asset who is on a level playing field with you. Every viewpoint and contribution ought to matter to you. Even if you don't agree with someone, taking the time to listen and comprehend a different point of view will aid in your learning. Titus (2020) mentioned that in our education timeline, students were never actually taught one of the vital life skills that arerequired to be teachable. Being teachable is all about having an open mind. Someone who is teachable views other people's viewpoints as useful learning resources rather than as a looming threat that they might be mistaken. When necessary, they take action and make adjustments. When you are teachable, you pay attention to the advice given by those around you and constantly use it to better yourself.

5. Unteachable behaviour

Unteachable behaviour refers to an unwillingness to learn a new skill and adopt changes. Here are some of the unteachable behaviours as listed by Koster (2021);

- Impatient
- Insecure
- Intolerant

- Bitter
- Disruptive
- Failing to hear (Poor listening)

Approaching the behaviour with empathy, patience, and a tailored approach will make progress and support individuals in overcoming unteachable behaviour.

6. Conclusion

In conclusion, success in today's employment environment requires the ability to learn and adapt. Adopting a growth mentality, looking for learning opportunities, using active listening techniques, being current with market trends, and honing communication and problem-solving abilities will help you succeed also in future employability.See challenges as opportunities for growth rather than obstacles. Embrace the chance to learn new skills, expand your knowledge, and overcome difficulties. Approach challenges with a positive and open mindset, viewing them as stepping stones towards improvement.

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STUDENT TEACHER'S VIEWS ON DIGITAL TRANSFORMATION IN EDUCATION

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Abstract

The rapid changes and transformations in the world affect education both as a structure and as a learning environment. One of these values has been the digital transformation. With the increasing use of technology every day and learning environments, now most students are born in a digital world. In this context, this study was designed with a phenomenological research design as the qualitative approach to determine student teachers' views on digital transformation in education in terms of program and management processes. The learning group consists of 80 student teacher's studying at Thiagarajar College of Preceptors. The data were collected through a survey. Results reveal that in the digital transformation process, managers must first create a vision to generate and managed accordingly for an effective learning environment. According to another result, school shareholders may be involved in this transformation process by letting them access the place and time by supporting content and infrastructure which is technologically appropriate. It is recommended that educational administrators and program specialists be ready for this transformation and have the qualities to manage this transformation.

Keywords: Digital transformation, technology, student teachers and effective learning

Introduction

The 21st century is known as the digital age when information and communication technologies that develop and change with globalization are rapidly affecting the structures of almost every region. Education can't remain indifferent to these developments and changes. Is rapidly developing information and communication technologies, and the digital tools used in educational environments are also increasing and changing in this direction (Parlak, 2017). There will inevitably be a digital transformation in education due to the increasing use of technology in everyday life (Taskıran, 2017). Bates (2015) Industry 4.0 for the new skills and learning processes of the digitized world emphasizes education according to the needs of the economic order and the market, shaped by digital technologies defined as " In this context, it can be seen that our educational system does not work according to these concepts, the classroom environments are the same as in previous years, today's learning needs digital technologies are not taken into account and are partially missing. In this direction, the problem is to study how digital transformation in education can be implemented in the context of management and training programs.

Digital Transformation

To meet changing business and market requirements, digital transformation is the process of employing digital technology to build new or adapt current business processes, culture, and consumer experiences. Digital transformation is the redesigning of business in the digital era.

It extends beyond typical jobs like as sales, marketing, and customer service. Instead, digital transformation begins and ends with how you perceive and interact with consumers. With digital technology on our side, we can rethink how we conduct business and how we engage our customers as we go from paper to spreadsheets to smart applications for business management.

There is no need for small enterprises that are just getting started to build up their business procedures and then alter them afterwards. That can future-proofof company from the start. Building a 21st-century firm on sticky notes and handwritten ledgers is just not feasible. Digital thinking, planning, and building positions you to be nimble, versatile, and ready to develop.

Need and Significance of the Study

Some of the key benefits of digital transformation in the education sector include faster and more accurate student progress tracking, collaborative learning, future-focused discussions or lectures, time- and cost-efficiency, and improved communication between a teacher and a parent.

Statement of the Problem

The problem undertaken by the investigator is stated as **"A Study on Student Teacher's Views on Digital Transformation".**

Objectives of the Study

The investigator of the present study framed the following objectives:

- 1. To find out the level of digital transformation among the student teachers
- 2. To find out whether there is a significant difference between the following subsamplesconcerningdigital transformation.
 - a) Gender [Male / Female]
 - b) Locality [Rural / Urban]
 - c) Marital status [Married / Unmarried] and
 - d) Subject [Science / Arts]

Hypothesis of the Study

The investigator of the present study framed the following hypotheses:

- 1. There is no significant difference between male and female student teachersindigital transformation with respect to gender.
- 2. There is no significant mean difference between rural and urban area student teachers in digital transformation with respect to the locality.
- 3. There is no significant mean difference between married and unmarried student teachers in digital transformation with respect to the marital status.
- 4. There is no significant difference in guidance needs between science and arts subject students in digital transformation with respect to the subject.

Methods

In the present study, the investigator applied a normative survey as a method. The normative survey method studies describe and interpret what exists at present.

Population

Population is the aggregate or totality of objects or individuals, who are proposed to be covered under the scheme of study. The population for the present study is student teachers in a B.Ed.College.

Sample

The present study consists of B.Ed.studying student teachers situated in the Madurai District of Tamil Nadu, India. The sample was selected by using a simple random sampling technique. The sample forms a representative sample of the whole population. The sample consisted of 80 students of whom 32 were boys and 48 were girls.

Tools for Data Collection

The Digital transformationscale wasdeveloped and constructed by the investigator. This scale consists of as many as 25items and each item has five alternative responsesi.e. Strongly Agree (SA), Agree(A), Undecided(U), Disagree (DA), Strongly Disagree(SDA).

Scoring Procedure

So the scoring to the response given by the students should be like the following

S.No	Response	Weightage
1	Strongly Agree (SA)	5
2	Agree(A)	4
3	Undecided(U)	3
4	Disagree (DA)	2
5	Strongly Disagree(SDA).	1

The toolused for Present Study

The tool used for the present study was

- (i) Personal Data form
- (ii) Attitude Towards E-Content

Two tools are constructed by the investigator.

Find the level of digital transformation among studentteachers.

Table :1

The level of digital transformation among student teachers

Digital transformation	Low Le	evel	Moder	ate Level	High Level	
	Ν	%	Ν	%	Ν	%
	12	15	55	68.75	13	16.25

According to the table below, 15% of 9thstudent-teacher havea low level of, 68.75% of student-teachers have moderate and 16.25% have a high level of digital transformation

Null Hypothesis:1

There is no significant difference between male and female studentteachers in digital transformation with respect o gender.

Table: 2 Significant Differences between Male and Female Student Teachers in Their Digital Transformation with Respect to Gender

Variable	Sub- Variables	Ν	М	SD	't' - Value	Significance at 0.05 level
Condor	Male	32	89.41	5.928	2.46	Significant
Gender	Female	48	92.60	5.514	2.40	Significant

It is inferred from the above table that the calculated 't'value (2.46) is greater than the table value (1.96) for df (2,78) and at a 5% level of significance. Hence the null hypothesis is rejected. It shows that there is a significant difference between male and female student teachers in digital transformation with respect to gender.

Null Hypothesis:2

There is no significant difference between rural and urban student teachers in digital transformation with respect tolocality.

Table: 3Significant Differences between Rural and Urban Studentteachers in DigitalTransformation with Respect to Locality

Variable	Sub- Variables	Ν	Μ	SD	't' - Value	Significance at 0.05 level
Locality	Rural	33	88.63	6.31	3 70	Significant
Locality	Urban	47	93.21	4.73	5.70	Significant

It is inferred from the above table that the calculated 't' value (3.70) is greater than the table value (1.96) for df (2,78) and at a 5% level of significance. Hence the null hypothesis is rejected. It shows that there is a significant difference between rural and urban student teachers in digital transformation with respect to locality.

Null Hypothesis:3

There is no significant difference between Married and Unmarried student teachers in digital transformationconcerningmarital status.

Table: 4Significant Difference between Married and Unmarried Studentteachers in DigitalTransformation with Respect to Marital Status

Variable	Sub- Variables	Ν	М	SD	't' - Value	Significance at 0.05 level
Marital status	Married	21	94.19	4.945	2 71	Significant
Warnar Status	Unmarried	59	90.30	5.861	2.71	

It is inferred from the above table that the calculated 't' value (2.71) is greater than the table value (1.96) for df (2,78) and at a 5% level of significance. Hence the null hypothesis is rejected. It shows that there is a significant difference between Married and Unmarriedstudent teachers in digital transformation with respect to Marital status.

Null Hypothesis:4

There is no significant difference between Arts and Science subject student teachers in digital transformationconcerningthe subject.

Table: 5Significant Differences between Arts and Science Student Teachers in their DigitalTransformation with Respect to Subject

Variable	Sub- Variables	Ν	М	SD	't' - Value	Significance at 0.05 level
Subject	Arts	37	89.32	6.037	2.06	Significant
Subject	Science	43	93.04	5.182	2.90	

It is inferred from the above table that the calculated 't'value (2.96) is greater than the table value (1.96) for df (2,78) and at a 5% level of significance. Hence the null hypothesis is rejected. It shows that it is a significant difference between Arts and Science subject student teachers in digital transformation with respect to Subject.

Major Finding of the Study

The study was conducted to assess the levels of digital transformationamonggirls and boys studying B.Ed.and to observe the difference between the girl's and boys'perceptionsofdigital transformation. The findings of the study indicate that the maximum overall academic score is 125 and the minimum score is 25.Based on the overall digital transformationscores the sample was categorized as 15% of studentteachers havinga low level, 68.75% of studentteachershavinga moderateand 16.25% havinga high level of digital transformation.

Interpretation and Discussion

The finding of the present review showed that huge differencebetweenmales and females in their scholastic pressure. Females have more scholarly than Male t= 2.4656 p < 0.05 at 5% degree of importance. This might be because of the way that there were massive contrasts between guys and females concerning their responses to push. By and large, more females experienced more significant levels of gloom, dissatisfaction, and uneasiness than their male partners while responding to pressure. As per the American Mental Affiliation, this capacity to interface with others might be the justification for why ladies are bound to assume responsibility for their pressure and oversee it.

The finding of the present review showed huge differences between rustic and metropolitan in their scholarly pressure. Urban have more digital transformation than the rural t= 3.7031 p < 0.05 at 5% degree of importance. This might be because of the way that There are many times streets of superior quality and very much constructed houses in metropolitan regions. Transport offices are profoundly evolved and frequently get customary financing for refreshes. It tends to be quicker to get from one spot to another in a city or town. Most conveniences and stimulations are not difficult to reach.

The finding of the present analysis showed that huge differences among Arts and Science subjects digital transformation. Science has more digital transformation than the arts student teachers.t= 2.96 p < 0.05 at a 5% degree of significance. This might be because of the way that These understudies have restricted jargon and language capability; they likewise have the tension of planning and carrying out well in the assessment.

Educational Implications

Some of the key benefits of digital transformation in the education sector include faster and more accurate student progress tracking, collaborative learning, future-focused discussions or lectures, time- and cost-efficiency, and improved communication between a teacher and a parent.

Conclusion

The timing has never been better for using technology to enable and improve learning at all levels, in all places, and for people of all backgrounds. From the modernization of Erate to the proliferation and adoption of openly licensed educational resources, the key pieces necessary to realize best the transformations made possible by technology in education are in place. Educators, policymakers, administrators, and teacher preparation and professional development programs now should embed these tools and resources into their practices. Working in collaboration with families, researchers, cultural institutions, and all other stakeholders, these groups can eliminate inefficiencies, reach beyond the walls of traditional classrooms, and form strong partnerships to support everywhere allthe-time learning.

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LEARNING BEYOND THE BORDERS: GLOBAL EDUCATION AND CULTURAL EDUCATION

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Abstract

Education has transcended national borders to become a global endeavour in today's linked and continuously changing globe. "learning beyond the border" is a notion that refers to the investigation and acquisition of knowledge and skills across foreign contexts allowing people to extend their viewpoints, improve their cultural awareness and promote global collaboration. The purpose of this abstract is to give a general overview of the importance and advantages of learning across borders. The complex nature of learning across borders and its relevance in preparing people for the opportunities and challenges of the twenty-first century are discussed. It also examines strategies and tools that support global education such as study abroad programmes, international partnerships between academic institutions, and online learning tools for cultural interaction.

Keywords: Global education, cultural education, education beyond borders.

Introduction

It is well acknowledged that both individuals and societies can benefit greatly from education. Basic education is today seen in the majority of nations as both a duty and a right. While governments are normally expected to facilitate access to basic education, citizens are frequently mandated by law to complete education up to a particular minimum level. History shows that throughout the last two centuries, education has grown significantly around the world. This is evident in all quantity measurements. Over the past two centuries, there has been an increase in the number of people around the world who are literate, mostly due to rising primary school enrolment rates. The average number of years spent in secondary and tertiary education has increased dramatically and is today far more than it was a century ago. Despite these global advancements, some nations have lagged.

Global education, or global studies, is an interdisciplinary approach to learning concepts and skills necessary to function in a world that is increasingly interconnected and multicultural. The curricula based on this approach are grounded in traditional academic disciplines but are taught in the context of project-and problem-based inquiries. The learner examines issues from the vantage point of the individual, the local community, the nation, and the world community. As social conditioning an essential component of schooling, global studies take an international stance that respects local allegiances and cultural diversity while adhering to the principles of the United Nations Declaration of Human Rights. In an increasingly interconnected world, education is evolving beyond traditional boundaries to embrace global perspectives and cultural enrichment. The exchange of knowledge, ideas, and experiences across borders has become essential to prepare learners for the challenges and opportunities of the current world andfor cultural enrichment in fostering a well-rounded educational experience and promoting a more inclusive and tolerant society.

Global Education

Global educationis an approach that transcends national boundaries and encourages learners to understand and appreciate the interdependence of nations, cultures, and economies. it aims to equip students with the skills, knowledge and attitudes necessary to thrive in an interconnected world. Globaleducation promotes a sense of global citizenship, fostering empathy, cross-cultural understanding and a commitment to addressing global challenges collaboratively.

Global competencies

Globalcompetencies, such as intercultural communication, critical thinking, empathy, and a thorough awareness of universal issues like climate change, human rights, and poverty are all emphasised in global education. These skills enable students to successfully negotiate cultural differences, function well in diverse teams and actively participate in global problem-solving.

Technology and Global Learning

The extraordinary access to information, resources and online collaboration tools made possible by technological advancements has completely transformed the way that people learn around the world. learners can interact with classmates from other countries, have cross-cultural conversations, and get first-hand exposure to other cultures through virtual exchange programmes, online courses, and educational platforms.

Cultural Education

When young people express their beliefs and attitudes through play, the arts, or other kinds of cultural expression, we are talking about cultural education. The phrase also describes a method of self-education. This occurs when we approach issues or objects playfully or artistically when we try to understand the world in this way when we look for and settle on a position on our own or with others, when we bargain and reach an agreement on stage or while playing, and when we take part in forming and altering the world.

In addition to feelings and the mind, cultural education frequently incorporates the entire body. It makes use of a wide range of cultural expression techniques, including visual arts, digital media, storytelling, literature, writing, cinema, photography, music, rhythm, playing, circus, dance, and theatre. Due to individual differences and the fact that not everyone is interested in or energised by the same things, variation is crucial. Programmes for cultural education are lighthearted. It involves engaging in a voluntary activity with others that we enjoy, are interested in, or find fascinating or preoccupying. Cultural education is based on your interests and strengths and asks you what you can already do and what you still want to learn or discover. Cultural work with youth includes cultural education.

The deliberate inclusion of many cultural experiences, practises and perspectives into the educational process is referred to as cultural education. It values cultural variety and works to promote intercultural sensitivity, tolerance for one another and nawareness of various lifestyles.

Promoting cultural awareness

Cultural education challenges students to actively engage in and respect diverse cultural perspectives while also exploring their cultural understanding of biases and stereotypes. Cultural education broadens students' viewpoints and fosters a more accepting worldview by exposing them to a diversity of cultural traditions, arts, literature, and histories.

Fostering Cultural Awareness

Students are pushed by cultural education to actively engage with and appreciate various cultural viewpoints while also examining their cultural awareness and challenging stereotypes, and biases, by exposing children to a variety of cultural traditions, arts, literature and history, cultural education broadens students' perspectives and promotes a more inclusive worldview.

Advantages of global education

Global exposure:

We have the chance to experience global exposure through global education, learning about the various cultures and customs practised by various nations. It enables us to be a little more compassionate and respectful of people of all races, creeds, and castes.

Various problems the globe faces: The earth is populated by both living things and issues. While some issues are minor, others are significant. We can better comprehend the various issues that the world faces and how to address them with the aid of global education. Every nation deals with difficulties that are global in nature. We might be able to resolve these challenges if we cooperate.

Highly qualified teachers: We could study highly qualified teachers from around the world who are knowledgeable about the subjects they teach and who help their students grasp the material better. Additionally, they encourage us to learn more and get involved in resolving global problems.

Develop leadership skills: It aids in the development of our leadership abilities. A leader is someone who has an extensive understanding of global issues, which is how they can guide the world. We consider many answers to problems as we learn more about them, and leaders are those who can generate ideas and put them into action. Education on a global scale enables us to consider a problem.

Financial Independence: We acquire a variety of talents that enable us to support ourselves and become economically independent. Nobody wants to be physically or financially dependent on another person. We have the chance to study through global education, and it also enables us to find employment after we've finished our studies.

Understanding oneself: To succeed in the future, one must first understand oneself. We may believe in ourselves by loving and trusting ourselves. We can achieve anything we set our minds to when we have faith. It gives us courage and joy.

Advantages of cultural education

Students Become More Empathetic:Prejudices can be avoided by pupils through fostering awareness of and a personal connection to other cultures in the classroom. Since they are more cognizant of the experiences a person from a different race or culture group may encounter, it enables them to empathise with others who are unlike themselves.

Students Gain a Better Understanding of Lessons and People:Students learn more deeply about the subject matter when working and learning in a classroom with people from different origins and cultures. Additionally, it teaches students how to participate in a diverse workplace using their unique skills and perspectives.

Students Become More Open-Minded:Naturally, we are encouraging pupils to be more open-minded later in life by exposing them to a variety of perspectives, viewpoints, and cultural backgrounds. They will become more receptive to new concepts as a result, and they will be better able to understand a subject by considering many viewpoints.

Students Feel More Confident and Safer: Students who learn about various cultures in school eventually feel more at ease and secure about these differences. This enables individuals to socialise with a larger variety of social groupings and feel more assured in both their relationships with others and them as a result.

Students Feel More Confident and Safer:Students who learn about various cultures in school eventually feel more at ease and secure about these differences. This enables individuals to socialise with a larger variety of social groupings and feel more assured in both their relationships with others and them as a result.

Students Are Better Prepared for a Diverse Workplace:Working with people from many cultures and social groups has become more crucial with the growth of globalization. Students are better prepared to succeed in the workforce if they are exposed to diversity and learn about different cultures in the classroom.

Conclusion

Learning beyond boundaries through international education and cultural enrichment equips students with the abilities, information, and attitudes needed to prosper in a globally interconnected society. Educational institutions may help students become engaged global citizens who positively impact their communities and the wider globe by building global competencies and cultural understanding. A commitment to constructing a more inclusive, tolerant, and integrated society is made by embracing global education and cultural enrichment. By giving children a wider view of the world, global education encourages comprehension, empathy, and critical thinking abilities. It promotes their understanding of and appreciation for interconnection, cultural variety, and global challenges, so equipping them to be responsible global citizens. Individuals who pursue global education are more prepared to tackle issues like poverty, climate change, and inequality on a global scale. It fosters cooperation, collaboration, and intercultural dialogue-all crucial for creating a peaceful and sustainable future. When cultural and global education comes together, a potent synergy is produced that improves the quality of education as a whole. Individuals get a thorough awareness of the world and their position in it by integrating global viewpoints into cultural education and cultural elements into global education. Through this integration, cultural variety is made more understandable and a sense of our common humanity and interconnectedness is strengthened.

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AWARENESS OF CHATGPT AMONG STUDENT-TEACHERS

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Abstract

This study aimed to find out the awareness of student teachers in ChatGpt and to create cognizance among student teachers. The research consists of student teachers of Thiagarajar College of Preceptors, Madurai District, Tamil Nadu.The researcher used the questionnaire about ChatGpt.In the research sample, there are 106 students determined by the purposeful random sampling method. The data were collected with the awareness ChatGpt questions prepared by the researcher.The findings showed that the ChatGpt awareness of the student teachers within the scope of the research was at an average level and there was no significant difference in the variables of Gender, location and Course stream of student teachers of Thiagarajar College of Preceptors, Madurai in their awareness about ChatGpt. It was concluded that the student's knowledge about awareness of ChatGpt was insufficient. From the research, it is recommended that the use of artificial intelligence tools facilitate every field, as well as their use in education will facilitate teaching and learning. **Keywords:** Chat GPT, Awareness, Student teachers

Introduction

Chat GPT is a large language model developed by open AI. In chat GPT, the language model uses deep learning to produce human-like text. OpenAI is committed to the principles of openness, and collaboration and has released research papers, tools and resources to the public, allowing the broader community to benefit from and contribute to AI advancements. Deep learning is a kind of machine learning which focuses on artificial neural networks with various layers to learn and make decisions or predictions from complex data. It explores the advantages and disadvantages of chat GPT as well as its limitations and features.

Chat GPT (Generative Pre-trained transformer) is an LLM (Large language model) that was trained on a vast amount of dataset from the internet and demonstrated its effectiveness at constructing sequences of sentences with valid deductive reasoning.Artificial intelligence (AI) has grown incredibly, giving new forms and transformations in many facets of today's life (Gocen&Aydemir, 2021; Jain& Jain, 2019). A language model is a type of artificial intelligence model that is trained to generate text that is similar to human language (MacNeil, et al., 2022). The field of artificial intelligence has made significant strides in recent years, which has led to the development of innovative technologies such as Open AI's Chat GPT (Rudolph, et al., 2023). Deep learning is also known as representation learning. The continuing appearance of novel studies in the fields of deep and distributed learning is due to both the unpredictable growth in the ability to obtain data and the amazing progress made in hardware technologies (Potok, et al., 2018). Before Chat GPT, which has ascended from a long history of research on AI, technology is used in language learning and teaching situations for many purposes (Alkadi, 2018; Zhao, et al., 2002). It is essential to identify methods for training prospective and in-service teachers in task development, particularly with digital tools (Eyal, 2012). The study showed students could be more engaged, motivated and involved in language learning with technology. This was strengthened in Al-Kadi's (2018) book on technological practices, research and limitations which weighed the advantages and disadvantages of technology integration.

Needs and Significance

Chat GPT could be used for education, despite its various limitation (Anu & Ansah, 2023). Researchers believe that despite the threats that it poses, generative tools can be useful for education. Learning to use Chat GPT effectively can be important for increasing efficiency in both teaching and learning and for reducing human errors. The purpose of this study is to understand student teachers'attitudes towards Chat GPT by using the statistical tool of t-test to understand their perception towards this tool, thereby determining their usage of the Chat GPT in their teaching practices. One important advantage is quick learning – it saves time and does not require recoding. It remembers updated material and gives prompts accordingly. This scalability also allows it to cater to a large number of users with accuracy.In this background, the investigator wanted to find out the awareness of student teachers about ChatGptof Thiagarajar College of Preceptors, Madurai.

Objectives of the Study

- 1. To find out the significant difference between male and female student teachers of Thiagarajar College of Preceptors in their awareness of Chat GPT.
- 2. To find out the significant difference between rural and urban student teachers of Thiagarajar College of Preceptors in their awareness of Chat GPT.
- 3. To find out the significant difference between arts and science stream student teachers of Thiagarajar College of Preceptors in their awareness of Chat GPT.

- 4. To analyze the field of Artificial Intelligence like Chat GPT as a teaching and learning.
- 5. To promote independent learning among student teachers.

Hypotheses

Null Hypothesis

- 1. There is no significant difference between awareness about Chat GPT and Gender.
- 2. There is no significant difference between awareness about Chat GPT and Locality.
- 3. There is no significant difference between awareness about Chat GPT and course Stream among I and II Year B.Ed student teachers of Thiagarajar College of Preceptors in Madurai District, Tamil Nadu.

Methodology

Tools Used

A questionnaire about Chat GPT was created through Google Forms to create awareness among I and II-year B.Ed. student teachers of Thiagarajar College of Preceptors, Madurai District, Tamil Nadu.

Population

The population of the study was B.Ed I and II year student teachers of Thiagarajar College of Preceptors in Madurai District, Tamil Nadu.

Sample

A sample of 106 I and II Year B.Ed student teachers of Thiagarajar College of Preceptors in Madurai District, Tamil Nadu.

Sampling Technique

A purposive random sampling technique was used by the Investigator.

Statistical Tools Used

The statistical tool used for analyzing Mean, Median, Standard deviation and 't' Test (Independent sample 't' Test) in SPSS (Version 22).

Delimitations of the study

- 1. The current study is undertaken only by I and II B.Ed student teachers at Thiagarajar College of Preceptors in Madurai District, Tamil Nadu.
- 2. The investigator has chosen 106 students as samples for the study.

Data Analysis

Appropriate statistical techniques like mean, standard deviation and t-test were used to analyze the data.



Figure 1: Variables(Score, Gender, Locality and Stream) of student teachers of Thiagarajar College of Preceptors, Madurai District, Tamil Nadu.

Table 1.

Mean and Standard deviation of the variables in the questionnaire about Chat GPTdone by student teachers of Thiagarajar College of Preceptors, Madurai District, Tamil Nadu.

S.No.	Factors	Ν	Mean	Std. Deviation
1	Gender	106	1.7736	0.42050
2	Locality	106	1.4623	0.50094
3	Stream	106	1.4906	0.50229

Table 2.

Difference between male and female student teachers of Thiagarajar College of Preceptors in their awareness about Chat GPT.

S.No.	Vari	able	Ν	Mean	Std. Deviation	Calculated 't' value	Table Value	Relationship
1 Ger	Condor	Male	24	15.0417	3.53220	0 1 0 3	1 81	Not
	Genuer	Female	82	14.9634	3.21050	0.105	1.01	Significant

(At a 5% level of significance the table value of 't' is 1.81)

Table 3.

Difference between rural and urban

student teachers of Thiagarajar College of Preceptors in their awareness about

S.No.	Fact	ors	Ν	Mean	Std. Deviation	Calculated 't' value	Table Value	Relationship
1	Locality	Urban	an 57 14.8596 3.25926	0.411	1.81	Not		
		Rural	49	15.1224	3.30802			Significant

Chat GPT.

Table 4.

Difference between Arts and Science stream student teachers of Thiagarajar College of Preceptors in their awareness about Chat GPT.

S.No.	Fac	tors	Ν	Mean	Std. Deviation	Т	Table value	Relationship
1	Stream	Arts	54	15.2407	3.27907	0.832	1.81	Not Significant
		Science	52	14.7115	3.26801			

Findings

- table 2 reveals that there is no significant difference between male and female student teachers of Thiagarajar College of Preceptors, Madurai in their awareness about Chat GPT while comparing the mean scores of male (m=15.04) and female (m=14.96) student teachers.
- table 3 reveals that there is no significant difference between rural and urban student teachers of Thiagarajar College of Preceptors, Madurai in their awareness of Chat GPT while comparing the mean scores of rural (m=14.86) and urban (m=15.12) student teachers.
- table 4 reveals that there is no significant difference between arts and science stream student teachers of Thiagarajar College of Preceptors, Madurai in their awareness of Chat GPT while comparing the mean scores of arts (m=15.21) and science (m=14.72) student teachers.
- The above table (2 to 4) reveals that calculated 't' values of the variables namely Gender, Locality andCourse stream are less than the table value(0.05 at 5% level of significance). Hence the null hypotheses are accepted and inferred that there is no difference between the mean scores of these variables.

Suggestions

- 1. To make all the student teachers of Thiagarajar College of Preceptors, Madurai District, Tamil Nadu know about Chat GPT and its implications.
- 2. To organize seminars and Conferences for creating awareness of ChatGpt at the higher education level.

Conclusion

Chat GPT is an innovative technology that has revolutionized how we interact with machines and each other. Although the paper small contribution to a long research journey on Chat GPT regarding cognizance among student teachers of Thiagarajar College of Preceptors, Madurai District, Tamil Nadu. The findings showed that there was no significant difference in the variables of Gender, location and Course stream of student teachers of Thiagarajar College of Preceptors, Madurai in their awareness of Chat GPT. Generally, while there are some limitations to Chat GPT, such as its inaccurate information, lack of contextual understanding, limited knowledge base, and sensitivity to input phrasing these can be reduced with a prompt selection of training data and additional programming. Emphasizing the usage of Chat GPT in scholastic activities can be a valuable addition to enhancing the learning experience and engaging students in interactive discussions.

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TOOLS TO TRIUMPH: MAXIMIZING LEARNING OUTCOMES WITH TEACHING AIDS

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Abstract

The magical weapons that turn conceptual concepts into concrete facts and capture students' attention are teaching tools. Teaching tools can transform information into an arrangement that captivates the heart and enlightens the brain. The importance of teaching tools in boosting the educational experiences of learners is examined in this topic study. The various tools, materials, and resources that educators employ to assist instruction and participate in students are referred to as teaching aids. Additionally, it investigates the advantages and potential effects of various instructional aids on the learning outcomes of students. It also looks at the difficulties and factors involved in successfully integrating instructional aids into a classroom setting. The results emphasise the significance of including instructional aids to encourage active learning, ease understanding, and enhance critical thinking.

Keywords: Tools, Triumph, Maximize learning outcomes and Teaching aids

Introduction

Teaching aids play a vital role in enhancing the learning experience and facilitating effective instruction in classrooms. They are tools, materials, or resources used by teachers to support and reinforce the teaching and learning process. These aids can be physical objects, visual representations, audio-visual media, or even digital resources that help teachers convey information, engage students, and make abstract concepts more tangible and comprehensible.

As Nelson Mandela wisely stated, "Education is the most powerful weapon which you can use to change the world." The use of teaching aids has become increasingly prevalent in modern education due to their ability to cater to diverse learning styles, capture students' attention, and promote active participation. By incorporating visual, auditory, and tactile elements, teaching aids stimulate multiple senses, leading to improved information retention and a deeper understanding of the subject matter. By leveraging the power of teaching aids, educators can facilitate focused and accelerated skill development that empowers students in their learning journey.

Skill Sprint

Teaching aids can be designed to specifically target and develop particular skills or competencies. Whether it's improving mathematical abilities, enhancing language proficiency, or developing critical thinking, teaching aids can provide targeted exercises, interactive scenarios, and hands-on activities that engage students in practising and honing their skills. Teaching aids encourage active participation and engagement from students. By incorporating interactive elements, visual representations, and manipulative materials, they stimulate students' curiosity and involvement.

Skill Sprints using teaching aids can present challenges, problem-solving tasks, or simulations that require students to actively apply their skills and knowledge, promoting a deeper understanding of the subject matter. Teaching aids serve as effective Skill Sprints by providing targeted skill development, promoting active engagement, offering immediate feedback, accommodating different learning needs, enhancing retention and transfer, and fostering motivation and engagement.

Need and Significance

Teachers not only do everything orally, but they use practical methods and technologies to make students understand better, through the use of teaching aids. Teaching aids create a visual and interactive experience for the students. It increases students' reading comprehension skills, illustrating or reinforcing skills. Students get more involved when learning if teaching aids are implemented into the curriculum. It brings motivation towards learning and engrosses them in work. Through teaching aids, students can clarify the subject matter more efficiently.

Teaching aids make classroom learning more live and active. It avoids dullness. Teaching aids give direct experience to the students. It fosters a learner-centred approach rather than relying solely on positive listening. Learners have diverse learning styles and preferences. Teaching aids can accommodate these variations by offering multiple sensory experiences. Proper teaching aids help students retain information and improve memory recall. It helps students to apply their knowledge in real-life situations. It builds conceptual thinking, critical thinking and problem-solving skills.

Teaching aids in rural areas:

Teaching aids plays a crucial role in enhancing the learning experience, particularly in rural areas where resources may be limited.

Visual aids: visual aids such as charts, posters and maps can effectively convey information and make learning more engaging.

Audio aids: audio aids can be valuable, in rural areas with limited access to textbooks or reading materials.

Interactive whiteboard: interactive whiteboards are used to create interactive lessons by displaying multimedia content or playing educational videos.

Hands-on materials: in rural areas hands-on materials are used to teach practical subjects like mathematics and science.

In rural areas, they don't have a vast range of teaching sources. In this situation, they used charts, maps, flashcards, hands-on materials, audio tapes etc., and they used work and non-working models as teaching aid.

Teaching aids in urban areas

Audio-visual tools: urban schools often have access to audio-visual aids such as Smartboards, televisions and projectors.

Computer and Internet: urban schools have computer labs or access to individual computers for every student. Computers provide access to a wealth of educational resources, educational websites, online educational apps, software etc. Through these students can be able to collaborate their learning with peers.

Educational apps and software: with the help of smartphones and tablets educational apps have become more popular teaching aids. These educational tools provide educational games, quizzes, interactive learning experiences and simulations that cater to varied subjects and grade levels.

E-books and digital libraries: urban schools may have access to digital libraries and ebooks. E-books provide convenience, portability and features like bookmarking, highlighting etc., it is enhancing the reading experience.

Online learning platforms: online platforms provide access to online courses, virtual classroom, discussion forum, personalized learning etc., it promotes flexibility among students.

Educational games and simulations: urban schools incorporate games into the learning process. This makes learning enjoyable, and engaging and stimulates critical thinking, problem-solving, and decision-making. It also provides dynamic learning experiences.

Field trips and guest speakers: urban schools often take students into museums, factories, art galleries, and other cultural centres. Schools provide opportunities to learn things with real experiences. Organize guest speakers conferences to enhance students' perspectives.

Science laboratory and equipment: urban schools may have well-equipped laboratories. It gives the opportunity to practice science experiments, develop scientific skills, and provide real experiences with experiments.

Challenges and considerations in the use of teaching aids

Any kind of teaching aids will not be appropriate for all levels of learners. Therefore, teaching aids must be suitable for a particular age group of learners. Thus, the teachers have to prepare teaching aids that serve the objectives of the particular lesson and an overview of the particular lesson.

However, wrong perceptions about teaching aids and their incorrect use by teachers may lead to ineffective teaching-learning situations (Van Rooyen & Van der Merwe, 1996). When teachers enter schools without this valuable information and when they are faced with reality, they end up producing teaching aids that are technically bad and educationally worthless and this virtually guarantees their demise (Meyer, 1981). Moreover, most teacher-training institutions do not provide any formal training and practice in the selection and use of teaching aids (Maduna, 2002). This situation may lead to creating problems for teachers and students when using the teaching aids effectively in the teaching-learning process. In the current Sri Lankan Preschool Education environment preschool teachers are struggling to finish a heavily loaded syllabus especially in preschools govern by the private sector.

Conclusion

Teaching aids play a pivotal role in the education field, enhancing the learning experience and facilitating effective knowledge transfer. They serve as valuable tools that engage students, cater to diverse learning styles, and promote active participation. As Benjamin Franklin famously said, "Tell me and I forget, teach me and I may remember, involve me and I learn." Teaching aids foster this crucial involvement, creating immersive learning environments that inspire curiosity, critical thinking, and lifelong learning. It is through the creative integration of teaching aids that educators can truly ignite the spark of knowledge within their students, fostering a love for learning that transcends the classroom. As technology advances and new teaching aids emerge, educators must embrace these tools and harness their transformative potential. By doing so, they can cultivate an inclusive and dynamic learning environment that equips students with the skills, knowledge, and adaptability necessary to thrive in an ever-evolving world. In the words of Albert Einstein, "Education is not the learning of facts, but the training of the mind to think." Teaching aids provide the scaffolding for this transformative training, empowering both educators and students to embark on a lifelong journey of intellectual growth and discovery.

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THE FLOURISHING FINNISH EDUCATION

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Abstract

"In a realm where exams do not define, Knowledge blooms and freedom align".

The recurring question among students is whether it is possible to pursue education without exams, grade systems, and the accompanying pressure and stress. Unbelievably, it is possibleand the answer is "FINLAND". Finnish education focuses on holistic learning, promoting creativity, critical thinking, and practical skills development. In Finland, students commence formal education at the age of seven, they're given free rein in the developing childhood years to not be chained to compulsory education. It is simply just a way to let a kid be a kid. Finland's educational system doesn't worry about artificial or arbitrary merit-based systems. There are no lists of top-performing schools or teachers. It's not an environment of competition instead, cooperation is the norm. This paper delves into the core principles and practices of the Finnish education system, aiming to shed light on the factors that have contributed to its remarkable success. By embracing the Finnish paradigm, we could revolutionize our educational system, fostering a love for learning and nurturing future generations.

Keywords: Flourishing, Finnish, Education and Revolutionizing

Introduction

"The conventional methods of teaching will create boredom among students." This observation highlights a pressing concern in education, where traditional approaches often fail to engage and inspire learners. In search of a solution to this challenge, the Finnish education system emerges as a beacon of innovation and success. Renowned for its unique features and principles, the Finnish education system has garnered global recognition for its ability to foster positive change within society. As renowned education expert, Sir Ken Robinson once said, "Students are not standardized products; they're human beings with unique interests, talents, and ways of learning." The Finnish system embraces this philosophy by providing students with personalized support, allowing them to explore their passions and develop at their own pace.As researchers and educators seek innovative solutions to transform education, the Finnish education system stands as a shining example of what is possible. This paper aims to explore the unique features and principles of the Finnish education system, examining how they have contributed to its success and considering the potential implications for education systems around the world.

Finnish Education system

Primary Education (Ages 7-16):Primary education in Finland is compulsory and typically begins at the age of 7. It consists of a nine-year comprehensive school, which

combines both elementary and lower secondary education. The curriculum is broad and emphasizes a well-rounded education, including subjects like mathematics, languages (Finnish, Swedish, and often English), arts, crafts, music, physical education, and more. The focus is on promoting active learning, critical thinking, and problem-solving skills.

One of the notable features of the Finnish primary education system is the concept of "peruskoulu," which means comprehensive school. It aims to provide equal opportunities to all students by avoiding early tracking and streaming. This means that students of all abilities and backgrounds study together until the age of 16.

Upper Secondary Education (Ages 16-19):After completing primary education, students have the option to continue their studies in upper secondary education. Upper secondary education is not compulsory but is widely attended by Finnish students. It consists of a three-year general or vocational education program. Students can choose between various academic or vocational tracks based on their interests and future goals.In the academic track, students focus on subjects like mathematics, sciences, humanities, and languages, preparing them for university-level education. In the vocational track, students receive practical and theoretical training in specific fields such as healthcare, technology, business, or hospitality, enabling them to enter the workforce directly after graduation.

Higher Education: Following upper secondary education, students can pursue a bachelor's degree at a university or a university of applied sciences (polytechnic). Finnish universities are known for their research-oriented approach, while universities of applied sciences have a more practical focus, emphasizing hands-on learning and collaboration with industry partners. After completing a bachelor's degree, students can opt for a master's degree, which usually takes two years to complete. Doctoral studies are also available for those who wish to pursue research and academic careers.

Finnish Education Revolution Brief and Brilliant

Finland's education system emphasizes a balanced approach to learning. In primary and secondary schools, the typical school day is around 4 hours, focusing on high-quality instruction and efficient use of time. Students have short breaks of around 15 minutes after every 45 minutes of instruction, enabling them to refresh their minds and engage in physical activity. This allows students to have more free time for extracurricular activities, self-study, and personal hobbies.

Beyond the Test

Instead of relying heavily on standardized testing, the Finnish education system promotes continuous assessment and feedback. Teachers assess students' progress through various methods such as classroom observation, projects, portfolios, and open-ended assignments. The focus is on fostering a love for learning and nurturing individual strengths rather than solely focusing on exams and grades.

Levelling the Playing Field

Finland's education system promotes equal opportunities for all students. There are no tuition fees in public schools, and students from all socioeconomic backgrounds have access to the same quality of education. The system aims to reduce inequality and provide support to students who may face challenges in their learning journey.

Teacher Professionalism

"Finnish teachers are trusted professionals, and they are granted a great deal of autonomy in the classroom." - Amanda Ripley

Teachers in Finland are highly regarded professionals. They undergo rigorous training and education to become qualified educators. The profession is selective, and teachers are trusted to design and implement their teaching methods. This autonomy allows teachers to tailor their instruction to meet the needs of individual students.

Harnessing the Power of the Finland Education System Embracing Minimalistic Assessments

The absence of excessive standardized testing reduces stress and pressure on students, allowing them to focus more on learning and personal development. This creates a positive and supportive learning environment. The emphasis on a no-exams or limited-exams approach in Finland is intended to nurture students' intrinsic motivation and love for learning. It encourages a lifelong curiosity and passion for knowledge, rather than solely focusing on achieving high scores.

Pasi Sahlberg, a Finnish educator and author, states that "The Finnish education system is designed to produce thinkers, not just learners. It aims to foster creativity, critical thinking, and problem-solving abilities in students." According to a study by OECD, Finnish students reported less test anxiety compared to their peers in other countries, which can have a positive impact on their well-being and engagement in learning. By adopting the concept of limited or no exams inspired by Finland's education system, we can foster the development of students learning skills. By reducing excessive testing and exam pressure, we create a less stressful environment that allows students to focus on deep learning, critical thinking, and problem-solving.

Empowering Equity

"The education system needs to be a ladder of opportunity for every child, not a barrier to success." - Wendy Kopp

Finland's education system is widely regarded as one of the most equitable and successful in the world. It emphasizes equal opportunities for all students and strives to create a level playing field, ensuring that every child has access to high-quality education regardless of their socio-economic background. Adopting the Finland education system can be instrumental in empowering equity within our education system. Finland's approach prioritizes equal opportunities and provides a framework that values each student's unique needs and abilities. By adopting Finland's emphasis on equitable education, we can promote inclusive practices and ensure that all students have access to high-quality education, regardless of their background or socioeconomic status.

Conclusion

Incorporating the Finnish education system into our own can be a powerful catalyst for creating awareness and driving positive change within our education system. By adopting the principles of equity, inclusivity, and personalized learning that define Finnish education, we can raise awareness about the importance of providing equal opportunities for all students. Implementing strategies such as shorter school days, professional development for teachers, and a comprehensive curriculum that encompasses various disciplines can help foster a well-rounded education that values the unique needs and talents of every learner. By embracing the Finnish model, we have the opportunity to create an education system that prioritizes equity and empowers students to thrive, fostering a generation of aware, engaged, and empowered individuals who will contribute to the betterment of society as a whole.

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ANALYZING THE IMPACT OF OPEN EDUCATION TO BRIDGE THE EDUCATIONAL GAP

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Abstract

Open education is a progressive and innovative method of education that places a strong emphasis on inclusivity and accessibility. By reducing restrictions like money, location, and time, it seeks to offer educational possibilities to a larger audience. Open Educational Resources (OER), OpenCourseWare, and other practices are all included in the concept of open education. This abstract emphasizes the value of open education as a filler, by allowing people from all backgrounds to access top-notch educational resources and take part in self-directed, lifelong learning, by utilizing open educational resources, students have access to a wide range of freely licensed content, such as interactive modules, films, textbooks, encouraging collaborative and participatory learning. Open education promotes inclusivity, accessibility and flexibility while bridging the gaps in traditional educational institutions. Societies may create a more egalitarian and open future of education by adopting open education.

Keywords: Open Education, Education, Lifelong Learning and Open Education Resources (OER)

Introduction

Education is the upliftment of an individual in all aspects like social, moral and intellectual development. It is the base for a knowledge-gaining platform in a child's early stage which shapes and strengthens one's attitude and behaviour in a perfect manner. Education and Society are interlinked, it helps to fit in the society and socialize with all. Pupils should be aware that education is not just about getting good grades but also about developing knowledge. 'Knowledge speaks, Marks doesn't'. Education also plays a vital role in reaching heights by attaining a suitable and desired profession. In addition to imparting knowledge, education also instills discipline, and the curriculum includes Value Education, to impart discipline, ethics and moral ideas.

In the traditional system, education is dependent on books, classrooms and teachers. But in modern education, students have different sources to acquire knowledge. The growth of education has been increasing in different aspects, and a major factor in it is technology. Technology now eliminates all obstacles and implements innovative teaching strategies. One among them is Open Education. It is the greatest platform to fill the education gap.

To eliminate the educational barrier, open education is emerging, to provide education to everyone, so it is easily accessible. Like formal education, it does not have a set of time needed. Learning is a personal decision. Every age is a good time to learn something new. It is primarily based on Self-directed learning and Learner-centered methodologies. In contrast to formal education, it is a lifelong learning process where students engage in case studies and in-depth research of particular concepts. There is no requirement to practice rote learning while engaging in experimental learning. It encourages students to deepen their knowledge across all of their areas of interest.

Education in Ancient Period:

In ancient times, education was followed in different methods based on the influence of rulers of the time, the religion they followed and the Culture and Civilization they practised. The Vedic Period played a concrete foundation of knowledge transmitting platform orally. The education is knitted around Vedas and the Religious text. The students learn the Vedas and memorize them. In Vedic Period, education was highly individualised. The Guru taught not only to impart knowledge but also moral values. Education in Vedic Period was mainly for Upper castes, especially Brahmins. Women and Lower Class people are not allowed to acquire an education. The subjects like Medicine, Astronomy, Mathematics, and Politics were taught apart from the Vedas.

The Gurukula system emerged in the ancient Vedic period. The word 'Guru' refers to Teacher, it is purely teacher-centered education. The students of the Gurus were called 'Shishyas'.The Guru's ashram, where he lived, was home to an educational facility, where they gain all the life skills they need and grow intellectually in all areas. Both theory and practical instruction are significant components of the education offered. The needs of the pupils as well as the Guru's area of expertise were taken into consideration when creating the curriculum. The main subjects of the Gurukula system were the Vedas, the Hindu scriptures. To memorize the Vedas, the students practised through repetition.

The interaction method was prioritised in education. It forced the pupils to work together with their peer group. It improved their ability to think logically, adapt, and appreciate one another while also strengthening their sense of unity. The amount of time allotted for finishing the education was set. Kshatriyas were the main recipients of this education. Incontrast, other Caste members and women were restricted to pursue education.

Current Education:

British invades took a survey on Indian Education and got admired by our rich education system. As they always wanted Indians to be slaves for them, they decided to impart Western Education in India. "Indians in blood and colour, but English in taste, in opinions, in morals, and intellect"(1). Slowly mark based system defused into our education mode, and this resulted in a lack of skills and rote learning among the students. In addition, the "all pass scheme" until grades Sixth to Eighth became a weed in the
educational area, leading to lethargic doing among students. The unsuited outdated curriculum also does not raise the want of our student folk and fit them into the current lifestyle. Becoming assimilated with manual methods both teacher and student committees hesitate to grasp technical e-learning skills in a full-fledged fashion in this e-world.

The only advantage of Western Education is the introduction of the English language in India, which helps us to fly overseas. A tremendous change in the last two decades has taken place in the economic, social and technological fields, as a result of which new learning needs have emerged. As private institution focuses mainly on the academic results of the students they fail to foster the cognitive skills of the students.

In the 21st Century, India has encountered different types of challenges, to equip people for this the First Nation Policy of Education was issued in 1968. The outdated curriculum remains the hindrance to the takeover of technology education in full swing. As an any-other asset, education has also become a hypothetical synonym for gold for the reach of low economic status, and here commences the need for open education.

Only during the recent pandemic which we all witness, and became aware of online classes and e-learning modes. This open education became the filler in the modern education system. The emergence of Open Universities wide spreads the "education for all" scheme through open education, irrespective of age, and social status.

Open Education Emergence:

Impressed by England's Open University, the forerunner of the open education system, the then Director of NCERT submitted the draft plan regarding Open Education which was later approved by the Government of India to start the Open school education in our country.

Objectives of Open Education:

The Open Education system aims at facilitating the economically poor school dropouts, and those who wish to continue their education after their relaxed age. It is highly impossible to provide education to millions of such people in developing countries by a formal system of education. So that it is the easiest method to provide education to those who desire to learn something new. It also provides innovation in education methods. Thus Open Education in countries like India became indispensable.

Open Education Resources:

Open Education Resources like podcasts, learning modules, streaming videos, openaccess journals, open courseware, and online tutorials (3).

Open Educational Resourcesinclude:

MIT OpenCourseWare:It is the forerunner of the Open Educational Resource Movement. It also accesses valuable teaching materials such as images, lecture slides and videos.

Khan Academy:Learners can acquire educational concepts on a wide range of topics from engineering and science to computer programming (4).

Merlot:The learning materials include animation, case studies, drills and practice and stimulation (4).

Academic Earth:It provides educational content and course materials from the best universities in the world (4)

Massive Open Online Courses (MOOC): It grants free online courses to develop new skills and enhances the quality of educational experiences.

Open Universities:The First Open University in the world was established in England in 1969.In India, Indira Gandhi National Open University (IGNOU) was established in September in, New Delhi. IGNOU started distance education programmes in 1987. Up to 2005, about 3.56 lakh students registered their names for various programmes of IGNOU. (2)

Advantages of Open Education: Access to education: Students can access education anywhere in the globe at any time. It does not require any fixed qualification rather than one's desire.

Less expense for students: The resources available online instead of the traditional textbooks lower the cost of course material.

Progress at their own pace: A learner has the freedom to advance at his own pace and convenience.

Effective in remote locations: People who live in remote places also get benefitted from the open education system due to the development of technology.

Economical: As compared to the traditional system, open education is more affordable. **Level of education:** Irrespective of level anyone can make use of open education.

Private study: learners can pursue their studies privately and learn whenever it is convenient at home in open education.

Conclusion

Open Education provides a wide area of learning to different people to fulfil their gap in getting a job in society. It helps to bridge the gap in the educational development of the individual as well as the country. While this alternative traditional education is not for everyone, it is still a practical option with nearly unlimited convenient options virtually endless for international students throughout the world. Additionally, flexible learning pathways are supported by open education, enabling students to set their own pace for learning and customize it to their requirements and interests. In addition, it develops critical thinking, creativity, and problem-solving skills as well as the development of digital literacy skills. Each student must analyze their circumstances and take decisions based on their requirements and aspirations.

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STEAM EDUCATION-A MULTIDIMENSIONAL APPROACH TO FOSTER CREATIVITY AND INNOVATION AMONG 21st CENTURY LEARNERS

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Abstract

This paper explores the concept of STEAM education and its impact on fostering creativity and innovation among learners in the 21st century. STEAM education goes beyond traditional disciplinary boundaries and encourages interdisciplinary connections, emphasizing the integration of science, technology, engineering, arts, and mathematics.

The benefits of STEAM education are examined, highlighting its role in promoting critical thinking, problem-solving, collaboration, and communication skills. By engaging in hands-on, project-based learning experiences, students develop practical knowledge, technical skills, and the ability to apply their learning to real-world challenges. Moreover, the integration of arts in STEAM education nurtures creativity, imagination, and design thinking. Students are encouraged to think outside the box, explore new possibilities, and embrace a multidimensional approach to problem-solving. The paper emphasizes the importance of arts in fostering innovative thinking and developing well-rounded individuals.

STEAM education extends beyond the confines of the classroom. It emphasizes community engagement, industry partnerships, and real-world applications, providing students with opportunities to make meaningful connections between their learning and the world around them. The paper emphasizes the relevance and practicality of STEAM education in preparing students for the demands of the modern workforce. However, challenges such as resource allocation, teacher training, and curriculum alignment need to be addressed to ensure the successful implementation of STEAM education. The paper emphasizes the importance of promoting diversity, equity, and inclusion in STEAM education, ensuring that all students have equal access and opportunities to engage in STEAM learning experiences.

Keywords: science, technology, arts, engineering, mathematics, problem solving, project-based.

Introduction

Integrating arts in science, technology, mathematics and engineering equips the students with the knowledge of tackling real-world challenges and make meaningful contributions to society. To prepare students to become innovators in an ever-evolving world. To create an inclusive learning environment through five disciplines by employing project-based learning. Exposing students to develop their critical thinking skills through problem-solving methods. It aims to develop a lifelong interest in learning new things. Art plays a vital role in fostering imagination, innovation, and emotional intelligence, which are all essential qualities in an increasingly interconnected and globalised society.

It also encourages collaboration and teamwork, as students often work in groups to tackle complex projects that require diverse skills and perspectives. The collaborative environment in which students learn promoted effective communication, empathy and respect for other's ideas, preparing students for future careers that will likely involve interdisciplinary collaboration. It embraces the use of technology as a powerful tool for learning and exploration.

Use of STEAM Education in the Classroom

- Scientists and engineers used models to predict the likely behaviour of a system. Many Engineers are not so comfortable with sketching, so it connects them with basic artistic skills through STEAM education. It is very helpful in preparing higher secondary students to succeed in higher education.
- Make the students reach the peak of success in their desired field.
- Giving more importance to critical thinking, inquiry, innovation and creativity to solve the students' Problems.
- Students are able to learn to use technological tools and applications.

STEAM Education Enhance Student Learning

- Holistic learning- STEAM education encourages students to approach problems and projects from a holistic approach. By integrating arts in science, mathematics, technology, and engineering students gain a comprehensive understanding of complex concepts. The students will learn to connect different disciplines and recognise the interdependence between them, leading to a deeper comprehension of the subjects.
- Critical thinking and problem solving- it fosters critical thinking and problem-solving skills by challenging students to analyse problems, evaluate multiple solutions, and make informed decisions. It nurtures students' ability to think creatively, consider alternative perspectives and find innovative solutions.
- Creativity and innovation- it encourages students to think from outside the box, integrating artistic expression with scientific and technical knowledge allowing students to explore many solutions, experiment with different mediums, and unleash their imagination.
- Collaborative learning and communication with students through group projects, students can learn to work together, share ideas and diverge the diverse skills of their peers. They develop effective communication skills, learn to articulate their thoughts, and accept other thoughts from their peers.
- Hands-on experiential learning- it actively engages students in projects, experiments and design challenges that require them to apply theoretical knowledge in practical contexts. It enhances students' understanding by allowing them to see the real-world

implication of what they are learning and make connections between theory and practice.

- Technological proficiency- technology is an integrated part of STEAM education, and students develop strong technological skills. The students will get the necessary skills for the digital age and prepare them for future careers in science, technology, engineering, arts and mathematics fields.
- Self-confidence- students develop their self-confidence by gaining confidence in their abilities, developing a sense of accomplishment, and building resilience in the face of challenges. Students extend their growth beyond academic achievements and prepare students for a fulfilled life.

Integrating STEAM Education in Schools

- The schools should integrate a multidisciplinary approach in their syllabus and reframe the school curriculum.
- It makes a good rapport between educational institutions and industries, research organisations,
- To create more opportunities to engage in real-world projects.
- Schools should conduct entrepreneurship programmes.
- The teachers are the facilitators.
- Teachers also benefit from STEAM education.

Benefits of STEAM Education

- To improve the social behaviour of the students.
- Learn to use their theoretical knowledge to solve a real-life problem by inquirybased approach.
- To provide an enhanced way to diagnose the problem and to find a solution for the solution.
- Develops self-confidence among students.
- Nurtures creativity and innovations by including arts in the learning process.
- The students learn to use various tools, software and technology application tools effectively.
- It creates more career opportunities for students who learn through STEAM. education advantages
- By integrating multiple disciplines allows students to develop a holistic understanding of the world.
- Students learn to analyse complex problems, think creatively and develop innovative solutions to complex problems.

- Hands-on experience is provided to students to make learning meaningful.
- By equipping students with skills, knowledge and mood as required for the evolving global economy prepares students to address global challenges.

Challenges in achieving STEAM education

- Even the teacher Educators need additional training to teach STEAM goals and objectives to student teachers.
- Developing the appropriate assessment tool for evaluating students.
- Some students may fix some perceptions that certain subjects are more difficult to influence the students to choose career choices.

Limitations

- Schools will face problems with changes in curriculum integration and discipline.
- Lack of awareness and importance of STEAM education among teachers and schools.
- It may require more professional teachers to teach effectively STEAM subjects.
- Assessing the student's progress will become more difficult because of advancement in learning.
- Insufficient time for teachers to teach students, students will have an overloaded curriculum.

Conclusion

STEAM education offers a multidimensional approach to education, fostering creativity, innovation, and the development of essential skills among 21st-century learners. By embracing STEAM principles, we can empower students to become lifelong learners, critical thinkers, and problem solvers, prepared to thrive in a rapidly changing world. It is through the holistic integration of science, technology, engineering, arts, and mathematics that we can cultivate a new generation of innovative individuals who will contribute to the advancement of society and shape a brighter future.

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PERCEPTIONS TOWARDS DIGITAL TECHNOLOGY AMONG 21st CENTURY B.Ed. TRAINEES

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Abstract

"Technology will never replace great teachers, but technology in the hands of great teachers is transformational."-George Couros.

The rapid advancement of technology has significantly impacted education, transforming the way educators teach and learners engage with information. As future Educators, B.Ed. trainees must develop a comprehensive understanding of technology's role in education to create dynamic and effective learning environments. This professional content delves into the thriving search for technological influence among B.Ed. trainees. The method employed in this study was a normative survey. A simple random sample of 100 B.Ed. trainees from the Madurai district, Tamil Nādu, were chosen to participate in the survey. The survey captured the trainees' awareness related to classroom technology. The data collected from the survey were analyzed using descriptive and inferential statistics. The findings of the study revealed that the awareness level of B.Ed. trainees regarding classroom technology were moderate. Additionally, the study found that there were differences in the perspectives of trainees on classroom technology in the digital age based on factors such as gender, locality and subject (Arts & Science). This study serves as a valuable resource for educators, policymakers, and researchers interested in enhancing technology integration in B.Ed. programs and promoting effective teaching practices in the digital era.

Keywords: Classroom Technology, B.Ed.(Bachelor of Education)Trainees' Perceptions on Digital Age, Educational Technology, Integration of Technology.

Introduction

Technology has become an integral part of our daily lives, revolutionizing various aspects of society, including the field of education. As we move further into the digital age, it is crucial to examine the perceptions and experiences of B.Ed.(Bachelor of Education) trainees regarding the integration of classroom technology. These trainees are the future educators who will shape the learning experiences of students in the coming years. Understanding their attitudes, experiences, and opinions concerning the use of technology in educational settings is essential for the effective implementation and enhancement of technology integration in teacher education programs (Koehler & Mishra, 2009). The rapid advancements in technology have brought about significant changes in the educational landscape, presenting both opportunities and challenges. Classroom technology, ranging from interactive whiteboards to online learning platforms, has the potential to enhance teaching and learning experiences, engage students in innovative ways, and foster critical thinking and problem-solving skills (Schmid, et al., 2020). However, the successful

integration of technology requires not only access to the necessary tools but also educators who are confident, knowledgeable, and skilled in leveraging technology effectively (Ertmer, et al., 2012). The present study aims to explore the perceptions of B.Ed. trainees regarding classroom technology in the digital age. By gaining insights into their perspectives, experiences, and opinions, we can identify the factors that influence their attitudes towards technology and the challenges they face in incorporating it into their teaching practices. Additionally, understanding the perceived benefits of technology integration and the recommendations provided by the trainees will help inform strategies to promote effective implementation. To accomplish these objectives, a normative survey methodology was employed. Descriptive and inferential statistical analyses were conducted to examine the data and identify patterns, differences, and associations. The findings of this research will contribute to the existing body of knowledge on technology integration in teacher education programs.

Digital Technology

Digital technology has become increasingly prevalent in educational settings, offering new possibilities for teaching and learning. Research studies have highlighted its potential to engage students, enhance learning outcomes, and support personalized instruction. Interactive whiteboards and online platforms are some examples of the wide range of technologies being integrated into classrooms.

Numerous studies have demonstrated the positive impact of classrooms on student engagement and achievement. For instance, interactive whiteboards have been found to promote active participation, collaboration, and student-centred learning (Glover, et al., 2007). Digital simulations and virtual laboratories have been shown to improve students' understanding of complex concepts and enhance their problem-solving skills (Chien, et al., 2016).

However, the successful integration of classroom technology is not without challenges. Educators often face barriers such as limited access to technology, inadequate training, and concerns about classroom management. Additionally, some teachers may have reservations about the pedagogical value of technology or may lack the confidence to use it effectively (Ertmer et al., 2012).

To overcome these challenges, it is essential to provide teachers with appropriate professional development opportunities and In-Service training. Teachers need training not only on how to use technology but also on how to integrate it meaningfully into their instructional practices.

Need and Significance of the Study

The research exploring the perceptions of B.Ed.(Bachelor of Education)trainees regarding the integration of classroom technology in the digital age are significant for several reasons. It provides insights into trainees' attitudes, experiences, and opinions, informing effective technology integration in teacher education programs. The findings can enhance teaching practices by uncovering innovative approaches and instructional strategies to improve student engagement and learning outcomes. Moreover, identifying the challenges faced by trainees and their recommendations for effective implementation can guide policymakers and educators in addressing these obstacles and designing supportive systems. This research has the potential to influence policy decisions, curriculum revisions, and resource allocation, promoting effective teaching practices in the digital era. Ultimately, it contributes to preparing future educators who can leverage technology effectively, benefiting the learning experiences of future generations of students.

Statement of the Problem

The problem undertaken by the investigator is stated as **"Perception towards Digital Technology among 21st Century B.Ed. Trainees".**

Objectives of the Study

The investigator of the present study framed the following objectives:

- 1. To find out the level of Perception of Digital Technology among B.Ed. Trainees
- 2. To find out the significant difference in perception towards Digital Technology concerning background variables
 - a. Gender [Male / Female]
 - b. Locality [Rural / Urban]
 - c. Subject [Science / Arts] and
 - d. Marital Status [Married / Unmarried]

Hypotheses of the Study

The investigator of the present study framed the following hypotheses:

- 1. There is no significant difference between male and female B.Ed.Trainees' perception
- 2. towards digitaltechnologyconcerning gender.
- 3. There is no significant mean difference between rural and urban area Trainees' perception towards digital technology concerningthe locality.
- 4. There is no significant difference in guidance needs between science and arts subjectsTrainees' perception towards digital technologyconcerningthe subject.

5. There is no significant mean difference between Married and Unmarried Trainee'sperceptionstowards Classroom Technology concerning Married Status.

Method

In the present study, the investigator applied a normative survey as a method. The normative survey method studies describe and interpret what exists at present.

Population

ThePopulation of the study was B.Ed. Traineesin the Madurai district.

Sample

The present study consists of B.Ed. (Bachelor of Education)Trainees' Perception of Digital Technology in the Digital AgeSituated in the Madurai District of Tamil Nadu, India. The sample was selected by using a simple random sampling technique. The sample forms a representative sample of the whole population. The sample consisted of 100 students of whom 27 were Male and 73 were female.

Tools for data collection:

The Perception scale wasdeveloped and constructed by the investigator. This scale consists of as many as 20items and each item has five alternative responsesi.e.Strongly Agree (SA), Agree(A), Undecided(U), Disagree (DA), Strongly Disagree(SDA).

Scoring Procedure

The scoring of the response given by the students should be like the following.

S.No	Response	Weightage
1	Strongly Agree (SA)	5
2	Agree(A)	4
3	Undecided(U)	3
4	Disagree (DA)	2
5	Strongly Disagree(SDA).	1

Tool Used for Present Study

The tool used for the present study

- 1. Personal Data form
- 2. Perception Towards Classroom Technology

Both tools are developed by the investigator.

Find the level ofPerception of Digital Technology among B.Ed. Trainees Table: 1

Awareness of	Low Level		Moder	ate Level	High Level		
Classroom	Ν	%	Ν	%	Ν	%	
Technology	21	21.0	66	66.0	13	13.0	

The level of Perception of Classroom Technology among B.Ed. Trainees

According to the table below, 21.0 % of B.Ed. Traineeshave low levels, 66.0% of trainees have moderate and 13.0% have high level of Perception towards Classroom Technology.

Null Hypothesis:1

There is no significant difference between the male and female of B.Ed. Trainees in TheirPerception TowardsClassroom Technology with Respect to Gender

Table: 2Significant Different Between Male and Female of B.Ed. Trainees' Perception of DigitalTechnology in with Respect to Gender

Variable	Sub- Variables	Ν	М	S. D	't' - Value	Significance at 0.05 level
Gender	Male	27	62.40	4.9788	1 20	Significant
	Female	73	68.24	6.3722	4.29	

It is inferred from the above table that the calculated 't' value (4.29626) is greater than the table value (1.96) for df(2,98) and at a 5% level of significance. Hence the null hypothesis is rejected. It shows that there is a significant difference between male and female of B.Ed. Trainees in their Perception towards Classroom TechnologyClassroom Technology with respect to gender.

Null Hypothesis:2

There is no significant difference between the rural and urbanof B.Ed. Trainees in their Perception towards Classroom Technologywith respect toLocality.

Table: 3Significant Different Between Rural and Urban of B.Ed. Trainees' Perception of DigitalTechnology with Respect to Locality

Variable	Sub- Variables	Ν	М	S.D	't' - Value	Significance at 0.05 level
Locality	Rural	46	64.5869	7.23	3.05	Significant
	Urban	54	68.4444	5.34	5.05	

It is inferred from the above table that the calculated 't' value (3.05922) is greater than the table value (1.96) for df(2,98) and at a 5% level of significance. Hence the null hypothesis is rejected. It shows that there is a significant difference between rural and urban of B.Ed. Trainees in their Perception towards Classroom Technologywith Respect to Locality.

Null Hypothesis:3

There is no significant difference between Arts and Sciences of B.Ed. Trainees in their Perception towards digitaltechnology with Respect to Subject.

Table: 4Significant Different Between Arts and Sciences of B.Ed. Trainees' Perception of DigitalTechnology with Respect to Subject

Variable	Sub- Variables	Ν	М	SD	't' - Value	Significance at 0.05 level
Subject	Arts	44	63.4772	6.2188	1 77726	Significant
	Sciences	56	69.1785	5.6828	4.77720	

It is inferred from the above table that the calculated 't' value (4.77726) is greater than the table value (1.96) for df(2,98) and at a 5% level of significance. Hence the null hypothesis is rejected. It shows that there is a significant difference between the Arts and Sciencesof B.Ed. Trainees in their Perception towards Classroom Technologywith Respect to Subject.

Null Hypothesis:4

There is no significant difference between Married andUnmarriedof B.Ed. Trainees in their Perception TowardsClassroom Technologywith respect to Married Status.

Table:4 Significant Different Between Married and Unmarried B.Ed. Trainees' Perception of Classroom Technology with Respect to Marital Status

Variable	Sub- Variables	Ν	М	SD	't' - Value	Significance at 0.05 level
MARRIED	Married	28	67.6785	6.4753	0.96068	No Significant
STATUS	Unmarried	72	66.2778	6.5740	0.70000	

It is inferred from the above table that the calculated 't' value (0.96068) is less than the table value (1.96) for df(2,98) and at a 5% level of significance. Hence the null hypothesis is accepted. It shows that there is nosignificant difference between Married and Unmarried of B.Ed.in their Perception towards Classroom Technologywith respect to Married Status

Major Finding of the Study

The study was conducted to assess the levels of Perception towards Classroom Technologyamong Female and Maleof B.Ed. Trainees and to observe the difference between the Female and Male Perception of Classroom Technology in The Digital Age. The findings of the study indicate that the maximum overall academic score is 100 and the minimum score is 20of individualBased on the overall Perception of Classroom Technology In The Digital Age scores the sample was categorized as 21.0 % of B.Ed.Trainees havea low level of, 66.0% of students have moderate and 13.0% have a high level of knowledge of Classroom Technology

Interpretation and Discussion

The interpretation and discussion of this research on the perceptions of B.Ed. trainees regarding the integration of classroom technology in the digital age revealed valuable insights. Trainees demonstrated a moderate level of Perception, highlighting the need for further emphasis on technology-related training and exposure during their education. The experiences shared by trainees emphasized the benefits of technology integration, such as increased student engagement and improved learning outcomes. However, challenges related to limited access, time constraints, and concerns about classroom management were identified. These findings underscore the importance of providing adequate resources, support, and professional development to address these challenges. The differential perspectives based on gender, locality, subject area, and marital status suggest the need for targeted interventions to cater to the diverse needs of trainees. The recommendations provided by trainees offer valuable guidance for effective implementation, emphasizing the significance of ongoing support and training. Overall, this research provides insights to inform policies and practices aimed at enhancing technology integration in teacher education programs and promoting effective teaching practices in the digital era.

Educational Implications

The research exploring the perceptions of B.Ed. trainees regarding the integration of classroom technology in the digital age have important educational implications. The findings suggest the need for curriculum development in teacher education programs to incorporate technology integration as a dedicated focus area. Additionally, targeted professional development programs should be provided to enhance trainees' technological proficiency and pedagogical practices.Establishing mentoring programs and support systems can provide guidance and assistance to trainees as they navigate the challenges of incorporating technology. By considering these implications, educational institutions can

prepare trainees to effectively integrate technology into their teaching practices, leading to improved student engagement and learning outcomes in the digital age.

Conclusion

The research exploring the perceptions of B.Ed.trainees regarding the integration of classroom technology in the digital age hold significant educational implications. The findings emphasize the need for curriculum development, professional development programs, resource allocation, mentoring, and collaborative learning communities. By addressing these implications, educational institutions can effectively prepare trainees to leverage technology in their future classrooms, promoting student engagement and improved learning outcomes. It is crucial to provide trainees with the necessary knowledge, skills, and support to overcome challenges and implement technology integration strategies effectively. By doing so, we can empower future educators to adapt to the evolving digital landscape and create dynamic learning environments that meet the needs of 21st-century learners. This research serves as a valuable contribution to enhancing technology integration in teacher education programs and fostering effective teaching practices in the digital era.

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COMPETENCY-BASED EDUCATION

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Abstract

Compared with conventional educational models, competency-based education places a strong emphasis on the mastery of skills and knowledge by learners, while also emphasizing individualized and flexible learning experiences. Competency-based education has attracted a lot of interest and acceptance recently. This Paper explores competency-based education's ability to satisfy the needs of students in the twenty-first century by examining its guiding principles, advantages, and difficulties.

Keywords: Competency-based education, student-centred approach, flexible learning experiences, lifelong learning skills.

Introduction

Competency-Based Education is an outcome-based approach to education to ensure proficiency in learning by students through the demonstration of the knowledge, skills, attitudes and values required for dealing with real life at the age and grade-appropriate level. Competency-Based Education in promoting student-centred learning, fostering lifelong learning skills, and enhancing educational outcomes.

Some principles of Competency-Based Education

- Clear learning outcomes
- Student-centered approach
- Mastery orientation
- Flexible pace of learning
- Integration of Technology

Clear Learning Outcomes:

Competency-Based Education starts with clearly defined learning outcomes (or) competencies. These outcomes describe the specific skills, knowledge, and abilitiesstudents are expected to acquire by the end of a course, program, or educational experience.

Student-centredApproach

Competency-Based Education places the learner at the centre of the educational process. It recognizes that students have different starting points and learning styles, and it allows for personalized learning pathways to accommodate individual needs and interests.

Mastery Orientation

Competency-Based Education Emphasizes mastery rather than seat time or competition of a predetermined curriculum. Students' progress through their education is based on their ability to demonstrate mastery of each competency. This approach in a particular skill (or) knowledge area before moving on to the next level.

Flexible Pace of Learning

Some students may move more quickly through competencies they already possess, while others may need additional time and support to achieve mastery. Flexibility in pacing helps ensure that all students can succeed.

Integration of Technology

Competency-based education often utilizes technology to support personalized learning experiences. Technology can provide adaptive learning platforms, interactive resources, and data analytics to help track and assess students' progress. It also enables students to access learning materials and resources anytime and anywhere.

These principles guide the design and implementation of competency-based Education, aiming to create more flexible, personalized, and relevant learning experiences that prepare students for success in the rapidly evolving world.

Benefits of competency-based education:

Competency-based education (CBE) offers several benefits for students.

- Individualized Learning
- Flexibility
- Relevant and practical skills
- Competency-Based Assessment

Individualized Learning

Competency-based education focuses on mastery of specific skills, and knowledge, allowing students to progress at their own pace. It promotes a student-centred approach that accommodates diverse learning styles and needs.

Flexibility

Competency-based education often employs flexible learning pathways, allowing students to access education on their terms. It can be delivered through online platforms, distance learning, or blended models, making education more accessible to a wider range of learners.

Relevant and practical skills

Competency-based education places a strong emphasis on real-world application of knowledge and skills. It ensures that students are acquiring practical skills that are directly applicable to their chosen careers.

Competency-Based Assessment

Competency-based education uses performance-based assessments to evaluate student mastery. In the old scenario, we were using a traditional education system based on examination. Competency-based education incorporates projects, portfolios, seminars and other forms of assessment that measure the practical application of skills. This type of assessment provides a more comprehensive understanding of a student's abilities and promotes deeper learning.

Overall, competency-based education offers a learner-centric approach that promotes personalized learning, practical skill development, and the acquisition of relevant competencies. It promotes students to better understand their learning profile.

Strategies for implementing competency-basededucation

- Foster collaboration and engagement
- Monitor and evaluate progress
- Train faculty and staff
- Align curriculum and assessments

Foster collaboration and engagement:

Create opportunities for collaboration and peer learning among students. Group projects, discussions, and interactive activities can enhance engagement and promote the development of teamwork and communication skills.

Monitor and evaluate progress:

Regularly assess and monitor student progress to identify areas of strength and improvement.

Train faculty and staff:

Educate faculty and staff about the principles and practices of competency-based education. Provide professional development opportunities to help them understand the shift in instructional approaches and assessment methods. Foster a culture of collaboration and continuous improvement.

Align curriculum and assessments

Break down the curriculum into modules or units that target specific competencies. Design assessments that directly measure students' proficiency in each competency.

Challenges Facing Competency-Based Education

It also faces certain challenges.

- Assessment methods
- Student engagement and motivation

Assessment Methods

Assessing competencies effectively and reliably can be complex. Traditional assessment methods like exams and papers may not always align well with the competency-based education approach.

Student Engagement and Motivation

Competency-Based programs require students to take ownership of their learning, set goals, and progress at their own pace. However, some students may struggle with self-direction and motivation, especially without the traditional external pressure like grades.

Addressing these challenges requires collaboration among educators, administrators, and policymakers.

Conclusion

In the old scenario, we were using transmission - reception model only. But it motivates students only for rote memory. Whether they understand the concept or not. So, we must use various methods to analyze a student's achievement. For example, seminars, projects, student portfolios, and quiz competitions. Jigsaw puzzles, peer evaluation, teaching-learning materials. In the 21st century (Information and Communication Technology) plays a vital role in the assessment of students.

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FOSTERING NOVELTY AND CREATIVITY IN CLASSROOMS BY CROSS-OVERLEARNING APPROACHES

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Abstract

Learning is not confined to the four walls of the classroom. Neither can learning be divided into grade levels based on age groups. Learning is a perpetual activity that occurs from womb to tomb. The traditional method of teaching and the curricula have failed to recognize it. Creativity and novelty have become vital for students to thrive in this rapidly evolving world. Traditional methods are being replaced by cross-over learning approaches for incorporating creativity and novelty. The ultimate aim of this article is to provide students, teachers, parents and educators with a comprehensive and detailed understanding of how creativity and novelty can be enhanced through crossover learning approaches by exploring the methodologies, importance, benefits and challenges in implementing cross-over learning. This paper will be a valuable resource for developing creativity and novelty through cross-over learning in education and training. **Keywords:** Novelty, creativity and crossover Learning

Introduction

Cross-over learning is an innovative teaching methodology that connects academic content and everyday learning combining formal and informal learning. The curricular material is linked with what students like thus awakening the attention and motivation in learning.

According to the Innovative Pedagogical Report (2015), Cross-over learning is regarded as one of ten innovations that are on the brink of having a profound influence on education. It is a great way of enriching formal linguistic knowledge with hands-on experience.

Approaches of Cross-over learning:

Various methods of cross-over learning were found to be highly effective in fostering creativity and novelty in students. The most effective methods are listed below.

i.Integration of arts and creativity:

Incorporating artistic practices, such as music, visual arts, or storytelling, into cross-over learning experiences can enhance creativity and innovation. The arts stimulate imagination, encourage unconventional thinking, and inspire new ideas. Integrating artistic elements into cross-disciplinary projects can lead to unique and innovative outcomes.

ii. Interdisciplinary collaboration:

Cross-over learning unites people from various disciplines and fields such as science, arts, engineering, and technology. The probability of transfer of knowledge through the exchange of ideas, methods, and approaches, leads to innovative solutions. For example, a team of scientists working with engineers may develop products that are both functional and aesthetically pleasing.

iii.Experimental learning:

Cross-over learning often involves hands-on, experiential activities that engage learners in real-world problem-solving. This approach encourages participants to apply knowledge from various fields to solve complex challenges. By experimenting with different ideas and approaches, learners develop a broader perspective and can uncover innovative solutions that might not have been apparent within a single discipline.

iv.**Problem-based learning:**

Cross-over learning can incorporate problem-based learning, where learners tackle complex, open-ended problems that require innovative solutions. This approach encourages critical thinking, collaboration, and creativity. By engaging in problem-solving activities that cut across different disciplines, learners are encouraged to think creatively and approach challenges from multiple angles.

v.**Design thinking:**

Design thinking is a human-centred problem-solving approach that emphasizes empathy, ideation, and prototyping. Cross-over learning can incorporate design thinking methodologies, allowing individuals to approach problems from multiple angles and generate creative solutions. Design thinking encourages iterative ideation, where ideas are refined and built upon, leading to innovation and breakthrough solutions.

vi. Diversified perspectives:

Cross-over learning exposes individuals to different perspectives, cultures, and ways of thinking. This exposure fosters open-mindedness and helps break down traditional boundaries and assumptions. When learners are exposed to diverse viewpoints, they are more likely to challenge existing norms, come up with fresh ideas, and find innovative solutions.

Novelty and creativity

Creativity is the generation of new and useful ideas, while novelty is the successful implementation of those creative ideas. The concept of creativity and its purpose and place

in education has arisen all around the world but is of particular academic interest in developed countries and industrialized nations where technology and ingenuity are of paramount importance to continued and ongoing prosperity. Educators, parents, and students realize that only by being creative will we be able to address the problems of the future, including education, health care, the environment, and the economy. Creativity is one of the key factors that drive civilization forward. Many researchers have closely examined the role of creativity and novelty in society and education.

Novelty and creativitythrough cross-over learning:

Creativity refers to the ability to produce a totally or partially novel identity. It involves making unique connections and thinking outside the box. Cross-over learning plays a vital role in enhancing creativity as it involves applying skills, knowledge and ideas from various domains in the following ways:

- 1. Transfer of knowledge from one domain to another will lead to innovative solutions and new concepts.
- 2. Various information gained from different domains will make the students more flexible and have numerous perspectives for any situation.
- 3. The traditional methodology of learning can be replaced with better methods and techniques.
- 4. Diversity of the individuals interacting with each other will lead to a diversity of thought and novelty.
- 5. Analogical thinking that develops creativity improves by drawing similarities between different fields.
- 6. Cross-over learning enables students to create new connections and combinations thus leading to knowledge construction.
- 7. Innovative insights and novel approaches to problem-solving.
- 8. Cross-learning breaks down the disciplinary silos, encouraging individuals to go beyond their area of expertise.
- 9. Conventional thinking is challenged by alternative approaches and perspectives by cross-over learning.
- 10. Students are encouraged to question established norms and explore unconventional paths.

Significance of cross-over learning:

Cross-learninghas significant importance in many aspects of both personal and professional development. Here are the key reasons why cross-learning is important:

1. Broadening Knowledge and Perspectives:

Cross-learning exposes individuals to diverse fields, disciplines, and perspectives. It expands their knowledge base beyond their specific area of expertise, fostering a more comprehensive understanding of the world.

2. Enhancing Problem-solving Skills:

Learning from different domains equips individuals with a wider range of problemsolving tools and approaches. They can draw upon diverse knowledge and experiences to find innovative solutions to complex challenges.

3. Stimulating Creativity:

Exposure to different fields and perspectives encourages creative thinking. By connecting ideas and concepts from unrelated domains, individuals can generate unique insights and ideas that can fuel innovation.

4. Encouraging Adaptability:

Cross-learning cultivates adaptability and flexibility in individuals. They become more comfortable navigating unfamiliar territories, adapting to new environments, and embracing change.

5. Breaking Down Silos and fostering collaboration:

Cross-learning promotes collaboration across disciplines and industries. It facilitates the exchange of ideas, knowledge, and best practices, breaking down silos and creating opportunities for interdisciplinary collaboration.

6. Accelerating Innovation:

The transfer of knowledge, methodologies, and approaches across domains can spur innovation. It allows individuals to leverage insights from different fields to develop new products, services, or processes.

7. Promoting Lifelong Learning:

Cross-learning emphasizes the importance of continuous learning and personal growth. It encourages individuals to be curious, explore new areas, and remain open to acquiring knowledge throughout their lives.

8. Facilitating Interdisciplinary Research:

Many complex problems require interdisciplinary approaches for effective solutions. Cross-learning enables researchers to bridge the gap between disciplines, fostering collaborations that can lead to breakthrough discoveries.

9. Enhancing Personal and Professional Development:

Cross-learning broadens individuals' skill sets, making them more versatile and adaptable. It enhances their overall personal and professional development, opening new opportunities for career advancement.

10. Promoting Cultural Understanding and diversity:

Cross-learning involves exposure to different cultures, beliefs, and practices. It fosters an appreciation for diversity and promotes cultural understanding, which is crucial in today's interconnected and globalized world.

Challenges in implementation:

Despite several benefits, many challenges are faced during the implementation of the approach. The common challenges include:

1.Lack of awareness and exposure: Limited awareness of other disciplines or fields can hinder cross-over learning. Individuals may not be aware of the potential connections and opportunities available in other domains, making it difficult to initiate cross-learning initiatives.

2.Siloed knowledge and expertise: Organizational structures and educational systems often foster specialization, leading to siloed knowledge and expertise. Breaking down these silos and promoting cross-disciplinary collaboration can be challenging, as it requires bridging gaps and creating platforms for knowledge sharing.

3.Different terminologies and jargon: Each field has its terminologies and jargon, which can create. barriers to effective communication and understanding across disciplines. Translating concepts and facilitating effective communication between domains may require effort and time.

4.Resource limitations: Implementing cross-over learning initiatives may require additional resources, including time, funding, and access to experts or learning materials from different fields. Limited resources can pose challenges in providing the necessary support for individuals or organizations to engage in cross-learning activities.

5.Integration and application of knowledge: Integrating knowledge from different fields and effectively applying it to new contexts can be complex. Understanding how to transfer concepts, methodologies, and approaches across domains and ensuring their applicability in different settings requires careful consideration and adaptability.

6.Overcoming biases and preconceptions: Individuals may have preconceived notions or biases about other fields or disciplines, which can hinder their willingness to engage in cross-over learning. Overcoming these biases and fostering an open and receptive mindset is crucial for successful cross-learning.

7.Assessment and recognition: Traditional assessment methods and recognition systems may not adequately capture or value the skills and knowledge gained through cross-over learning. Developing appropriate assessment methods and recognition frameworks that acknowledge interdisciplinary achievements can be a challenge.

8.Resistance to change: Individuals or organizations may be resistant to adopting cross-over learning due to a preference for familiarity and comfort in their domains. Overcoming resistance to change and promoting a culture of openness and curiosity can be a challenge.

Addressing these challenges requires commitment, leadership support, and a proactive approach. Organizations and educational institutions can create supportive environments that encourage cross-over learning, provide resources and platforms for collaboration, and promote a culture of openness, curiosity, and lifelong learning.

Conclusion

Cross-learning is essential for broadening knowledge, stimulating creativity, fostering collaboration, and driving innovation. It equips students with the skills and mindset needed to thrive in an ever-changing and interconnected world. Education is based on different interlocking structures and unless changes take place at different levels, it will not produce the desired results. Offering the right chances to develop students' creative and innovative potential and effort in reducing barriers and improving the presence of enabling factors for creativity and novelty should be a priority for schools, to support the shift towards a more creative and innovative education.

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E-COMPETENCIES OF THE B.Ed. TRAINEES OF THE DINDIGUL DISTRICT

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Abstract

This study aims to assess the e-competencies of B.Ed. trainees in Dindigul District and examine the differences in e-competencies based on various variables. The sample consisted of 300 student teachers from private B.Ed.colleges, selected through stratified random sampling. A standardized tool, the E-Competencies Assessment Scale, was administered to collect data, which were analyzed descriptively and differentially. The findings revealed that the B.Ed. Trainees in Dindigul District had an average level of e-competencies. There were no significant differences in e-competencies based on gender, course and year of study, and the locality of the institution. However, significant differences were found based on educational qualifications. The study emphasizes the importance of integrating web technologies in education and suggests that the government, particularly the NCTE, should consider the findings and recommendations to enhance e-competencies among B.Ed.trainees.

Keywords: Education, e-competencies, B.Ed.trainees, Technology in Education

Introduction

Education, in its general sense, is a form of learning in which the learning, skills and habits of a group of people are transferred from one generation to the next through teaching, training or research. Education in the twenty-first century has remarkable changes in terms of the methods of imparting and receiving. Technology in education also as changed the overall outlook of teaching and learning. Now, the teacher is more of a facilitator than a traditional classroom teacher with chalk and blackboard. Technology (ICT) plays an increasingly significant role in improving access to education for people living in impoverished areas and developing countries.

E-Competencies for Teaching

The term, E-Competencies refer to the skills and abilities with the knowledge of electronic information technologies.

E-Competencies include competencies related to professional growth and development, innovation and collaboration. It leads to proactively engaging in exploring and learning new and emerging technologies. It helps to identify educational sites and portals suitable to their subject area. The e-competent teacher reviews new and existing software for education and recommends useful and credible websites to colleagues. The teachers with e-competencies use the internet and network applications and resources. The e-competencies of a teacher include the usability to

- Send and receive emails with attachments, manage emails and use LAN and Webbased email servers.
- Effectively use synchronous and asynchronous web-based communication tools like instant messengers, voice and teleconferencing.
- Contact and use shared printers, shared folders and other devices within a network.
- Effectively use research engines, web directories and bookmarks.
- Download and install relevant applications including freeware, shareware updates, patches, viewers and support applications.

Objectives of E-Competencies

The main purpose of the European e-Competence Framework is to provide a reference framework of ICT competencies that can be used and understood by ICT users and supply companies, ICT practitioners, managers and HR Departments, the public sector, and educational and social partners around Europe. Particularly, it provides a structure which can be utilized by nations without an ICT competence model, while allowing existing national ICT competence models to be linked to it, to provide a common European framework for translation. The User Guide for the European e-Competence Framework identifies the following as the intended target groups for the framework:

- ICT practitioners and managers: By providing clear guidelines to build competence development pathways
- Human Resource managers: By enabling the anticipation, planning and standardized description of competence requirements
- Education and Training: By enabling effective planning and design of ICT Curricula
- Market Researchers and Policymakers: By providing standardized European-wide agreed onreferences and definitions for evaluating, anticipating and measuring ICT

skill needs across the continent. The User Guide additionally envisages several usage scenarios where the framework might be applied.

- For human resource and competence managers in companies, particularly SMEs, to plan, develop and manage competencies (particularly in terms of managing the LLL pathways of employees)
- Inspiring the development of national/local ICT frameworks
- Using it as input for describing qualifications, training courses and certification, particularly within tertiary education
- As a tool for individuals to plan their career development pathway as an ICT practitioner
- As a tool for guiding recruiting and sourcing processes within companies
- As a framework by which to conduct skills forecasting, as well as demand and supply monitoring of professional e-skills, on local, regional, and national levels.
- ICT practitioners and managers: By providing clear guidelines to build competence development pathways
- Human Resource managers: By enabling the anticipation, planning and standardized description of competence requirements

Review and Rationale of the Study

The investigator reviewed as many as 14 Indian studies and 25 studies from abroad, conducted on E-Competencies. The studies were conducted on the B.Ed.Trainees, teacher trainers, student teachers, teachers and facilities. The studies were conducted through survey and experimental methods. The study is unique against others in this area, as it focuses on the E-Competencies of B.Ed.use, especially of the Trainees.

The present study has relevance and importance as today we are in the digitized global world in which education has reshapedits form through the integration of web technologies.

Objectives of the Study

The objectives of the present study are

- To find out the level of E-Competencies of the B.Ed. Trainees of Dindigul District.
- To find out the Significance of difference, if any in the E-Competencies of the B.Ed.Trainees, concerning certain variables viz., Gender, Age, Educational Qualification, Course and Year of Study, Types of the Institution, Locality of the Institution.
- Hypotheses of the study:
- In line with the above objectives, the following hypotheses were formulated.
- The B.Ed. Trainees in DindigulDistrict do not have any E-Competencies.

- There is no significant difference between the mean E-Competencies scores of the male and female B.Ed. Trainees of DindigulDistrict.
- There is no significant difference between the mean E-Competencies scores of the first year and second-yearB.Ed. Trainees of Dindigul District.
- There is no significant difference between the mean E-Competencies scores of the Rural and Urban B.Ed. Trainees of DindigulDistrict.
- There is no significant difference between the mean E-Competencies scores of the B.Ed. Trainees based on Age.
- There is no significant difference between the mean E-Competencies scores of the B.Ed. Trainees based on Educational Qualification.
- There is no significant difference between the mean E-Competencies scores of the B.Ed. Trainees based on the Types of Institution.

Methodology of the Study

As the study is descriptive by nature, a normative study technique has been adopted. As many as three hundred students and teachers from the private B.Ed. The College of DindigulDistrict has been chosen through a stratified random sampling technique to form the sample. Standardized Tool E-Competencies Assessment Scale was developed by the investigator and administered to the B.Ed. Trainees for data collection. The collected data were subjected to descriptive and differential statistical analysis.

Limitations of the Study

The study has attempted to assess only the E-Competencies of the B.Ed.trainees. Tool for the same has covered only those Dimensions of E-Competencies, which are found necessary to the profession of teaching. In this way, the present study is limited.

Delimitations of the Study

- The delimitations of the present study are as follows,
- The study is confirmed only to B.Ed. Trainees of DindigulDistrict

Operational Definition of Terms

Though the terms used in the title and content of the report of the present study are self-explanatory, the following operational definitions are given for better understanding.

• By the term, "E-Competencies" the investigator means, the knowledge and application of computer software packages for the teaching-learning process.

Analysis and Interpretation of Data

The data obtained from the sample through the administration of the tools have been subjected to descriptive and differential analysis in tune with the stated objectives. The detailed analyses of the data obtained from the administration of the tool are presented below:

Analysis of the E-Competencies Scores of B.Ed. Trainees level of Dindigul District (Whole Sample)

Levels of E- Competencies	Range	Ν	Percentage	
Low	0-100	18	6%	
Average	101-200	186	62%	
High	201-300	96	32%	

From the table, it can be seen that the percentage of E-Competencies of the B.Ed. Trainees in the low level are 6%, 62% of B.Ed. Trainees of Dindigul District have an average level of E-Competencies and 32% of B.Ed. Trainees of Dindigul District have a high level of E-Competencies

Significance of Difference between the Mean E-Competencies Scores of the B.Ed. Trainees of Dindigul District of sub-grouped based on certain variables.

Variable	Sub-variable	Ν	Mean	S.D	't' Value
Gender	Male	55	70.290	13/24	0.342*
	Female	245	69.424	14.29	
Course and Year of	B.Ed.I Year	85	7107	13.97	1.55*
Study	B.Ed.I Year	215	68.99	14.11	
Locality of the	Urban	74	71.87	13.66	1.619*
Institution	Rural	226	68.83	14.17	

*Not significant at 0.05 level

*Significant at 0.05 level

As revealed by the above table, there are no significant differences between the mean scores of the E-Competencies of Dindigul District B.Ed.Trainees are sub-grouped based on Gender, Course and Year of Study, and Locality of Institution, Hence, the related null hypotheses are not rejected. In the respective sub-groups Female B.Ed.Trainees. B.Ed.II Year Trainees, Rural B.Ed. Trainees are slightly better in their Attitude towards the use of ICT for Teaching than their counterparts.

Findings and Conclusions

The following are the major findings and conclusion of the study.

- 1. The B.Ed. Trainees of Dindigul District have an Average level of E-Competencies which is evident from their mean E-Competencies score i.e. 67.41 out of the total score of 320.
- 2. The male and female B.Ed. Trainees do not differ in their E-Competencies.
- 3. The first-year and the second-yearB.Ed. Trainees differ in E-Competencies, and the first-year trainees have fewer E-Competencies compared with second-year trainees.
- 4. The rural and urban primary-level teacher trainees differ in theirs. The rural B.Ed. Trainees have fewer E-Competencies than urban trainees.
- 5. The E-Competencies of B.Ed. Trainees do not differ based on age.
- 6. The B.Ed. Trainees of men, women and Co-Educational Institutions do not differ in their E-Competencies.
- 7. The E-Competencies of B.Ed. Trainees differ based on their Educational Qualifications.

Conclusion

The present study shows that B.Ed.level trainees have an Average level E-Competencies. We live in an ever-changing technological and global society in which technology can facilitate teaching strategies that promote the higher-order thinking skills of trainees. Hence, the suggestions and recommendations of the present study deserve closure look by the government authorities like NCTE.

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UTILIZATION OF INTERACTIVE WHITEBOARD FOR TEACHING BIOLOGICAL SCIENCE

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Abstract

In recent years, interactive whiteboard tools and apps have gained in popularity as valuable tools to enhance the learning process in a range of fields, notably biology. Educators might use whiteboards that are interactive to present engaging biology lessons on an engaging platform. It enables professors to pique the curiosity of learners and encourage engaged engagement by displaying visual information, such as images and illustrations, in a large cooperative area. Biology-specific courses offer a greater range of engaging and engaging ways to learn. These courses teach biological concepts to pupils through accurate simulation, virtual examinations, and virtual activities. The implementation of interactive whiteboard technology and software in biology training has the potential of enhancing the educational process dramatically.

Introduction

Using a touch-based or pen-like device, users can manage and manipulate digital material on a large interface display known as an interactive whiteboard (IWB). The digital material might be something from engaging instructional programmes, activities, and apps to text, photographs, and recordings.

Presentations, brainstorming sessions, and collaborative learning are frequently done on whiteboards with screens in academic and professional environments. They allow distant users to take part in instruction or conversation through teleconferences and virtual learning.

Fingertip or stylus input on interactive whiteboards may be detected using a variety of tools, including infrared electrical, or optical detectors. To allow multimedia conference calls, some whiteboards with touchscreens additionally have integrated speakers, recording devices, and mics.

Using a projection system and an interactive whiteboard, the educators may show graphics from a laptop onto a projection screen in the teaching environment. The term "interactive whiteboards" can apply to two very distinct categories of technologies.

Initially, audience members may view a presenter's visual contribution by utilising an interactive whiteboard in conjunction with multimedia and data-sharing tools such as Windows NetMeeting or Elluminate (TechLearn, 2003).

The subsequent kind of interacting whiteboard, as defined by Clyde (2004), Hall & Higgins (2005), and TechLearn (2003), comprises a touch-sensitive whiteboard, an operating system with supplemental apps, and a display mechanism. Computer-generated images are presented on the whiteboard. The whiteboard in the focal point of the

educational environment may be operated by touching the screen or using a special stylus (Clyde, 2004; Hall & Higgins, 2005).

The use of interactive whiteboards can improve understanding, cooperation and exchange across a variety of contexts.

Features

Like an outcome of the convergence of earlier advances, interactive whiteboards today identify themselves by their multimedia capabilities including images, sounds, and touchscreens (Hall & Higgins, 2005). As opposed to having a few students gather over computers in the classroom, an IWB, like a standard video screen, may display an extended desktop image in the main area of the classroom, thereby providing vision for all learners (Gatlin, 2004).

Because touch-sensitive screens may be manipulated, a greater number of people, such as those having special needs and small children, can use devices (Clyde, 2004). Due to touch sensitivity, teachers can annotate online notes (Gatlin, 2004). IWB development, on the other hand, frequently allows teachers to capture actual time instruction.

For formative or summative examinations, several IWBs additionally offer optional input devices. These " voting tools" can enable more student participation and relieve the educator from the centre of the classroom, while lowering the risk of being exposed and ensuring confidentiality (Hennessy, Deaney, Ruthven, & Winterbottom, 2007).

Hall and Higgins (2005) offered some recommendations for the potential application of IWBs in the learning environment, such as the showing of online materials or videos that demonstrate a subject, modelling the use of programmes, presenting work by students, creating digital lessons and diagrams, text control, practising writing, preserving of points out, and rewriting (Hall & Higgins, 2005). Although many of these programmes aren't exclusive to IWBs and may be completed with just a laptop and a screen, teachers frequently comment on the annotations and handling elements built into IWBs (Clyde, 2004; Gatlin, 2004; Jewitt, Moss, &Cardini, 2007; Starkman, 2007).

Components of Interactive Whiteboard

- 1. **Display Surface**: This is the huge, flat panel that serves as a projection screen for pictures and information. A whiteboard-like table or a touch-sensitive screen can be used.
- 2. **Projector**: The instrument used for displaying pictures onto the screen's surface. Typically, the projection device is fixed on the roof or against a wall.
- 3. **Computer**: A personal computer is a gadget that displays the material on a digital whiteboard. It is commonly a laptop or desktop computer. that is linked to the projectors.

- 4. **Stylus or Interactive Pen**: It is the gadget which enables students to make contact with the display's screen. The interactive pen or stylus is utilised on the screen for writing, drawing, choosing, and modifying material.
- 5. **Software**: The interactive whiteboard software is the programme that allows participants to make connections with the screen's surface. It includes text applications, sketching, choosing, and altering written material, as well as capabilities for sending and receiving material.
- 6. **Audiosystem**: Some interactive whiteboards have a sound system with loudspeakers and a recording device that may be utilised for lectures and conferences.
- 7. **Connectivitychoices**: Most interactive whiteboards have options for connection such as USB, HDMI, and Wi-Fi, which allow students to link a variety of devices to the whiteboard and exchange material.

Tools used in Interactive Whiteboard

- **Stylus**: An electronic pen used to write or draw on the board. It allows users to create digital ink on the board, which can be saved or erased.
- **Touch recognition**: An interactive whiteboard can detect touch input, allowing users to control the board using their fingers. This is useful for tasks such as zooming, scrolling, or selecting items on the board.
- **Multi-touch**: Some interactive whiteboards allow multiple users to interact with the board simultaneously. This is useful for collaborative work and brainstorming sessions.
- **Built-in speakers**: Many interactive whiteboards come with built-in speakers, which can be used to play sound or audio files during presentations or lectures.
- **Screen capture**: Many interactive whiteboards can capture and save an image of the current screen. This is useful for sharing notes or presentations with others.
- Wireless connectivity: Some interactive whiteboards can connect wirelessly to other devices, such as laptops or tablets, allowing users to display content from those devices on the board.
- **Screen annotation**: Interactive whiteboards often have tools for annotating the screen, such as highlighting, underlining, or circling important information.
- **Screen recording**: Some interactive whiteboards have built-in software for recording the screen, which can be useful for creating tutorials or training videos.
- **Virtual keyboards**: Some interactive whiteboards have virtual keyboards, which allow users to enter text directly onto the board.
- **Integration with other software**: Interactive whiteboards can integrate with other software programs, such as presentation software or video conferencing software, to enhance the user experience.
Interactive whiteboard in teaching biology

Interactive whiteboards (IWBs) are an excellent tool for teaching biology. They provide a dynamic and interactive platform for teachers to engage their students and promote active learning. Here are some ways in which IWBs can be used in the biology classroom:

- 1. **Annotating diagrams:** IWBs allow teachers to annotate diagrams, which can help to explain complex concepts and processes in biology. This is especially useful when discussing anatomy or genetics, where visual representations are key to understanding.
- 2. **Virtual dissection**: With IWBs, teachers can use digital simulations to conduct virtual dissections. This allows students to explore and learn about different animal structures and functions, without the need for real specimens.
- 3. **Interactive quizzes**: IWBs can be used to create interactive quizzes that allow students to test their knowledge and understanding of biology concepts. Teachers can display questions on the board, and students can use interactive pens to select their answers.
- 4. **Collaborative learning**: IWBs can be used to promote collaborative learning. Teachers can divide the class into groups and have them work together on different biology projects or activities. This can help to improve teamwork and communication skills, which are essential in many biology careers.
- 5. **Multimedia presentations**: IWBs can be used to create multimedia presentations that incorporate videos, images, and audio recordings. This can help to engage students and make learning more fun and interactive.

Apps in interactive whiteboard for teaching IWB

1. Microsoft Whiteboard:

It is a flexible and interactive whiteboard programme that is accessible for Windows, iOS, and the web. It lets users design and sketch on an unlimited made of canvas, integrate pictures, add markings, and interact in continuous interaction with others.

2. Explain Everything:

Explain Everything is a robust interactive whiteboard software that is accessible on iOS, Android, and the web. It has a variety of sketching tools, as well as the capacity to integrate and alter photographs and records, capture pictures, and include interactive components such as puzzles and slideshows.

3. Notability:

It is a popular iOS and macOS taking notes tool that also acts as a whiteboard. It has annotating capabilities, handwriting recognition, and the capacity to upload and edit PDFs, capture music, and sync.

4. GoodNotes:

One more amazing taking observation tool for iOS and macOS that can also be used as a whiteboard is GoodNotes. It gives pleasant handwritten knowledge, lets you upload photos and PDF documents, has a variety of tagging options, and helps you to properly organise the information you write.

5. Google Jamboard:

Google Jamboard is an interactive whiteboard programme that is accessible via the Internet as well as a smartphone or tablet mobile application. It has a basic and straightforward interface with several sketching devices and the capacity to add written notes, import photos, and so on.

Conclusion

The usage of interactive whiteboards and applications in biology education has shown to be extremely effective and influential in improving the educational experiences of learners. Such technology tools have several benefits that lead to greater engagement, comprehension, and memory of biological ideas.

For starters, interactive whiteboards offer instructors an innovativedevicefor presenting complicated biological facts in an engaging and aesthetically appealing way. They enable educators to use multimedia tools such as photographs, videos, graphics, and animated graphs in their lessons, which are capable of communicating complex ideas and procedures. Interactive whiteboards establish a cooperative and participative classroom atmosphere by directly immersing students in their educational experience through interactive tasks and conversations, improving their participation and information storage.

The utilisation of interactive whiteboards and applications in biology instruction accommodates varied methods of learning and interests. People who learn visually can benefit from the whiteboard's graphical illustrations and drawings, while students who are kinesthetic learners may participate in interactive tasks offered by educational applications. Furthermore, because these devices are interactive, they promote active engagement and inspire students to take control of their educational experiences by allowing them to browse through information at their speed, examine resources, and repeat topics as required.

The use of interactive whiteboards and smartphones in biology classrooms transforms traditional methods of instruction by providing an increasingly interesting, dynamic, and personalised experience for students. Educators may successfully assist student learning, create a better knowledge of biological ideas, and educate students for an occupation that relies more on technological proficiency and intellectual abilities by harnessing software to increase visualisations, communication, and evaluation.

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AUGMENTED REALITY: MOBILE APPLICATIONS FOR EFFECTIVE TEACHING AND LEARNING

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Abstract

Due to the development of science, new technological tools are very useful for learning and teaching in daily life, when these are used properly, the development of learning and teaching is improving day by day. Augmented reality is also one of the new and best instruments for the teaching community. Augmented Reality (AR) can be used for a variety of purposes in the classroom. This imaginative advancement superimposes virtual content on top of the certified environment, allowing students to interact with content in entirely new ways. This paper aims to explore the various augmented reality mobile application for teachers and learners for inverting traditional classroom into smart classroom.

Keywords: Augmented reality, Mobile Applications, Teaching, Learning

Introduction

Augmented Reality (AR) can be utilized for various targets in the classes. This creative innovation overlays virtual substance on top of the genuine climate, permitting understudies to associate with content in entirely different ways. Since the innovation's origin, App designers have been delivering the best AR applications for schooling that assist with further developing classroom learning through expanded commitment and intelligence. These Augmented Reality applications permit understudies to grow their insight and draw in them during the time spent creating AR projects. Also, they empower instructors to construct their own AR content and illustration plans.

Augmented Reality Application

Narrator AR is one of the most amazing AR applications for training that promotes preschool writing in a fun and engaging way. The application encourages children to write with a pen before using the app to animate transcribed words off the page in Augmented Reality. It also propels them at an important stage of early education to draw in the fundamental fine engine and mental abilities to help early proficiency and mental health. Seeing letters and numbers structured in 3D liveliness aids young students in gaining a thorough understanding of how to write. It is beneficial to visual students.

CleverBooks Geography enables students in grades K1 through K-6 to investigate ready-to-involve content in Augmented reality. It highlights 3D models of nations and remembers data for geological anomalies, political designs, creatures, plants, and legacy destinations, to name a few. CleverBooks Geography is one of the most mind-blowing AR applications for schooling that draws in understudies in a better way to see and investigate the world, and every one of its marvels, through an intelligent development opportunity of a true climate. It is adaptable to various subjects (geology, proficiency, social examinations, our general surroundings, and so on) and grades.

Quiver Education is another outstanding AR application for education that combines actual shading with Augmented Reality innovation to give students an unusually magical experience. When students have finished shading the sheet, they can use this 3D shading application to revitalize its content. Quiver Education, designed with teachers in mind, places a greater emphasis on instructive content than the standard Quiver App, with explicit pages planned around topics as diverse as science, math, and the planets.

Curiscope's Virtuali-Tee takes Science to a new level by allowing students to learn about the human body... on a human body. Students can investigate the circulatory, respiratory, and stomach-related frameworks with completely vivid 360° recordings using delightfully planned Augmented Reality and astounding 3D growth opportunities. It is one of the most mind-blowing augmented reality training applications, allowing understudies to track their pulse and see it energising live in the application.

The Animal 4D+ app was created to highlight the magnificence and significance of untamed life on Earth. Different creatures are supernaturally revived in reasonable 3D activity for the youngsters to see, alongside their exceptional sounds and developments, by the sorcery of Augmented Reality. It's one of the most amazing, augmented reality applications for education that aims to increase children's awareness of the various animal species and the importance of protecting, securing, and preserving the ecological balance.

The Space 4D+ application is a simple and direct yet clever device that uses Augmented Reality innovation to transport children to the outskirts of our nearby planet group, where they can easily notice and learn about various heavenly bodies and space investigations. It's one of the most amazing, augmented reality (AR) applications for education designed and created to engage children with the wonders of our universe.

Catchy Word allows students to walk around their homes and classrooms, and that's just the beginning, to 'find letters' using Augmented Reality technology. When all of the letters have been collected, they can be combined to form a word. It's an excellent app for kids who struggle with spelling. It's one of the most mind-blowing augmented reality applications for education, allowing educators and guardians to create their statement list and settle on a single word or the entire rundown in a series.

ANSTO XR is one of the most amazing, augmented reality (AR) applications for education that opens the occasional table to reveal a world of protons, neutrons, and electrons and explains why they are so important to science and business in the twenty-first century. Understudies may see fresh and draw on facts on the most well-known components by directing their gadgets at the ANSTO occasional table banner; remembering the path of the iota and data for how the component is used in day-to-day life.

GeoGebra Augmented Reality stimulates interest and decisive thinking in math and real-world space. It contains a few examples of 3D numerical items that students may place on a table, floor, or any flat surface around them. It's one of the most fantastic AR applications for education, allowing pupils to fill in as humans or two by two to study shapes and 3D capabilities, and the possibilities are endless. They can also tilt their cameras to connect a Penrose triangle or enter a Klein's container. They can also take screenshots from various places, contrast evidence, and different understudies, and then return to class for demonstration and discussion.

Bookful uses Augmented Reality (AR) and 3D components to create engaging experiences and revitalise tales and characters. Guardians and teachers will like how this application evolves, providing something new to functional growth potential. It's one of the most incredible AR applications for education, with the world's largest 3D/AR library, including titles from leading distributors and brands like The Tale of Peter Rabbit, DK's Encyclopedia, and kids' favourites like Barbie, My Little Pony, Thomas and Friends, Transformers, and the Smurfs.

CleverBooks Geometry enables students to examine mathematical solids in Augmented Reality and demonstrate their aptitude in 3-D computation. It's one of the most amazing, augmented reality teaching programmes, highlighting 3D representations of five fundamental 2D-aspect mathematical forms (circle, square shape, block, hexagon, and triangle) and allowing an instructor to make sense of unique calculating concepts through 3D perception. Combine the programme with CleverBooks Geometry Building Blocks to create an engaging and vibrant learning environment for children from 5 to 12 years old at home or students in your numerical class (K-6).

Octaland 4D+ is one of the most astounding AR programmes for instruction, combining real-life professions with 26 Octanian characters from A-Z and employing Augmented Reality innovation. "There was once a mystical country ruled by Kaz the Knowledgeable King. It is known as Octaland, and its inhabitants are known as Octanians. From Albert the Astronaut to Zack the Zookeeper, the Octanians are hardworking people who are happy with how they make ends meet!"

World Brush is an Augmented Reality software that allows users to paint with brushes on their environment. It's one of the most amazing AR applications for schools that also

allows users to share their compositions with their friends and teachers. Each artwork is mysterious and is kept at the approximate GPS location where it was created.

Understudies may use Google Translate's AR component to point their device's camera at the text they need to read, and it will offer them a consistent interpretation of the image exhibited. It's one of the most incredible augmented reality training tools, allowing your students to learn languages without having to write the phrases they need to understand.

With Arloon Plants, students will learn about plants' components, life cycles, and numerous species. They will investigate how they adapt to biological systems and seasons to survive, and they will discover a plethora of fascinating truths that will astound them. It's one of the best AR applications for training since it allows students to work with the virtual plants that they may bring to life using Augmented Reality technology.

Conclusion

There is no question that if professionals utilize the above-mentioned augmented reality technology in teaching and learning, students will like the lessons and perform well in the exams. Learning and teaching may have a considerable effect, and positive impact and the aforementioned AR technologies are extremely successful in terms of performance, and students can exhibit their interest in the learning activity 100% of the time. Such technologies can develop engaged learners and improve not just idea retention in their good memory.

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THE FUTURE OF STEM EDUCATION: EMERGING TRENDS AND DIRECTIONS

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Abstract

STEM (Science, Technology, Engineering, and Mathematics) education is critical for educating students for future problems and fostering innovation. As we progress deeper into the twenty-first century, the landscape of STEM education is continually changing, driven by technological developments, changing social requirements, and a better knowledge of successful pedagogical practises. This theme paper investigates the rising trends and directions in STEM education that are defining the field's future. It looks at topics including transdisciplinary learning, inclusive practises, digital literacy, personalised learning, and experiential learning. The study also discusses the problems and possibilities that these changes present, as well as how educators and policymakers may navigate this changing terrain to promote a comprehensive and equitable STEM educationfor all students.

Keywords: STEM education, emerging trends, future directions, science education, technology education, engineering education, mathematics education

Introduction

STEM (Science, Technology, Engineering, and Mathematics) education is an important part of educating kids for future problems and possibilities. As societies become more reliant on advances in science, technology, engineering, and mathematics, it is critical to investigate the developing trends and directions that will influence STEM education's future. This theme paper will look at these patterns and what they mean for educators, policymakers, and stakeholders. Because of the increasing rate of technology progress and its incorporation into different facets of our life, we must change our approach to STEM education. The conventional siloed method, in which courses are taught individually, is no longer compatible with today's multifaceted and linked society.

Experiential learning has evolved as a successful pedagogical strategy in STEM education, focusing on offering hands-on, real-world experiences. Experiential learning encourages critical thinking, problem-solving abilities, and a better grasp of STEM ideas by involving students in actual activities, experiments, and projects. This method is essential for preparing students to face real-world difficulties and allowing them to use their knowledge in meaningful ways.

To provide equitable chances for all students, inclusive practises in STEM education are critical. Women and minority minorities have historically been underrepresented in STEM disciplines. Educators may establish an atmosphere that welcomes and supports the involvement of all students, regardless of gender, colour, or socioeconomic background, through encouraging diversity and inclusion. This not only solves equality problems, but it also leads to a more diverse and rich STEM workforce. Incorporating developing technology into STEM education brings both possibilities and obstacles. AI, virtual reality, and augmented reality have the ability to improve learning experiences, create immersive simulations, and enable remote learning. Their implementation, however, necessitates careful consideration of ethical issues, technological access, and digital literacy skills for both educators and students.

Despite the potential of these new trends, some obstacles must be overcome. Inadequate financing, restricted resources, and a lack of professional development opportunities for educators all pose challenges to the successful adoption of novel STEM teaching practises. Aligning curriculum with quickly changing business demands, as well as nurturing students' enthusiasm and drive in STEM topics, are continuing problems. Collaboration among educators, politicians, industry leaders, and communities is critical for effectively navigating the future of STEM education. This document intends to give insights into developing STEM education trends and directions, as well as recommendations for stakeholders to manage difficulties and capitalise on possibilities.

Interdisciplinary Approaches in STEM Education Definition and significance of interdisciplinary approaches

In STEM education, interdisciplinary techniques entail combining several fields, such as science, technology, engineering, and mathematics, to offer students a more comprehensive knowledge of real-world challenges. This approach acknowledges that many difficulties and discoveries emerge at the intersections of several areas. Students may acquire critical thinking abilities and utilise information from multiple fields to tackle complicated issues by breaking down disciplinary barriers.

Integration of STEM disciplines

STEM courses have traditionally been taught as independent entities, with little linkages drawn between them. However, there is an increasing emphasis on combining these disciplines in the future of STEM education. For example, in coding exercises, students might research the link between mathematics and computer science, or in engineering projects, they can investigate the application of scientific ideas. This integration allows students to learn how STEM courses are interrelated and how they work together to solve real-world problems.

Benefits and Challenges of Interdisciplinary STEM Education

Interdisciplinary STEM education has various advantages. It fosters a greater understanding of issues by giving diverse views and cross-disciplinary links. As they traverse complicated challenges requiring knowledge from several subjects, students build critical thinking and problem-solving abilities. Interdisciplinary techniques can encourage creativity and innovation by challenging students to look beyond the boundaries of a particular subject. However, establishing transdisciplinary STEM education is difficult. Educators must work across disciplines to create integrated courses. This necessitates the investment of time, money, and professional development opportunities in order to improve their interdisciplinary teaching abilities. Methods of assessment must also be modified to adequately evaluate student learning across many disciplines.

Case studies and successful models

Interdisciplinary methods to STEM education have been effectively adopted in a variety of educational institutions and programmes. Project Lead The Way (PLTW), for example, provides a curriculum that integrates science, technology, engineering, and mathematics, allowing students to investigate real-world problems and build problemsolving abilities. The BioBuilder programme, which integrates biology and engineering to involve students in synthetic biology projects, is another example. These case studies and successful models provide light on the advantages and best practises of multidisciplinary STEM education. Interdisciplinary methods to STEM education are critical for training students to face difficult issues and collaborate in diverse teams. Educators may prepare students for future STEM employment and stimulate creativity in scientific discovery and technology advancement by cultivating their capacity to link concepts across disciplines.

Experiential Learning in STEM Education Definition and Principles of experiential learning

Experiential learning is a hands-on, student-centered method to learning that emphasises hands-on experiences, real-world applications, and reflection. It entails involving students in hands-on activities, experiments, and projects that allow them to interact directly with STEM concepts and phenomena. The concept that knowledge is generated through personal experiences and reflection underpins experiential learning.

Role of hands-on activities, experiments, and projects

Hands-on activities, experiments, and projects play a pivotal role in experiential learning in STEM education. These experiences allow students to manipulate materials, collect data, and engage in problem-solving processes. They provide opportunities for students to develop skills such as critical thinking, collaboration, and communication. Hands-on activities foster curiosity, creativity, and a deeper understanding of STEM concepts by connecting theoretical knowledge with practical applications.

Incorporating real-world problem-solving and critical thinking

Experiential learning encourages students to engage in real-world problem-solving and critical thinking. By presenting students with authentic challenges, they are motivated to apply their knowledge and skills to develop innovative solutions. This approach prepares students for the complexities and uncertainties they may encounter in STEM careers. It also nurtures skills such as analytical reasoning, adaptability, and resilience, which are essential in a rapidly changing technological landscape.

Advantages and challenges of experiential learning in STEM education

Experiential learning offers numerous advantages in STEM education. It increases student engagement, as it promotes active participation and relevance to their lives. It fosters a deeper understanding of STEM concepts by connecting abstract theories to concrete experiences. Experiential learning also enhances the retention of knowledge, as students are more likely to remember what they have learned through practical applications.However, implementing experiential learning in STEM education presents challenges. It requires adequate resources, including materials, equipment, and laboratory spaces, to facilitate hands-on experiences. Educators need professional development opportunities to design and facilitate effective experiential learning activities. Additionally, assessment methods must be adapted to assess students' learning outcomes beyond traditional tests and quizzes.

Case studies and successful models

Numerous case studies and successful models showcase the effectiveness of experiential learning in STEM education. For instance, the Engineering is Elementary (EiE) curriculum engages elementary school students in hands-on engineering challenges, fostering their problem-solving skills and engineering mindset. The FIRST Robotics Competition provides high school students with the opportunity to work in teams to design, build, and program robots to compete in real-world challenges. These examples highlight the positive impact of experiential learning on student engagement.

Inclusive Practices in STEM Education Importance of diversity and inclusion in STEM fields

Diversity and inclusion are crucial in STEM fields to ensure equal opportunities and representation. Historically, women, racial and ethnic minorities, individuals with disabilities, and other underrepresented groups have faced barriers to entry and advancement in STEM careers. By promoting diversity and inclusion in STEM education, educators can address these disparities and foster a more equitable and representative workforce.

Addressing Gender and racial disparities in STEM Education

To address gender and racial disparities in STEM education, it is important to create an inclusive and supportive learning environment. Educators can implement strategies such as providing positive role models, challenging stereotypes, and offering mentorship programs. Encouraging diverse perspectives and experiences in the curriculum can also contribute to a more inclusive classroom. Additionally, promoting STEM activities outside the classroom, such as clubs and workshops, can engage underrepresented groups and spark their interest in STEM fields.

Strategies for promoting inclusivity in STEM classrooms

Inclusive practices in STEM classrooms involve creating an environment where all students feel valued, respected, and supported. Strategies to promote inclusivity include incorporating culturally relevant pedagogy, providing differentiated instruction to accommodate diverse learning styles, and implementing collaborative learning approaches. Educators should also be mindful of the language and examples used in the classroom, ensuring they are inclusive and avoid perpetuating biases or stereotypes.

Encouraging underrepresented groups in STEM careers

To encourage underrepresented groups to pursue STEM careers, it is important to provide access to resources, support networks, and mentorship opportunities. Outreach programs and partnerships with community organizations can expose students from underrepresented backgrounds to STEM role models and provide hands-on experiences. Scholarships, internships, and apprenticeships can also help remove financial barriers and provide opportunities for practical engagement in STEM fields.

By prioritizing diversity and inclusion in STEM education, we can create a more equitable and innovative STEM workforce. Inclusive practices not only address historical disparities but also enrich STEM fields with diverse perspectives, leading to more creative problem-solving and impactful advancements.

Emerging Technologies in STEM Education Impact of emerging technologies on STEM fields

Emerging technologies such as artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) are transforming various STEM fields. AI is revolutionizing data analysis, pattern recognition, and automation. VR and AR provide immersive experiences and simulations that enhance learning and visualization of complex concepts. These technologies have the potential to revolutionize the way STEM subjects are taught and learned.

Integration of artificial intelligence, virtual reality, and augmented reality

The integration of AI, VR, and AR in STEM education can provide students with interactive and engaging learning experiences. AI-powered tools can personalize instruction, adapt to individual learning styles, and provide real-time feedback. VR and AR simulations enable students to explore scientific phenomena, manipulate virtual objects, and conduct experiments in safe and controlled environments. These technologies can enhance students' understanding, engagement, and motivation in STEM subjects.

Online Platforms and remote learning in STEM Education

The COVID-19 pandemic has accelerated the adoption of online platforms and remote learning in STEM education. Virtual classrooms, video conferencing tools, and online collaboration platforms have allowed students and educators to continue learning and engagement despite physical distancing measures. These platforms offer opportunities for students to access educational resources, participate in virtual laboratories, and collaborate with peers and experts worldwide. Remote learning also facilitates self-paced learning and lifelong learning opportunities.

Ethical Considerations and Challenges in adopting emerging technologies

As emerging technologies become more prevalent in STEM education, it is crucial to address ethical considerations and challenges. Privacy concerns, data security, and algorithmic biases in AI applications must be carefully addressed. Additionally, access to technology and reliable internet connections may create disparities among students. Educators must ensure equal access and support for all students, considering the digital divide and varying technological resources.

The integration of emerging technologies in STEM education holds immense potential for transforming learning experiences and preparing students for the future. However, it is essential to approach their implementation thoughtfully, considering ethical implications, ensuring accessibility, and providing necessary support and training for educators and students.

Overcoming Challenges and Seizing Opportunities Funding and resource challenges

One of the major challenges in advancing STEM education is the lack of sufficient funding and resources. To overcome this challenge, policymakers and educational institutions should prioritize investment in STEM education. Increased funding can be allocated for infrastructure development, procurement of equipment and materials, professional development for educators, and the creation of partnerships with industry and community organizations. Collaboration between public and private sectors can also help leverage resources and expertise to support STEM education initiatives.

Curriculum alignment with industry demands

STEM fields are evolving rapidly, and there is a need for continuous alignment between the curriculum and industry demands. Educational institutions should establish strong connections with industry professionals and employers to stay updated on the latest technological advancements and skill requirements. This can be achieved through partnerships, internships, apprenticeships, and advisory boards. Regular curriculum reviews and revisions can ensure that STEM programs remain relevant and equip students with the skills needed for future career opportunities.

Cultivating interest and motivation in STEM subjects

Inspiring and cultivating students' interest and motivation in STEM subjects is crucial for their long-term engagement and success. Educators should employ innovative teaching methods, such as project-based learning, gamification, and real-world applications, to make STEM subjects more engaging and relevant to students' lives. Providing opportunities for exploration, discovery, and creativity can ignite curiosity and passion for STEM fields. Mentoring programs, guest speakers, and STEM role models can also inspire and motivate students to pursue STEM careers.

Professional development for educators

Continuous professional development for educators is required for the effective adoption of developing trends in STEM education. Training programmes and workshops should be offered to help teachers improve their pedagogical abilities, understanding of emerging technology, and expertise in interdisciplinary and experiential teaching methods. Collaboration among educators, exchanging best practices, and joining professional learning networks may all help to build a culture of continual improvement and innovation in STEM education.

Stakeholders can pave the path for a future-ready workforce equipped with the skills and knowledge needed to flourish in a fast-changing world by addressing these problems and grabbing the possibilities afforded by rising trends in STEM education.

Conclusion

Interdisciplinary methods, experiential learning, inclusion, and the incorporation of emerging technology characterise the future of STEM education. These developments have the potential to improve students' comprehension, engagement, and preparedness for future employment. However, issues including as finance, curriculum alignment, and diversity promotion must be addressed. Collaboration among stakeholders is critical for navigating these obstacles and ensuring equal access to high-quality STEM education. We can equip students to flourish in a STEM-driven environment and contribute to social improvements by embracing emerging trends and solving accompanying issues.

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INNOVATIVE STEM APPROACH FOR MULTI-DISCIPLINARY LEARNING SOLUTION

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Abstract

Innovation in training and the right gadgets in the possession of understudies assist with setting them up for the profession and specialized abilities they should find success in today and the labour force of tomorrow. Innovation is evolving training, changing how and where understudies learn and engaging them at each phase of their excursion. While heading to customizing learning, innovation is engaging understudies by giving them responsibility for what they get the hang of, making training applicable to their advanced lives, and setting them up for their fates. With innovation and admittance to assets outside the homeroom, understudies are propelled to become issue solvers, basic masterminds, associates and makers. Where innovation has been effectively coordinated into homerooms, understudies foster a long-lasting affection for learning. STEAM training is intended to give kids learning open doors that join fun involved exercises with encounters that assist in their principal improvement. This harmony between schooling and play normally urges youthful personalities to clarify some pressing issues, attempt new things, draw in with their companions, and investigate their general surroundings. Learning through a producer mentality and climate can be extremely captivating when STEAM is planned and coordinated with the right innovation. **Keywords:** STEM Education, Active Learning, Innovation with AR

Introduction:

Learning is a process that every living being continued from birth to death. Whether you are talking about animals, birds, insects or people, they learn something directly or indirectly every day. You can learn from anyone. Even a small ant will teach us the greatest lesson of our life to 'never fear failure'. But with the help of some techniques and strategies, learning becomes easier. Knowing the most effective techniques to learn things can help you achieve the best results in the shortest possible time. Relevant educational experiences in STEAM can inspire creativity; helping students apply the meaning of their learning and prepare them for future career opportunities and jobs that haven't even been created yet. Specific skills in coding, programming, physical computing, and computational thinking have become common workforce requirements. Even as they create, students can acquire these skills and hone their problem-solving and critical-thinking skills for the 21st century.

STEAM Education as multiple approaches

Your attempts to learn new ideas, concepts, and abilities may be maximised with the aid of the most effective learning techniques. Your time is likely limited, so it's critical to squeeze in as much instructional value as you can. STEM education incorporates deep learning, problem-solving, life skills, and technology. Only if we give our kids engaging learning opportunities can they cultivate original thought processes and a passion for the subject. Children may learn in meaningful ways and can use their imaginations thanks to STEAM education. It would be advantageous to assist kids in seeing their interests from a fresh viewpoint as they begin primary school and take part in extracurricular activities. Hard science, technology, engineering, or math are the explicit emphasis of STEM.In a STEAM curriculum, according to The Conversation, students use both hard and soft skills to solve problems and encourage collaboration to understand a concept. The whole point of a learning system is to inspire inquiry and curiosity; enable students to ask thoughtprovoking questions that encourage creativity and inquiry and connect their problemsolving to real-world solutions.

Beyond Childhood Development The best learning approaches can help you get the most out of your efforts to pick up new knowledge, skills, and talents. Since you probably have a limited amount of time, it's important to fit in as much educational value as you can. Deep learning, problem-solving, life skills, and technology are all incorporated within STEM education. Only by providing our children with stimulating learning experiences will they be able to develop innovative thought processes and a passion for the subject. Thanks to STEAM education, kids may learn in relevant ways and use their imaginations. As children enter primary school and engage in extracurricular activities, it would be beneficial to help them perceive their interests from a new angle. The express emphasis is on hard science, technology, engineering, or maths.

By doing experiments as part of STEAM learning activities, children are encouraged to improve their capacity for observation, the ability to recognise patterns in data, and the ability to predict outcomes. When exposed to this form of scientific reasoning, young children enhance their problem-solving skills and acquire core critical thinking skills.

STEM education is a teaching approach that combines technology, engineering, and maths. The Stem study Guide claims that the arts have "the ability to expand the limits of STEM education and application," and they are also a component of its more recent successor, STEAM. According to the Institution for Art Integration and STEAM, STEAM is meant to foster student discussion and problem-solving while assisting them in developing valuable skills and a love of cooperation.

They are integrated into a thorough learning paradigm that uses STEAM and is grounded in real-world applications.

According to the U.S. Department of Education,Our nation's youth must be ready today more than ever to apply knowledge and skills to problem-solving, information processing, and understanding how to gather and evaluate evidence in a world that is always changing and getting more complex. Make decisions. Students as young as preschoolers may benefit from STEM-based learning activities! The following is a list of the main benefits of STEAM education for the growth of young children and beyond.

1. Foster a long-lasting adoration for learning

STEAM exercises and activities are intended to get youthful students amped up for growing new abilities by acquainting them with these potential open doors through tomfoolery and significant encounters. This can assist kids with fostering an uplifting outlook towards learning early on and make it simpler and more energizing for them to continue toward more significant levels of learning. Making a solid point of view on learning and scholastics right off the bat in life can likewise prompt new encounters and open doors sometime down the road that kids could not in any case exploit.

2. Fabricate fearlessness and confidence

This active way to deal with learning isn't just tomfoolery and drawing in, however, can likewise assist youngsters with feeling more certain and skilled. For instance, many STEAM exercises assist youngsters with figuring out how to utilize explicit devices to finish various jobs, for example, figuring out how to utilize scissors to cut paper or a blending spoon to blend fixings. As youthful understudies cooperate with less complex apparatuses, they start to figure out how to finish jobs all alone, work on their coordinated abilities, and lift their confidence and certainty. This can likewise assist them with better-evaluating circumstances and deciding when they need to request help.

3. Foster decisive reasoning abilities

This technique for learning goes past retaining realities and subtleties. The STEAM approach shows youngsters how to handle data actually - consider it figuring out how to learn. Through fun examinations, STEAM learning exercises urge youngsters to level up their perception abilities, track down designs, investigate results, and anticipate results. Presenting this sort of logical reasoning to youthful understudies imparts fundamental decisive reasoning abilities and assists them with turning out to be better issue solvers.

4. Foster innovativeness

The world's most noteworthy researchers, mathematicians and specialists utilize inventive reasoning to track down imaginative answers for the most difficult issues. Giving open doors to kids to be inventive and empowering them to utilize their minds can help each part of their turn of events. STEAM learning urges imaginative personalities to consider fresh possibilities, see things according to alternate points of view, and use devices and materials in new ways. There's no restriction to a baby's creative mind, and with just the right amount of STEAM, they can become one of the best personalities of their age!

5. Further develop relational abilities

For babies and preschoolers, play is the most normal method for learning new words and expressions. The STEAM approach is helpful to learning and spotlights permitting youngsters to investigate and explore different avenues regarding new materials, apparatuses and ideas. This normally helps fabricate their jargon and further develop their relational abilities in a positive climate. An enhanced jargon can assist kids with sharing their considerations, feelings and feelings all the more real. This can assist them with feeling more open to talking or bantering with their companions, permitting them to foster solid connections.

6. Supports tactile turn of events

Before children might slither, they were working diligently utilizing their five essential faculties to find out about and collaborate with their current circumstances: smell, taste, contact, sound, and sight. In a STEAM climate, youthful students are urged to utilize these faculties to investigate, notice and learn. Through fun and drawing-in exercises, kids are acquainted with new surfaces, sounds, scents and circumstances - in a climate without assumptions. This permits them to foster positive relationships with new and different tactile data normally. Work in STEM fields

The scientific advancements of the future will be made possible by the STEM students of today. You could be on your way to creating game-changing answers to some of the most important issues facing the globe by enrolling in educational courses in one of these fascinating fields. One of the following STEM jobs could be a good fit for you if you enjoy science and math, desire a fulfilling and meaningful career, and don't mind working with difficult ideas and problems. This list is only a representative sample of the numerous STEM professions available in today's fast-paced, technologically advanced society. The positions mentioned in each discipline are also frequently multidisciplinary; for instance, a statistician needs a mix of technological, scientific, and mathematical abilities to succeed. The skills students develop through STEM provide them with a foundation for success in school and beyond. Employer demand for STEM qualifications and skills is high and will continue to increase in the future. Currently, 75 per cent of jobs in the fastest-growing industries require workers with STEM skills.

7. Online interactive teaching

The new pedagogy involves helping students find purpose, passion, and experimentation in a field that will fuel their desire to learn and continue learning. Online

interactive learning tools like G Suite and Google Classroom can help pave the way for active learning that allows students to share valuable information, extract key ideas from new material, and organize a mental framework. These collaborative tools are also aligned with STEM education, which focuses on real-world problem-solving, intellectual risktaking, trial-and-error problem-solving, collaboration, and intrinsic motivation. These interactive tools allow teachers to collaborate with students in the learning process, which is essential for problem-based, student-centred learning. Interactive online learning means going beyond the passive one-way nodes of reading, listening and watching static content. It involves extracting the exact content you want and manipulating it, rather than just waiting for information and digesting it.

Interactive online learning

Ways to make virtual learning more interactive

- 1. Create a buddy system.
- 2. Pair students based on their geographic region to ensure time zone consistency.
- 3. Ask them to build on each other's work
- 4. Create a curriculum that allows for peer discussion.
- 5. Create more real-time classroom surveys.

Active learning methods in STEM

Dynamic learning happens when understudies draw in with learning materials through activity-based techniques, for example, bunch work, involved tasks, and critical thinking exercises rather than uninvolved or adaptable exercises like perusing, paying attention to a talk, or watching a video exhibition.

Reasons to consider majoring in STEM

There are many motivations to consider a STEM field. The following are some of them:

- Testing field of review. Assuming understudies need a connection with the field of study that is testing, STEM is the best approach.
- More lucrative profession. STEM extends to understudies an opportunity to more readily pay for occupations. In 2021, the Department of Work Measurements found that STEM occupations had almost twofold the yearly middle pay contrasted with the public normal for all occupations.
- Have an effect. STEM furnishes understudies with the apparatuses to put forth a concentrated effort to certifiable issues and foster inventive answers for those issues.
- Voyaging. STEM majors frequently concentrate on abroad projects that permit understudies to study and perhaps work abroad.

 Professional stability. STEM abilities are pursued in numerous occupations and move well to different occupations. Most STEM fields require thorough critical thinking and decisive reasoning abilities that are helpful in practically any occupation.

STEM fields

STEM majors can be any science, technology, engineering, or math major. This means that individual colleges have different definitions of what counts as STEM in their curriculum. The following fields of study are typically STEM programs: computer science, electronics and other technology-related disciplines, engineering mathematics, natural and physical sciences, and life sciences.

Improves Critical Thinking Skills

Learning modules in an intelligent STEM program put understudies' decisive reasoning skills under serious scrutiny. With the guidance of a pretending recreation, this might be achieved. It is feasible to plan recreation-based circumstances in which understudies are expected to do specific exercises, make decisions, and afterwards notice the results progressively. Distributors and teachers might assist understudies with tracking down replies to difficulties by creating game-based learning modules. Since it is anticipated that maths and logical capacities will be vital for most callings later on, students who gain these abilities early would without a doubt profit from having the option to refine them over the long run and perhaps ace them when they are ready for work.

Students to Learn and Innovate with Augmented Reality

The notion of augmented reality was once unique and unheard of, but now that educational institutions are integrating AR technologies into K-12 instruction, it has become much too mainstream. Virtual learning is now feasible in a risk-free setting thanks to AR. In many schools, augmented reality (AR) technology is employed from the very beginning to make learning more fascinating and to convey fundamental ideas in a fun and immersive way. It may be quite helpful in illuminating difficult scientific and technical topics. Students of engineering can see and study how a machine or a robot works. They can then try and work around the augmented screen, make changes and test possibilities and then take the experiment to the real world through an actual demo.

The following fields are often included in STEM:

The majors are accounting, anthropology, economics, medicine, nursing, political science, psychology and social sciences in various fields. The US Department of Homeland

Security (DHS) maintains a list of STEM majors that it updates regularly. According to DHS, a STEM field is included in the Department of Education's Classification of Educational Programs taxonomy and includes engineering, biological sciences, mathematics, physical sciences, or related fields.

Conclusion:

By offering understudies the chance to gain and comprehend ideas from a true point of view, STEM puts an accentuation on the improvement of sensible and decisive reasoning. Understudies who have gotten STEM training presently have the information and capacities to succeed in various occupations, including business and work, as well as to explore different avenues regarding learning strategies that have been viewed as effective. Typically determined to limit educator support based on what is viewed as conventional schooling, the job of the educator/facilitator is to coordinate and oversee understudies in the homeroom to such an extent that understudies are effectively engaged with decisive reasoning and critical thinking. As a general rule, educators' positions include helping students in advancing by scattering information and encouraging a climate in which they can and will do as such. An instructor is crucial for an understudy's life since they offer.

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SOCIAL MEDIA EDUCATION ENHANCE THE RURAL STUDENTS LEARNING

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Abstract

This paper examines the impact of social media education on enhancing the learning experiences of rural students. Access to quality education and resources can be limited in rural areas, but social media has emerged as a promising tool for bridging educational gaps. The abstract highlights the key points covered in the paper.

The paper explores the benefits of social media in education and its specific impact on rural students. It discusses how social media platforms such as Facebook, YouTube, LinkedIn, and educational blogs facilitate communication, collaboration, and knowledge sharing among rural communities. The abstract emphasizes the positive outcomes of social media integration in rural education, including improved connectivity, access to information, and the development of digital literacy skills.

The challenges associated with social media education in rural areas, such as limited internet connectivity and disparities in digital literacy. It emphasizes the need for educators, policymakers, and stakeholders to recognize the potential of social media as an educational tool and to develop strategies that ensure equitable access and utilization of these platforms in rural settings. The author suggests that social media education enhances learning opportunities for rural students by breaking down barriers and providing access to educational resources. The abstract highlights the importance of leveraging social media effectively to empower rural students and create a more inclusive and equitable educational environment. **Keywords:** social media, education, rural students, learning

Introduction

According to Swiss social reformer and educator Johann Heinrich Pestalozzi, "Education is the natural harmonious process of man's innate power". But today's present world changes a lot. Social media plays an important role in the world. It connects and communicates and shares the info with family, friends and other people digitally. The entire world is just one tough finger tough away and wholly thanks to social media.

Social Media

Social media is a medium that is growing quite prevalent nowadays because of its user and friendly characteristics. It can be defined as an array of internet-based platforms, which promotes and enhances the distribution of information.

Social media can also be said to be a group of internet-based applications that build on the ideological and technological foundations of the creation and exchange of usergenerated content.

Importance of social media For Students

Social media plays an important role in human life. Students and teachers are now connected while making better use of this platform for receiving and imparting education respectively

Students' critical and higher-order thinking will have developed through social media.

It gives guidelines to new business people and expresses their talents through social media.

Advantages

Social media content can indirectly boost links to website content by appearing in universal search results, improving search traffic and online data.

Images, text, video, pdf files, and MS Office documents easily create attention

People quickly update their knowledge. They are knowing the past event.

There are many reasons why using Internet-based media can be a positive tool for children.

Impact of social media

Reduced the focus on learning as well as on retaining information. Ineffective interpersonal skills will decrease lax attitude for using proper spelling as well as grammar.

Physical and mental health will be affected more by stomach problems and developed aggressive tendencies.

Easy Sharing of Information

People are easily connected to them so they are sharing information easily. There are several reasons for using internet-grounded media as a positive tool for children.

Social Credibility

Social networking plays an important role in school, college and universities like Facebook, Youtube, link, and education blogs. Social media easily connects students and teachers. Teachers' social websites and media also mention the qualifying subjects very clearly and in detail thus developing the student's creativity.

Facebook

Students can post questions and get answers about homework, coursework, school subjects or any topic from other classmates and friends who may have experience with those topics.

Students can post questions and get answers from teachers or lecturers.

With Facebook groups, lecturers can create public discussion spaces.

Youtube

Students can access Youtube anywhere, such as any time, any place.

Youtube can help students by watching images, listening to songs and expanding their visual and hearing abilities.

Linked In

LinkedIn is the world's largest professional network on the internet. You can use LinkedIn to find the right job or internship, connect and strengthen professional relationships, and learn the skills you need to succeed in your career. You can access LinkedIn from a desktop, LinkedIn mobile app, or mobile web experience.

Educational Blog

An education blog is a blog created for educational purposes. Education blogs archive and support student and teacher learning by facilitating reflection, questioning by self and others, collaboration and by providing contexts for engaging in higher-order thinking

An education blog or education blog is a blog (weblog) created for educational purposes. Blogs offer huge instructional potential as an online resource.

Cost-Effective Communication

Social media is an excellent & free medium for the end stoner! It can't only be used to communicate. It's also an outstanding device/ technology to promote effects similar to events, new courses, and colorful advanced exploration. It helps to improve their learning so literacy skills are developed.

Any time Connectivity

There's frequently someone to reply from the transnational community as geographical factors don't circumscribe utmost of the social networking spots. ATC (Time connectivity) has come possible due to the appearance of colorful social media websites. They ask questions through the websites and wait for the reply when the opposite person sees the message and replies to them.

Reason of Students Use in Social media

Social media is the best communication tool between the teacher students and parents who can check and ask or respond to the question. It promotes job opportunities through online classes and the course is popular in the present situation in which we learn the content and help the training teacher and workers. It has become an invaluable tool not only for communication and marketing but also in the field of education as well. Generally, students use social media to share and get instant quick information, review and solution to their problem

Social media in education

Today modern society adapts the social media network. Many schools, colleges, and universities use social media to communicate with students and other people use this device. It helps to save time. Students' technical knowledge will be developed and their skills. It helps to build and develop the relationship social media easily connects to any place at any time so people are easily communicating themselves.

Role of social media in Rural Areas

Social media is used by all types of people. Rural people are aware of social media. They know a lot of information through social media. As of 2021, the literacy rate in rural India was around 73.5%. This includes 81% male and 65% female literacy in rural sections of India. So social media plays an important role. People easily get educational information and all types of information. Social media encourages rural people to learn. It explains the importance of education and describes the simple way to achieve the goal.

Conclusion

Social media education has the potential to significantly enhance the learning experiences of rural students. By leveraging social media platforms such as Facebook, YouTube, LinkedIn, and educational blogs, rural students can overcome geographical limitations and gain access to educational resources, information, and collaborative opportunities. The integration of social media in rural education offers several benefits. It promotes connectivity among students, teachers, and communities, enabling effective communication and knowledge sharing. Additionally, social media platforms provide a cost-effective means of communication and information dissemination, bridging the digital divide that often exists in rural areas.

Social media education also fosters the development of digital literacy skills, equipping rural students with the technological competencies necessary for success in the modern world. Through social media, students can engage in interactive and project-based learning, expanding their creativity, critical thinking, and problem-solving abilities. However, challenges such as limited internet connectivity and disparities in digital literacy must be addressed to ensure equitable access and utilization of social media in rural education. Efforts should be made to provide reliable internet infrastructure and comprehensive digital literacy training to both students and educators in rural areas.

By harnessing the power of social media, rural students can overcome educational barriers, connect with a global community of learners, and access a wealth of educational resources. Social media education has the potential to level the playing field and create a more inclusive and dynamic learning environment for rural students, empowering them with the knowledge and skills needed to thrive in the digital age.

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ESSENTIALS OF DEVELOPING SCIENTIFIC REASONING ABILITY

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Abstract

Scientific reasoning ability (SRA) is a skill that is still developing and is enhanced by learning new things. Students' capacity to connect ideas and theories using information that has been gathered and processed is known as their capacity for scientific reasoning. Three elements make up scientific reasoning skills: claim, evidence, and refutation. In a wide sense, scientific reasoning (SR) refers to the mental processes of investigation, experimentation, appraisal of the evidence, inference, and argumentation carried out in the interest of conceptual transformation or scientific understanding. The ability to use scientific ideas, methods, and information to solve issues and reach choices is known as scientific reasoning ability. It evaluates a person's capacity for critical thought, evidence-based reasoning, and the application of scientific ideas and tenets to information analysis and interpretation. A variety of abilities, such as observation, data gathering, hypothesis development, investigation, data analysis, and evidence-based conclusion drawing, are required for scientific reasoning. It necessitates the ability to reason systematically, think logically, and spot patterns and links in data. It is crucial to evaluate one's capacity for scientific thinking in several contexts, including science education, inquiry, and strategic decision. A person's capacity for scientific reasoning might serve as a useful indicator of their prowess in disciplines that call for analytical reasoning and problem-solving. This article focuses on the elements of SRA, the Essentials of SRA, Strategies to develop SRA and various national frameworks of SRA.

Keywords: Scientific reasoning ability, Analytical thinking, Problem-solving, Decision making, Scientific research.

Introduction

Although Sir Francis Bacon (1561-1626) is often regarded as the originator of the scientific method, the concepts that motivated him were developed by intellectuals over a thousand years before. The ability to reason scientifically is an empirical way of learning that has marked the growth of science. There is no unique recipe for the scientific method. It calls for knowledge, creativity, and imagination. Reasoning is a crucial component of science education, as many studies have noted. Students' understanding and evaluation of the technological and scientific developments in society can be aided by their capacity to reason. Because reasoning helps students assess novel circumstances in all aspects,

including developing and defending their conclusions, formulating logical assumptions, and explaining their opinions.

The act of employing reason to conclude a set of premises is referred to as reasoning. Reasoning from the broad to the particular (also known as deductive reasoning) and rationale from the specific to the general are generally distinguished from one another (called inductive reasoning). In scientific explanations and projections, deductive reasoning is crucial. Different students respond differently and absorb information from one another in various ways. Unquestionably, scientific reasoning is a crucial talent in studies involving science since it ensures successful experimentation, hypothesis testing, data analysis, and conclusion drawing. When skills are fully developed, scientific reasoning also includes reflecting on the method of information acquisition as well as the knowledge change that ultimately resulted from such inquiry activities. Scientific reasoning includes the reasoning as well as problem-solving skill sets involved in developing, testing, and revamping hypotheses or theories. A "hallmark mental accomplishment of the human race," science is a cultural institution that is motivated by both individual thinking and group cognition.

Elements of Scientific Reasoning Ability

Deductive and inductive abilities are both necessary for sound scientific reasoning. People need to be able to evaluate what is already known or believed, create testable hypotheses, test their ideas, and come to the correct conclusions by combining empirical data with theory. Projects and group conversations are two more excellent ways to help kids develop their critical reasoning abilities. They can explore their classmates' mental processes thanks to cooperative learning. Additionally, it increases their capacity for critical thought and teaches children that there are numerous viable approaches to problem-solving. Additionally, systematic information attention and the capacity to derive logical conclusions from patterns seen are necessary for this type of reasoning. Additionally, it necessitates the capacity to evaluate one's reasoning at each level of the procedure.

Contextual influences have not been explicitly acknowledged in a large portion of the laboratory research that has already been done on the growth of scientific thinking. We contend that much of this research centred around individual cognition has both social factors as well as cultural instruments that promote scientific reasoning, even though conscious mental and meta-thought functions have been a core concern of past work and have greatly helped us learn about the procedures of scientific thinking. Clarity, correctness, precision, relevance, depth, width, logic, significance, and fairness are the fundamental intellectual criteria that should be applied to all aspects of scientific thought. According to one definition, scientific reasoning is a technique for solving problems that call for critical thought regarding content, methodological, and epistemological knowledge. The improvement of these cognitive abilities has been the emphasis on one particular method for studying scientific reasoning.

A comprehensive description of scientific reasoning would include other brain processes such as formal hypotheses, retrieval, and other reasoning, in addition to what has been covered here. Other significant non-cognitive factors include motivation, character, personality, competence in making arguments, and personal epistemology. These new factors do not change our conclusion that the growth of scientific reasoning depends on encoding and strategy use and that cognitive and metacognitive abilities must be taken into account in the context of social and physical factors. Individual and social cognition, which is regulated by education and cultural tools, is the source of scientific acquiring knowledge and, more crucially, scientific knowledge transformation. It has taken many centuries for science to become a cultural institution. It is a long road from information searching to sophisticated scientific reasoning, with the aid of numerous scaffolds along the route. As people, we may start with the interest and inclination to be tiny scientists, but there are many scaffolds along the road. Effective scientific investigation and problem-solving require several components that make up scientific reasoning skills. Some of the essential components of scientific thinking include the following:

Observation: A crucial component of scientific reasoning is the capacity to observe and gather information objectively and accurately.

Creating testable hypotheses based on information at hand and logical reasoning is known as hypothesis formulation.

The **capacity to plan and carry out experiments** to test hypotheses and collect data.

Data analysis: The skill of utilizing the right statistical techniques to analyze data and find patterns, correlations, and trends.

The capacity to make **sound judgments** based on information and proof gathered through experimentation, observation, and data analysis is known as inference.

Critical Thinking: The capacity to reason critically and logically to assess the claims and defences of science.

Problem-Solving: The capacity to recognise issues and create workable solutions using scientific logic.

Communication: The capacity to effectively convey scientific ideas and results orally and in writing.

Creativity: The capacity to develop novel solutions to challenges in science.

Ethical Considerations: The capacity to identify ethical issues in scientific study and conduct research morally and responsibly.

Effective scientific thinking and problem-solving require a wide range of skills, all of which are interrelated and complement one another.

Essentials of Scientific Reasoning Ability

Understanding and resolving complicated problems: Science entails the methodical study of nature, and scientific reasoning offers a framework for doing this. People can spot patterns, forecast the future, and come up with testable and verifiable hypotheses by applying scientific reasoning.

Considering the evidence: We are exposed to a huge amount of information and data in today's society, most of which is unreliable or inaccurate. People may assess the evidence critically and decide what data is reliable and what is not using scientific thinking.

Making educated decisions: Scientific reasoning offers a logical and fact-based method for making decisions. It lets people evaluate the available information, weigh the benefits and drawbacks, and make well-informed decisions that are founded on facts rather than prejudices or ideas.

Increasing knowledge and innovation: From the development of electricity to the creation of modern medicine, many of the most important advancements in human history have been driven by scientific thinking. People can contribute to the expansion of understanding and creativity in their fields of study by using scientific reasoning.

Strategies to Develop Scientific Reasoning Ability

Scientific reasoning skills must be actively and persistently developed. Here are some methods to increase your capacity for scientific reasoning. By focusing on specifics, employing many senses, and recording findings in a methodical, objective manner, you can enhance your observational skills.

Pose inquiries: Asking inquiries regarding the natural world and using proof reasoning to construct testable hypotheses will help you develop your abilities to create research questions and hypotheses.Performing experiments Create and carry out experiments to verify your hypotheses and collect information that may be used for analysis with the right statistical techniques.

Develop your ability to interpret data by employing proper statistical techniques, seeing trends and linkages, and coming to informed decisions.

Apply critical thought: Assess scientific statements and arguments, look for biases and faults, and examine other possible answers as you exercise critical thinking.

Solve issues: By detecting problems, producing and assessing potential solutions, and applying the best answer, you can improve your problem-solving abilities.Effective communication Practice expressing scientific ideas and conclusions clearly in a both written and conversational form.

Partner with others: Work alongside other scientists to develop fresh viewpoints, data sharing, and problem-solving strategies.

Stay current: Read scholarly journals, go to seminars and conferences, and connect with other scientists to stay current on the most recent scientific discoveries and developments in your field.

To identify areas for development and create a plan to address them, ask for feedback from mentors, peers, and colleagues. You can gradually strengthen and enhance your capacity for scientific reasoning by utilizing these techniques regularly.

Various National Frameworks of Scientific Reasoning Ability

The necessity of helping students develop their capacity for scientific thinking has been emphasized by numerous national frameworks as a means of preparing them for a complex and fast-changing environment. Here are a few illustrations:

As one of the three domains of science education, the **Next Generation Science Standards** (NGSS) in the United States list scientific and engineering processes, including scientific reasoning. It underlines how crucial it is for students to engage in engineering design and scientific research to improve their capacity for scientific thinking.

Australian Curriculum: The Australian Curriculum places a strong emphasis on helping students develop their critical and creative thinking talents, including scientific reasoning, as one of the general skills they must master to succeed in all academic areas. It notes the importance of inquiry skills as a fundamental facet of scientific reasoning.

The eight essential competencies for lifelong learning identified by the **European Framework** for Key Competences include "learning to learn," which encompasses scientific reasoning skills including critical thinking, problem-solving, and evaluation of complex data.

Chinese National Curriculum Standards: According to the Chinese National Curriculum Standards, it is important to build students' capacity for scientific inquiry and problem-solving. To prepare students for future occupations, it emphasizes the value of cultivating critical thinking skills as well as creative thinking talents, including scientific reasoning. National frameworks stress the value of fostering students' capacity for scientific inquiry techniques and skills.

Conclusion

The capacity to think scientifically is an important skill for people to master because it helps them to use scientific concepts, methods, and information to solve issues. In many areas, including science education, research, and decision-making, it is crucial to be able to think critically, employ proof reasoning, and apply scientific concepts and principles. Observation, hypothesis-forming, experimentation, data analysis, inference, critical thinking, problem-solving, communication, creativity, and ethical considerations are some of the components that go into developing scientific reasoning skills. People can gradually develop and enhance their capacity for scientific reasoning by consistently using techniques like practising observation, asking questions, carrying out experiments, analyzing data, applying critical thought, solving problems, effectively communicating, working with others, staying current, and asking for feedback. Learning scientific reasoning skills should be a top priority for both educators and students since they are essential for success in a complicated and continuously changing world.

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