



Volume 2

PROCEEDINGS OF NATIONAL LEVEL CONFERENCE ON

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

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Teppakulam, Madurai -625 009, Tamil Nadu | www.tcp.ac.in

EDUCATION 5.0: REVOLUTIONIZING LEARNING FOR THE FUTURE

(VOLUME 2)

Edited by

**Dr. S. Prakash
Dr. P. Sophia Mesalina
Dr. S. Anbalagan
Mr. S. Raja Kumar
Mr. K. Thangavel
Mr. K. Balasubramanian**



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Education 5.0: Revolutionizing Learning for the Future (Volume 2)

**Dr. S. Prakash, Dr. P. Sophia Mesalina, Dr. S. Anbalagan, Mr. S. Raja Kumar,
Mr. K. Thangavel, and Mr. K. Balasubramanian**

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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, academicians, 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 thought-provoking 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.

Dr. S. Prakash



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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 like-minded 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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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

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Madurai-625 009, Tamil Nadu



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VISIBLE LEARNING TRENDS IN TEACHING, LEARNING AND ASSESSMENT

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Visible learning, the concept as conceived by Hattie (2009) explains the literal notion of the phrase ‘visible learning’ in direct terms stating that, when the students learning is visible which is representational of the outcomes and achievement, implying that their efforts are directly proportional to their achievement. Further on the teacher’s part it represents their efforts in transacting the subject area, their efforts towards achieving learning outcomes and the impact of their teaching on student’s learning outcomes.

Visible learning is a notion that is incredibly easy to understand, in accordance with Professor John Hattie, a leading researcher in the field of education which helps to facilitate student learning in a feasible manner. This implies the teachers to be able to evaluate their own practices in order to assess how they contribute to student outcomes and that all students should be able to observe how their own efforts are progressing their learning outcomes. Visible learning fosters an environment of understanding. Utilising innovative technologies and creative methods, Visible Learning supports educators in discovering up-to-date more productive ways to teach. Since teaching strategies must adjust to the constantly shifting nature of today's educational world, it is crucial that

educators adopt these strategies to achieve positive student results. In order to maximise learning potential, Visible Learning endorses teachers to evaluate the betterment of the learners and continuously improve their instructional strategies.

The scope of visible learning lies in its strength to define the students level of learning that occurs, which in terms defined as ‘visible learning’ to the context of learners and Visible learning on the teachers part aims at achieving ‘reception’ which means how well the students are learning and not just the part of transmitting the content, the teaching methods and other objective aspects. Student’s conscious performance and their knowledge of how their learning happens and how learning is getting transformed in to achievement are all the components of visible learning.

Visible learning trends in spheres of education

Visible learning trends are seen happening across the education sectors with the growing awareness on student’s centered learning where in students pace of learning, their understanding of how learning occurs and what needs to be done to comprehend and improve their ability to achieve. Visible learning positively influences and characterizes self-motivation, learner initiation, student-centered learning approach and learner-controlled instruction. It places students at the center of the education process, further visible learning makes students’ understand their own abilities, their strength and their weaknesses, as the student is more aware of the learning processes and makes sure that he /she is able to define what to learn, how to plan and prepare, proceed and

ultimately they know and are sure of their achievement (Fisher, 2016).

The following are the estimable characteristics of visible learning that are sorted out of review of studies,

- increased motivation and desire to learn
- awareness of the learning processes and sure of their achievement levels
- perceive their strength and abilities which helps them to plan for preparation accordingly
- improved comprehension of the content and the expected objectives to be achieved
- achieve desired learning outcomes as they are aware of their input levels that determine outcomes
- in visible learning since learning happens as a conscious process, the materials that are to be learnt are sensitively and systematically approached by the learner, this helps them to achieve a deeper understanding of the subject matter
- Hattie (2012), those students involved in visible learning are termed as 'visible learners' and they are able to express their ideas and are open to interaction on the subject matter
- visible learners accommodate to classroom environment in a more effective way as they are active participants in the teaching learning process
- visible learners engage in various self-learning and group learning activities, they are able to involve themselves fully and carry out academic activities with ease and confidence

Integrating visible learning practices

It is crucial to pinpoint precisely which aspect of traditional or virtual education contributed to demonstrable student learning. Students must comprehend the subject matter they are learning, the essence of acquiring knowledge, how to evaluate their development, and why it was crucial to have learnt in order to execute this in the classroom. In order to accomplish these objectives, teachers must regularly assess different factors affecting students' academic performance utilizing success standards and learning intentions. Student evaluation criteria and learning intentions, in accordance with Hattie, can enhance student learning by a factor of two to three, which contributes significantly to educator preciseness. Lay an emphasis on the value of crucial student work and provide teachers the freedom to create learning experiences that motivate learners to utilize information to use in creative and intriguing approaches. Give instructors the chance to reminisce on their practice by providing them the opportunity like career evolution or mentoring sessions. It is inevitable to make sure that the educators have the necessary resources they need to succeed in the classroom and in their surroundings to support them. Encourage the practice of feedback and make sure learners are actively engaged in the whole process.

Making Visible Learning a Reality

- Concept mapping and advanced organisers are two productive visible learning techniques. Students are involved in creating "graphical representations or logical structure of the content to be learned" through concept mapping. (Hattie, 2009).

- Incorporating strong cognition tactics such as summarising the core idea(s), synthesising, and analysing relationships, this method is especially beneficial for students who have difficulty with these abilities.
- Because they connect outdated knowledge with current knowledge, behavioural objectives and advance organisers encourage visible learning. These techniques explain to students what they will learn and how to accomplish the goals they have set.
- Coordinating and developing-Modifying educational materials in a concealed or accessible way to enhance learning
- Self-consequences-For either achievement or failure, students may devise their own arrangements for incentives or punishment.
- Autodidactic -self-articulating the stages necessary for successfully completing a certain assignment.
- Self-monitoring -monitoring one's own accomplishments and achievements frequently by keeping track of them.

Our comprehensive approach to curriculum aids visible learning practices in the classroom context. Information is organised and conceptual connections are made using the building blocks. It helps in enabling the cognitive abilities to engage in critical thinking since the learners are not having trouble remembering a lot of material. To help kids acquire the idea of thinking dispositions, we have been creating a variety of thinking routines. The kids' ability to reason has also benefited from the universal thinking framework. Teachers

and students can now think through challenging tasks thanks to this new categorization. The main concept is to give categories and meanings to the various categories of in-depth thought that are involved in the learning process. For many of our members, this has resulted in tremendous school-wide achievement.

A visible teacher's mental models include

- constantly assessing one's performance;
- considering how one's actions may affect the outcomes for students; and viewing oneself as a 'change agent'
- modifying and improving the learning of their students;
- regularly seeking critiques regarding their own performance and their teaching;
- using student evaluations as a tool to gain insight about their own teaching;
- challenging the students constantly and limiting the use of the phrase "do your best";
- talking less and engaging the students in dialogue, making sure they make up over eighty percent of educational settings talk;
- and developing a relationship with the students that will encourage them to ask for assistance and acquire risks with their learning.

Visible learning – Assessment trends

According to the pioneer researchers in the visible learning domain, Hattie (2012), Clinton & Clarke (2020), the success criteria about which students are conscious about to achieve,

creating understanding of how to achieve and creating learning experiences in order to make sure and verify their progress contributes to the core idea of assessment in the visual learning domain.

Clinton & Clarke (2020) highlighted the need to ensure best assessment practices and student success with regard to the following aspects,

- focus on students learning
- improve teaching standards
- teaching students how to set their own learning goals
- to assess their achievement and to improve their learning deficiency by themselves
- the major method advocated for student reflection and action to ‘collaborative learning, peer tutoring, engage in deep thinking, classifying good and non-acceptable behaviour’ are all practices that students in visible learning adopt to assess themselves

Leeson (2017) identified and evaluated visible learning practices based on four dimensions which is referred to as ‘visible strands’ namely (a) the visible learner (b) know thy impact (iii) inspired and passionate teaching and (iv) feedback; each of the above dimension is denoted by a set of four attributes namely (i) vision and values (ii) knowledge and understanding (iii) personal qualities and (iv) professional practices. It has been observed from the study that considerable influence was achieved on the part of students achievement after implementation of visible learning in teaching learning practices.

Visible learning – A way forward

Learning as it has been defined in numerous ways across the teaching-learning and education contexts, ‘visible learning’ makes a significant impact by stressing the perspective that when learning happens visibly to the student primarily and to teacher as ‘reflection’ based on the teaching processes carried out; visible learning is significant as a theoretical context in the field of education amidst an array of defined learning contexts and theories such as learner centered instruction, learner controlled instruction, self-paced participative learning, active learning, activity based learning etc.,

Visible learning makes more sense adding simpleness to the process that happens in the teaching learning context. In the global context visible learning trends has already impacted the teaching learning and education processes by contributing to many critical models that has been put forth based on the ideals of visible learning namely, DIIE model (Diagnose, Intervene, Implement, Evaluate), 5D model (Discover, Design, Deliver, Double-back, Double-up) (Hamilton et al., 2022). Visible learning practices are carried out functionally on many pilot project basis and one such exercise is creating ‘visible learning teams’ (making learning visible team; that has identified curricular and teaching practices which could enable children learn in group creatively, critically and collaboratively.

Two decades since visible learning trends are in vogue and is proven a successful learning model the fruits of which is yet to be realized at a wider level both at the theoretical level and functional level. Research in visible learning trends will pave a way in taking forward the many significant understanding of

the idea of visible learning that could contribute in evolving the teaching learning and assessment practices.

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EFFECTIVENESS OF BLENDED LEARNING IN LEARNING SCIENCE OF THE STUDENTS AT STANDARD IX

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Abstract

The present study aimed to investigate the effectiveness of blended learning compared to the traditional lecture method in teaching science to ninth-grade students. The research design employed was a pretest and post-test experimental group design. Random sampling techniques were used to select 120 students from government and aided schools in the Virudhunagar district. The participants were divided into two groups: a control group and an experimental group. Each group consisted of 30 students from government schools and another 30 from aided schools. Data were collected using an achievement test, a problems inventory administered to teachers, and a retention test. The collected data were analyzed using t-tests, F-tests, and post-hoc analyses. The results revealed that the blended learning approach was more effective than the conventional lecture method in teaching science. The mean scores of the experimental group in both the pre-test and post-test were significantly higher than those of the control group. The findings demonstrated that learning science through blended learning was more effective than traditional methods in both government and aided schools. On the other hand, there was no significant difference in the mean scores of the control groups between the pre-test and post-test, indicating that there was no significant improvement in learning science through traditional methods among the ninth-grade students. The study provides evidence supporting the greater effectiveness of blended learning over the traditional lecture method in teaching science to students in government and aided schools.

Keywords: *Blended learning, science, treatment, mixing online and other methods.*

Introduction

Blended learning is a combination of online and face-to-face activities for classroom instruction or other training modalities to help develop new knowledge and skills that can be transferred to the workplace environment. The use of blended learning is expanding

globally (Vaughn, 2007). Blended learning is evident in professional development training and general classroom offerings for several educational programs across disciplines in global communities. With the limitation of funding and time constraints, more professional development training organizations, and programs in departments and units at universities and colleges are infusing blended learning as another educational tool to use in the delivery of instructional and managerial services. Blended learning is a fast-growing trend in traditional institutions in higher education and other organizations. An online Learning Survey revealed that blended learning was expanding globally to a growth rate of 46% or higher per year. Once organization facilitators and instructional faculty members at the university and college become comfortable with blended learning applications, they are usually highly motivated to explore further new and improved ways of using blended learning for instructional services or managerial training activities (Allen, seaman & Garrett 2007). Blended learning practices are used by students, leaders, faculty members and staff in various teaching and training venues. The leadership development training process continues after face-to-face activity participation with the support of blended learning technology. Many leadership university and college programs using blended learning include at least three dimensions for students such as awareness of concepts, definition and procedures/policy, and understanding of measurable skills and knowledge. The role of technology today using blended learning has broad implications for the student or learner. The online tools available in blended courses can also significantly enhance student engagement ensuring that all students and learners participate in course discussions.

Statement of the Problem

Students at standard IX had hurdles in learning Science especially Biology and Chemistry by adopting conventional methods

in the classroom transaction. Students scored fewer marks due to problems existing in Biology and Chemistry by the ineffective methods. Hence the researcher tried to eliminate the problems by selecting the study entitled **EFFECTIVENESS OF BLENDED LEARNING IN LEARNING SCIENCE AMONG THE STUDENTS AT STANDARD IX.**

Significance of the Study

Students at standard IX had problems in learning science specifically biology and Chemistry. Conventional methods of teaching science were not fruitful to the students at the selected schools in the Virudhunagar district. Scoring marks in the specified subject was difficult for the students. Hence the researcher identified an effective method named Blended learning which supported the students in scoring more marks.

Objectives of the Study

1. To find out whether there is any significant difference in achievement means score between the pre-test of control groups and the post-test of control groups in learning Science by adopting Traditional methods among the students at standard IX.
2. To find out whether there is any significant difference in achievement mean score of the students between the pre-test of the control group and the post-test of the Control group concerning (a) Government School (b) Aided School
3. To find out whether there is any significant difference in achievement mean score of the students between the Pre-test of the Experimental group and the Post-test of the Experimental group concerning (a) Government School (b) Aided School

Hypotheses of the Study

The followings were the hypotheses of the study

1. There is no significant difference in achievement mean score between the pre-test of control groups and the post-test of control groups in learning Science by adopting Traditional methods among the students at standard IX.
2. There is no significant difference in the achievement mean score of the students between the pre-test of the control group and the post-test of the control group with respect to (a) Government School and (b) Aided School.
3. There is no significant difference in the achievement mean score of the students between the Pre-test of the Experimental group and the Post-test the of Experimental group with respect to (a) Government School and (b) Aided School.

Methodology

An equivalent group experimental method was adopted in the study. Control group- Pre-test and Post-test-Experimental group- Pre- test-Treatment through Blended learning-Post-test was adopted in the study. An equivalent group Experimental Method was adopted in the study.

Sample: Two types of schools (Government and Aided) in Virudhunagar district were selected for the study. 120 students studying at standard IX were selected from 2 types of higher secondary schools with equal strength of both the control group and experimental group in the study.

Tools: Researcher-made four tools used in the study. One was an opinionnaire from the teachers, the second tool was the

achievement test which was used for testing the effectiveness of Blended learning in learning science among the students and the third tool was a Retention test which was used to find out the retention of the Blended learning for learning Science. A pilot study was administered for the tools. After establishing the Reliability and validity of the tools, they were considered for the Final study.

Statistical Technique Used in the Study

Descriptive statistics and inferential statistics were adopted in the study. t-test and F-test were adopted as statistical techniques for the study. The SPSS package was used for data analysis.

Analysis of Data:

The analysis of data using the 't-test is shown in Tables.

Hypothesis-1

There is no significant difference in achievement mean score between the pre-test of control groups and the post-test of control groups in learning Science by adopting Traditional methods among the students at standard IX.

Table No. 1

A mean score between the Pre-test of control groups and the Post-test of Control groups in learning Science

Dependent Variable	Test	N	Mean	S.D	't' value	Level of Significant at 0.05 Level
Learning Science	Pre-test of Control Groups	60	11.90	4.05	0.47	NS
	Post-test of Control Groups	60	12.04	3.67		

The calculated 't' value of **0.47** is less than the table value of 1.98 at the 0.05 level. Hence the null hypothesis is **accepted**. There is no significant difference in achievement mean score between the pre-test of control groups and the post-test of control groups in learning Science by adopting traditional methods among the students at standard IX. It concludes that traditional methods are ineffective in learning science among the students at standard IX.

Hypothesis-2

There is no significant difference in the achievement mean score of the students between the pre-test of the control group and the post-test of the Control group with respect to (a) Government School and (b) Aided School.

Table No. 2

The mean score of the students between the pre-test of the control group and the post-test of the Control group with respect to (a) Government School (b) Aided School

S. No	Type of Schools	Test	N	Mean	S.D	't' value	Level of Significant at 0.05 Level
(i)	Government School	Pre-test of Control Group	30	15.23	4.46	0.036	NS
		Post-test of Control Group	30	15.27	3.85		
(ii)	Aided school	Pre-test of Control Group	30	11.33	4.12	0.69	NS
		Post-test of Control Group	30	11.67	3.57		

The calculated 't' value for (i), and (ii) are **0.036, and 0.69, respectively** less than the table value of 2.04 at the 0.05 level. Hence the null hypothesis was **accepted**. There is no significant difference in the achievement mean score of the students between the pre-test of the control group and the post-test of the Control group with respect to (a) Government School and (b) Aided School.

Hypothesis-3

There is no significant difference in the achievement mean score of the students between the Pre-test of the Experimental group and the Post-test of the Experimental group with respect to (a) Government School and (b) Aided School.

Table No. 3

The mean score of the students between the Pre-test of the Experimental group and the Post-test of the Experimental group with respect to (a) Government School (b) Aided School

S. No	Type of schools	Test	N	Mean	S.D	't' value	Level of Significant at 0.05 Level
(i)	Government School	Pre-test of Experimental Group	30	16.80	6.06	13.48	S
		Post-test of Experimental Group	30	30.80	4.87		
(ii)	Aided school	Pre-test of Experimental Group	30	11.63	2.85	38.84	S
		Post-test of Experimental Group	30	44.20	3.11		

The calculated 't' value for (i), and (ii), is **13.48**, and **38.84**, respectively higher than the table value of 2.04 at 0.05 level. Hence the null hypothesis was rejected. There is a significant difference in the achievement mean score of the students between the Pre-test of the Experimental group and the Post-test of the Experimental group with respect to (a) Government School and (b) Aided School.

Findings of the Study

1. There is no significant difference in achievement mean score between the pre-test of control groups and the post-test of control groups in learning Science by adopting traditional methods among the students at standard IX.
2. There is no significant difference in the achievement mean score of the students between the pre-test of the control group and the post-test of the Control group with respect to (a) Government School (b) Aided School.
3. There is a significant difference in the achievement mean score of the students between the Pre-test of the Experimental group and the Post-test of the Experimental group with respect to (a) Government School and (b) Aided School.

Educational Implications

When the present world is marching towards new developments, and there is a great worldwide move to impart quality education to students, research like this attempt to study the effectiveness of Blended learning and Traditional Methods in learning Science, indeed, contributes significantly towards students, parents, managements of schools and policymaking as well. The following educational implications are put forth by the investigator for necessary follow-up and further research pursuits.

The study revealed that Blended Learning helped in enhancing the achievement of students in science significantly at standard IX. Hence the study recommends that,

- The students may be given thorough orientation on the nature, functions and effects of different teaching techniques in learning Science with laboratories, which can create interest and involvement among students in learning Science without fright or fear.
- The academicians and the authorities may work out the practicability of Blended learning for students that may help them to overcome the difficulties faced in learning Science.
- Schools should support ongoing teacher learning in the workplace and should manage ICT resources for use by both teachers and students.
- Collaboration between the training providers and the schools is necessary as is a change in beliefs about the utility.
- Training is needed for the teachers to use online and offline in the teaching and learning process at the school level.
- Preparation of TLM and SLM for simplifying the learning and teaching process.

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COMPETENCY-BASED EDUCATION ENRICHES SKILL EXPANSION AMONG STUDENTS

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Abstract

Competency-centred instruction is a curriculum, instruction, and evaluation strategy that aims to improve learning outcomes at an institute. It is designed to help students build knowledge and experience in certain abilities in each area they study. Competency-based education is a system that combines educational instruction and evaluation in which students demonstrate their knowledge of a topic. This technique allows pupils to take responsibility for their learning and offers them having pupils "show what they know" and apply what they've learned to assessments that demonstrate they've genuinely comprehended the subject. It allows students to take ownership of their learning and offers them, students, the ability to take ownership of their studies and offers them a worthwhile and enjoyable learning experience. This innovative method is outcome-based, allowing educators to assist students in developing knowledge, and values, and becoming continuous learners even after they have completed their degree. As a result, a basic description of competency-based education would be an educational approach that prioritizes students' entire growth. When each learner understands the ultimate objective, they are going to assume more ownership of their learning. Strong implementation necessitates policies, pedagogy, institutions, and an environment that support all students. Another fantastic technique to demonstrate mastery is to have students utilize their knowledge and relate it to real-life circumstances. To succeed, several skills are necessary, and all of these abilities or skill sets must be learned during the process of educational pursuits or schooling; only then can school education be regarded as productive and profitable. Competency-based learning, also known as competency-based education, is an outcome-

based approach to education that aims to ensure students' proficiency in learning by requiring them to demonstrate the knowledge, skills, values, and attitudes needed to deal with real-life situations at the appropriate age and grade level. Learners also gain abilities that they will require in the future. This article discusses competency-based education, its significance, the role of instructors, and its implementation.....

Keywords: *competency-based education, institution, teacher, student, holistic development....*

Introduction

Today's world is radically different from that of a few years ago. There are new sorts of professions and abilities necessary in employment, and as the globe progresses, the workforce will require newer and more diverse competencies. We shall live in a turbulent, unpredictable, complicated, and confusing environment, according to educators. As a result, for subsequent generations to be fully capable of entering the workforce, they must be provided with skills that will be helpful to others in the future. It is the responsibility of educational institutions to provide students with the competencies or fundamental abilities that will enable them to be happy and prosperous in their job. In addition to global issues, the skills taught by educators must be updated to meet the needs of future students. We can no longer rely on traditional educational techniques to prepare our pupils for an unpredictable future. Rather than teaching specialized jobs or specializations to pupils, it is more productive to teach them basic competencies that will guarantee they grow into decent citizens. Competency-based education and training is not a new idea, but it has gained popularity in recent years as more institutes launch programs. Competency-based education, like MOOCs, has grown in popularity among students because of its

adaptable framework and low cost. These programs, as the name implies, focus on the acquisition of competencies relevant to a certain job.

Competence-based education

In layman's words, competency-based learning means that, rather than concentrating on scores and yearly program schedules, the emphasis is on the degree to which every learner is in the topic. This implies that pupils may only advance if they exhibit mastery. Competency-based education and personalized learning are inextricably linked. Teachers guarantee that each pupil has complete mastery before moving on by personalizing their educational experience for each unique student. This accomplishes the aim of equity: students progress at their rate, yet everyone in the educational environment achieves proficiency. Competency-based education emphasizes preparing individuals for the next step of their lives, whether college or a profession.

When the same competency-based education is compared to the conventional teaching-learning of teaching, the distinctions that may be found include the fact that in conventional schools, the year is planned out in advance for each student. As a result, after each unit, each pupil must proceed, regardless of whether they completely grasp the topic or have acquired the requisite abilities. A classroom must include kids of the same age. Competency-based education, on the opposite hand, is adaptable to the student's needs and stage of learning. That is, pupils are provided with the personalized help they require to progress and master the topic and innate abilities. Instead of progressing based on age,

pupils progress depending on who they are and the things that they have the ability of.

Skill-based learning, proficiency-based education, mastery-based education, based-on-results learning, performance-oriented learning, and even standards-based education are all terms used to describe competency-based learning. Flexibility and personalization are the primary goals of this competency-based education. All of this is in addition to an emphasis on topic mastery, outcomes, meaningful evaluations, quick feedback, and data-driven.

Importance of competency-based education

Competency-based learning encompasses a collection of abilities, skills, and information that enables students to complete tasks independently. It enables students to progress depending on the capacity to learn something they know at a pace that suits them, independent of their surroundings. This strategy is designed to take into consideration diverse learning skills and result in better student outcomes.

Competency-based learning concentrates on what students learn rather than just completing courses or subjects. CBE enables students to proceed through learning objectives at their speed while demonstrating mastery of information. It enables students to demonstrate what they understand immediately as they understand it.

In various respects, competency-based education differs from traditional education. The curriculum in competency-based education offers students a changeable environment for learning with the subject matter at various levels. In conventional education, the curriculum offers all students, regardless of prior knowledge, a standardized class format.

Again, in terms of class completion, centred around competencies education, students complete the course of study when they are able, whereas, in conventional education, all students complete the class at the end of the semester. Furthermore, the average time for graduating in competency-driven education is 30 months, compared to sixty months on average in traditional education.

There are several reasons why children benefit from competency-based education. Here are five advantages of competency-based education...

1. **Self-paced competency-based education:** Competency-based education concentrates on the end rather than the route. This implies that competency-based instruction allows students to pace themselves and is not bound by a fixed learning method and framework. When a student believes they are proficient in the material being studied, they can choose to take an official evaluation and proceed to the following set of instruction materials. Students can progress at their own pace while finishing their education and class whenever they are ready.
2. **Flexibility of competency-based education:** Because the structure of competency-based education is determined by the individual learner, it is extremely adaptable. There is no set schedule in these programs, so students may direct their studies. Students can also choose where and when to finish tasks and evaluations. Education based on competencies is also adaptable in the sense that students can attend a program at any level after receiving credit for prior learning and experience.
3. **Engaging competency-based education:** Increased and enhanced student involvement is one of the finest benefits

of competency-based education. Students are more interested in the learning content because they own their education. They may also choose where, when, and how they learn. Competency-based education encourages individualized learning and caters to a wide range of learning styles. This provides a genuinely personalized experience and boosts engagement. This is because the material is more relevant and personalised to each student's requirements.

4. **Competency-based education emphasizes skills:** Competency-based education emphasizes teaching students real-world skills and developing their competencies. Subjects are built around a certain skill, thus guaranteeing the learning content is applicable. Students who have received competency-based education emerge with a set of competencies that will enable them to face the world and succeed in a competitive setting.
5. **Competency-based instruction is reasonably priced:** While the overall price of the program varies, it enhances learning while decreasing the expense of education. Furthermore, because many Competency-based education programs are delivered online, operating costs are reduced, resulting in lower tuition fees. Competency-based learning and education is the new educational slogan. Nevertheless, while it can be extremely beneficial to students, it is not appropriate for all students. To take advantage of and profit from competency-based education, students must be self-directed learners.

Furthermore, if the school provides education based on competencies, the role of educators and educators shifts and

transforms. Teachers contribute to the establishment of desirable outcomes for learning in their particular fields of competence. They also design interesting learning materials, engrossing learning experiences, and give students customized help.

Choosing a competency-based educational approach can be extremely beneficial to schools. Students will be more pleased with the learning programs, and enrollment and graduation rates will be greater overall. Furthermore, schools that implement competency-based learning can draw an extensive amount of students who seek adaptation in their academic pursuits and learning.

Competency-based learning is concentrated on the learner. Transitioning to this form of learning, however, can be difficult for educational institutions, educators, and administrators. However, the benefits of competency-based education seem especially appealing.

Role of Teachers in competency-based education

One of the most common and regrettable misconceptions about competency-based education vs conventional schooling is that teachers are less essential in competency-based education and the function of the instructor is diminished. Some teachers are concerned that competency-based education will be used to reduce the role of full-time teachers, leading to further objectification of higher education. Concerns that the level of student learning based on competence curriculum will be lower than in more traditional programs are closely related, as the role of the teacher has shifted from merely the primary conveyer of understanding to

that of a guide assisting students in navigating mastery. Bloom (1968) developed the initial taxonomy to measure just the cognitive domain, but it was later broadened to include the psychomotor and emotional domains as well. Competencies within each domain are organised hierarchically, from simple and tangible to complicated and abstract. These beliefs and concerns, however, are just that: myths and worries. The most effective competency-based education programmes continue to place instructors at the centre of the programme, responsible for developing skills and curriculum and giving students critical feedback as they build knowledge and mastery.

In many respects, instructors' core roles in a competency-based schooling program are similar to those in conventional programs—they are ultimately accountable for the program's quality and engage with learners in a way that helps their pupils gain mastery. Competence-based education, with a focus on personalized and contextualized learning, learning objectives, competence mastery, and genuine assessments, encourages instructors to work with pupils where they are as opposed to forcing them to keep up with a robotic pace established by the teacher.

Implementing competency-based education through an intelligent learning platform

Through their mastery features, intelligent learning platforms enable competency-based education. Simply defined, schools and institutions can submit or construct a set of competencies for use on the site. Teachers and administrators may simply do it for their classrooms. After

that, they must link the instructional material (classes and assignments) to the competencies. Despite a vast published literature detailing CBE, there is little evidence of enhanced learning efficacy (Carraccio, Wolfsthal, Englander, Ferentz, & Martin, 2002; Malone & Supri, 2012; Morcke, Dornan, & Eika, 2013), and even more regarding effectively applying CBE. On some platforms, this is as simple as tagging classes with equivalent competencies.

Then, as they progress using their classes, they must complete certain tasks, such as taking a quiz or providing a written assignment. The ILP recognizes the competencies they've earned with each sort of examination they complete. Finally, all competencies contribute to acquiring competence in a certain subject.

1. Add competencies

Teachers with no technological knowledge may quickly deploy capabilities in a sophisticated learning platform for K-12 and higher learning. Educators may add multiple competencies as they desire and use these to track students' development. The class topic is linked to the competencies that should be taught. Teachers may also swiftly test pupils' competencies using the intelligent learning platform's quiz system. This may also be used for self-evaluation. Students take quizzes by selecting the proper answers, and the Intelligent instructional system verifies these assessments automatically and presents each student's progress on an easy-to-use dashboard. This form of fast evaluation also enables teachers to identify knowledge gaps.

2. Automate mastery

The above example demonstrates only one of the potentials of intelligent learning platforms in managing competency-based learning. Teachers can utilize a variety of additional evaluation styles. Unless students are asked to provide assessments in writing (essays and freeform quiz questions, for example), the whole evaluation process is automated. All the instructor needs to do is specify the proper answers, and the system will verify auto-graded tests. Furthermore, teachers will look to see if the lessons cover all of the competencies they need to teach, or if they ensure competence. They demonstrate the specific competencies as well as how much is covered and examined throughout the course. Capabilities that have not been addressed by any portion of the course or assignments will reduce the class's overall mastery level, which may be stated as a percentage. As a result, teachers may either add more material and assessments that cover that ability, or they can delete it and send it to a more appropriate class.

3. Track student progress based on competencies

In an ILP, student progress is instinctively tracked. As a result, teachers no longer need to personally access each student's profile and specific assignment. Analytics will provide them with that data at a look. As a result, they can instantly look up each student's name and see how far they've progressed in demonstrating mastery of the competencies. Their completed and ongoing lessons, grades, and attendance statistics may all be incorporated in user-friendly, yet thorough reports.

4. Show competency-based content recommendations

More than just helping you allocate and monitor school competencies and evaluate students, an intelligent instructional system can do so. These intelligent systems are powered by Artificial Intelligence (AI). As a result, they examine user activity and deliver the most appropriate content suggestions depending on each user's expertise level. Students who demonstrate mastery of key abilities will be granted access to more challenging classes or content, as well as an in-depth exploration of related topics. Those who struggle to finish an assignment, on the other hand, can obtain tips according to their skill level. Instead of requiring students to repeat the same lesson, which might undermine their commitment and assurance, the platform can propose similar instructional information from other sources, such as blogs and videos.

Conclusion

Students today require self-paced, goal-oriented learning through competency-based education. This method of instruction concentrates on each student's requirements and skills, ensuring that everyone masters a topic before moving on to the next. Intelligent instructional systems are technologies that may assist teachers in easily implementing competency-based programs, tracking student progress, and ensuring that each learner has access to the greatest educational content depending on their abilities, goals, and interests. Critical and innovative abilities, collaboration, and communication skills are essential for an effective life in the twenty-first century. Competency is a collection of skills,

talents, and knowledge that enables an individual to accomplish a certain activity in real life. Every learning should be directed towards the acquisition of skills that will assist the individual in performing tasks or taking action to live an effective and joyful life.

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MECHANISM OF INSTRUCTION AND LEARNING FOR STUDENTS IN EDUCATION 5.0

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Abstract

This study aims to determine whether boys and girls learn differently. Using Education 5.0 skills when instructing others. Education 5.0 gives pupils a basis for lifelong learning and a variety of abilities that go far beyond the Internet. Utilizing modern technologies to enhance teaching and learning while emphasizing the social and emotional needs of students is known as education 5.0.

Keywords: *teachers, learning 5.0, teaching and learning skills*

Introduction

In developing the students' skills, instruction should be based on performance in related activities. Students' education and technology are created by a combination of knowledge, new skills, and work ethic. Education requires changes in curriculum, teaching, learning, and assessment. Students receive only theoretical knowledge in learning and other business disciplines and cannot be successful in their work. Each education level has a variety of skills in a variety of subjects, and each skill requires specific training to be successful.

Teaching and Learning Course 5.0

Privacy, ethics, security, and technological knowledge are all given special consideration. A successful method is required to provide students with easy access to knowledge, faster learning, and entertainment to apply what they have learned. Technological advancements and the internet have created significant changes in society, business, and education. With this in mind, the usage of mobile phones in education has evolved to match today's shifting needs. The use of technology, particularly the use of the Internet to improve the quality of learning and teaching, has become the most important for teachers all over the world, consequently leading education for everyone who wishes to use technology in teaching.

Investing in Educational Technology

Educational technology is an important aspect of education since it assists teachers in incorporating new technologies and tools into their classrooms. Teachers can improve student safety in the classroom. It helps teachers to engage pupils in innovative, imaginative, and balanced ways for any educational system to be successful. In the long run, there must be a shared vision of sales and optimization. We must manage this educational transformation and choose our goals for it.

Teacher Training

Teacher Training Teachers will be trained in business and social New Perspectives. Before COVID-19, it was common to speak of "new" education in the context of the Fourth

Industrial Revolution (Industry 4.0). The second focuses on the creation of cyber-physical systems and is mainly driven by automation. This has a direct impact on the skill requirements and requires students to acquire a variety of knowledge to help them work with machines.

But tailoring education to the needs of the Fourth Generation can mean falling behind the train. More and more experts support the concept of the fifth revolution (Industry 5.0). Second, it refers to "dehumanizing" production and services, referring to the role of humans in the balance and the increased focus on relationships and cooperation between humans and machines. If we want education reform to have a lasting impact, we must approach it today through the lens of the Fifth Industrial Revolution. We need Education 5.0.

Education 5.0

Education 5.0 starts with people, not technology. Its purpose clearly defines the specific results people want to achieve through special education. It's not about providing every student with a laptop or tablet. It's not about improving infrastructure and connectivity. It has nothing to do with the creation of digital tools and platforms. Instead, the focus should be on developing mentally, socially, and emotionally mature people who are also conscious of their personal development and health. The relevant strategic, methodological, and instructional methods are then adopted. Among other things, the latter group focuses on strategies to help students rediscover their motivation, creativity, and enthusiasm for studying. While still important in this context, digital tools, platforms, and infrastructure serve as enablers rather than ends in and of themselves.

Education 5.0 Specifically Includes

- Putting human qualities at the forefront of education, recognizing and nurturing the abilities and functions that are best performed by people (e.g., those involving originality, creativity, critical thinking, analytical skills, design, compassion, etc.)
- Taking into account not just social and learner demands but also market and company needs (employability);
- Providing "big picture education," keeping in mind how the educational offer fits into the larger learning trajectory, labor market, and global changes.
- Using students as change agents and actively involving them in the creation and application of curricula.
- Educating students about the importance of maintaining excellent physical and mental health, the dangers of excessive or inappropriate exposure to technology, and the safety and ergonomics of using it at home, school, and work

Access to Education 5.0

Access to Education 5.0 requires comprehensive education reform and addresses all important aspects. The content to be covered includes ideas in addition to the use of technology are

- **Strategy:** repeating the main purpose and specific objectives of the educational service in the context of Learning 5.0.
- **Collaboration:** promote practices that go beyond traditional home collaboration models and involve people and communities.

- **Content:** Identity, develop, and share common themes for good ideas (with a good balance between disciplinary and non-disciplinary, focusing on fairness, issues such as social, diverse people, and safety)
- **Delivery Mechanisms:** Identify which tools are best for achieving strategic goals; this is where the technology may or may not be chosen as optimal.
- **Measurement and Evaluation:** Research and development of formal and informal measurement and recognition methods Education 5.0.
- **Quality Assurance:** Establish quality standards for Education 5.0 and conduct regular quality reviews.

Education 5.0 is essentially a real-world experience, allowing learning to happen anytime, anywhere. Education 5.0 refers to a method that provides technology and new teaching methods to improve the educational process. Some tips and tricks in the context of Learning 5.0.

In Learning 5.0, special attention is paid to things like privacy, ethics, security, and technology knowledge. It prepares students for lifelong learning and provides a foundation for acquiring a wide range of digital skills. The term "Education 5.0" describes a strategy that uses both traditional and sequential teaching methods to improve student learning. In the context of Learning 5.0, the following teaching and learning methods are recommended:

1. Self-learning:

Use tools and platforms for learning transformation to tailor instruction to each student's needs, preferences, and interests in learning. With the support of this strategy that

supports personal development, students can improve themselves.

2. Cooperative Learning:

Encourages students to participate in debate, problem-solving, and group work. Cooperative learning encourages students to share ideas, give and receive help, and develop relationships and collaboration.

3. Active Learning:

Active learning replaces prior learning through exercises, experiments, simulations, and practical applications. This method encourages good thinking.

4. Blended Education:

Provides face-to-face education, internet programs, and a virtual learning environment. Through this concept, students can access course materials, work with classmates, and receive feedback inside and outside the classroom.

5. Flipped Classroom:

You can reverse the traditional classroom by doing lectures and other teaching materials as homework and using class time for discussion, group work, and manual labor. The idea encourages collaboration and increased understanding.

6. Project-Based Learning:

Build learning based on real-world problems and projects. Students actively explore, explore, solve problems, and then present their results, encouraging creativity, critical thinking, and the use of world knowledge.

7. Gamification:

Use gamification features such as rewards, levels, and leader boards to increase motivation, engagement, and fun in the learning process. Questions, assessments, and teaching activities can lead to greater engagement through play.

8. Data-Driven Teaching:

Gather information on student performance and development using resources in the arts. Analyze data to identify areas for improvement, review instruction, and provide timely feedback and assistance to students.

9. Lifelong Learning and Skills Development:

Supports the development of critical skills such as critical thinking, problem-solving, communication, creativity, and digital literacy to support lifelong learning leadership. Students are encouraged to participate in their learning and adapt to new technologies and changing environments.

10. Teachers Role:

Accept the teacher's role as a supporter and coach rather than important information. Students are encouraged to self-direct, question, and reflect. Teachers can assist all students with special needs by providing advice, assistance, and guidance.

It is important to remember that Education 5.0 is an evolving concept and many teachers and schools will interpret and apply it differently. The ideas described above provide a starting point for improving the teaching process using teaching methods and technology.

Conclusion

Learning 5.0 represents the latest change in the way we think about learning, enabling us to create an integrated system that puts the learner in their place. Education 5.0 uses the power of technology to personalize learning and engage students more than traditional methods. Artificial Intelligence (AI) algorithms are used to evaluate students' learning patterns and materials against standards. Augmented and virtual reality can take learners to different places, giving them an interactive understanding and experience of a topic or place.

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ANXIETY OF STUDENT TEACHERS TOWARDS TECHNOLOGY IN DHARMAPURI DISTRICT

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Abstract

This paper mainly focused to expose the meaning, benefits, and answer why the use of anxiety and technology for the student teachers. The paper discussed the various types of anxiety and anxiety towards technology. It emphasizes the way to solve the anxiety of student teachers towards technology. It pointed out the need for selecting the appropriate technology. Computer anxiety has been found to be associated with avoidance and a tendency to debilitate test performance and it often results in negative feelings such as fear, stress and worry among computer users. Computer anxiety is a complex psychological construct and needs to be measured with multiple dimensions. Some examples are computer equipment anxiety, computer message anxiety and computer observing anxiety.

Key words: *Anxiety, Technology, Computer Anxiety and Student Teachers.*

Introduction

Psychology is the scientific study of mind and behavior, and the relationship between them. Nowadays the young people have more fear towards knowing a new thing. Anxiety is a multisystem response to a perceived threat or danger. It reflects a combination of biochemical change in the body, the

patient's personal history and memory and the social situation. As far as we know anxiety is a uniquely human experience. Other animals clearly know fear but human anxiety involves an ability to use memory and imagination to move backward and forward in time, that animals do not appear to have. The anxiety that occurs in posttraumatic syndromes indicates that human memory is a much more complicated mental function than animal memory. Moreover, a large portion of human anxiety is produced by anticipation of future events. Without a sense of personal continuity over time people would not have the "raw materials" of anxiety.

Computer Anxiety

Computer anxiety is a psychological construct that has received much attention (Beckers et al. 2001). Although the exact nature of the construct is still in dispute, a generally accepted definition of the construct is: the fear of computers when using the computer, or when considering the possibility of computer use (Heinssen et al. 1987). Other terms used to describe computer anxiety include: aversion to, apprehension of, intimidation by, hostility toward, and aggression towards computers (Beckers et al. 2001). Computer anxiety has also been referred to as computer phobia in the popular press.

Need of the Study

In the modern world, the unprecedented growth of technology plays a prominent role in almost all spheres of knowledge. In the field of education the growth in technology combined effort of the computer technology created a major

impact on knowledge dissemination process and slowly it began to reach the status of a new source of information.

The teacher is the only person who is responsible for moulding the knowledge of students. More over the present world is the technological world. The technology provides a major impact in the teaching learning process. So the present day teachers do not have any fear (Anxiety) about the technology. They should be trained well and improve their application skills of technology hence the researcher has chosen the anxiety of Technology as his area of study.

Statement of the Problem

Technology is the most important role in teaching and learning of Student Teachers. The technology provides a major impact in the teaching learning process. So the present day teachers should not have any fear (Anxiety) about the technology.

They should be trained well and improve their application skills of technology. Hence the problem is entitled as **“Anxiety of Student Teachers towards Technology in Dharmapuri district”**.

Objectives of the Study

The following objectives were framed by the investigator

1. To know the level of anxiety among the student teachers.
2. To measure whether there is any significant difference in the anxiety towards using technology among the Student Teachers with respect to the gender.

3. To find out whether there is any significant difference in the anxiety towards using technology among the Student Teachers with respect to the age.
4. To find out whether there is any significant difference in the anxiety towards using technology among the Student Teachers with respect to their types of course.
5. To calculate whether there is any significant difference in the anxiety towards using technology among the Student Teachers with respect to their types of locality.

Hypotheses of the Study

The following null hypotheses were framed by the investigator to fulfill the objectives of the study.

1. The level of anxiety towards using a technology among the Student Teachers is moderate.
2. There is no significant difference in the anxiety towards using technology among the Student Teachers with respect to the gender.
3. There is no significant difference in the anxiety towards using technology among the Student Teachers with respect to the age.
4. There is no significant difference in the anxiety towards using technology among the Student Teachers with respect to their types of course.
5. There is no significant difference in the anxiety towards using technology among the Student Teachers with respect to their types of locality.

Limitation of the Study

Research studies in general will have limitations due to many factors. It is the responsibility of the researcher to see that the study is conducted with maximum care in order to be reliable. However the following limitations were unavoidable in the present study.

- The present study was restricted only to college of education institute in Dharmapuri district of Tamil Nadu state.
- The present study was restricted only ten Private college of education in Dharmapuri district.

Review of Related Literature

Olga Revilla Muñoz, Francisco AlpistePenalba and et.al in 2016 conducted a study on reducing techno-anxiety in high school teachers by improving their ICT problem solving skills. Action research was carried out to find the techno-anxiety. Experimental study was carried out to study the (i) skills for solving technological problems, and (ii) the techno-anxiety level. 46 high school teachers were selected for the study and the sample were divided equally for the experimental and control group. The correlation coefficient (R) is -0.1460 , and the coefficient of determination (R^2) is 0.021 . The post-test results of the experimental group are closer to the regression line. The results shows that very low techno stressed found among the samples. They all have some skill resolution capabilities

Methodology

The success of any research depends upon suitable methodology with specific operational steps and well

constructed tools. The present study which aims at finding the Anxiety of Student Teachers towards technology has been designed using the methodology as survey method.

Research Design

The investigator followed the survey method in the present study. The investigator used a standardized form of questionnaire and the items were pooled verified with the help of research guide. The tool was administered to the sample selected Student Teachers of Dharmapuri district.

The data were analyzed by applying appropriate statistical technique to find out the Anxiety of students teacher towards technology.

Table - 1
Methods and Its Procedure

Phase – I	Phase – II	Phase – III	Phase - IV
<i>Identification</i>	<i>Selection</i>	<i>Implementation</i>	<i>Evaluation</i>
Identification of the Problem ↓	Selection of the Content (Anxiety of Technology) ↓	Selection of the Sample ↓	Analysis of Data ↓
Identification of the Depts. ↓	Development of the Tool ↓	Administration of the Tool ↓	Interpretation of Results ↓
Contacting Principals for the study (Higher education teachers)	Finalization of the Tool	Collection of Data	Findings and Conclusion

Research Tool

The investigator used the self prepared tool to analyze the Anxiety of Student Teachers towards Technology in Dharmapuri district.

Selection of the Sample

The investigator decided to collect data from the Student Teachers of Dharmapuri district. Random sampling technique was adopted for the present study. The samples of 210 Student Teachers are selected for this study.

Sample consists of 10 Private college of education, of which 34 Male and 66 Female Student Teachers selected random only. A total of 100 Student Teachers were chosen for the present study. The breakup of the details of the sample was presented in the following table.

Table - 2

The table showing distribution of the sample

S.No	Variables	Sub-variables	Sample	Total
1	Gender	Male	34	100
		Female	66	
2	Age	Below 30	84	100
		Above 30	26	
3	Types of course	Arts	56	100
		Science	44	
4	Locality	Urban	52	100
		Rural	48	

Statistical Techniques Used

Statistical techniques serve the fundamental purpose. The following statistics adopted for the study.

❖ Descriptive Analysis

Mean and standard deviation.

❖ Differential Analysis

't' test for determining the significance of Difference between the means of two sub-groups used in the study.

Analysis and Interpretation of Data

The hypotheses were tested using the mean scores of study Involvement among students' teachers in Dharmapuri District, TamilNadu

Table-3
The table shows that mean and S.D scores of
sample wise distribution

S. No	Variable		N	Mean	SD	t - value
1	Gender	Male	34	44.48	9.45	0.48
		Female	66	40.55	9.15	
2	Age	Below 30	84	42.74	9.53	0.95
		Above 30	26	43.21	9.53	
3	Types of Course	Arts	56	45.08	9.47	1.04
		Science	44	39.97	8.78	
4	Locality	Urban	52	45.34	7.91	0.85
		Rural	48	41.73	10.05	
	Total		100	42.88	9.23	

Summary of the Findings

The findings of the present study was

- The present study confirms that the Student Teachers have higher level of anxiety over technology.
- The male Student Teachers have less anxiety towards technology than the female higher education teachers.
- The student teachers below 30 years of age and above 30 years of age have similar anxiety level towards technology.
- Arts Student Teachers have more anxiety towards technology than the science Student Teachers education teachers.
- Rural area student teachers have more anxiety towards technology than urban area student teachers.

Conclusion

Finally in this present study confirms that the high level anxiety towards using technology among the Student Teachers in Dharmapuri district.

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BENEFITS OF IMPLEMENTING COMPETENCY-BASED EDUCATION

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Abstract

Competency-based education (CBE) is a learner-centered approach that emphasizes mastery of skills and knowledge. This short abstract highlights the benefits of implementing CBE in educational settings. By focusing on mastery rather than time-based progress, CBE offers personalized learning experiences tailored to individual needs and strengths. This approach promotes higher levels of learner engagement, as students take ownership of their learning and progress at their own pace. Educators benefit from CBE by being able to provide targeted instruction and support to meet each student's specific needs. CBE also fosters the development of essential 21st-century skills, such as critical thinking, problem-solving, collaboration, and adaptability. Additionally, CBE promotes equity and access by allowing learners to progress based on their abilities and providing flexible learning pathways. The implementation of CBE ensures alignment with workforce demands, equipping students with practical skills that are relevant to their future careers. Overall, implementing CBE brings numerous benefits to learners, educators, and educational systems, enabling a more personalized, engaging, and effective learning experience.

Keywords: *Competency-based education, personalized learning, learner engagement, targeted instruction, 21st-century skills, equity, access, flexible learning pathways, workforce alignment, educational systems.*

Introduction

Competency-based education helps students develop and demonstrate mastery over a topic, builds a culture of equity and inclusivity and prepares pupils for life beyond the walls of their school.

Competency-based education:

The competency-based education (CBE) approach allows the pupils to advance based on their capacity to master a skill at their own pace regardless of the setting. This system is adapted to meet different knowledge capacities and can lead to more effective pupil outcomes. Competency-based education is easy for the pupils and where they're in the learning process. In this pupil can learn according to their capacity.

Structure:

The first big difference between competency-based education vs traditional education is structure. For the latter, learning progression is listed. Pupils follow through with a given number of subjects every semester. They progress on to the advanced-level subjects if they get passing marks, anyhow of their understanding of the further foundational concepts taught in earlier modules. As a result, they may encounter added literacy difficulties as they progress toward finishing the course.

Meanwhile, when it comes to competency-based education, learning progression is structured around mastery of capabilities, not credit hours. A pupil will only be allowed to move on to the coming subjects after successfully demonstrating mastery of knowledge and chops as defined in the literacy objects of their prerequisites. This ensures that they have the knowledge and chops they need to understand advanced-position generalities in a subject matter.

Instruction system:

In faculty-grounded education, every pupil is entitled to admit personalized instruction. They will be completely guided at every step of the literacy process and will admit feedback from their preceptors incontinently. This kind of pupil-schoolteacher exchange can help scholars develop academic progress.

Assessment:

Competency-based education grading isn't as rigid as the traditional approach to literacy. In competency-based education programs, constructive assessments are an essential element of the literacy process. pupils admit feedback and are given the chance to achieve mastery of a subject. Learning outgrowth literacy issues equate to either not yet competent, competent, or largely competent. This means that pupils only need re-learn the capabilities they've not yet earned and not the entire course.

Benefits of Enforcing Competency-Based Education Programs:

With competency-based education, pupils can attack their literacy difficulties and, in the end, achieve mastery.

1. Competency-based education programs enhance pupils' skills

In a study named "Does Perpetration of Competence-based education intervene the impact of team learning on pupil satisfaction?" published in the Journal of Vocational Education & Training, Van Griethuijsen and associates (2019)

concluded that “scholars are more satisfied with how they develop interpersonal skills, similar as communicating and collaborating with co-workers, as their education becomes further competency- based in nature.” Education that’s further competence-based in nature is, therefore, rated more appreciatively by pupils in terms of quality and guidance the pupils admit.”

2. Competency-based education programs welcome non-traditional learners

Competency-based education poses a challenge to numerous traditional ways of tutoring and knowledge that hinders some individualities from feeling included in learning surroundings.

3. Competency-based education programs offer time and location flexibility

With competency-based education, pupils can study anywhere, anytime. There are also available online platforms through which pupils can contact their teachers regarding any difficulties they may encounter while going through the learning materials.

4. Competency-based education programs can help pupils save time and money

Pupils who are getting competencies speedily can save a lot of money by finishing target. The quicker they complete a degree program, the more money they will be suitable to save and the lower pupil debt they will need to acquire.

5. Competency-based education programs can encourage productivity among pupils

More productive pupils will be qualified to graduate earlier and advance in their professional lives quickly. pupils may work to finish their studies soon than the recommended period to time.

6. Competency- based education programs aim for mastery

Mastery is the end thing of competency- based education. pupils need not worry that they will have any kind of mediocrity. Curriculum design is held up to a high standard. pupils are also hoped to showcase excellence in a subject area where they earlier got the credit.

7. Competency-based education programs will produce more competent graduates

Pupils who have completed a degree program with a competency-based curriculum prove that they're skilled in all areas of their field. This means there isn't one subject in their curriculum that they don't completely understand. It also means that they're job ready. This is important because the fourth industrial revolution comes with quite a competitive labour request, where only the best of the best can be employed, especially in the tech- driven times to come.

8. Competency-based education will give pupils the confidence that comes with mastery of skills.

Pupils can be confident that they will be capable to perform their tasks well in their jobs because they've mastered the capabilities needed to do so. This will enable them to be

competent in their professional lives. Competency- based education will also inculcate in them the idea that mistakes are resolvable parts of the learning process.

9. More Equitable Future for pupils:

Competency-based education is radical in that it gives all pupils a fair chance to excel at their studies. In this framework, everyone who's willing to allocate time and work and continue learning, regardless of one's individualized struggles, can achieve positive educational results. This is important because this academic success can very well restate to professional success, and thus extends itself to self- efficacy, economic freedom, and good intellectual and physical health and wellbeing, among others. A college degree in this sense becomes a real ticket to an enhanced life.

Conclusion:

Competency- based education emphasizes how competent each pupil is in a specific subject. It does concentrate on pupils' grades. On the contrary, other learning models measure the success of pupils summatively by exposing them to content- weather skills or generalities.

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BLENDED LEARNING STRATEGY IN TEACHING

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Abstract

This text explores the importance and impact of new Information and Communication Technologies (ICT) in education. It emphasizes the need to incorporate these technologies to create efficient learning environments that transcend traditional boundaries. Blended Learning, defined as a combination of various methodologies and instructional technologies, is presented as a solution to enhance the learning experience. The instructional philosophy of Blended Learning is captured in the acronym BLEND, which stands for Briefcase of content, Learner-centred, Enjoyable, Natural, and Diagrammatic. The text further discusses the different components and strategies involved in structuring Blended Learning, such as collaborative task structure and self-directed inquiry. It highlights the benefits of synchronous and asynchronous instructional methods in online teaching. The integration of pedagogical perspectives, including cognitive, emotional, behavioural, contextual, and social constructivism, is also emphasized. The abstract concludes by emphasizing the goal of blended learning, which is to combine the best aspects of traditional and online learning to facilitate active and self-directed learning opportunities for students. Proper design and implementation of blended learning are crucial for meeting learners' expectations and enriching their educational experiences.

Keywords: *Blended learning, Strategy in Teaching, Collaborative, Pedagogical approaches, Information and Communication Technologies (ICT)*

Introduction

The new Information and Communication Technologies have profoundly affected our society which is now knowledge-based, technology-driven and fast-changing. To compete and survive in the competitive world of education, it is essential to create, adopt and utilize new technologies which will allow an efficient flow of data, voice and images to all those who want to remain updated in the fast-changing world. With the present infrastructure, class size, availability of teachers, quality and training of teachers, it is difficult to achieve all the objectives of the teaching process. Therefore, the use of new media in the educational process is of vital importance today. With the help of the new ICT, education will cross borders and will change the world into a global village. It changes the way the teacher teaches and the students learn.

Blended Learning

Blended Learning is viewed as “the integrated combination of traditional learning with web-based online approaches, the combination of media and tools employed in an e-learning environment and the combination of several pedagogic approaches irrespective of learning technology used.”

Blended Learning Design's instructional philosophy is captured in the acronym BLEND.

- *Briefcase of content*: The learner's 'briefcase' is packed with practice exercises, job aids, 'how-to's and summaries. These features carry the learner - and the learning - into the future.

- *Learner centered:* Interpersonal skills demand practice, rehearsal and involvement. Keep the ball in the learner's court by interweaving lots of opportunities for personal reflection, group work, discussion and role plays, and make sure that learners have a safe and secure environment to practice their skills.
- *Enjoyable:* There is a critical link between a relaxed, positive and stress-free environment and success in learning. Stressful environments, negativity and the fear of failure all block the learner's receptivity. Use games and stories to make the learning experience more enjoyable and stress-free.
- *Natural:* The left side of the brain manages the linguistic and deductive functions; the right handles the emotions, art and imagery. Whole-brain presentations appeal to both sides. So, ensure varied practices so that as many as possible of the intelligence and learning styles can be tapped, exercised and accommodated.
- *Diagrammatic:* Many learners are primarily visual. Using graphics and diagrams to capture and represent the content and reinforce the written word through structured diagrams and visual metaphors could capture and illustrate the content.

Blended Learning is defined as a combination or mixing of at least four different methodologies:

- Mixing of technology-based learning (e-learning, collaboration, virtual classroom, etc.)

- Combination of pedagogical approaches (behaviourism, cognitivism and constructivism)
- Mixing of forms of Instructional Technology (face-to-face, internet, CD-ROM, etc.)
- Integrating instructional technologies with actual job activities.

Thus, blended learning is a mixture of the various learning strategies and delivery methods that will optimize the learning experience of the user.

The existing and developing universe of learner-centric methods balances the traditional classroom approach and the constantly evolving technology-based learning. This balance has tremendous potential for building increased performance within all institutions. By mixing traditional methods with new ones, we now have **synchronous and asynchronous tools** that provide instructional programmes with two very powerful methods:

- **Synchronous Instructional Methods** – The synchronous (real-time) domain is the more traditional approach to online teaching and has the instructor (or mentor) and learner available at the same time. Synchronous training via the Internet is very helpful to learners who wish to adjust their learning style away from traditional classroom or labs. Methods in this domain consist of traditional classrooms, virtual classrooms, live product practice (lab), interactive chats and mentoring (coaching).
- **Asynchronous Instructional Methods** – The asynchronous (different time) domain means that the instructor (or in most cases computer-based courseware) and the learner are available at different times, a benefit for self-directed

learners who like to learn at their pace and own time. Methods in this domain consist of documents and web pages, Web Based Training (WBT), Computer Based Training (CBT), CD-ROM, assessments, tests, surveys, simulations and recorded live events.

Structuring Blended Learning

The blended learning strategy developed was structured around the fundamental aspects of its implementation.

i. *Establishing Collaborative Task Structure:*

- 1) Specifying the Goal: The goal of collaborative learning activities specifies the behaviours that are expected at the end of the activity.
 - Identify the outcome- the form of the final performance must be articulated.
 - Check the understanding- Check the understanding of the goal and the direction for achieving it.
- 2) Structuring the Task: In structuring the collaborative learning task one must decide the following factors in advance: Class size; Group composition, Time on Task; Role assignment; Providing Reinforcement and rewards.
- 3) Monitoring Group Performance: Observe and intervene as needed to assist learners in acquiring the group's goal. The constant valance of group performance is necessary to discover problems and trouble spots before they hamper group performance.
- 4) Debriefing: Feedback to the groups on how well they are collaborating is important to their progress in acquiring progress. There are several ways to gather feedback in a whole class discussion about the collaborative process:

- Openly talk about how the groups functioned during the cooperative activity
- Solicit suggestions for how the process could be improved
- Obtain the viewpoints of pre-designated observers.

ii. Promoting self-directed inquiry:

Self-directed inquiry is an approach in which learners actively engage in the learning process to acquire outcomes at higher levels of behavioural complexity. It enables them to construct their understanding from a variety of resources and helps them to reason, problem-solve, and think critically about the content therein. In the process, they learn more than discreet science concepts and skills. They learn a practical, useful approach to solving problems and answering questions. The inquiry process involves the following steps.

- Observe a process or event.
- Formulate questions based on observations.
- Develop a workable hypothesis.
- Devise a strategy for testing it.
- Analyze and conclude collected data.
- Communicate findings to others.

Skills and Strategies of the Blended Inquiry Process

- i. **Connect:** Observe the natural world, experience interactions of people in the real world through texts, graphics, pictures, audio or video files, and documentaries; Connect to own interests and previous knowledge; Gain background knowledge to set the context for new learning by using both primary and secondary sources – mess around with the ideas.

- ii. Wonder: Ask questions that connect to own interests and ideas; Make predictions, a tentative thesis statement, or an educated guess (hypothesis) that can be tested through research.
- iii. Investigate: Design the investigation; Develop a search strategy; Design an experiment to test hypotheses; Plan data collection methods for field investigation; Develop a method for testing existing design to create a new design; Perform the investigation; Find and evaluate information to answer questions, interview experts, test thesis; Collect and record data systematically; Think about the information to illuminate new questions and predictions
- iv. Construct: Analyze and interpret the data; Design charts, tables, graphs, and other representations of observations; Interpret graphs and charts, Explain results (what they are and why they occurred); Construct new understandings connected to previous knowledge; Conclude questions and predictions; Form own interpretations based on analysis of evidence from multiple perspectives; Confirm or restate the thesis based on the evidence; Restate hypothesis and explain whether the hypothesis was supported or unsupported by the results of the investigation; Explain why the hypothesis was supported or not supported
- v. Express: Express new ideas through a variety of formats to share learning with others; Prepare and deliver a presentation with visuals and analyzed data to express a conclusion; Apply understandings to a new context, or new situation.
- vi. Reflect - Reflect on the process of learning and new content understandings gained from inquiry, on possible sources of error, decide how to improve the project if repeated and ask new questions.

Various pedagogical perspectives are blended for instructional effectiveness in the strategy which includes:

- *Cognitive perspective* focuses on the cognitive processes involved in learning as well as how the brain works.
- *Emotional perspective* focuses on the emotional aspects of learning, like motivation, engagement, fun, etc.
- *Behavioral perspective* focuses on the skills and behavioural outcomes of the learning process e.g., role-playing and application to on-the-job settings.
- *Contextual perspective* focuses on the environmental and social aspects which can stimulate learning. Interaction with other people, collaborative discovery and the importance of peer support as well as pressure are examples.
- *Social-constructivist perspective* is particularly well afforded by the use of discussion forums, blogs, wikis and online collaborative activities. It is a collaborative approach that opens educational content creation to a wider group including the students themselves.

Conclusion

The goal of blended learning is to unite the best features of in-class teaching with the best features of online learning, to promote active, self-directed learning opportunities for students. An instructional design for the blended learning strategy should naturally define the roles of the teacher and the students engaged in the instructional process. Meeting the learners' expectations and enriching their experiences is central to a blended learning system. So improper use of modalities and blends may lead to confusion and complexities and hence should be avoided. Consistent with the aim and

requirements of an institution and to attend to the needs of its beneficiaries in its environment, authorities concerned can rely on the availability and stability of high-quality instructional resources in the most varied areas of education for developing knowledge, skills and attitudes. A re-conceptualization of the learning paradigm entails the incorporation of new pedagogies and learning theories (e.g., student-centred, social constructivism), the development of new understandings and knowledge through students' social interactions with a community of peers, and new roles of students (e.g., active author of content, self-paced learner) and teachers (e.g., mentors, coaches).

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TECHNOLOGY AND CURRICULUM INTEGRATION IN EDUCATION 5.0

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Abstract

In Education 5.0, integrating technology into the curriculum is a critical component that goes beyond merely replacing conventional teaching techniques with technology. It entails utilising technology to provide creative learning experiences that are aligned with the curriculum. This research investigates the advantages of integrating technology and curriculum in Education 5.0, such as greater engagement, enhanced learning outcomes, and the development of 21st-century skills. It also covers numerous methods for incorporating technology into the classroom, such as employing technology to offer education, boost student learning, and foster cooperation. Furthermore, the article discusses the possible influence of future technologies such as virtual reality, artificial intelligence, and big data on student learning. It emphasises how technology and curricular integration may improve teaching and learning across disciplines, including science, history, math, and language arts. The paper presents frameworks for technology integration, such as SAMR, TPACK, and TIC, which provide guidance to educators in effectively integrating technology into their teaching practices. It concludes by emphasizing the importance of careful planning, professional development, and equitable access to resources for successful technology and curriculum integration in Education 5.0, ensuring all students benefit from these advancements.

Keywords: *Technology, Curriculum and Integrated Technology in Education*

Introduction

Integration of technology into the curriculum in Education 5.0 refers to the use of technology to improve student learning through curriculum integration. It's not just about replacing conventional teaching techniques with technology; it's also about leveraging them to design brand-new, cutting-edge learning experiences that are in line with the curriculum.

Benefits of Technology and curriculum integration in Education 5.0.:

- **Increased engagement:** When using technology, students are more likely to be interested in what they are studying. This is so that technology-based learning experiences can be dynamic and interesting.
- **Improved learning outcomes:** According to studies, kids who use technology in the classroom typically get superior learning results than their non-technological peers. This is so that students can receive individualised education and feedback thanks to technology.
- **Developed 21st-century skills:** Technology and curriculum integration in education 5.0 can assist students in acquiring the skills necessary for success in the workforce in the twenty-first century. Critical thinking, problem solving, cooperation, and creativity are some of these abilities.

Ways to integrate technology and curriculum in the classroom:

- Using technology to deliver instruction: There are many different ways to give training using technology, including through lectures, videos, and simulations.
- Using technology to support student learning: Online materials, interactive exercises, and assessments are just a few examples of how technology may be utilised to support student learning.
- Using technology to collaborate with others: Technology can be utilised to cooperate with people, such as through social media, group projects, and online discussion forums.

Technology and curriculum integration in Education 5.0 is a growing trend that is having a positive impact on student learning. As technology continues to evolve, we can expect to see even more innovative ways to use technology in the classroom.

Technology and curriculum integrated into the Classroom in Education 5.0:

- **Virtual reality:** Students can be transported to various locations and eras through virtual reality, giving them access to experiences that would not otherwise be feasible. Students might utilise virtual reality to tour the Taj Mahal or explore inside a human cell, for instance.
- **Artificial intelligence:** Each student can receive individualised education using artificial intelligence, giving them the support they need to succeed. AI

could be used, for instance, to provide students feedback on their assignments or to recommend useful extra resources.

- **Big data:** Big data can be used to monitor student development and pinpoint areas where they need more assistance. When instruction is personalised and all students are on the right path to success, this information can be exploited.

Technology and curriculum integration in Education 5.0 is a powerful tool that can be used to improve student learning. As technology continues to evolve, we can expect to see even more innovative ways to use technology in the classroom.

Technology and curriculum integration to teach specific subjects:

- **Science:** Technology can be used to create interactive simulations that allow students to explore scientific concepts in a hands-on way. For example, students could use a virtual microscope to explore the structure of a cell or use a simulation to model the movement of the planets.
- **History:** Technology can be used to create interactive timelines and maps that allow students to explore historical events more engagingly. For example, students could use a timeline to track the events of the American Civil War or use a map to explore the spread of the Roman Empire.
- **Math:** Technology can be used to create interactive exercises and games that help students practice math skills. For example, students could use a math game to

practice their multiplication tables or use an interactive exercise to solve equations.

- Language arts: Technology can be used to create interactive stories and poems that help students develop their literacy skills. For example, students could use an interactive story to practice their reading comprehension skills or use an interactive poem to practice their writing skills.

Technology and curriculum integration in Education 5.0 is a powerful tool that can be used to improve student learning in all subjects. As technology continues to evolve, we can expect to see even more innovative ways to use technology in the classroom.

Framework for technology integration

There are many different frameworks for technology integration. Some of the most common frameworks include:

SAMR (Substitution, Augmentation, Modification, Redefinition): SAMR is a framework developed by Ruben Puentedura that helps teachers think about how technology can be used to transform learning. The four levels of SAMR are:

- Substitution: Technology is used to replace a traditional teaching method. For example, a teacher might use a PowerPoint presentation to replace a lecture.
- Augmentation: Technology is used to enhance a traditional teaching method. For example, a teacher might use a video to supplement a lecture.
- Modification: Technology is used to change the way a traditional teaching method is delivered. For example, a

teacher might use a discussion forum to facilitate student collaboration.

- **Redefinition:** Technology is used to create new learning experiences that are not possible without technology. For example, a teacher might use a virtual reality simulation to allow students to experience a historical event.
- **TPACK (Technological, Pedagogical, and Content Knowledge):** TPACK is a framework developed by Punya Mishra and Matthew J. Koehler that helps teachers think about the knowledge and skills they need to effectively integrate technology into their teaching. TPACK is made up of three domains:
 - **Content Knowledge:** The teacher's knowledge of the subject matter they are teaching.
 - **Pedagogical Knowledge:** The teacher's knowledge of how to teach.
 - **Technological Knowledge:** The teacher's knowledge of how to use technology.
- **TIC (Technology Integration Continuum):** TIC is a framework developed by the International Society for Technology in Education (ISTE) that helps teachers think about the level of technology integration in their teaching. The TIC has five levels:
 - **No Use:** Technology is not used in the classroom.
 - **Minimal Use:** Technology is used occasionally to support traditional teaching methods.
 - **Strategic Use:** Technology is used regularly to enhance traditional teaching methods.

- **Intensive Use:** Technology is used extensively to change the way teaching and learning are delivered.
- **Transformative Use:** Technology is used to create new learning experiences that are not possible without technology.

Conclusion

The best framework for technology integration will vary depending on the teacher, the students, and the subject matter. However, it is important to recognize that the successful integration of technology and curriculum in Education 5.0 requires careful planning, professional development for educators, and equitable access to resources. It is crucial to bridge the digital divide and ensure that all students have equal opportunities to benefit from these advancements.

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EMERGING BLENDED LEARNING IN THE TEACHING AND LEARNING PROCESS

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Abstract

Blended learning is an innovative instructional approach that combines online and face-to-face learning modalities in the teaching and learning process. This paper explores the concept of blended learning and its impact on the educational landscape. It examines the key components and features of a blended learning environment, including the integration of online and offline components, flexibility and accessibility, personalized learning experiences, active learning opportunities, and collaborative learning. The role of teachers and learners in a blended learning setting is discussed, highlighting their responsibilities and the benefits they derive from this approach. Additionally, the pedagogical strategies employed in both online and face-to-face modes of blended learning are examined, emphasizing the importance of inquiry-based learning, experiential learning, discussion-based learning, and project-based learning. The conclusion emphasizes the significance of blended learning in the teaching and learning process, emphasizing its ability to enhance engagement, foster collaboration, and promote personalized learning experiences. Blended learning has the potential to transform education by leveraging technology to create a dynamic and effective learning environment that prepares learners for the digital age.

Keywords: *Blended learning, teaching, learning, classroom environment, technology*

Introduction

Blended learning has gained popularity in recent years due to its potential to improve learning outcomes, increase

student engagement, and provide a more personalized educational experience. It allows educators to leverage technology as a tool for expanding access to quality education, accommodating diverse learning styles, and preparing students for the demands of the digital age.

While blended learning offers numerous benefits, it also requires careful planning and effective use of technology to ensure seamless integration of online and offline components. Educators must design meaningful online activities, provide appropriate support and resources, and maintain a balance between virtual and face-to-face interactions to create an optimal learning environment for students.

Important Features of a Blended Learning Environment

A blended learning environment combines traditional face-to-face instruction with online learning components, creating a flexible and interactive educational experience. Here are some important features of a blended learning environment:

Integration of online and offline components: Blended learning seamlessly integrates online and offline learning activities. It combines in-person classroom instruction with online resources, such as multimedia content, discussion forums, virtual simulations, and learning management systems.

Flexibility and accessibility: Blended learning provides flexibility in terms of time and location. Students can access online materials and complete assignments at their own pace and convenience, allowing for personalized learning. This

flexibility also increases accessibility for students who may have scheduling constraints or physical limitations.

Personalized learning experiences: Blended learning enables personalized learning experiences by leveraging online tools. Students can progress through the material at their own pace, access additional resources, and receive immediate feedback on their performance through online assessments and automated grading systems.

Continuous engagement: Blended learning promotes continuous engagement with the course material. Students have access to online resources and materials outside of class time, allowing them to review and reinforce concepts as needed. This continuous engagement helps to deepen understanding and retention of knowledge.

Enhanced communication and interaction: Blended learning environments encourage communication and interaction between students and instructors. Online platforms provide various channels for communication, such as email, discussion forums, and video conferencing tools, fostering a sense of community and enabling timely communication.

Role of Teachers in BL Environment

In a blended learning environment, teachers play a crucial role in facilitating and guiding the learning process. Here are some key roles and responsibilities of teachers in blended learning:

Designing and curating online content: Teachers are responsible for selecting and curating appropriate online resources and materials that align with the learning objectives. They may create or adapt online content, including multimedia presentations, videos, interactive simulations, and online assessments, to enhance students' learning experiences.

Facilitating face-to-face instruction: In blended learning, teachers continue to have a role in delivering face-to-face instruction. They lead classroom discussions, provide explanations, facilitate group activities, and address questions and concerns. Teachers use their expertise to guide students through the learning process and provide immediate feedback.

Monitoring and supporting online learning: Teachers monitor students' progress and engagement with the online learning components. They ensure that students are accessing and completing online activities and assignments. Teachers can also track students' online interactions, participation in discussion forums, and completion of online assessments to identify areas where additional support may be needed.

Providing individualized support: Blended learning allows for personalized learning experiences, and teachers play a crucial role in providing individualized support. They can identify students' strengths and weaknesses based on online assessments and other data and offer targeted interventions or additional resources to help students succeed. Teachers can also provide feedback and guidance on students' online work and progress.

Facilitating collaborative learning: Teachers foster collaboration and interaction among students, both in the face-to-face and online components of blended learning. They create opportunities for students to work together on group projects, participate in online discussions, and engage in peer feedback. Teachers facilitate the development of communication and collaboration skills in a blended learning environment.

Assessing and evaluating student performance: Teachers are responsible for assessing and evaluating students' learning in a blended learning environment. They may use a combination of online assessments, traditional exams, projects, and presentations to gauge students' understanding and progress. Teachers provide feedback on students' work and use assessment data to inform their instructional decisions.

Providing timely feedback and support: Teachers offer timely feedback on students' progress, both in face-to-face interactions and online platforms. They provide constructive feedback on assignments, online discussions, and assessments to guide students' learning and help them improve. Teachers also address questions and concerns raised by students and provide individualized support as needed.

Role of a Learner in the BL Environment

In a blended learning environment, learners play an active and responsible role in their education. Here are some key roles and responsibilities of learners in blended learning:

Self-directed learning: Learners take responsibility for their learning by actively engaging with the online learning components. They manage their time effectively, set goals, and independently navigate through the online materials and resources. Learners take ownership of their learning process and make decisions about when and how to engage with online content.

Active engagement: Learners actively participate in both face-to-face and online activities. They contribute to classroom discussions, ask questions, and seek clarification when needed. In the online component, learners engage with interactive content, complete assignments, participate in online discussions, and collaborate with peers.

Time management and organization: Blended learning requires learners to manage their time effectively. They need to allocate time for both face-to-face and online activities, ensuring that they meet deadlines and complete assignments on time. Learners organize their schedules and create a study plan to balance their in-person and online learning commitments.

Seeking help and support: Learners are encouraged to seek help and support when needed. They can reach out to their teachers, classmates, or online support systems to clarify doubts, ask questions, and seek additional guidance. Learners actively engage in the feedback and support mechanisms provided by the teachers and take advantage of office hours or online communication channels.

Reflection and self-assessment: Learners engage in reflective practices to monitor their learning progress. They assess their understanding of concepts, identify areas of strength and weakness, and reflect on their learning strategies. Learners actively use the feedback provided by teachers and reflect on their performance to identify areas for improvement and make adjustments to their learning approach.

Digital literacy and technological skills: In a blended learning environment, learners need to develop digital literacy and technological skills. They should be comfortable using online platforms, navigating through digital resources, and effectively utilizing technology tools. Learners take the initiative to develop their digital skills and seek support if needed.

Reflection on learning strategies: Learners reflect on their learning strategies and make adjustments as necessary. They assess the effectiveness of different approaches, such as note-taking methods, studying techniques, and online learning tools. Learners actively experiment with different strategies to optimize their learning experience and outcomes.

Active feedback and assessment: Learners actively participate in the feedback and assessment process. They respond to feedback provided by teachers, reflect on it, and make improvements accordingly. Learners also actively engage in self-assessment and monitor their progress to gauge their understanding and identify areas for further development.

Pedagogies for Online and Face-To-Face Modes

Blended learning combines online and face-to-face modes of instruction, and different pedagogical approaches can be employed for each mode to create an effective learning experience. Here are some pedagogies commonly used in online and face-to-face modes of blended learning:

Pedagogies for Online Mode

Asynchronous Learning: In asynchronous learning, learners engage with online materials and activities at their own pace and convenience. Pedagogical approaches for asynchronous online learning may include discussion boards, multimedia presentations, pre-recorded lectures, interactive modules, and self-paced quizzes. This allows learners to access and interact with the content on their own time and promotes self-directed learning.

Synchronous Learning: Synchronous learning refers to real-time interactions between learners and instructors in an online setting. Pedagogical approaches for synchronous online learning may include live video conferences, virtual classrooms, and webinars. This mode allows for immediate feedback, discussion, and collaboration, simulating the experience of a traditional face-to-face classroom.

Collaborative Learning: Online collaborative learning involves learners working together in virtual teams or groups. Pedagogical approaches for online collaborative learning may include group projects, peer feedback, online discussion forums, and collaborative document editing. This promotes active engagement, critical thinking, and the development of communication and teamwork skills.

Adaptive Learning: Adaptive learning leverages technology to personalize the learning experience based on individual learner needs. Pedagogical approaches for adaptive online learning may include intelligent tutoring systems, personalized learning paths, and adaptive quizzes. This allows learners to receive tailored content, feedback, and support, enhancing their learning outcomes.

Pedagogies for Face-to-Face Mode

Inquiry-Based Learning: Inquiry-based learning encourages learners to ask questions, explore topics, and construct their understanding. Pedagogical approaches for face-to-face inquiry-based learning may include hands-on activities, experiments, case studies, and problem-solving tasks. This fosters critical thinking, active engagement, and the development of research skills.

Experiential Learning: Experiential learning focuses on learning through direct experience and reflection. Pedagogical approaches for face-to-face experiential learning may include field trips, simulations, role-playing, and real-world application of knowledge. This allows learners to connect theory to practice, develop problem-solving skills, and gain practical experience.

Discussion - Based Learning: Discussion-based learning promotes active engagement and critical thinking through meaningful discussions. Pedagogical approaches for face-to-face discussion-based learning may include small group discussions, debates, and Socratic seminars. This encourages

learners to express their ideas, debate different perspectives, and develop their communication and critical thinking skills.

Project-Based Learning: Project-based learning involves learners working on extended, real-world projects to explore and apply knowledge. Pedagogical approaches for face-to-face project-based learning may include group projects, research assignments, and presentations. This fosters collaboration, problem-solving, creativity, and the development of project management skills.

Conclusion

Blended learning offers a powerful approach to the teaching and learning process by combining the benefits of online and face-to-face instruction. It creates a dynamic and flexible learning environment that caters to diverse learner needs and promotes engagement, collaboration, and personalized learning experiences. Ultimately, blended learning optimizes the learning experience by combining the best aspects of online and face-to-face instruction. It maximizes engagement, supports different learning styles, and empowers learners to become active participants in their education. As technology continues to advance, blended learning will undoubtedly continue to play a significant role in shaping the future of education.

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EXPLORATION OF MATHEMATICAL MODELING CONCEPTS AND TECHNIQUES - AN OVERVIEW

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Abstract:

In this paper, we attempt to disclose the basic concept and techniques of mathematical modelling. Then the process of modeling is quietly emphasized with Illustrations properly and it helps to foster the techniques to carry out in all the subject disciplines.

Keywords: *Mathematics, Model, Modeling and Process of modeling.*

Introduction:

Mathematics is undoubtedly an everyday problem for all human beings because this is not so easy to resolve and put a solution immediately. To solve this, many educators and mathematicians make an various attempts to carry this subject into their real-life atmosphere. In this way, Mathematical modeling would deal with the day-to-day problem with a valid solution and we discuss it here.

The dictionary meaning of mathematics is that ‘ it is either the science of number and space or the science of measurement, quantity and magnitude’. In other words, **Mathematics** is completely defined as the science of numbers, quantities, shapes and spatial relations.

According to Lindsay, “Mathematics is the language of physical sciences and certainly no more marvellous language was created by the mind of man” From this observation we

could understand the unique nature of the mathematics language with its signs, symbols, terms and operations, which can handle ideas with a precision and conciseness that is unknown to any other language.

Model & Modeling:

The NPE (1986) stated, “Mathematics should visualize as the vehicle to train a child to think, reason, analyse and articulate logically”.

A model is an object or concept that is used to represent something else it is reality scaled and converted to a form we can comprehend. A mathematical model is a model whose parts are mathematical concepts such as constraints, variables, functions, equations, inequalities etc. _ Prof HyderM.Abbas.

A mathematical model is a description of a system using mathematical concepts and language. The process of developing a mathematical model is termed mathematical modeling.

Mathematical modeling is the process of creating a mathematical description of some real-life situation or problem and using it to analyse and solve the problem.

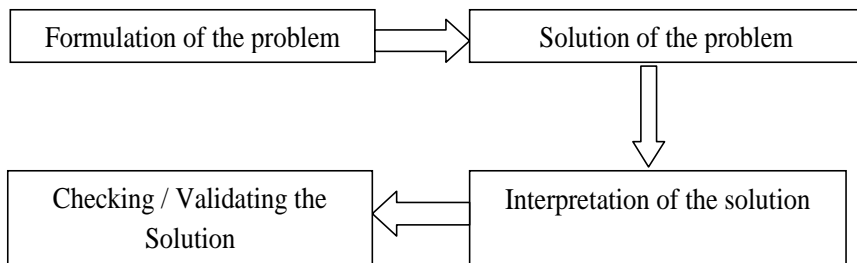
Mathematical modeling is an attempt to study some part or form of areal-life problem in mathematical terms. Haines and Crouch (2007) defined mathematical modeling as “characterize mathematical modeling a cyclical process in which real-life problems are translated into mathematical language, solved within a symbolic system and the solutions tested back within the real-life system.

Verschaffel. Greer and De Corte (2002), mathematical modeling is a process in which real-life situations and

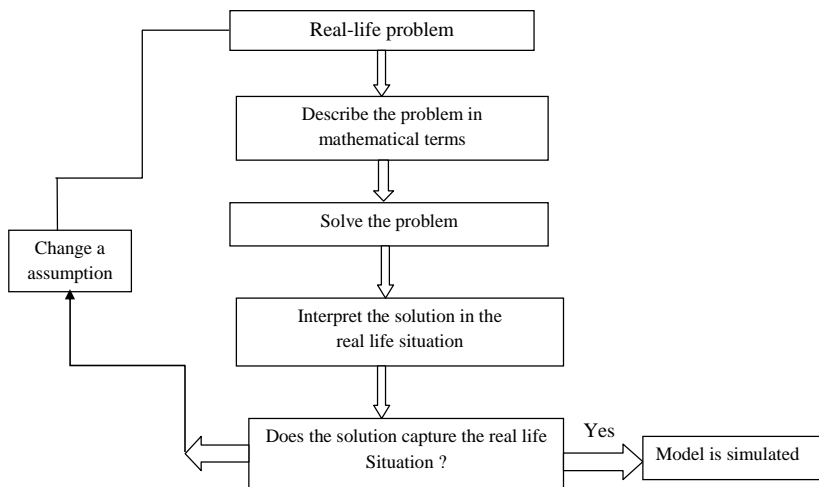
relations in these situations are expressed by using mathematics. Both perspectives emphasize going beyond the physical characteristics of a real-life situation to examine its structural features through mathematics. Lesh & Doerr(2003a) describe mathematical modeling as a process in which existing conceptual systems and models are used to create and develop new models in new contexts. Accordingly, the model is a product and modeling is a process of creating a physical, symbolic or abstract model of a situation (Sriraman, 2006). Similarly, Gravemeijer and Stephan (2002) state that mathematical modeling is not limited to expressing real-life situations in mathematical language by using predetermined models.

Therefore, we finally conclude that we can take any real-life problem, and translated it into mathematical languages like algebraic equations or differential equations. Then resolve the mathematical problem anyway to obtain a solution and then translate it into real-life situations for validation. This process is called “mathematical modeling”

Steps involved in this process of mathematical modeling:



The process of mathematical modeling is shown below



Step: 1

Understand the Problem

First, we have to define the statement of the problem and ignore certain irrelevant factors then only it becomes manageable.

Step: 2

Mathematical Description and Formulation:

Describe in mathematical terms, which includes

- Define variables, write equations or inequalities, Gather data and organize into tables, make graphs, and calculate probability.

Step: 3

Solving the mathematical problem

The simplified mathematical problem developed in step 2 is then solved using various mathematical techniques.

Step: 4**Interpreting the Solution**

The solution obtained in the previous step is now looked at in the context of the real-life situation that we had started with step 1.

Step: 5**Validating the model**

We go back to the original situation and see if the results of the mathematical work make sense. If so, we use the model until now information becomes available or assumptions change.

Instance 1

Suppose you have a room of length 6m and breadth 5m. you want to cover the floor of the room with square mosaic tiles of side 30 cm. How many tiles will you need? Solve this by constructing a mathematical model.

Let us sketch up the figure

Breadth (b)

5m

**Formulation:**

We have to consider the area of the room and the area of a tile for solving the problem. The side of the **tiles is 0.3m**. Since the length is 6m, we can fit **in $6/0.3 = 20$ tiles** along the length of the room in one row.

Since the breadth of the room is 5 meters, we have $5/0.3 = 16.67$. so we can fit 16 tiles in a column. Since $16 \times 0.3 = 4.8$, $5 - 4.8 = 0.2$ meters along the breadth will not be covered by tiles.

This part will have to be covered by cutting the other tiles. The breadth of the floor left uncovered, 0.2 meters, is more than half the length of a tile, which is 0.3 m. so we cannot break a tile into two halves and use both halves to cover the remaining portion.

Mathematical Description:

We have

Total number of tiles required = (Number of tiles along the length \times number of tiles along the breadth) + Number of tiles along the uncovered area ----- (1)

Solution:

As we said above, The number of tiles along the length is 20 and the number of tiles along the breadth is 16. We need 20 more tiles for the last row. Substituting these values in (1), we get $(20 \times 16) + 20 = 340$.

Interpretation:

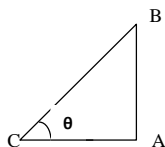
We need 340 tiles to cover the floor.

Validation:

In real -life your mason may ask you to buy some extra tiles to replace those that get damaged while cutting them to resize. This number will of course depend upon the skill of your mason. this gives you a rough idea of the number of tiles required.

Instance 2

A Tower is $100/\sqrt{3}$ metres high. Find the angle of elevation if the point of observation is 100 meters away from its foot.

**Formulation:**

Let AB be the tower of the height $100/\sqrt{3}$ meters and c be appointed at a distance of 100 meters from the foot of the tower.

Mathematical Description:

Let θ be the angle of elevation of the top of the tower from point C.

In Right Angle Triangle $\triangle CAB$,

$$\tan \theta = AB/AC = \text{Opposite Side} / \text{Adjacent Side}.$$

Solution:

$$100/\sqrt{3} / 100 = 1/\sqrt{3}$$

$$\theta = 30^\circ = \pi/6.$$

Interpretation of the solution:

Hence the angle of elevation of the top of the tower from a point 100 meters away from its foot is 30° .

Validation:

It is an approximate value and you can stop this process here. It is very useful to find the height of any object in areal-life situation.

Advantages of modeling

- It leads the teachers to act and promote the research on class work regularly.
- It develops the scientific attitude, among students
- Fostering the creativity
- It enhances the self-confidence
- It applies to all disciplines

Disadvantages of modeling

- It consumes time more
- Curriculum not supporting the innovation
- Students' active participation is needed more
- Teachers' commitment is not enough

Conclusion:

Mathematical modeling techniques are needed more in schools, and it is emphasized that it increases the student's ability and creativity. They could find the solution to their societal problem. It makes them to be an independent thinker. Teachers should take an interest to study and work out every class activity and then the teacher can easily provide such facilities and atmosphere through their curricular planning. At last, this basic concept of mathematical modeling only focused to create awareness and take a simple idea into your mind that is carried out successfully.

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UNLOCKING MEANINGFUL LEARNING THROUGH FLIPPED CLASSROOM

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Abstract

Flipped learning was a little different from the normal classroom, where the education was learned from various resources at home followed by the project assignment activity which was completed in the school. In the emerging world, the teacher's knowledge alone could not satisfy the students' hunger for education. Students had to learn themselves whereas the teacher's role was facilitating them. This paper briefly explain show a flipped classroom unlocks students to achieve meaningful learning.

Keywords: *Flipped learning, Flipped Classroom, Student-Teacher, Activity based learning*

Introduction

Flipped learning is just the opposite of the traditional way of learning. In the modern world, students are very smart, and teacher-given information is not enough for the students. To satisfy their need, flipped learning method can be used to maximise the potential of the students. It helps to improve his/her knowledge skills and also helps in increasing his/her innovative thinking. Flipped learning unlocks the potential of the students and makes him/her have meaningful learning. In flipped learning, students learn a topic at their home and do exercises or other related activities in the classroom. The flipped classroom is very interesting to the students as it helps to understand a particular concept deeply and makes a healthy competition within the classroom.

Need of flipped approach

According to John Bergmann and Aaron Sams, Flipped approach is “traditionally done in the class is now done at home, and what was traditionally homework is now completed in class” (2012:2013). This approach is first experimented with chemistry class in 2007. This type of classroom is very effective for students who actively participate. Flipped learning involves watching videos online and doing activities related to them in the classroom. This method is popular in America and other Western countries.

Uses of Flipped classroom to the learners

Sometimes normal classroom education becomes ineffective for students. Since the students are sitting in the classroom due to the coercion of their parents, this is not a good method and we cannot consider coercive education as a complete education. On the other hand, the flipped classroom is more beneficial for students as it is flexible and students learn the lessons willingly through their initiative which results in a well-rounded education and comfort.

(i) Differ from Traditional Learning:

Flipped learning enhances the student's meaningful learning. In a traditional classroom students' learning is only rote learning. After all, this is only mark-based learning. Whereas flipped learning's main objective is meaningful learning so it enhances the student's meaningful learning.

(ii) Deep Understanding:

Students directly know the concepts which are not taught in a classroom. More materials are used by the students to find

the answer. By that, it helps the student to get a deep understanding as well as content or concept-based learning.

(iii) Critical and Innovative Thinking

Flipped learning provides an opportunity for students to engage with the learning material independently before coming to class. This gives them time to critically analyse and evaluate the content, ask questions and identify areas of confusion. In the classroom, students can then *engage in discussions, debates and problem-solving activities* that require them to apply critical thinking skills.

iv) Independent Learning Skills

Students can work independently, which will improve their innovative skills through self-study.

v) Holistic Learning

Flipped learning is a holistic learning that gives importance to student's ideas and creativity. Students learn it intensely and artistically.

vi) Promote Self-learning

The school student learns like a research scholar who studies the concept in his/her interest. He/she learn show to collect and refer the resources by this method.

vii) Qualified Education

This learning is independent learning so students can study it any time, any place and discuss the topic with any person so students learn the topic profoundly and at the same

time meaningfully. It helps to get qualified education to the students.

viii) Learn Technical Things:

Flipped classroom materials are available in various types. They are video and audio material, reference books etc. Technically supported tools are, YouTube linked in, educational blogs, Swayam, etc.

Objectives of Flipped Learning:

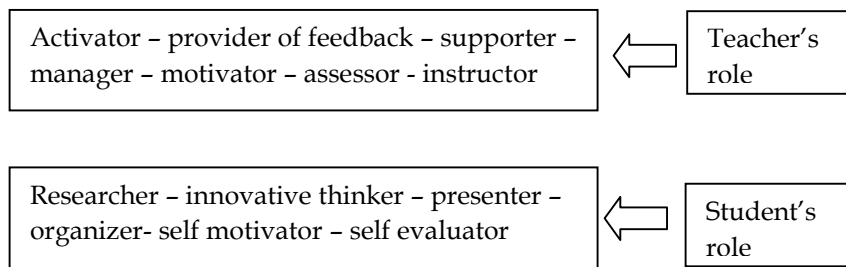
Students' active participation is very important in the objective of this learning. It can be called Motivating Students-Centred Learning.

- F - Flexible
- L - Learner centred
- I - Innovative
- P - Problem-Solving

Teacher's Role and Student's Participation in the flipped classroom:

- i) Teacher gives the task the previous day
- ii) Explains the topic roughly
- iii) Providing reference materials and model power point presentations or any other resources to the students
- iv) Any query of the student to be clarified by the teacher
- v) Students finishing the task on time
- vi) Discussing the topic

- vii) Assignments and projects are completed in the classroom
- viii) Debate and discussion in the classroom
- ix) Feedback is provided by the teacher
- x) Suggestions to the students



Advantages

- i) It helps busy students
- ii) Flipping helps struggling students
- iii) Allows students to pause and rewind their teacher
- iv) Increases student-teacher interaction
- v) Teachers know their students better
- vi) It makes class transparent
- vii) Flipping is a great technique for absent teachers
- viii) Flipping can lead to the flipped mastery program

The challenges of flipped learning

- i) Incompletion or non-participating in the task given to the students
- ii) Copying another student's work
- iii) Selecting the best student is very challenging for the teachers
- iv) Some students may not be willing to refer to or search the materials

- v) Technical issues are the main challenges for the students
- vi) Parents may not accept this model
- vii) Unproductive presentation may be presented by the students
- viii) It is a time-consuming process.

Conclusion

Using Flipped classroom method students get meaningful learning. Innovative thinking, critical analysis, self-learning concept, and future-based learning also increased by the students. Nowadays this flipped learning concept is increasing throughout the world. Although there are certain limitations it can be rectified in future. Schools can use this flipped learning to unlocking meaningful learning of the pupil.

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IMPACT OF FAMILY ENVIRONMENT ON ACADEMIC ACHIEVEMENT OF 21ST CENTURY LEARNERS IN SCHOOLS

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Abstract

"There is no school equal to a decent home and no teacher equal to a virtuous parent." — Gandhi

For a child, the home environment seems to impact spiritual, moral, academic, behavioural, and emotional skills more than formal schooling. This happens because the child has a nearly life role model at home which imprints in the mind and gets flashed very often even though he or she grows older. Any narration will start with my father or my mother or in my home. Whether poor or rich the family is, the values are first caught from there; which in turn leads the child to be stronger in deciding what to do and what not to do; The toughest factor in moulding a child's character or behaviour is the relationship with their parents, peer group and the influence of mentors too. Students who suffered academically are vulnerable in society; the low achievers often strengthen their low esteem in the school environment rather than at home.

Home is known as the first institution of a child which has a significant relationship with the life of the student. We intended to study the relationship of a home environment with the academic performances of the students. The focus of the study was to find out the relationship between home interactions, physical infrastructure/facilities, and emotional, social, and academic support which could reflect in the academic performance.

The study revealed that most of the respondents are lacking separate study rooms at their homes, and have a very low interactional opportunity, yet the supervisory, emotional, and social support is at its peak for academic achievement in a home environment. This also boosts the confidence level of the students to perform well in their academics. This supports parents as empowered participants in their children's education, thereby contributing to student's success in school.

Keywords: Home environment, confidence, emotional, supervisory, empower, academic, performance

Introduction

In the present-day scenario, every human wants to be smart and intelligent and strives to achieve success in life. For a student, success means, scoring high marks, and being a topper in academics. Academic achievement seems to play an important role in the development of the child but, it is not so; It is also the status of an individual being intelligent. In modern society, the achievement is highly appreciated. Academic achievement is given a lot of weight age in admitting students for vocational-oriented aspects. Academic achievement depends upon several factors which in turn determines the failure and the success of the students. There is a need to study and understand the factors that are directly or indirectly influencing the academic achievement of students like school home environment, parent education, home infrastructure, supervisory, emotional, and psychological support etc. Realizing the importance of the influence of the home environment on Academic achievement the presenter intended to elaborately study each factor to identify its influence on the academic performance of the students.

Home is the primary environment from the time a person is born until his last breath; hence its effect on the individual is also most significant. It is also significant in human life for the development of various personality traits. Every parent is highly concerned with providing material facilities to their children ignoring the other facilities. It may be noted in some cases parents think that their responsibility is only to provide the child with a separate room and arrange some tuition for it.

Teenage is a phase where the child undergoes a transition from the most memorable stage of childhood. It is a transitional period that requires special attention and protection. Now the child tries to identify what is right and what is wrong; what is truth and what is lie; what to do and what not to do etc., Physically also, children go through several transitions while they mature. We know that the brain undergoes quite substantial developments in early adolescence, which affect emotional skills as well as physical and mental abilities. As adolescent girls and boys grow, they take additional responsibility, experiment with new ways of doing things and try to be independent.

There also exists what is known as identity conflict what the child wants to who he/she is, and what is his/her identity; when it matches with parents' social and emotional skills, there is less conflict; if they are not convinced with the way they are brought up, the crisis becomes a challenge for them to fight against and try to find a solution. It is a time in which values and skills are developed that have a great impact on well-being. Researches show that when adolescent girls and boys are supported and encouraged by caring adults, they can focus much better on their academics.

The participants of this topic were the student community who have high aspirations to do their academic well. They were able to orate well about the family environment, and its influence on their academic outcome. Their focus was only on academics and not the co-curricular or extracurricular activities. We wanted to know the area if any social, emotional or material needs other than what they get from their parents to support and guide them in the same area.

Physical Environment

Regarding the physical environment (infrastructure) the students narrated that their homes are in a decent place, well-lit, clean, and comfortable to stay. They also mentioned it is a safe and secured, well-ventilated, approachable area, the noise level due to usage of electrical gadgets is under control, proximity to school and coaching classes but the only inconvenience recorded was the non-availability of a separate study room. Sometimes, the noise in the neighbourhood will be annoying. Inside the home also, as elders are there, they tend to see serials, so round-the-clock TV will be on. But then, when there is a study hour, the family support will be overwhelming without the usage of TV or any other noise. Worth mentioning here is, the power backup was thoughtfully done to compensate for the power failure.

Social and Psychological support

The most important support in the student's submission was their parents' role in their schooling and their success at school was the constant experience of feeling encouraged and supported. All the participants said that they received a lot of

support from their parents. This points toward show their care for young people needs to feel secure, appreciated, and validated. Even though direct parental support very often decreases in adolescence due to identity conflict, the emotional support and the style of interactions may be a significant source of confidence and support (Rogers et al. Citation 2018; Simpkins et al. Citation 2006). For some students, social psychological support from their parents especially the mothers appeared to be particularly important in times of low self-esteem or in the face of low academic performance. These described how their parents encouraged them not to give up, but rather to believe in themselves to perform better in the forth-coming assessments.

Supervisory Support

As children grow older, parents' monitoring of the school homework gets reduced and less related to students' achievement (HillandTyson Citation 2009; Jeynes Citation 2007, Citation 2014). Interestingly the supervision of schoolwork was not a main issue but their overall development was, most importantly their behavioural changes due to teenage. As Jeynes (Citation2014) argues, parents' homework assistance may increase the students' security and classroom confidence. In a few cases, it was felt negative which was felt as if the students were under pressure which led to a negative impact on parents' follow-up. When it comes to the middle classes, peer group influence becomes a factor for both social and emotional, aesthetic, and cultural development as well as cognitive development. This is the time when parents' support is much needed to handle the students in a friendly manner.

Sibling factor

In a family of more than where more than one child is born, the general tendency is to compare them in aspects – be, it their appearance, general behaviour, social, emotional, academics or their attitude in general. This most of the time gives a negative impact on the child who gets demoralised. Here is where the counsellor or the school teacher takes the role to guide the parents on how to handle the situation so that the student will be comfortable.

Head of the family

In some families, the head of the family will be the father; in some, it will be the mother; the head of the family is the authority generally in taking decisions or any kind of actions involving family matters. Very few families will have a democratic set-up where they discuss any matter before taking any decision to act upon. Where there is a cordial relationship among the family members, the freedom of choice will be better even in academics. In a family where authority dominates, the students suffer without being able to vent their feeling and express their ambition to become what so ever they may be. This leads to poor performance in academics since they are not able to focus on a particular subject.

Practical support

The parents also play a main role in their children's formal schooling through practical support every day. This includes waking them up in the morning, monitoring study, dropping them at school and tuition centres and picking them back, boosting their morale when they are down, and supporting

them with a balanced diet, and supply of study materials etc., they also recognised it as an important factor to help them fulfil the school's practical demands. In some cases, though the family is economically weaker, the parents take all measures to see that their child is well-taken care for the achievement. They also meet the teachers at regular intervals to get feedback about the overall development of their children and get guidance to support them in the home environment. Educated parents will always think that it is important for them to help a child with their study time and related school work that the child has to do but this is just the opposite in the case of a child from a poor home environment. The child is deprived of opportunities and would struggle with academics.

Expectations and aspirations

The generalised point is that it was important for the parents that their children complete their education and obtain a degree that could lead to employment. They also feel that their children should not struggle in their life for want of economic support and at least the next generation should be well placed. Most of the parents wanted to fulfil their aspiration through their ward becoming an engineer, doctor, or an advocate which are branded professions than any other. Few of them gave a free hand to choose their choice career what they are passionate about without any force.

The informants said that they were determined to complete upper secondary education, with wide-ranging career options including becoming a confectioner, a paediatric nurse, a car mechanic, an architect, a journalist, an advertising agency or an event manager which are the flourishing field.

Most of them planned to get a diploma certificate in skill-oriented which would be a standby for them if future demands. Few planned to become self-employed and start their businesses, ready to face the challenges.

Thus, parents who managed to try to strike a balance between holding high expectations and granting their children autonomy appeared to encourage the participants.

Obligation and gratitude towards parents

Most of the students realised that their parents are working hard to support their children to perform well academically. In the research literature, the goal to make the parents proud is referred to as 'family orientation' and is shown to have a positive effect on educational aspirations and school effort (Friberg Citation2019). Realising the sacrifices made by the parents, students wanted to give return gratitude through good academic performance and well placed in life along with value embedder personality.

Discussion

It is evident that parents are one of the most important influencing factors during the school days of the children and can make a significant difference to their children's educational attainment and life chances (e.g. Coleman et al. Citation 1966;) Allour participants were with the clear intention of completing their education with high scores and with possible all-round development too.

The students experienced a considerable amount of parental support and involvement in their schooling, especially concerning social-psychological support. Cordial

relationships with their parents was a major source of motivation and encouragement, especially during time of low self-esteem or in the face of educational challenges or failure.

Limitations

First, we determinately chose to adopt a positive approach, without hitting on socio, emotional support. This may have resulted in a certain ambiguity in the student's choice of answer, as our questions may have guided their perspective in a positive direction. However, the children feel a strong sense of loyalty towards their parents and positively showed truthfulness. This is precisely the value inherited from generation. They were ready to express their unhappiness in an acceptable way to strike a balance or business between them.

Conclusion

To sum up, it throws light on the home environment and parental involvement that students identified as supporting factors in their schooling. In addition, the students expressed their need for a calm and conducive atmosphere (maybe a study room) to focus better on their academics. Their need for encouragement and motivation, their need for practical support in everyday school life, and their need for clearly expressed expectations regarding their education were overwhelming areas of support from their parents. From the viewpoint of the students, parental involvement was a major component of their success in school, whether they are from well-educated families or the first-generation learner. Thus, parental involvement matters in the eyes of vulnerable students.

Academic Anxiety (so-called examination fear) is also one of the factors of Academic performance. High expectations and an uncondusive home environment lessen the efforts and motivation of the students. But a pinch of academic anxiety possibly exists in every student whether for their preparation, whether they would perform well or not, whether the paper would be easy or not. Students may experience anxiety about tests and examinations may experience heightened anxiety before an assessment. A certain degree of assessment anxiety is normal and sometimes may help students prepare more effectively, work more efficiently, and remain focused during testing.

Our findings draw attention to the importance of identifying the support needs of each student, and the specific resources that are available to a heterogeneous group of parents. Teachers who help parents to identify different ways of supporting their children in school may contribute to a more inclusive school-home collaboration, which encompasses parents from all backgrounds. This may support parents as empowered participants in their children's education, thereby contributing to students in school life.

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INTEGRATION OF MOBILE APPLICATION IN TEACHING BIOLOGICAL SCIENCE

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Abstract

*A rising amount of research indicates that mobile applications may be useful teaching tools for biology, and they are increasingly popular in the field of education. Apps can give students clear visuals and interactive learning experiences that can help them comprehend difficult ideas and gain a deeper understanding of biology. This essay discusses the advantages of using mobile applications in the classroom, particularly for teaching biology. We also list some apps that are free to download from the Google Play store and provide ideas for how teachers might include these apps in their lesson plans. Let's start with the **ANATOMY LEARNING - 3D ANATOMY app**, which makes it easier to visualise intricate bodily systems and structures in 3D representations (this app features more than **2000** models of 3D), Cross sections of body parts, information on the names and functions of the various organs and tissues found in the human body, practice identifying various body parts, and a deeper understanding of human anatomy and physiology are all provided by this app. It also supports 3D touch, allowing users to interact with the models in an immersive way and a quiz to test users' understanding of human biology. The next app is called **ARLOOPA**, a mobile augmented reality tool that enables the integration of digital content including sounds, photos, and texts into actual locations. The Arloopa app is also described as an AR visualisation tool. The Arloopa app is an **AR** visualization tool that brings*

the merging of the physical and digital worlds. Arloopa is a company that develops augmented reality (AR), virtual reality (VR), and 2D and 3D content. It also offers cloud-based augmented reality services, custom-branded augmented reality app and game development, and virtual reality app and game development. The integration of the Arloopa application into teaching biological science is the focus of this project.

Keywords: *Anatomy learning, Arloopa, students, mobile apps, AR, 2D, 3D, Education, Digital*

Introduction:

1) Anatomy learning - 3D anatomy is an interactive 3D representation of the human body provided by the mobile app 3D Anatomy, which teaches anatomy. Anatomy Learning, a business that specialises in creating educational apps, created this program from scratch. Both Android and IOS users can access Anatomy Learning's 3D anatomy application. More than 2000 3D models of the human body, including bones, muscles, organs, and tissues, are available in this software. Here, students can investigate these models by panning, zooming, and rotating to acquire a clearer view. This app is a highly valuable and helpful resource for school children, etc. It's simple to use, provides clear information in a graphic style on anatomy, and is extremely beneficial to comprehend and understand how the different structures of our human body work together and they move. Our bodies' many structures move and cooperate. It has quiz features that help the students to practice their knowledge of anatomy and physiology by these features, the students can prepare for the exams that they learned from this app, and this app helps to know and understand all complex contents more easily because it appears more visually appealing. This app allows the students

to learn at their own pace. Here, we can explore the models with their animations in any way students like and students can take a break whenever they need. This software is the perfect choice if students are interested in learning more about the human body. This is an app that is very user-friendly, and easy to access, it provides plenty of information about human anatomy and lastly helps to visualize very hard concepts. This app is developed by **3D MEDICAL OU**, This app is developed by a team of experienced anatomy and medical educators. Finally, this app is a very user-friendly resource for learning about human anatomy.

2) Arloopa here we live in the virtual and physical worlds are intertwined. In this context, our lives are becoming digital every day and our habits are changing. Along with digitalization, education methods are also evolving. With the opportunities offered by educational technologies, students learn more easily and the success rate in education increases. Especially augmented reality (AR) and virtual reality applications (VR) come up with important innovations in education. Augmented Reality, one of the most popular topics today, is a type of experience that enriches existing reality. Today, augmented reality applications have been used intensively from primary school to university medical education. Via these applications, students were able to see the subjects they studied in front of their eyes, in their classrooms or at home, and thanks to the content interaction, they became better learners. AR technology allows the combination of real objects and virtual information that can be superimposed on these objects to increase students' interaction with physical

environments and facilitate their learning. When AR environments are used in teaching biological science, It provides benefits such as visualizing complex relationships and providing experiences that cannot be done in real life.

Objective:

- Mobile applications allow students to access educational content anytime and anywhere, as long as they have a mobile device and an internet connection.
- Mobile applications can empower students to take control of their learning process. With access to a vast array of resources and materials, students can explore topics beyond the curriculum and delve deeper into areas of personal interest
- Biological science often involves observing and experimenting with living organisms, Mobile apps can simulate these hands-on experiences through virtual labs, interactive 3D models, and augmented reality applications.
- Anatomy Learning-3D is an interactive application for your desktop or mobile device, which allows students to study, dissect, and explore human anatomy.
- The Arloopa is a mobile application that is an augmented reality visualization tool that brings the physical and digital worlds together as one.

Features:

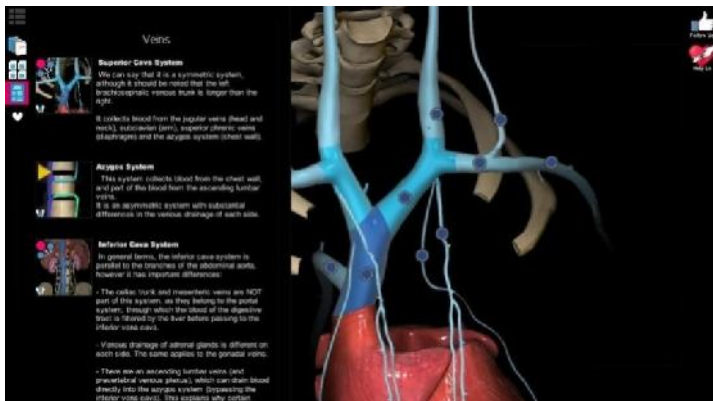
1) Anatomy learning – 3D Anatomy

This is an app that includes many features to help students to learn about the human body, they are

- **3D Models:** It contains more than 2000 **3D models** of the human body available with their names and animations that helps to visualize the complex concepts in anatomy.

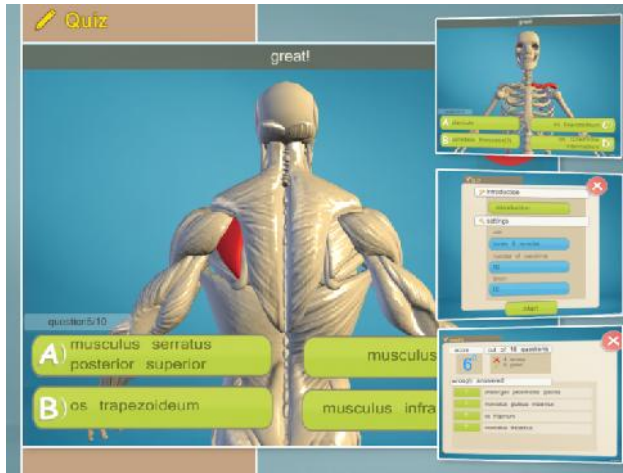


- **CROSS SECTIONS:** Here the students can see the **cross sections** of our body parts to see how different structures are interacting



- **ANIMATIONS:** It also helps to view a variety of **animations** that visualize how the human body is moves

- **QUIZZES:** It also contains another feature which is a **quiz** that helps to test the student's knowledge of the human body



- **LEARNING MODES:** This app contains totally 3 modes they are – 1) **Beginner**, 2) **Intermediate**, and 3) **Advanced** modes are present in this app to choose the level of anatomy study.
- **3D TOUCH:** This app supports **3D touch** which helps the students to view the models in a very immersive way

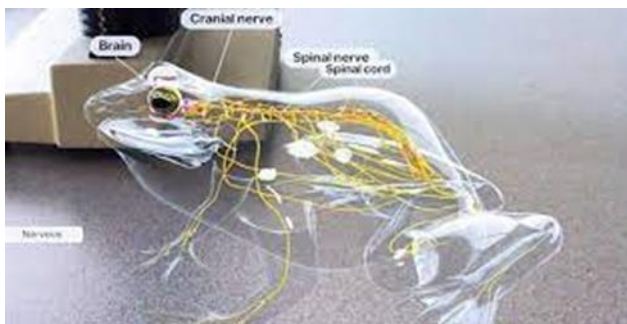


2) Arloopa

- **Video, photo, GIF recording** – here this app helps to capture video, photos and GIF Recordings through mobile phones which makes a new reality and makes the students view a new form of the world.
- **Social sharing** – by this app, we can share many AR works towards all social platforms like WhatsApp, Facebook, etc
- **In-app 3D objects library** with diverse categories, such as animals, vehicles, educational objects, etc
- **Marker-based Augmented Reality (MBAR)** – this implies the scanning of a particular image (marker) with the camera of the mobile device. (also called ‘image recognition’) The device recognizes the marker and displays the augmented reality content on top of it. For instance, this type of AR is purposefully used when we want to bring artwork to life from the same point as captured in the image, creating a smooth effect of revival. Any image can serve as a marker, provided that it has sufficient unique visual points. The common examples include printed materials, such as pictures, leaflets, brochures, posters and even cylindrical objects like bottles and cans, which require marker-based cylindrical AR tracking. With the help of extended tracking, the user can then move the marker around to a certain degree and the AR content will follow it, maintaining its orientation within a scene. In the Arloopa app, the user can also detach the AR content from the marker and place it anywhere in their environment, manually move it around and zoom in/out as needed.



- **Marker-less Augmented Reality (MLAR)** - With the emergence of advanced camera systems and more precise sensors in mainstream devices like Apple's iPhone and Samsung's Galaxy, AR has completed the transition from marker-based activations to MLAR experiences. MLAR tracking is easily the most effortless way of experiencing digital content via AR. As the name implies, the user does not need to scan any marker but only needs to choose where to place the virtual content by simply hovering the device over a preferred surface, or even placing virtual objects to float mid-air. MLAR reality is extremely useful for virtual try-on of nature, animals, birds, Microorganisms, genetic materials etc.



- **Location-based AR (LBAR)** - LBAR, also known as position-based and geo-based augmented reality, attaches AR content to a specific location. This means that to unlock the digital content, the user needs to be physically present at the particular location. In the Arloopa app, the location-based AR content can be discovered using the dynamic map. The pins on the map show the points where AR content is available. Once users arrive at the relevant locations and click on the pins digital content will be displayed in the real environment, completely marker-free.

How these apps can be used in the teaching of biological science:

1) Anatomy learning - 3D Anatomy

This is the app that works under a combination of 3D models, interactive features and content based on education to help users can visualize the human anatomy. These models are labelled with anatomical terms, and users can also listen to the audio pronunciation of the terms. This app includes a variety of interactive features such as quizzes, tests, and dissections. So these features can help the students to know about human anatomy in a fun and engaging way.

- **Learn about human anatomy more interactively and engagingly:** The app's 3D models allow the students to rotate, zoom and explore the human body in a way that is impossible in textbooks. This can help the students to visualize and know about the anatomy of the human

- **Test their knowledge:** It includes a variety of quizzes and tests that is very effective and help the students to test their knowledge and understanding of human anatomy. This app helps the students to identify the areas where they need more practice and focus their study efforts accordingly
- **Practice dissections:** This app includes a variety of dissections that can help the students that how to identify and remove different anatomical structures. This can make the students develop the skills they need for future medical school or clinical rotations.
- **Stay up to date on the latest update:** This app includes a variety of educational content such as articles, videos and images, that can help students to stay up to date on the latest research in human anatomy. This can help students to develop a deeper understanding of human anatomy and be better prepared for their future careers.

The Anatomy Learning – 3D Anatomy app is a valuable resource that can help students to know and learn about human anatomy more interactively and effectively. And there are some additional tips for using this app to help more students to learn.

- **Use the app in conjunction with traditional textbooks:** Actually, this app can be a great supplement to traditional textbooks, but this is not a complete replacement for textbooks this app is just an additional source of content that helps with the textbooks, students must use the textbooks to know the basic information about the anatomy of human.

- **Use the app to practice problem-solving skills:** Here as we know it contains tests and quizzes that can develop the student's problem-solving skills and students should use this app to practice answering anatomy questions in various formats.
- **Use the app to collaborate with classmates:** this app provides a great way that students can easily collaborate with their classmates and helps to share their knowledge about human anatomy and to help each other to learn. So this can help the students to mingle with their peers mates and develop their skills and knowledge.
- **Use the app to stay motivated:** this app provides a great way for students to stay motivated to learn about human anatomy. The app's interactive features can make learning about human anatomy fun and engaging

2) Arloopa

Arloopa is an augmented reality mobile application that enables the integration of digital content such as sounds, images, and texts into real-world environments.

- **3D Models and Visualization:**

Arloopa can provide interactive 3D models of biological structures, such as cells, organs, or organisms. Students can explore these models from different angles, dissect them virtually, and interact with various components. This approach allows for a deeper understanding of complex structures that are otherwise difficult to visualize in a traditional classroom setting.

- **Virtual Field Trips:**

With Arloopa, students can take virtual field trips to various ecosystems, biomes, or even historical sites related to biology. They can explore diverse habitats, study different organisms, and observe natural processes in an immersive way. Arloopa can provide contextual information, explanations, and interactive elements to enhance the learning experience.

- **Gamified Learning:**

Arloopa can be used to create educational games and quizzes related to biology. Students can participate in interactive challenges that require them to identify species, classify organisms, or solve biological puzzles. This gamified approach promotes active learning, improves retention, and makes the learning process more enjoyable.

- **Collaborative Learning:**

Arloopa can facilitate collaborative learning experiences by allowing students to interact with virtual objects and communicate with their peers in a shared augmented space. They can work together on group projects, solve problems, and discuss biological concepts using AR tools and visualizations. This promotes teamwork, communication skills, and a deeper understanding of the subject matter.

Pros and Cons of these apps :

There are many pros and cons to using an **Anatomy learning - 3D Anatomy app** and **Arloopa, Pros**

- **3D models:** They can provide a more realistic and interactive way to learn anatomy than traditional textbooks or diagrams (3D anatomy) and in AR reality. This can help the students to visualize the relationships between different structures and understand how they function
- **Interactive features:** Allows the student to zoom in and out, rotate, and explore more models and helps to know about the human anatomy in the 3D anatomy app and Arloopa gives a new refined and defined AR world to the students.
- **Accessibility:** It can be accessed on a variety of devices, including smart mobiles, and laptops. This makes them a convenient and affordable option for students who are unable to attend a traditional anatomy lab and Arloopa also gives high-quality AR things.
- **Portability:** This app can take anywhere, making them a great option for students who need to study on the go for both apps

Cons

- **Cost:** It can be expensive for premium options, especially for students this may be a major barrier who are on a budget.
- **Accuracy:** it is important to make sure that the 3D models in the app are accurate and up-to-date.
- **Engagement:** Some students may find 3D anatomy apps to be less engaging than traditional textbooks or lectures.

- **Limitations:** It can be limited in their ability to provide a comprehensive understanding of anatomy and the AR world

Conclusion:

There are many benefits to using apps to teach biology. Apps can help students learn more interactively and engagingly, and they can provide access to a wide range of information and resources. Additionally, apps can be used to personalize instruction and provide students with feedback on their learning. Overall apps can be a valuable tool for teaching biology and they can provide access to a wide range of information and resources. Apps can be used as a supplement or additional support to the textbooks.

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ROBOTICS IN EDUCATION: EMPOWERING THE NEXT GENERATION OF INNOVATORS

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Abstract

Robotics has emerged as a powerful tool in education, offering students unique opportunities to engage in hands-on learning and develop critical skills for the future. This thematic paper explores the various aspects of robotics in education, including its benefits, challenges, and implementation strategies. It examines the impact of robotics on student engagement, problem-solving abilities, and interdisciplinary learning. Through an in-depth analysis of relevant research and case studies, this paper highlights the potential of robotics in shaping the educational landscape and preparing students for the demands of a technology-driven world.

Keywords: *Robotics, Education, Engagement, Landscape and Technology-driven.*

Introduction:

The field of education has undergone significant transformations in recent years due to advancements in technology. One such technological innovation that has gained traction in educational settings is robotics. Robotics in education refers to the integration of robots and robotic systems into the learning environment to enhance students' educational experiences. Robotics provides a unique platform

for students to engage in hands-on, experiential learning, allowing them to explore complex concepts and develop critical skills such as problem-solving, teamwork, and computational thinking. With the rapid advancement of robotics technology, there is a growing interest in understanding the potential benefits, challenges, and effective implementation strategies of robotics in education.

Aim and Objectives:

- This thematic paper aims to comprehensively explore the role of robotics in education and its impact on student learning and development.
- The paper seeks to examine the benefits of robotics in education, including its potential to enhance student engagement, problem-solving abilities, creativity, and collaboration skills.
- The paper aims to identify the challenges associated with implementing robotics in educational settings and propose strategies to overcome them.
- This paper aims to investigate the interdisciplinary nature of robotics in education and explore its potential to foster connections between STEM subjects, arts, humanities, and entrepreneurship.
- Lastly, the paper aims to provide insights into the role of robotics in promoting inclusivity, diversity, and equity in education.

Challenges in Implementing Robotics in Education

The integration of robotics into education brings forth several challenges that need to be addressed to ensure its

successful implementation. One of the primary challenges is the access to resources and infrastructure. Robotics often requires specialized equipment, software, and hardware, which can be costly and may not be readily available in all educational settings. Moreover, providing adequate technical support and maintenance for robotics equipment can be a logistical hurdle for schools and institutions.

Another significant challenge lies in the training and support of teachers. Educators need to acquire the necessary skills and knowledge to effectively incorporate robotics into their teaching practices. Professional development opportunities and ongoing support programs are crucial to enable teachers to feel confident and competent in guiding students through robotics activities. Furthermore, the integration of robotics into the curriculum and the development of appropriate assessment methods pose additional challenges, as traditional assessment frameworks may not fully capture the breadth of skills and competencies developed through robotics.

Addressing gender and diversity gaps is another critical challenge. Encouraging equal participation and breaking gender stereotypes in robotics education is essential to ensure inclusivity and diversity. Efforts should be made to provide equal opportunities for all students, regardless of their gender, race, or socioeconomic background. Additionally, the cost and sustainability considerations of implementing robotics programs can be a hurdle for educational institutions. Funding for robotics initiatives, equipment maintenance, and upgrades requires long-term planning and financial commitment.

To overcome these challenges and issues, collaboration among stakeholders is crucial. Partnerships between educational institutions, industry professionals, and policymakers can help provide the necessary resources and support for robotics education. Government initiatives and funding schemes can facilitate the integration of robotics into the curriculum and support teacher training programs. Collaboration with organizations working towards inclusivity and diversity can help address gender and diversity gaps. Additionally, exploring innovative and cost-effective solutions, such as open-source robotics platforms, can help mitigate financial constraints.

By proactively addressing these challenges, educational institutions can unlock the full potential of robotics in education, creating a vibrant learning environment that nurtures critical thinking, problem-solving, and collaboration skills among students, preparing them for the demands of the rapidly evolving technological landscape.

Robotics as a Catalyst for Interdisciplinary Learning

Robotics has emerged as a powerful catalyst for interdisciplinary learning, bridging the gap between various subjects and fostering connections among different fields of knowledge. Integrating robotics into education provides students with opportunities to apply concepts from science, technology, engineering, and mathematics (STEM) while also exploring connections to arts, humanities, and entrepreneurship. Through robotics projects, students can witness the practical applications of theoretical concepts, reinforcing their understanding of core subjects.

By engaging in robotics activities, students develop computational thinking skills as they program robots to perform specific tasks. They learn to break down complex problems into smaller, manageable steps and apply logical reasoning to find solutions. This computational thinking approach transcends traditional disciplinary boundaries and is applicable across a wide range of fields. Furthermore, robotics projects often require collaboration and teamwork, fostering interpersonal skills and effective communication. Students from different backgrounds and areas of expertise must work together to design, build, and program robots, encouraging them to pool their knowledge and perspectives. This collaborative environment promotes the exchange of ideas and nurtures creativity and innovation. Robotics also provides a platform for exploring the intersections between STEM and other subjects. For instance, incorporating robotics into art classes allows students to create interactive artworks that incorporate technology. In the context of history or literature, robots can be used as tools for storytelling, bringing historical events or fictional narratives to life. Additionally, robotics encourages entrepreneurship and business skills by providing opportunities for students to design and prototype solutions to real-world problems. Students can learn about market research, product development, and even the ethical considerations of bringing a robotic product to market.

The interdisciplinary nature of robotics in education not only enhances students' understanding of individual subjects but also fosters a holistic approach to problem-solving and critical thinking. It prepares students for the complexities of the real world, where diverse knowledge and skills are often

required to address multifaceted challenges. By embracing robotics as a catalyst for interdisciplinary learning, educators can create dynamic and engaging learning environments that promote collaboration, creativity, and a deep understanding of the interconnectedness of knowledge across various disciplines.

Robotics for Inclusivity, Diversity, and Equity in Education

Robotics has the potential to promote inclusivity, diversity, and equity in education by providing equal opportunities for all students to engage in hands-on learning experiences. It breaks down barriers and challenges traditional stereotypes, fostering a more inclusive and diverse learning environment. One key aspect is breaking gender stereotypes. Robotics programs encourage girls to participate in STEM fields, which have traditionally been dominated by males. By creating a welcoming and supportive atmosphere, robotics education empowers girls to explore their interests in science and technology, bridging the gender gap in STEM. This leads to a more balanced representation of gender in technical fields and opens up opportunities for diverse perspectives and ideas.

Moreover, robotics education can reach underrepresented communities, including students from low-income backgrounds or marginalized groups. By providing access to robotics programs and resources, educational institutions can offer equal opportunities for all students to develop critical skills and engage with technology. Robotics can serve as a vehicle for social mobility and empower students to overcome barriers to success.

Additionally, robotics education can enhance accessibility for students with disabilities. Through adaptive robotics and assistive technologies, students with physical or cognitive disabilities can actively participate in robotics activities. By accommodating diverse learning needs, robotics promotes inclusivity and allows students with disabilities to explore their potential in STEM fields.

Robotics education also promotes cultural awareness and global collaboration. By incorporating diverse cultural perspectives into robotics projects, students can learn about different cultures, traditions, and problem-solving approaches. Robotics competitions and collaborative projects provide opportunities for students to work with peers from different backgrounds, fostering understanding and appreciation for cultural diversity.

To ensure equity in robotics education, it is essential to provide support and resources to underprivileged schools and communities. This can involve initiatives such as funding robotics programs in low-income schools, offering scholarships, and partnering with community organizations to provide mentorship and guidance. By leveraging the potential of robotics for inclusivity, diversity, and equity in education, educators can create an environment that celebrates and values the unique contributions of all students. Robotics becomes a tool for empowerment, breaking down barriers and opening doors for students from diverse backgrounds to excel in STEM fields and contribute to a more inclusive and equitable society.

Advances in robotics technology

Advances in robotics technology continue to shape the future of robotics education, presenting exciting opportunities for both educators and students. As robotics technology evolves, robots are becoming more sophisticated, versatile, and accessible. Future directions in robotics education include the development of advanced robot platforms that are capable of performing complex tasks and interacting with the physical world in more intelligent and human-like ways. One significant trend is the integration of artificial intelligence (AI) into robotics. AI-powered robots have the potential to adapt and learn from their environments, making them more adaptable and capable of independent decision-making. This integration opens up possibilities for students to explore machine learning and AI algorithms, enabling them to develop a deeper understanding of how robots can perceive, interpret, and respond to the world around them.

Another emerging trend is the utilization of virtual and augmented reality (VR/AR) in robotics education. VR/AR technologies allow students to immerse themselves in simulated environments, providing a safe and controlled space for experimentation and learning. Students can design, program, and interact with virtual robots, gaining hands-on experience without the need for physical robots. This approach expands access to robotics education and allows for remote collaboration and shared learning experiences. Additionally, the Internet of Things (IoT) is increasingly being integrated into robotics education. IoT-enabled robots can connect to the internet and communicate with other devices, allowing for enhanced data collection, analysis, and

automation. Students can explore concepts such as sensor integration, data analytics, and networked systems, preparing them for the interconnected world of smart devices and automation.

Ethical considerations in robotics education are also gaining attention. As robots become more prevalent in various aspects of society, it becomes crucial to educate students about the ethical implications and responsibilities associated with their design and use. Future directions in robotics education involve incorporating discussions on privacy, security, bias, and the ethical use of robots, fostering a deeper understanding of the societal impact of robotics. Furthermore, the democratization of robotics education is an emerging trend. Open-source platforms, affordable robotics kits, and online resources are making robotics education more accessible to a wider range of students and educators. This shift allows for increased participation and engagement, regardless of financial constraints, and encourages a diverse and inclusive learning environment.

The Benefits of Robotics in Education

The integration of robotics into education brings forth numerous benefits that have a transformative impact on students' learning experiences. Here are some key advantages of using robotics in education:

Hands-On and Experiential Learning: Robotics provides a hands-on and experiential learning environment where students actively engage with real-world challenges. By designing, building, and programming robots, students gain

practical experience and develop a deeper understanding of abstract concepts. This hands-on approach enhances retention and comprehension, as students can see the direct application of theoretical knowledge.

Enhancing Problem-Solving Skills: Robotics encourages students to become effective problem solvers. As they work on robotic projects, students encounter various challenges and obstacles that require critical thinking and creative problem-solving skills to overcome. They learn to analyse problems, break them down into manageable parts, and develop logical solutions. This process fosters resilience, adaptability, and perseverance in tackling complex problems.

Fostering Creativity and Innovation: Robotics sparks creativity and nurtures innovation among students. As they design and build robots, students are encouraged to think outside the box, explore unconventional solutions, and experiment with different designs and functionalities. This creative process allows students to explore their imaginations, take risks, and develop a sense of curiosity and innovation.

Promoting Collaboration and Teamwork: Robotics projects often involve teamwork and collaboration. Students work together in groups, sharing ideas, dividing tasks, and collectively solving problems. Collaboration in robotics education promotes effective communication, cooperation, and respect for diverse perspectives. Students learn how to contribute to a team, negotiate conflicts, and appreciate the value of collaborative effort.

Developing Computational Thinking: Robotics nurtures computational thinking skills, which are essential in today's technology-driven world. Students learn to analyse problems, break them down into smaller steps, and develop algorithms to program their robots. Computational thinking enhances logical reasoning, algorithmic thinking, and the ability to understand and solve problems systematically, skills that are valuable in various disciplines.

By leveraging the benefits of robotics in education, educators can create dynamic and engaging learning experiences that foster critical thinking, problem-solving, creativity, and collaboration skills. Robotics empowers students to become active learners, preparing them for future challenges in an increasingly technology-driven society.

Conclusion

In conclusion, the future of robotics education holds great promise, with advances in robotics technology shaping new directions and trends. As robotics becomes more intelligent, integrated with AI, and enabled by VR/AR and IoT, students will have opportunities to engage in more immersive and realistic learning experiences. Emphasizing ethical considerations and promoting accessibility through open-source platforms will ensure that robotics education benefits a wider range of learners. By embracing these future directions and emerging trends, educators can prepare students for the challenges and opportunities of a technology-driven world.

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EXPERIENTIAL LEARNING ENHANCING MATHEMATICAL CREATIVITY

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Abstract

A teaching strategy known as experiential learning places a strong emphasis on interactive, immersive events that let students actively connect with and apply the concepts they are learning. Experiential learning in the context of mathematics education can give students the chance to cultivate their mathematical creativity, which entails the capacity to think flexibly and creatively about mathematical problems. This paper investigates how students' mathematical inventiveness might be improved via practical learning. It starts out by describing mathematical creativity and talking about how crucial it is to help children develop this talent. The following section of the paper examines different experiential learning strategies, such as project-based learning, problem based learning and inquiry-based learning, and analyses how these strategies might be utilised to foster mathematical creativity. In conclusion, this research makes the case that students' mathematical creativity can be significantly increased through experiential learning. Experiential learning can aid in the development of the kinds of innovative thinking abilities that are necessary for success in mathematics and other subjects by giving students chances to actively engage with mathematical ideas and apply what they have learned in authentic situations.

Keywords: *Experiential Learning, mathematical creativity, students*

Introduction

The teaching has changed noticeably throughout time. The goal of mathematics is to comprehend patterns that exist in both the physical universe and the human mind. There are many different ways to think, and mathematics teaches students how to think in a way that allows them to deal with abstraction and solve problems that necessitate a working knowledge of mathematics. For scientists, originality in mathematics is crucial. One of the objectives of teaching mathematics in schools is to foster creativity. Less focus is placed on lecturing in contemporary classrooms and more is placed on debate, demonstration, real-world application, collaboration, and activity-based learning. Therefore, Experiential Learning is the process of learning by doing. Experiential learning has become increasingly significant and established itself in the field of education since it helps students make the connections between ideas and knowledge taught in the classroom and real-world circumstances. Though creativity is usually seen to be associated with the arts and literature, producing useful science is now also regarded as a creative act. Mathematical creativity, according to Liljedahl and Sriraman (2006), can be described as the following at the school level: a method that results in novel and/or insightful solutions to a specific problem or other problems of a similar nature, as well as new questions and/or possibilities that enable an existing problem to be examined from a fresh angle.

Experiential learning

The basic tenet of learning by doing is that as we perform an action, we can learn more about it. Experiential learning is

another name for learning by doing. There has always been experimental learning. According to Aristotle, we learn by doing the things we have to learn before we can do them. During experiential learning, an active learning process, students "learn by doing" and reflect on their experiences. Experiential learning activities include, internships, practicums, practical lab work fieldwork, undergraduate research, study abroad, , and studio performances, to name a few. Well-designed, supervised, and graded experiential learning programmes can stimulate academic inquiry through fostering interdisciplinary learning, career growth, civic engagement, cultural awareness, leadership, and other professional and intellectual talents. **In experiential learning, the following are considered as the important elements.**

- Reflection, analysis, and synthesis.
- Opportunities for students to use initiative, make decisions, and take ownership of the results.
- Opportunities for pupils to engage intellectually, creatively, emotionally, socially, or physically.
- An intentionally designed learning opportunity that presents the chance to learn through inevitable events, failures, and successes.

The Workings of Experiential Learning the experiential learning cycle's fundamental model is "Do, Reflect, Decide." The definition of experiential learning in Kolb's Experiential Learning Theory (David Kolb, 1984) is "the process whereby knowledge is created through the transformation of experience." Knowledge is the end outcome of absorbing and transforming experience.

Mathematical experience-based education

Students must actively participate in their own comprehension of mathematical concepts and procedures in order to learn mathematics effectively. Students gain the ability to recognize issues, employ sound reasoning to support their claims, and apply mathematics to complex issues through this style of learning. Math experiential learning exercises are a great approach to help kids get over their math phobia, see how applicable what they're learning is in the real world, and, most importantly, enjoy math.

Mathematical creativity

The capacity to approach mathematical problems and concepts in an original and creative manner, leading to new insights, solutions, and discoveries, is known as mathematical creativity. It involves combining existing knowledge and techniques with imagination and intuition to find unexpected solutions and develop new mathematical concepts. Mathematical creativity is an essential component of mathematical research, as it enables mathematicians to develop new theories and solve complex problems that have not been addressed before. It is also crucial for maths students to master since it enables them to comprehend the subject thoroughly and use what they have learned in practical settings. Some ways to foster mathematical creativity include encouraging students to explore mathematical concepts in depth, giving them open-ended problems to solve, allowing for experimentation and exploration, and promoting collaboration and discussion among students. Additionally, exposure to a variety of mathematical issues and themes might

aid pupils in developing their mathematical creativity. Teachers are essential in helping children develop their mathematical inventiveness. Here are some strategies teachers can use to encourage students' mathematical inventiveness.

Experiential learning and mathematical creativity: background literatures

Experiential learning theory emerged as a result of taking students' individual differences into consideration. It is suggested to (1) the teacher that should implement the experiential learning-based teaching material in Mathematics that has been previously developed, (2) the student that is expected to be able actively in comprehending the material and to improve the cognitive ability using experiential learning-based teaching material in Mathematics, (3) the other researchers that can use this research as the reference for the similar research related to the development of experiential learning-based teaching material in Mathematics. (Mutmainah, Rukayah, Mintasih Indriayu 2019); It is indicated that ELA has a positive effect on students' Mathematical Creativity. ELA instructional approach produced a significant impact on mathematical creativity among secondary school students. Mathematical creativity should be emphasised in all mathematics classes (Chesimet M.C Githua B.N Ng'eno, J.K 2016); Future research on experiential learning in mathematics should consider long term planning that includes both inside and outside classroom activities and an interdisciplinary approach (Tran et al., 2020); Students' learning outcomes improve due to their involvement in experiential activities. Students benefit from the knowledge and skills teachers have

gained from organizing activities in a variety of settings (Uyen BP, Tong DH and Lien NB (2022) Students' academic achievement in mathematics using the cooperative learning method are better than the results of students' academic achievement in mathematics using the traditional learning method (Algani et al. 2021) Future studies could propose plans to restructure math learning content at high schools in the direction of the RME (Realistic Mathematic Education) to take full advantage of the positive benefits from this and build an assessment framework suitable to the curriculum oriented to RME application. Moreover, the framework for evaluating the effectiveness of teachers' teaching with RME should be clarified to assist them in adjusting how they use the RME model in mathematics teaching and learning. (Duong et al. 2022) In line with senior high school students' attitudes towards the study of mathematics, it was realised that, students have interest in doing mathematics; students found mathematics to be a very useful subject; and students were confident in doing mathematics (Lawsha Mohamed, Hussain Waheed 2011) Creativity has been proposed as one of the major components to be included in the education of the 21st century (Mann, 2005). Therefore, the contemporary curricula should emphasize the development of students' creative thinking (Lamon, 2003). There is no commonly accepted definition of mathematical creativity (Mann, 2006). However a commonly agreed on definition is that mathematical creativity is a novel way of thinking characterised by fluency, flexibility, originality and elaboration (Gill, Ben-Zvi & Apel, 2007; Leikin, Berman & Koichu, 2010; Kim, Cho & Ahn, 2003; Imai 2000; Runco, 2008). Fluency is the number of responses a learner can

give to a mathematical question, flexibility is the shift in categories in the responses to a given mathematical task, originality is the degree of uniqueness of responses and elaboration is the ability of a person to produce detailed steps (Leikin, 2009). The main goal of mathematics education is the “mathematisation” of the child’s thinking. Clarity of thought and pursuing assumptions to logical conclusions is central to the mathematical enterprise (Pooja, 2012). Researchers have come up with various definitions of mathematical creativity. According to Runco (1993) creativity is a construct involving both divergent and convergent thinking, problem finding and problem solving, self-expression, intrinsic motivation, a questioning attitude and self-confidence. Krutetskii (1976) characterises mathematical creativity in the context of problem formation (problem finding) invention, independence and originality Mathematical creativity is an essential aspect in the development of mathematical talent (Mann, 2005). Mathematical creativity is also important for constructing mathematical knowledge in a more central way than merely producing learnt knowledge thus teaching of mathematics must focus on seeking solutions creatively, exploring patterns uniquely and formulating hypothesis (Jha, 2012). Despite its importance, mathematical creativity is often neglected in mathematics education.

Experiential learning enhancing mathematical creativity: Approaches for students Problem based learning

A method of teaching known as problem-based learning (PBL) emphasises the solution of practical issues in order to foster critical thinking and problem-solving abilities. PBL

involves students working in small groups to discover and address difficult, open-ended issues that are meant to resemble difficulties encountered in the real world. A cycle of problem identification, investigation, idea generation, and solution testing is used in the process.

In PBL, Instead than just absorbing knowledge from professors or textbooks, students engage more actively in their learning. Together, they discover issues, look into potential fixes, and then report their findings to the group. This method allows students to take charge of their own learning and creates a greater comprehension of the subject matter. PBL is frequently utilized in higher education, especially in professions where the capacity to solve complex problems is crucial, including medical, law, and business. It can also be applied to K-12 education, notably in STEM subjects (science, technology, engineering, and math).

Some of the benefits of PBL include:

Development of problem-solving skills and critical thinking
Increased engagement and motivation among students
Improved teamwork and collaboration skills
Application of knowledge to real-world situations
Preparation for future careers that require problem-solving skills.

However, PBL can also be challenging for teachers, as it requires a significant amount of planning and preparation. It also requires a shift in the traditional teacher-student dynamic, as teachers take on more of a facilitator role rather than a content expert.

Project based learning

Students that take part in project-based learning (PBL) spend a lot of time working on one project or a series of related projects. PBL involves students in an inquiry-based process that focuses on resolving practical issues or responding to challenging inquiries. In project-based learning (PBL), students collaborate to create and carry out a project that calls on them to use their problem-solving, critical thinking and communication abilities. The process involves identifying a problem or a question, conducting research, developing a plan of action, implementing the plan, and reflecting on the experience. Throughout the process, students receive feedback from their peers, teachers, and other stakeholders.

PBL can be used in a wide range of subjects and grade levels, from elementary school to higher education. The projects can take many forms, from creating a product or a service to conducting a scientific investigation or a social research project.

Some of the benefits of PBL include:

- Improvement of critical thinking and problem-solving abilities
- Increased creativity and inventiveness
- Communication skills and collaboration that are improved
- Putting knowledge to use in practical settings
- Greater student involvement and motivation
- Preparation for future careers that require project management skills.

However, implementing PBL can be challenging for teachers, as it requires careful planning and management of the project. It also requires a shift in the traditional teacher-centered approach, as students take on more responsibility for their own learning. To be successful, PBL requires a supportive learning environment, clear expectations, and ongoing feedback and assessment.

Inquiry based learning

IBL, or inquiry-based learning, is a method of teaching that encourages students to research and explore topics of interest. IBL encourages students to actively participate in their education by asking questions, looking for information, and creating their own knowledge. In IBL, teachers take on the role of facilitators, assisting students in making connections between their past experiences and the new information they are learning while also giving resources and assistance. The process involves several stages, including identifying a question or problem, conducting research, analyzing data, and drawing conclusions.

IBL can be applied to a variety of academic settings, from elementary school to higher education. It excels in cultivating a feeling of curiosity and lifelong learning, as well as analytical, communication, and problem-solving skills. Some of the benefits of IBL include:

- Improvement of problem-solving and critical thinking abilities

- Increased engagement and motivation among students

- Improved ability to think creatively and independently

- Enhanced communication and collaboration skills

Application of knowledge to real-world situations
Preparation for future careers that require inquiry and problem-solving skills.

However, implementing IBL can be challenging for teachers, as it requires careful planning, management, and assessment of the inquiry process. It also requires a shift in the traditional teacher-centered approach, as students take on more responsibility for their own learning. To be successful, IBL requires a supportive learning environment, clear expectations, and ongoing feedback and assessment.

Conclusion

Experiential learning can be an effective way to enhance mathematical creativity in students. By providing opportunities for active involvement of kids with mathematical ideas through hands-on, immersive experiences, Students can improve their capacity for original thought, which are necessary for success in maths and other fields. Students can get a thorough understanding of mathematical concepts and be motivated to approach problems in creative and flexible ways by using experiential learning methodologies including problem-based learning, project-based learning, and inquiry-based learning. By giving students access to a variety of digital tools and resources that can support their learning and enable them to explore mathematical concepts in fresh and creative ways, the use of technology can also improve the experiential learning process. Programmes for experiential learning have been successfully implemented in a range of contexts, from college-level courses to classrooms in elementary schools. Teachers may encourage

mathematical creativity in their students and provide them the skills they need to thrive in mathematics and beyond by implementing experiential learning techniques into their classroom instruction.

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NATIONAL INITIATIVES FOR INCLUSIVE EDUCATION

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Abstract

Education performs an important position in shaping a society. The policy of a country reflects both its vision and its constitutional obligations, which oblige the society to respond. The Constitution's guidelines, which provide for current arrangements to remedy historical wrongs committed against a variety of marginalised groups of its citizens, reflect inequality and diversity within India's society. Because Indian society is an inclusive society, any education policy must take into account this. 'Inclusive Education' addresses the diverse needs of learners by reducing barriers in all forms. It is a process of strengthening the capacity of the prevailing education system to reach out to all learners irrespective of their intelligence level. This educational approach in turn provides all students with greater opportunities for academic as well as social achievement. Inclusion is to eliminate exclusionary practices from society. These are the practices that are the consequences of improper attitudes and poor responses towards diversity in race, caste, ethnicity, class, religion, gender and economic status as well as towards disabilities. Inclusive practices are needed in the true sense to combat discriminatory attitudes, build an inclusive society and achieve education for all. An inclusive society is a place where every individual feels valued, their basic needs are met, their existence is accepted and recognised and hence, they live with dignity.

Keywords: *Inclusive Education, Policy, Committees*

Introduction:

Inclusive education policies and programs Until 1990, 90 per cent of children with disabilities in India between the ages

of 6 and 14 were excluded from the mainstream of education according to the concept of social justice and equal rights emphasized by the constitution of India, which came into effect in 1950, the government of India must provide education to these disadvantaged group with priority in education. In 1960 there was a major change in the provision and funding of special education in India. The Ministry of Education of the central government was divided into two, and the Ministry of social welfare was newly created. The responsibility of providing education to people with special needs and those with functional disabilities came under this new ministry.

Inclusive Education:

According to the UNESCO definition from 2005, inclusive education is a process of addressing and reacting to the diversity of needs of all learners through promoting involvement in learning, cultures, and communities, and eliminating exclusion from and within education. The teacher and pupils are aware of their entire educational system, and the ultimate goal is to create an environment that encourages learning. It also recognizes the challenges and benefits of student diversity. Every student's needs are satisfied in an inclusive education approach, and they have a chance to achieve in life.

Recommendations of the Indian Education Commission (1964-1966)

The Indian Education Commission was the first statutory body to propose that the education of disadvantaged children

should be organized not only for humanitarian reasons but also for those benefits. The Commission found that while the Indian Constitution contained specific guidelines for compulsory education for all, including children with disabilities, little was done about it. The Commission also stressed that the education of children with disabilities should be "an integral part of the general education system".

The Commission found that services for children with disabilities are grossly inadequate and recommended a two-pronged approach to providing integrated special education to improve the situation.

The Commission has set itself the following objectives to be achieved by 1986:

- Education for about 15% of the blind, deaf and orthopaedic disabled and 5% of the mentally disabled.
- The Commission has also specifically emphasized the importance of inclusive education in achieving this goal, as it is cost-effective and useful for developing mutual understanding between children with and without disabilities.

Integrated Education Program for Disabled Children Since (1974)

In 1974, the Department of Social Justice and Empowerment of the Government of India launched the IEDC program to promote the integration of students with mild to moderate disabilities into mainstream schools. The children should receive financial support for books, stationery, school uniforms, transportation, special equipment and supplies.

State governments have received 50% financial support to implement this program in mainstream schools. However, the program had little success. In 1990, the program had been implemented in 14 states. These were Karnataka, Kerala, Madhya Pradesh, Tamil Nadu and Uttar Pradesh, Maharashtra, Andaman and Nicobar, Bihar, Gujarat, Haryana, Nagaland, Orissa and Rajasthan. Kerala is the only state that has made significant progress in implementing this program. In Kerala, the program has been implemented in 4,487 schools and 12,961 children have benefited.

National Education Policy - 1986

The National Education Policy and Action Plan issued by the Government of India in 1986 emphasized the need to provide education to people with special needs in an integrated manner with other sections. NPE, 1986 "To integrate the physically and mentally retarded in the mainstream of society with equal rights, enable them to develop normally and meet the challenges of life with self-confidence. A ready-to-face journalism education system needs to be reformed accordingly," it says. The National Education Policy insists that special education should be a mandatory component of pre-service teacher education to produce general teachers. But this recommendation of the Education Committee published in 1986 was not implemented in 1992.

Program of Action (POA) on Nap, 1992

The 1986 Plan of Action (POA) on the Implementation of the National Policy on Education, 1992 elaborated on who

should be admitted to public school classrooms for persons with disabilities. Only those who are eligible to join the public school classrooms should be allowed in the public school classrooms. This means that only those with the least degree of deficiency should be admitted. People with significant and more severe disabilities should be transferred to general school classrooms after mastering basic living skills in resource centres or special schools.

Rehabilitation Council of India Act 1992

The Rehabilitation Council of India Act, 1992, have become surpassed through the manner of approach of the Parliament which came into stress with effect from 22nd June 1993. The functions and responsibilities of the council are as follows

- Standardization and regulation of training courses at various levels in all training institutes across the country.
- To give recognition to training institutes/universities conducting training courses in and outside the country in the context of rehabilitation of the disabled.
- Enhancing research in rehabilitation and special education.
- Maintaining a Central Rehabilitation Register of occupations of persons with valid qualifications in the field of rehabilitation.
- To encourage the continuation of rehabilitation education programs and for this, work closely with organizations working in the field of disability.
- To encourage continuing education in the field of rehabilitation and special education by collaborating with institutions and organizations working for disability or disability.
- Recognition of vocational rehabilitation centres as human resource development centres
- To register vocational instructors and other personnel working in vocational

rehabilitation centres. • To provide recognition of affiliated national institutions of disability and higher or apex bodies as human resource development centres. • Registration of personnel working in National Institutes and Apex Institutes with Disabilities under the Ministry of Social Justice and Empowerment.

Persons with Disabilities Act, 1995

A close examination of the national initiative discussed so far indicates that although the Indian government had made numerous tries to enforce incorporated training programs, it lacked a company dedication to sell integration. This turned in large part due to the fact the Indian Government has taken into consideration that provision for kids with disabilities is a welfare problem instead of an academic imperative. The PWD Act proposed the supply of stepped-forward academic services, clinical care, vocational training, employment, and social protection for all individuals with disabilities.

The act in addition said that on every occasion possible, college students with disabilities ought to be knowledgeable in everyday college settings.

The Act provides direction to the government and local bodies for the following activities:

Prevention and early detection of disabilities

- All children shall be screened once a year for identifying "at risk" case
- Staff of primary health centres shall be trained to assist in this work

- Measures shall be taken for prenatal, perinatal, and postnatal care of mother and child Awareness campaigns.

Education

- Every child with a disability shall have the right to free education till the age of 18 years with free books, uniforms and scholarships/appropriate transportation and a barrier-free environment.
- Teacher's training institutions shall be established to develop requisite manpower
- Non-formal education

Employment

- 3% vacancies in Government shall be reserved for blindness/low vision, hearing impairment, locomotor disability and cerebral palsy.
- Government educational institutions including those receiving grants from the government shall reserve at least 3 % of seats.
- No worker may be sacked/demoted if they come to be disabled in the course of service.

Non-discrimination

- All the places of public utilities public buildings, rail compartments, buses, ships and aircraft shall be made barrier-free to give easy access.

Research and development

- Age relaxation and health and safety measures in a workplace environment

- Poverty alleviation schemes
- Reservation at 3%

Affirmative Action

- Aids and home equipment will be made available
- Allotment of land shall be made at concessional rates for housing, business, special schools, etc.

Social Security

- Financial assistance to NGOs,
- Insurance coverage to employees with disability

Grievances Redressal

- Any violation of the rights of people with disability may move to the Chief Commissioner for Persons with Disability in Centre and Commissioner in State.

Sarva Siksha Abhiyan - (SSA)

The 'Sarva Siksha Abhiyan' (Sarva Siksha Abhiyan), which is currently being implemented in India, was introduced during the Ninth Five Year Plan period (1997-2002) with the assistance of the World Bank. Following the 86th Amendment to the Constitution of India, compulsory free education for all children between the ages of 6 and 14 years was made a fundamental right, and the scheme was brought in to achieve the goal of 'primary education for all' within a specified time frame.

- i) For the admitting school, each child receives annually Rs. 1200 on account of financing | will be provided. This fund should be used to purchase assistive devices and learning materials for differently abled children.

This financial assistance will be given to the schools through the district/village administration.

- ii) The policy decision that each district 'accepted the responsibility of providing education for children with functional disabilities and implemented the SSA program through schools in the specific area (Cluster schools) enabled children with special needs to go to their nearest school.

National Curriculum Framework-2005

The National Curriculum Framework (NCF 2005) is one of the 4 National Curriculum Frameworks posted in 1975, 1988, 2000, and 2005 by the National Council of Educational Research and Training NCERT in India. The Framework offers for making syllabi, textbooks and coaching practices inside the faculty schooling programmes in India.

Hence, it can be concluded by highlighting the conceptual principles of Inclusiveness in Schools as recommended by NCF 2005, that,

- Inclusive Education is about embracing all.
- Disability is a social responsibility – accept it.
- No selection procedures to be adapted for admission to learners with disabilities.
- Children do not fail, they only indicate failure of the school.
- Accept differences and celebrate diversity.
- Inclusion is not confined to the disabled. It also means non-exclusion.
- Handicap is a social construct, deconstruct handicap.

- Make provisions – not restrictions, and adjust to the needs of the child.
- Remove physical, social and attitudinal barriers.
- Partnership is our strength such as School-community; School-teachers; teachers-teachers; teachers-children; children-children; teachers-parents; school systems and outside systems.
- All good practices of teaching are practices of inclusion.
- Learning together is beneficial for every child.
- Support services are essential services.
- If you want to teach, learn from the child. Identify strengths and limitations.
- Inculcate mutual respect and interdependence.

Inclusive Education of the Disabled at the Secondary Stage- (IEDSS)

In 2008, the Government of India revamped the "Integrated Education for Disabled Children" (IEDC) scheme to provide education for children with special needs between the ages of 6 and 14 to continue their secondary education between the ages of 14 and 18. The scheme is known as IEDSS. Needy children are now provided with free education (up to secondary level) from 6 to 18 years of age in formal school classes enrolled in the public education system.

Children with special needs between the ages of 14 and 18 years to study in a regular school class at Rs. 3000/- is provided to the schools by the central government. This funding should be used to purchase learning materials for students with special needs.

Right to Education Act, (2009)

The Ministry of Manpower, Government of India framed the 'Right to Education Act', 2005 based on Article 45 and Article 21(A) of the Guidelines of the Constitution. The Act was passed by the Parliament of India in 2009 and came into force in 2010. The constitutional validity of this Act was upheld by the Supreme Court in 2012.

This law was created for people with special needs; Rather, it focuses on children (ages 6 to 14) including all of them. This Act states that education for all is the basic right of 6 to 14-year-olds. Although this Act has many special features, the following four are highlighted as important among them.

1. Schools should not deduct any fees from students.
Building a school for all
2. In general, if a 6-year-old child does not go to school, it should not be stipulated that they should be admitted to classes appropriate to their educational level unless they are placed in a class appropriate for their age and given appropriate educational training. But exceptionally, only children with low intelligence may be placed in classes appropriate to their educational level (some argue that this goes against the idea of education for all).
3. Within three years of the enactment of this Act, if there are no schools in the neighbourhood for the children, the responsibility of establishing schools' rests with the State and local bodies. Until such schools are established, the students should be provided with free transport facilities or accommodation and help to go to school.

4. The responsibility of providing financial resources for the implementation of this Act rests with the Central and State Governments. Central and State Governments have a joint responsibility in implementing the SULVI Act.

National Education Policy - 2020

On 29th July 2020, the first Indian education policy of the 21st century, "National Education Policy, 2020" (NEP) was approved by the union cabinet of India. Achieve an inclusive and equitable schooling device so that all youngsters have identical possibilities to analyse and thrive so that participation and studying consequences are equalised throughout all genders and social classes via way of means in 2030.

Equitable and Inclusive Education: Learning for All

Focus on Socio-Economically Disadvantaged Groups (SEDGs).

- SEDGs can be appreciably labelled based absolutely on Gender identities (in particular female and transgender individuals), Socio-cultural identities (such As Scheduled Castes, Scheduled Tribes, OBCs, and minorities), Geographical identities (consisting of college students from villages, small towns, and aspirational Districts), Disabilities (such as mastering disabilities), and Socio-financial conditions (inclusive of migrant communities, low earnings households, kids in susceptible situations, sufferers of or kids of sufferers of trafficking, orphans along with baby beggars in city areas, and the city poor).

- Separate strategies will be formulated for focused attention for reducing each of the category-wise gaps in school education.
- A 'Gender-Inclusion Fund' may be constituted to offer equitable high-satisfactory training for all women in addition to transgender students.
- Free boarding facilities will be built - matching the standard of Jawahar Navodaya Vidyalayas, particularly for students who are from socio-economically disadvantaged backgrounds.
- Schools/faculty complexes could be furnished sources for the mixing of youngsters with disabilities, Recruitment of unique educators with cross-incapacity training, and for the status quo of aid centres.
- Assistive devices and appropriate technology-based tools, and language-appropriate teaching-learning materials will be made available.
- NIOS will grow notable modules to train Indian Sign Language and to train exclusive number one subjects in the use of Indian Sign Language.
- As consistent with the RPWD Act 2016, youngsters with benchmark disabilities shall have the choice of normal or precise schooling. Resource centres together with unique educators will assist the rehabilitation and academic wishes of novices with excessive or a couple of disabilities.
- Knowledge of how to teach children with specific disabilities will be an integral part of all teacher education programmes.

Conclusion

The schemes and acts ensure education for all children irrespective of their caste, religion, ability, and so on. It is essential to build an inclusive society through an inclusive approach. Right-inclusive schooling lets all college students take part in all factors of the study room similarly or near equally. The Government of India is trying to beautify its education machine focusing on the inclusive approach. The challenges can be overcome by raising awareness in society and publishing positive examples of disabled children and adults succeeding in inclusive education.

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ONLINE LEARNING FOR PROFESSIONAL DEVELOPMENT: ENHANCING SKILLS AND KNOWLEDGE

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Abstract

The purpose of this paper is to discuss the role of online learning in professional development and its potential to improve skill and knowledge acquisition. Professionals in a variety of sectors are turning to online platforms to extend their skills as technology advances and the desire for continual learning grows. The study investigates the advantages of online learning, new trends, and novel ways to effective professional growth. It also examines the problems and implications of online learning, as well as tips for its implementation. The findings emphasise the significance of online learning as a significant tool for professionals seeking to remain competitive and succeed in their respective areas.

Keywords: *online learning, professional development, skills enhancement, knowledge acquisition*

Introduction

The way professionals engage in ongoing learning and development has been transformed by online learning. Online platforms provide simple and flexible solutions for professional progress in today's fast-paced environment, when staying up to date with the newest information and skills is crucial (Smith, 2021). Professionals may access a multitude of

information, courses, and interactive learning experiences suited to their unique requirements with just a few clicks (Johnson & Brown, 2019). The importance of online learning stems not just from its ease of access, but also from its capacity to create interesting and dynamic learning experiences. Immersive learning environments, in which professionals may actively interact and collaborate with instructors and colleagues, have become possible because of technological advancements (Williams et al., 2020). This sense of community and support enhances the learning process, enabling professionals to gain valuable insights and perspectives from experts in their fields.

Quality assurance procedures are also critical to the efficiency of online professional development courses. Regular evaluations and ongoing evaluations are used by institutions and organisations that provide online courses to evaluate progress and ensure learning outcomes are fulfilled (Anderson, 2018). This rigorous methodology contributes to the authenticity and value of online learning programmes, providing professionals with the assurance that their time and efforts are properly spent.

Benefits of Online Learning for Professional Development

Online learning for professional development provides several advantages that help to improve skills and knowledge in today's digital age. One key benefit is the flexibility it offers, allowing professionals to study at their own speed and convenience (Anderson & Smith, 2023). This flexibility is especially advantageous for people who have demanding job

schedules or other commitments that make traditional in-person training difficult to attend (Johnson, 2021).

Also, online learning platforms frequently include a diverse choice of courses and materials that cater to a variety of professional disciplines and interests (Garcia, 2022). Professionals can pick from a wide range of topics and disciplines, allowing them to build knowledge in areas relevant to their professional objectives and aspirations (Lee & Chen, 2020). This personalised approach to learning guarantees that professionals obtain the specific skills and information necessary to flourish in their areas.

Strategies for Effective Online Learning in Professional Development

To maximise the benefits of online learning for professional development, effective tactics that foster engagement, interaction, and active learning must be used. The usage of collaborative online platforms and discussion forums is one such technique (Smith et al., 2022). These platforms allow professionals to contact with their colleagues, exchange experiences, and participate in meaningful debates about their area of expertise. Collaborative learning promotes a feeling of community and allows for networking and information exchange (Williams & Johnson, 2021).

Incorporating multimedia features like films, simulations, and interactive modules can also improve the learning experience (Chen et al., 2023). These interactive and engaging elements not only make the knowledge more accessible and remembered, but they also give practical applications and real-life examples pertinent to professional situations.

Incorporating formative evaluations throughout the online learning journey also helps professionals to track their progress, identify areas for growth, and receive timely feedback (Brown & Wilson, 2020).

Mentorship programmes or coaching sessions delivered via virtual platforms can supplement online learning (Miller, 2019). When professionals are paired with experienced mentors or coaches, they receive personalised guidance, support, and knowledge that is suited to their specific requirements. By bridging the gap between theory and practise and promoting the transfer of information and skills into real-world scenarios, this mentorship strategy improves the efficacy of online learning.

Overcoming Challenges in Online Professional Development

While online learning for professional growth has many advantages, it also has several drawbacks that must be addressed for best results. One such difficulty is the possibility of feeling alone and lacking in social connection (Liu et al., 2022). Online learning, unlike conventional face-to-face environments, may lack the spontaneous interactions and personal relationships that professionals typically seek. To solve this difficulty, options for virtual networking, cooperation, and group debates must be included (Johnson & Smith, 2021). This is possible with video conferencing capabilities, online group projects, and virtual peer feedback sessions.

Another key problem in an online learning environment is sustaining motivation and self-discipline (Huang et al., 2023). Professionals pursuing online learning may encounter distractions from their job or personal life, making it

challenging to remain focused and committed to their professional development goals. To overcome this, clear goals and objectives, regular progress evaluations, and support mechanisms that keep professionals engaged and responsible are critical (Smith & Brown, 2020). Incorporating gamification components, such as badges, leader boards, and awards, can also aid to boost engagement and give an additional motivation for professionals to actively participate in the online learning process (Gao et al., 2021).

Furthermore, technological constraints and a lack of access to dependable internet connectivity might undermine the efficiency of online professional development, particularly for professionals in distant or disadvantaged locations (Roberts et al., 2022). To solve this difficulty, online learning platforms must be user-friendly, available across several devices, and compatible with varied internet speeds (Wang & Li, 2021). Providing technical support and resources to experts can also aid in the resolution of any technical issues that may arise.

Ensuring Quality and Assessing Learning Outcomes in Online Professional Development

By assuring the quality of online professional development programmes, professionals may gain crucial skills and knowledge. One key component is the design and implementation of effective learning experiences. Online courses should be designed to promote active learning, engagement, and knowledge application (Jones & Smith, 2012). Including multimedia elements, interactive activities, and real-world case studies can increase learning and allow for practical application in professional situations. The

evaluation of learning outcomes is another important aspect of online professional development. Traditional methodologies, like as quizzes and examinations, can be adapted to the online environment; however, additional assessment processes consistent with the nature of online learning must also be addressed (Chen et al., 2023). Online portfolios, collaborative projects, and reflective journals are all acceptable forms of submission. Peer and self-evaluation can also be used in tandem to foster a culture of continuous growth and reflection (Lee & Johnson, 2021).

To ensure the quality of online professional development programmes, it is necessary to design ways for regular assessment and feedback. Regular surveys, course evaluations, and feedback loops can provide important insights into the efficacy of the programme and identify areas for development (Anderson & Davis, 2022). Incorporating feedback from programme alumni can aid in iterative design and future version enhancement. Partnerships with professional groups and industry partners can aid in the validity and relevance of online professional development programmes. Collaboration with subject matter experts, practitioners, and employers may aid in aligning the curriculum with current industry demands and ensuring the inclusion of practical skills and knowledge (Harris et al., 2021). Industry-recognized certifications and endorsements can also provide professionals with actual credentials that authenticate their learning achievements.

Promoting Collaborative Learning and Networking Opportunities in Online Professional Development

Through online professional development, professionals may engage, collaborate, and expand their networks beyond

geographical boundaries. Collaborative learning activities can assist professionals from diverse backgrounds in developing a sense of community and sharing knowledge (Brown & Williams, 2023). Professionals may participate in meaningful relationships, exchange ideas, and learn from one another's experiences by using discussion forums, virtual group projects, and online communities of practise. In addition to formal learning activities, networking opportunities should be included in online professional development courses. Through virtual conferences, webinars, and networking events, professionals may interact with experts, industry leaders, and colleagues in their respective fields (Johnson et al., 2022). These contacts may lead to meaningful mentorship, collaborations, and possibilities for professional progress. Professional social networks and learning management systems, for example, can enable these networking activities and provide a venue for continuing collaboration and support.

Incorporating real-world case studies, simulations, and project-based learning into online professional development may improve the collaborative learning experience. Professionals may collaborate on actual projects and problem-solving scenarios, putting their knowledge and abilities to use in real-world situations (Smith et al., 2021). Collaboration projects not only improve comprehension but also promote collaboration, communication, and critical thinking abilities, all of which are necessary for professional growth and success. Professionals may benefit from the pooled wisdom and different viewpoints of their peers by increasing collaborative learning and networking opportunities through online professional development. The relationships made during the

learning process have the potential to last beyond the program's completion and promote continued professional growth throughout their careers.

Conclusion

This research emphasised the importance of personalised learning experiences and adaptable technology in meeting professionals' specific demands and preferences. The use of multimedia materials, virtual simulations, and gamification tactics can improve overall learning and increase skill development. In addition, the subject topic discussed the need of good teacher presence and learner assistance in online professional development. A helpful and engaging learning environment may be enhanced by the presence of experienced and attentive teachers, as well as the availability of solid support systems. The article also emphasised the significance of quality assurance and assessment in guaranteeing the efficiency of online professional development programmes. Integrating evidence-based tactics, evaluations, and feedback systems can help participants track their progress and identify areas for growth. External reviewers and subject matter experts can help to assess these programmes' credibility and usefulness.

Professional development through online learning has the potential to change the way professionals gain new skills and information. Individuals may further their professional development and stay current in a fast-changing world by embracing emerging trends and advances in online learning. Recognising the importance and promise of online learning for professional development is critical for policymakers, educational institutions, and professionals themselves. The

future of online learning provides exciting potential for individuals seeking continual skill improvement and professional progress by investing in infrastructure, devising successful programmes, and nurturing a supportive learning environment.

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VALUES OF USING THE INTERNET AMONG SECONDARY SCHOOL STUDENTS

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Abstract

This study explores the values acquired by secondary school students through the use of the Internet. The researchers aim to understand the differences in values based on variables such as gender, medium of instruction, and type of school. A descriptive and normative survey method is employed, with a sample of 120 students from various schools. The data collection tool consists of 40 statements with a four-point scale. Statistical analysis, including percentage analysis and t-tests, is conducted to analyze the data. The findings reveal that there is no significant difference in values based on gender, while differences are observed in values between students of different medium of instruction and types of school. The study highlights the educational, moral, social, personal, and cultural values students acquire through internet usage. The conclusion emphasizes the importance of responsible internet usage and the role of education in fostering good character and societal expectations.

Keywords: *internet usage, values, secondary school students, gender, medium of instruction, type of school, educational values, moral values, social values, personal values, cultural values.*

Introduction

During the olden days, the pen is a powerful tool. Pen is mightier than the sword. Presently technological advancement plays a vital role. Internet is used in many ways in everyone's life i.e. Searching for career opportunities, Relaxation, Health

awareness, Knowledge updating worldwide interactions and more.

While using the Internet, there is a feeling that the world is in our hands. In the pandemic situation, we realized the power of the internet in all fields; especially the teaching-learning process was not affected. The quality of higher education is also highly influenced by innovative tools and techniques of technological advancement. So, school students can't deny internet usage. In traditional teaching, they knowingly or unknowingly learn certain values. Values make them good citizens because they are the Nation's Future Builders. The investigators are teacher educators and are highly interested to know the inculcation of values through the usage of the internet. Hence the present study was undertaken.

Variables of the study:

Background Variables

Gender

Medium of instruction

Type of school

Dependent Variable

Values by the usage of the Internet

Objectives of the Study

To find out the differences among secondary school students' values of using the internet in respect of the variables namely Gender, Medium of Instruction and Type of school

Hypotheses

There is no significant difference among secondary student values of using the internet with the variables namely Gender, Type of School and Medium of instruction.

Methodology in Brief

Design: Descriptive

Method: Normative

Technique: Survey

Sample

A random sample of 120 students from various schools constitutes the sample for this study.

Tools Used

The tools used for data collection are as follows:

1. General Information sheet
2. Values of using the internet constructed by Mrs Joti and Dr.V.Geetha

Tool Description

The tool consists of 40 statements with a four-point scale.

Scoring:

Always --3 often---2 sometimes --1 never --0

Statistical treatments

Percentage Analysis and 't-test

Table 1
Statistical measures and results of test of significance of
difference between the means of secondary school students:
variable wise

Variables	Sub Variables	N	M	SD	't' value	S/NS
Gender	Male	34	49.9	4.21	0.85	NS
	Female	76	50.8	4.19		
Medium of instruction	Tamil	52	46.7	4.67	2.83	S
	English	58	54.0	4.03		
Type of school	Private	65	50.9	4.5	2.01	S
	Govt. aided	45	48.8	4.04		

In Gender, the obtained 't' value is less than the table value of 1.96. It indicates there is no significant difference between Male and Female students in their Values of using the internet. In the Medium of instruction, the obtained 't' value is more than the table value of 1.96.

It shows that there is a significant difference between Tamil and English medium students in their values of using the Internet. Compare to Tamil and English Medium student English Medium students have higher values than Tamil Medium students. Communication skills maybe the reason.

In the Type of school, the obtained 't' value is more than the table value of 1.96. It infers that there is a significant difference between Private and Government Aided students. Private school students have easy access to internet usage(Parental income is one of the factors) there may be the reason.

Percentage Analysis: Educational Values

60% of the student stated that they learnt easily because of visual effects. Knowledge enhancement and through online tests and quizzes they can understand their strength and weakness.

Moral Values:

20% of the student responded allotted specific time for internet usage, selecting and using the correct site and informing friends not to use it. Develop punctuality in developing emails.

Social Values:

85% of the student opined that through the usage of internet sharing and updating information, improvement in communication and also develop patient listening.

Personal Values:

15% of the students viewed that they know new product availability based on their interest.

Cultural Values:

80% of the student opined that they suggest a unique programme for school functions, and they download music for their functions and celebrations in schools.

Conclusion

In the present scenario, no work can be done without the Internet. Education also depends much more on information through Internet services. So, parents give freedom to their

children and also monitor the usage of the internet. Students are equally responsible for the proper usage of the net, which is expected by the parents and also to fulfil societal expectations. Education with technological advancement is one of the keys to empowerment. Value inculcation through the internet must build good character which makes the student achieve high in future because a Good Nation depends on its Good Citizens.

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PARENT - PROFESSIONAL ROLE IN INCLUSIVE EDUCATION

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Abstract

The importance and necessity of parent-professional partnerships are certainly emphasized in "special educational needs" legislation. First, the old, "expert" style of service delivery has been taught to the majority of professionals. They assess each child individually, offer advice, and treat them as needed within the confines of their discipline. Second, traditionally, parents have taken on a more passive role and have been the main recipients of the services that professionals might offer. Parents are expected to actively participate in the examination and intervention of their child as a result of recent legislation and shifting societal attitudes. Third, the growth of parent-professional collaborations suggests a working alliance. Hopefully, the majority of parents and professionals share the belief that working together will lead to better services for young children and their families. However, behaviour change has been sluggish and frequently challenging. When questioned, parents and professionals both concur that successful partnerships require certain personal traits. Despite this, both parents and experts still find partnerships to be challenging. The study breaks down the idea of collaboration before making suggestions for enabling and empowering parent-professional partnerships based on the knowledge of parents.

Keywords: *Partnership, Parent, Peer, Teachers, School*

Introduction

A parent - professional partnership is a cooperative arrangement between a parent of a disabled kid and a specialist who works with the child. Every child with

exceptional needs has parents who, despite not having a medical diagnosis, also have special needs. Whether their child has a learning disability, an intellectual difference, a physical problem, or a chronic or serious illness, extensive interactions with numerous health experts will almost definitely become a part of their lives. The professions that come to mind first when discussing a parent-professional partnership are educators. To be a part of this collaborative partnership, a professional must offer a direct or indirect service to the kid with the disability or to the child's family, or they must be active in the policies that have an impact on the child. Other experts with whom a parent might collaborate include policymakers, trainers, and therapists in addition to educators.

Parent- Professional Partnership

The elements of partnership as a process are as follows:

- Partners develop strong communication and interpersonal skills
- The program's structure and practice explicitly encourage cooperation.

Goals of Partnership

- Increasing parent awareness of teachers' roles, duties, and status as professionals
- Fostering the development of healthy relationships between parents and teachers through improving teacher knowledge of parents' perspectives.
- Outlining concrete actions for parents and teachers to take when circumstances warrant it.

Benefits of Parent Professional Partnership:

The education of students with disabilities and those who are not is greatly benefited by parent-teacher collaboration in inclusive education. The advantages of parent professional cooperation include the following:

1. Parent-teacher relationships are beneficial for identifying the various needs of students, both at home and in school.
2. It aids in giving students' education more purpose and utility. Each student's needs and preferences are respected.
3. In parent-professional collaboration, recommendations are made to remove educational obstacles.
4. Parent-professional partnerships ensure that all students have equal access to learning opportunities.
5. This collaboration offers to bring together, develop, and evaluate students. It aids in creating well-designed, individualized instructional programmes.
6. Professional skills are enhanced in the areas of cooperative learning, peer tutoring, and adaptive curriculum, among others, through parent-professional collaboration. Parent professional partnership development is a difficult task. To succeed, you need commitment, patience, and extra assistance.

Role of Parent

To help promote inclusive education, parents should keep the following things in mind.

- Early detection of a child's impairment.
- Parents should not take an excessively protective stance towards their children; rather, they should show

and share love, care, emotion, and camaraderie with them.

- The duty to aid and support schooling, career preparation, and responsibility for education.
- Parents should accept their child's limitations.
- Parents might not be hesitant to interact with teachers and other professionals in the field.

Pull of Instructions

When the programme planning team determines that an individual's outcome design cannot be best met in the classroom setting, pull out instruction may be necessary. Pull out instruction refers to the implementation of individualized programming for alternative programmes, courses, and curriculum that occurs outside of the classroom. Instructions should be offered in the least restrictive, most inclusive environment respecting the dignity of the student.

Role of Peer

The child with a special need has the chance to interact with typically developing students and develop real friendships with them in an inclusion classroom, and the other students have the chance to interact with individuals whose abilities vary and to learn that being disabled is just a part of life. A youngster with exceptional needs may benefit greatly from the help of peers who can offer both practical assistance and companionship. The peer's function is

- **Collaborative Learning**

A method employed by the school to enhance the teacher's lessons on certain abilities. This type of instruction gives

pupils the chance to practice, review material, and engage in higher order thinking.

- **Cross Age Peer Support**

Another tactic that aids in learning in the context of general education is cross-age peer support. This strategy frequently incorporates older students, typically college students who will support elementary or secondary pupils' learning.

- **Peer Modeling**

Another resource that can be used to assist kids in learning academic procedures and classroom routines is peer modeling. Additionally, it gives teachers in the classroom the chance to use students as assistants in clarifying instructions and providing school-based interventions with little to no explanation of the lesson cycle. It is a great opportunity for peers to offer kids who need to develop their social skills relevant behavioral models.

Role of Professionals

Professionals are essential to advancing inclusive education. This is due to the fact that they frequently serve as the bridge between the ideal learner's family, home, and school. Professionals with the necessary training and expertise can help families and educators feel more optimistic about the prospects for students with disabilities.

- **Core Values**

There are four guiding principles for an educational system that accepts all students regardless of their differences in learning preferences.

These principles will serve as the cornerstone of an accessible and inclusive educational system.

- **Low Policy and Obligations**

The legal and policy foundations that support the development of an educational system are highlighted in this section. That includes students who are divided into groups. The legislation or policy may be national or local, and it may apply to national organizations, local governments, our educational institutions, or experts in the field of education.

- **Empathy and Understanding**

This section emphasized the need for transformation in both individuals and organizational and agency cultures. The paradigm that will be required to support inclusive education will be created through changes in attitudes, ways of thinking, and behavior among individuals and organizations.

- **Problem Solving and Practical Solution**

Professionals desire and require real-world examples that demonstrate how to include diverse learners in classrooms and colleges.

Role of Teachers

- **Curriculum Modification-** The majority of educators who work in inclusive settings change their lesson plans to accommodate their special education students' needs. A modified curriculum may contain aids to increase students' comprehension, such as graphically organized and color-coded chapters, audio taped text, notes, tasks, and summaries of textbook chapters.

- **Communication-** It is crucial for inclusive teachers to stand up for the needs of their special education students by making sure that resources like staff development opportunities, team teaching, peer talking, and instructional assignments are accessible, in addition to ongoing policies that evaluate each student's progress individually.
- **Classroom Environment-** Successful inclusion classrooms, in the opinion of instructors, are those where staff members believe in the academic potential of their special needs students. It's crucial for instructors to set up a setting where children with special needs may learn alongside their peers and develop positive social skills.
- **Managing Behaviour -** Parental and teacher cooperation is necessary for effective behaviour management. Only after understanding and describing behaviour can it be controlled. Due to their limitations and the experiential feelings they acquire from others, children with disabilities are more likely to display behavioural issues. Effective behavior-management techniques can prevent or treat a variety of behavioural issues. The efficacy of various behaviour management techniques may range from person to person.

Role of Schools

- A safe and orderly learning environment;
- The development of social and moral values in students;
- Opportunities for equality;
- A strong education for student achievement;

- An emphasis on fundamental skills; and
- Regular assessments of students' progress.

Conclusion

It's clear that home and school work best together. Teachers are not the only ones responsible for the family's education. The burden must be shared evenly by the parents. In an ideal world, home should become school and school should become home, as Vinoba Bhaveji correctly observed. Their latent abilities and skills will manifest and can be properly developed if the children have a home environment and if the family offers a supportive environment for education. This leads us to the conclusion that home and school are two sides of the same coin.

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PEER LEARNING – THEORIES BEHIND IT

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Abstract

Based on psychological and sociological concepts, educators developed peer learning as a means of teaching and learning. Peer learning occurs when individuals of similar abilities interact with one another. The role of teachers, in addition to the readiness of parents and kids, constitutes key factors in the success of peer learning. Peer learning under the direction of a qualified instructor performs well with an array of learners. This article's primary goal was to provide an overview of the peer learning method. Books on peer learning, pertinent academic articles, and conference papers were used as secondary sources in this study.

Keywords: *constructivism, learning, teaching process, peer learning.*

Introduction

Peer learning, sometimes known as peer-to-peer learning, Peer learning is the process of acquiring knowledge and skills by deliberately helping and encouraging peers who are on equal footing or matched companions. A peer group consists of a group of individuals with the same status who interact with one another (Falkchikov, 2001). Peer group influence often peaks across adolescence. This method is often employed by teachers in the learning and teaching process, in particular when a constructive learning approach is applied.

Objective

The purpose of this paper is to provide an overview of the peer learning method.

Methodology

Since this research is based on a literary survey, books on peer learning, relevant research papers, and conference papers were reviewed as secondary sources in this study. The research method used was the content analysis method. Data relevant to the content analysis method is analysed.

Theories behind the Peer Learning

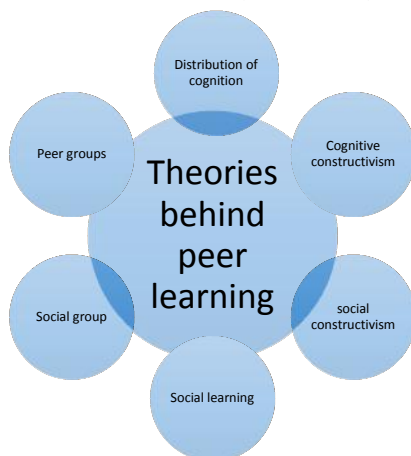
The theory of education encompassing cognitive constructivism, social constructivism, cognitive distribution, social groupings, and peer groups formed the foundation for the teaching approach known as peer learning. Constructivism's basic idea is that students learn better by doing instead of watching. Dewey (2001) says that education is not an effort of “telling” and being “told”. It is active and constructive process. In its brief history, constructivism has evolved under two logical paradigms—cognitive constructivism and social constructivism—under the influence of both philosophy and psychology to reach the present stage of development. The cognitive constructivist strand is expressed by Jean Piaget (1972), Bruner (1990), and Neisser, whereas Vygotsky (1978) represents the social constructivism. The primary focus of cognitive constructivists is on how people develop their own mental systems. Vygotsky's social constructivism, which is regarded as an extension of constructivism, accepts that every function of a child's cultural development manifests on two levels: first, on the social level (inter-psychology), and second, on the individual level (intra-psychology). He explains that every higher function emerges as a real relationship between the learner and the others around him (Vygotsky, 1980).

Theory of Distributed Cognition developed by Edwin Hutchins (2020) expresses that the individual's social and

physical environment as well as their own knowledge reside within them. Cognitive distribution is the process whereby social sharing of cognitive resources increases individual cognitive capacity and enables a group to do something that individual cannot. Adults provide children the chance to deal with tangible items, make decisions, explore ideas and concepts, and conduct experiments as part of social learning.

Social learning theorists enlarged the concept of behaviorism to cover not only observed behavior but also the cognitive processing of environmental information (Santrock, 2006). According to Bandura, learning through observation involves digesting information. When a student observes information about the world and converts it into cognitive representations, observational learning takes place. Then, the knowledge converted into a cognitive process

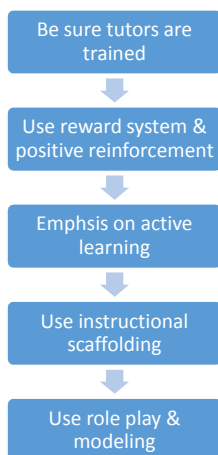
A peer group consists of group of individuals with the same status with who interact one another (Falkchikov, 2001). The child's peer groups have the power to shape what they value, is aware of, dress, eat, and studies. Peer groups include members who hold similar values, interests, and opinions.



A social group is a collection of individuals who identify as one another and engage in informal structures of interaction based on common values, conventions, and objectives. Another definition of a social group is a group of two or more people who interact meaningfully for a common goal.

Successful Peer Learning and Peer Teaching Techniques

The responsible authority in peer learning conditions should ensure that the tutors are properly trained and knowledgeable about the peer teaching process. The learning experience is organized by the student themselves under the supervision of a professionally certified teacher, and they are able to control the learning and teaching conditions without damaging the learner's personality. Students are hence engaged. Positive reinforcement in particular needs to be a key component of the reward system. The learner should be allowed enough response time to resolve the learning issue on their own.



Conclusion

Peer learning occurs when two or more students with similar backgrounds interact. At the end of the learning process, the learners are accomplishing a task that neither of them could complete independently. The facilitator should be familiar with the theories underlying this learning scenario that encourages peer learning. Both the teacher and the tutee in a peer learning situation should be aware that peer learning involves both teaching and learning. Due to its multi-functional approach, peer learning and teaching possibilities can be one of the most successful learning and teaching methods when they are correctly implemented and flaws are avoided.

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PEER-TO-PEER LEARNING-BENEFITS: CHALLENGES AND STRATEGIES

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Abstract

Peer-to-peer (P2P) learning is a type of learning where individuals with similar knowledge or skills come together to share knowledge and learn from each other. This approach emphasizes collaboration, knowledge sharing, and mutual learning, rather than traditional top-down learning from an instructor or expert. In P2P learning, each individual takes an active role in both teaching and learning, with participants alternating between the roles of teacher and learner. This helps create a more dynamic and engaging learning environment, as learners have the opportunity to not only absorb knowledge but also actively contribute to the learning process.

P2P learning can take place in a variety of settings, such as online communities, workshops, or informal learning groups. It can also be facilitated by technology, such as video conferencing or online learning platforms, allowing learners to connect and collaborate with others regardless of their physical location. P2P learning offers several benefits, such as fostering a sense of community, promoting critical thinking and problem-solving skills, and encouraging lifelong learning. Additionally, it can be a cost-effective and scalable way to provide learning opportunities, particularly in areas where access to traditional education is limited. Overall, P2P learning represents a shift towards a more collaborative and inclusive approach to education, where individuals are empowered to take an active role in their learning and contribute to the learning of others.

Keywords: *Peer-to-peer, collaboration and inclusive approach*

Introduction

Peer learning, also known as peer-to-peer learning, involves students being organized into groups to collaborate

and share knowledge. In this approach, they come together to solve problems, complete tasks, or finish assignments. The main objective is to foster shared experiences, enabling children to work as a team, communicate, and strive towards achieving a common goal. Through this process, students acquire numerous skills and abilities. Peer-to-peer learning is a type of learning where individuals of similar knowledge or skill level work together to learn from each other. This approach to learning allows individuals to collaborate and share knowledge and experiences, creating a more interactive and engaging learning experience. Peer-to-peer learning can occur in both formal and informal settings, such as in a classroom or workplace. In peer-to-peer learning, learners are both teachers and learners. Each individual brings their unique experiences, knowledge, and perspectives to the learning process, creating a rich and diverse learning environment. This type of learning encourages active participation, critical thinking, and problem-solving skills. It also promotes a sense of community and mutual support, as learners work together towards a common goal.

Peer-to-peer learning is an effective way to enhance learning outcomes, particularly in areas such as teamwork, communication, and leadership. It can also increase motivation and engagement, as learners are more invested in the learning process when they have an active role in it. Overall, peer-to-peer learning provides a collaborative and engaging way for individuals to learn and grow together.

Importance of Peer Learning

Peer-to-peer learning is an essential component of the classroom environment, offering numerous benefits for students. Here are some key reasons why peer-to-peer learning is important in the classroom:

1. **Active engagement:** Peer-to-peer learning encourages active participation among students. When students engage in discussions, group activities, or collaborative projects, they become active participants in their learning process. This active engagement helps them develop a deeper understanding of the subject matter.
2. **Different perspectives:** Each student brings their unique background, experiences, and perspectives to the classroom. Peer-to-peer learning allows students to share their viewpoints and learn from one another. It exposes them to diverse ideas and encourages critical thinking as they consider alternative viewpoints. This diversity of perspectives promotes a richer and more comprehensive understanding of the topic.
3. **Enhanced communication skills:** Engaging in peer-to-peer learning requires students to articulate their thoughts and ideas effectively. They learn to express themselves clearly, actively listen to others, and engage in meaningful discussions. These communication skills are crucial for academic success as well as for future professional endeavours.
4. **Social and emotional development:** Peer-to-peer learning fosters a sense of community within the classroom. Collaborating with peers promotes social interactions, empathy, and cooperation. Students develop their

interpersonal skills, learn to work in teams, and become more aware of their strengths and weaknesses. Additionally, peer learning creates a supportive and inclusive learning environment, boosting students' confidence and self-esteem.

5. Knowledge consolidation: Explaining concepts to others is an effective way to consolidate one understanding of a topic. Through peer teaching, students reinforce their learning while helping their classmates. By presenting information in their own words and answering questions, they gain a deeper mastery of the subject matter.
6. Increased motivation: Peer-to-peer learning can enhance student motivation and engagement. Students often find it more relatable and less intimidating to learn from their peers. They can also feel more comfortable asking questions and seeking clarification from their classmates, fostering a positive learning experience.
7. Autonomy and responsibility: Peer-to-peer learning promotes student autonomy and responsibility for their learning. It encourages them to take ownership of their education by actively seeking knowledge, participating in discussions, and sharing their insights. Students develop a sense of accountability towards their peers and themselves, which can lead to improved academic performance.

Characteristics of Peer-to-Peer Learning

Peer-to-peer learning in the classroom refers to a teaching and learning approach where students actively engage with each other to acquire knowledge, share ideas, and collaborate

on projects. It involves students taking on the roles of both learners and teachers, fostering a more interactive and participatory learning environment. Here are some characteristics of peer-to-peer learning in the classroom:

Collaboration: Peer-to-peer learning encourages students to work together in groups or pairs, promoting collaboration and cooperation. Students learn from each other by discussing concepts, solving problems collectively, and sharing their insights.

Active participation: Rather than passively receiving information from the teacher, students actively participate in the learning process. They contribute their knowledge, perspectives, and experiences, making the learning experience more dynamic and engaging.

Knowledge construction: Peer-to-peer learning facilitates the construction of knowledge through meaningful interactions. Students engage in discussions, debates, and questioning, which helps them develop a deeper understanding of the subject matter.

Enhanced communication skills: Engaging with peers in discussions and presentations helps students develop their communication skills. They learn to articulate their thoughts, listen actively, and provide constructive feedback to their peers.

Increased engagement: Peer-to-peer learning promotes active engagement among students. It creates a supportive and inclusive environment where students feel comfortable expressing their ideas and opinions, leading to increased motivation and interest in the learning process.

Diverse perspectives: In a peer-to-peer learning setting, students come from diverse backgrounds, each bringing their unique perspectives and experiences. This diversity enriches the learning environment, exposes students to different viewpoints, and promotes critical thinking.

Empowerment and autonomy: Peer-to-peer learning empowers students to take ownership of their learning. They become active participants in their education, assuming responsibility for their learning outcomes and those of their peers.

Personalized learning: Students have the opportunity to learn at their own pace and receive personalized support from their peers. They can seek assistance from classmates who may explain concepts in a way that resonates with them, fostering a deeper understanding.

Confidence building: Engaging in peer-to-peer learning helps students develop self-confidence as they share their ideas, collaborate with others, and receive positive feedback. It creates a supportive environment that encourages risk-taking and experimentation.

Long-term retention: Research suggests that peer-to-peer learning enhances long-term retention of knowledge. Teaching concepts to others strengthens one's understanding of the material and promotes deeper learning.

It's important to note that while peer-to-peer learning can be highly beneficial, it should be complemented with appropriate guidance and facilitation from the teacher to ensure accurate information and a productive learning environment.

Strategies of peer-to-peer learning in the classroom

Peer-to-peer learning in the classroom can be an effective way to promote collaborative learning, student engagement, and a deeper understanding of the subject matter. Here are some strategies to implement peer-to-peer learning in the classroom:

1. **Group work:** Divide students into small groups to work on projects, assignments, or problem-solving tasks together. Encourage them to share ideas, discuss concepts, and help each other understand difficult concepts.
2. **Peer tutoring:** Assign students as peer tutors to assist their classmates. This can be done by pairing students with different skill levels, where the more advanced student acts as a tutor to support the learning of the other student.
3. **Think-pair-share:** Ask students to think about a question or problem individually, then pair them up to discuss their ideas with a partner. Finally, have pairs share their thoughts with the whole class. This strategy

promotes active engagement and provides opportunities for students to learn from each other.

4. Jigsaw technique: Divide a complex topic or task into smaller parts and assign each part to a small group. Each group becomes an expert on their assigned part, and then they come together to teach the whole class. This encourages collaboration and ensures that every student has a role to play in the learning process.
5. Collaborative projects: Assign group projects that require students to work together to complete a task or solve a problem. This allows them to learn from each other's perspectives, share knowledge and skills, and develop teamwork and communication skills.
6. Peer assessment: Encourage students to provide feedback and assess each other's work. This can be done through structured rubrics or peer evaluation forms. Peer assessment promotes critical thinking and helps students develop a deeper understanding of the subject matter by evaluating the work of their peers.
7. Class discussions: Facilitate meaningful discussions in the classroom where students can share their ideas, opinions, and insights on a particular topic. Encourage active listening, respectful dialogue, and the exploration of diverse perspectives.
8. Learning buddies: Assign students as learning buddies or study partners. They can work together on homework assignments, review materials, or study for exams. Learning buddies provide support, motivation, and an opportunity for students to teach and learn from each other.

9. **Cooperative learning activities:** Incorporate cooperative learning activities such as group games, simulations, or role plays. These activities foster collaboration, problem-solving, and active participation among students.
10. **Reflection and feedback:** Provide time for students to reflect on their learning experiences and provide feedback to their peers. This can be done through group discussions, written reflections, or peer conferences. Reflection and feedback help students consolidate their learning and enhance their metacognitive skills.

Remember, the success of peer-to-peer learning strategies depends on creating a positive and inclusive classroom environment, setting clear expectations, and providing guidance and support throughout the process.

Challenges of Peer-to-Peer Learning:

1. **Variable Knowledge Levels:** In peer-to-peer learning, participants may have different levels of knowledge and skills. This can lead to discrepancies in understanding and hinder the learning process if not managed effectively.
2. **Lack of Expertise:** Since peers are not experts in the field, there may be limitations in terms of the accuracy and depth of information shared. Students may inadvertently propagate misconceptions or incomplete understanding of concepts.
3. **Time Management:** Peer-to-peer learning requires coordination among participants. Scheduling conflicts and variations in individual learning speeds can pose challenges in organizing study sessions or group activities.

4. **Potential for Distractions:** Collaborative learning environments can be prone to distractions. Students may get off-topic or engage in socializing rather than focusing on the intended learning objectives, affecting productivity.
5. **Unequal Contributions:** In some cases, certain individuals may dominate discussions or contribute more than others, creating an imbalance in participation. This can hinder the full engagement and learning of all participants.

Addressing these challenges and maximizing the benefits of peer-to-peer learning often requires effective facilitation, clear guidelines, and a supportive learning environment. By promoting active participation, encouraging respectful communication, and ensuring equal opportunities for all, the potential drawbacks can be mitigated, allowing for a more enriching collaborative learning experience.

Role of Teacher in Peer To Peer Learning

In a peer-to-peer learning environment, the role of a teacher may vary slightly from traditional classroom settings. While the teacher still plays a crucial role in facilitating and guiding the learning process, their role becomes more of a facilitator or mentor rather than the sole source of knowledge. Here are some key roles and responsibilities of a teacher in peer-to-peer learning:

Facilitator: The teacher facilitates the learning process by creating a supportive and collaborative environment where students can engage with each other and exchange knowledge and ideas. They set the stage for peer-to-peer interactions and ensure that everyone has an opportunity to contribute and learn from one another.

Knowledge Resource: Although the teacher is not the primary source of knowledge in a peer-to-peer learning setting, they still possess expertise and serve as a valuable resource. They can provide guidance, clarify concepts, and answer questions when needed. The teacher's role is to supplement and enhance the student's learning experience by offering insights and additional information.

Setting Learning Goals: The teacher helps students set clear learning goals and objectives. They guide students in defining their learning outcomes and facilitate discussions on how to achieve those goals. The teacher also assists in designing activities and assessments that align with the learning objectives and encourage peer collaboration.

Monitoring and Feedback: The teacher monitors the progress of individual students and the overall dynamics of the peer-to-peer learning environment. They observe the interactions, assess the quality of discussions, and provide timely feedback to students. The teacher's feedback can help students reflect on their performance, address any misunderstandings, and improve their learning strategies.

Mediator: In peer-to-peer learning, conflicts or disagreements may arise among students. The teacher acts as a mediator, helping students resolve conflicts and maintain a positive and constructive learning environment. They encourage effective communication, active listening, and respectful dialogue among peers.

Facilitating Reflection and Evaluation: The teacher facilitates reflective practices, encouraging students to think critically about their learning experiences. They guide discussions on what worked well, challenges faced, and lessons learned through peer interactions. The teacher also assists in evaluating the effectiveness of peer-to-peer learning methods and makes adjustments as needed.

Fostering Collaboration and Empathy: The teacher promotes a culture of collaboration and empathy among students. They encourage students to support and learn from one another, fostering a sense of community and shared responsibility for learning. The teacher models and reinforces positive communication and cooperation within the peer-to-peer learning environment.

Overall, the role of a teacher in peer-to-peer learning is to facilitate, guide, and support students' collaborative learning experiences. They create a framework that encourages active engagement, knowledge sharing, and critical thinking among peers, while still providing guidance and expertise when necessary.

Conclusion:

In conclusion, peer-to-peer learning is a highly effective educational approach that promotes active engagement, collaboration, and knowledge sharing among students. By fostering a learner-centred environment, peer-to-peer learning encourages individuals to take ownership of their education and develop valuable skills such as critical thinking, communication, and problem-solving. This approach not only

enhances academic performance but also cultivates a sense of community and mutual support within the learning environment. Furthermore, peer-to-peer learning allows for diverse perspectives, experiences, and expertise to be shared, leading to a richer and more comprehensive learning experience for all participants. By harnessing the power of collaboration and leveraging the strengths of each learner, peer-to-peer learning paves the way for lifelong learning and prepares individuals to thrive in an interconnected and rapidly changing world.

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PLANNING AND MANAGEMENT OF INCLUSIVE CLASSROOM

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Abstract

Creating an inclusive classroom is essential for ensuring that every student, regardless of their abilities or backgrounds, has equal access to quality education. This article explores the planning and management strategies required to set up an inclusive lecture room surroundings that help the numerous desires of all learners. It explores the importance of proactive planning, the role of collaboration among stakeholders, and the implementation of effective instructional practices. Additionally, highlight the significance of fostering a positive and supportive classroom culture that embraces diversity and promotes inclusivity. By incorporating these strategies, educators can cultivate an environment where every student can thrive academically, socially, and emotionally.

Keywords: *Inclusive classroom, Equal access, Quality education, Collaboration, Instructional practices*

Introduction

Creating an inclusive classroom is a fundamental aspect of modern education. It entails designing a learning environment that embraces diversity, respects individual differences, and ensures equal access to education for all students, regardless of their abilities, backgrounds, or learning styles. Inclusive classrooms aim to foster a supportive and empowering learning environment where every student feels valued, included, and has the opportunity to thrive academically, socially, and emotionally.

The planning and management of an inclusive classroom are the foundation to the education system. Educators must proactively address the diverse needs of their students, collaborate with stakeholders, and implement effective instructional strategies to create an inclusive and supportive learning environment. This article explores the various aspects of planning and managing an inclusive classroom, highlighting the importance of proactive planning, collaboration, differentiated instruction, creating a positive classroom culture, and assessing student progress.

Planning and Management of Inclusive Classroom

Planning is an important function of management to achieve educational goals. A plan is a statement of principles, so it is necessary and useful for policy formulation. Planning is the process of determining future course of action and is performed at all levels of management. Inclusive classrooms are general education classrooms where students with and without disabilities study together. This is essentially the opposite of a special education classroom where students with disabilities only study with other students with disabilities. Class management is an organizational function that requires teachers to perform various tasks such as planning, organizing, coordinating, directing, managing, and communicating.

Here are some considerations for planning and management of inclusive classroom:

1. Proactive planning for an inclusive classroom:

Proactive planning is a vital aspect of creating an inclusive classroom environment. The aim of proactive educational management is therefore to create an environment that supports and facilitates both academic and social-emotional learning. This requires planning ahead and considering the cognitive, emotional and physical needs of the student. Here are some key elements and considerations for proactive planning in an inclusive classroom:

Understanding Student Diversity:

- Gather information about students' individual strengths, interests, learning styles, and cultural backgrounds.
- Consider students' abilities, disabilities, and diverse needs, including language proficiency, sensory needs, and socio-emotional development.
- Collaborate with special educators, support staff, and families to gather comprehensive information about students.

Identifying Potential Barriers:

- Anticipate and identify potential barriers to inclusion, such as physical accessibility issues, lack of resources, or curriculum limitations.
- Consider how to address these barriers through accommodations, modifications, assistive technologies, or environmental adaptations.
- Regularly review and revise plans to ensure ongoing accessibility and inclusivity.

Developing a Flexible and Responsive Curriculum:

- Design a curriculum that allows for flexibility and customization to meet diverse student needs.
- Incorporate a range of instructional strategies, materials, and resources to address different learning styles and abilities.
- Offer choices and options for students to demonstrate their understanding and engage in the learning process.

Setting Achievable Goals and Objectives:

- Collaborate with students, families, and support professionals to set individualized goals and objectives that are challenging yet attainable.
- Ensure that goals are aligned with educational standards and address specific learning needs and abilities of each student.
- Monitor progress regularly and provide ongoing feedback to students and families to support their growth and achievement.

Providing Individualized Supports:

- Determine and provide necessary supports, accommodations, and modifications for students with diverse needs.
- Create individual education plans (IEPs) or personalized learning plans (PLPs) for students with disabilities or specific learning needs.
- Collaborate with support professionals to implement specialized interventions and provide necessary resources.

Engaging Families and Stakeholders:

- Involve families as partners in the educational process by seeking their input, sharing information, and actively communicating about their child's progress.
- Collaborate with support professionals, such as special educators, counselors, or therapists, to ensure coordinated support and services for students.
- Foster open lines of communication and establish a collaborative relationship with all stakeholders involved in the students' education.

Ongoing Assessment and Reflection:

- Use a variety of assessment methods to gather data on student progress, including formative and summative assessments, observations, and student self-reflections.
- Regularly reflect on instructional practices, curriculum effectiveness, and the impact on student learning and engagement.
- Use assessment data to inform instructional decisions, adapt strategies, and provide targeted support to meet individual student needs.

2. Collaborative Approach in Inclusive Education:

Collaboration among stakeholders plays a significant role in creating an inclusive classroom. It includes the importance of involving parents and guardians, engaging support staff and specialists, collaborating with fellow educators, and building partnerships with external organizations. It highlights the benefits of shared decision-making, effective communication, and collective problem-solving in addressing the individual needs of students.

Importance of Collaboration in Inclusive Education:

Holistic Understanding of Students: Collaboration allows for a holistic understanding of students by combining the insights and expertise of various stakeholders. Parents and guardians provide valuable insights into a student's strengths, interests, and needs, while support staff and specialists contribute their knowledge in specific areas such as special education, speech therapy, or occupational therapy. By sharing information and working together, educators can develop comprehensive strategies to meet the diverse needs of students.

Coordinated Support and Services: Collaboration ensures that support services and interventions are coordinated and aligned to meet the individual needs of students. By collaborating with support professionals, such as special educators, counselors, or therapists, educators can develop individualized plans and interventions that address specific learning challenges or disabilities. This coordinated approach enhances the effectiveness of interventions and support provided to students.

Shared Decision-Making: Collaboration involves shared decision-making, where all stakeholders have a voice in shaping educational plans and policies. By involving parents, support staff, and fellow educators in decision-making processes, educators can gain valuable perspectives, insights, and expertise that contribute to the overall success of students. This shared decision-making fosters a sense of ownership and empowerment among all stakeholders, promoting a positive and inclusive school culture.

3. Differentiated Instruction and Universal Design for Learning (UDL):

Differentiated instruction and Universal Design for Learning (UDL) are instructional approaches that promote inclusivity. This means developing flexible learning environments where information is presented in different ways and students are given options to engage and demonstrate their learning in different ways. It explores the adaptation of teaching methods and materials to meet diverse learner needs. It emphasizes providing multiple means of representation, action, and expression, incorporating assistive technologies and tools, and personalizing learning experiences.

4. Classroom environment and physical arrangement:

Building inclusive learning environments means not only changing attitudes, support systems and activities, but also rearranging physical space to meet the diverse needs of outstanding children. The physical environment of the classroom significantly impacts inclusivity. It includes creating a welcoming and safe space, arranging furniture for accessibility and inclusivity, displaying visual supports and learning aids, and implementing effective behavior management strategies. It emphasizes the importance of creating a positive and supportive classroom climate that promotes student engagement and participation.

Considerations for Creating an Inclusive Classroom Environment:

Accessibility: Ensure that the physical space is accessible to all students, including those with mobility impairments or sensory disabilities. This includes providing wheelchair accessibility, clear pathways, and appropriate accommodations for students with visual or hearing impairments.

Flexibility: Design a flexible classroom layout that can be easily modified to meet the changing needs of students. This allows for different seating arrangements, groupings, and learning zones based on instructional activities and individual student needs.

Safety and Comfort: Prioritize the safety and comfort of students in the classroom environment. Consider factors such as appropriate lighting, temperature control, ergonomic furniture, and noise reduction measures to create a conducive learning space.

Personalization: Provide opportunities for students to personalize their learning environment. Allow them to display their work, bring in personal items, or create designated spaces that reflect their individuality and interests. This promotes a sense of ownership and belonging.

Clear Traffic Flow: Arrange furniture and learning materials in a way that allows for clear and unobstructed movement throughout the classroom. Ensure that students can easily navigate the space without barriers, promoting inclusivity and accessibility.

Assistive Technologies: Incorporate assistive technologies and tools that support inclusive practices. This may include interactive whiteboards, text-to-speech software, speech-to-text tools, or communication devices. Ensure that these technologies are readily available and easily accessible to students who require them.

5. Cultivating a positive and supportive classroom culture:

A supportive and learning Supportive environment can enhance the academic, social, and emotional growth of students with diverse needs and abilities. It explores strategies for promoting acceptance, empathy, and respect among students. It explores fostering a sense of belonging, encouraging collaboration and teamwork, celebrating diversity and cultural awareness, and addressing issues related to bullying and discrimination. It emphasizes the role of the teacher in modeling inclusive behavior and creating a supportive learning community.

Here are some key strategies:

- Establish clear expectations for behavior and participation.
- Promote inclusive language and communication.
- Build positive relationships among students and with teachers.
- Celebrate diversity and individuality.
- Teach and model empathy and respect.
- Use cooperative learning and collaboration.
- Provide emotional support.
- Foster positive classroom routines and transitions.
- Encourage peer support and collaboration.

- Involve families and the community.
- Provide superb reinforcement and recognition.

By implementing these strategies, educators can create a positive and inclusive classroom culture that supports the learning and well-being of all students.

6. Assessing and monitoring student progress:

Effective assessment and monitoring practices support the progress of all learners. It explores the use of formative and summative assessments, alternative assessment methods, timely and constructive feedback, and tracking individual student growth and achievement. It emphasizes the importance of using assessment data to inform instructional decisions, provide targeted support, and promote student self-reflection and goal-setting.

- Use individualized assessment approaches that consider diverse learning needs.
- Emphasize formative assessment to gather ongoing feedback on student understanding.
- Apply Universal Design for Assessment (UDA) principles for equitable assessment opportunities.
- Collect and analyze assessment data from various sources to monitor progress.
- Develop Individualized Education Plans (IEPs) or personalized learning goals for students with special needs.
- Employ differentiated assessment strategies to accommodate diverse learning needs.
- Foster collaboration and data sharing among educators, support professionals, and families.

- Encourage student self-assessment and reflection on their learning progress.
- Provide continuous feedback and support based on assessment results.
- Establish collaborative assessment and support teams for a coordinated approach.

7. Professional development and continued learning:

Ongoing professional development is essential for educators to effectively support inclusive classrooms. It discusses the need for continuous training, accessing professional development resources, engaging in peer learning and reflection, and staying informed about best practices and research. It emphasizes the importance of educators continually enhancing their knowledge and skills to meet the diverse needs of their students.

Strategies for Professional Development and Continued Learning in Inclusive Education:

Attend Workshops and Conferences: Participate in workshops, conferences, and seminars focused on inclusive education. These events provide opportunities to learn from experts in the field, gain insights into research-based practices, and engage in discussions with fellow educators.

Collaborative Learning Communities: Join professional learning communities, both online and offline, dedicated to inclusive education. These communities can be formal or informal groups of educators who come together to share resources, discuss challenges, and exchange ideas. Engaging in

collaborative learning communities promotes ongoing learning and support.

Online Courses and Webinars: Take advantage of online courses and webinars focused on inclusive education. These courses offer flexibility and convenience, allowing educators to learn at their own pace and access resources from experts around the world.

Peer Observation and Feedback: Engage in peer observation and feedback with colleagues. Observing inclusive classrooms and providing constructive feedback can enhance understanding and implementation of inclusive practices. It also provides opportunities for collaborative problem-solving and professional growth.

Professional Journals and Publications: Stay updated with research and literature in the field of inclusive education by reading professional journals, books, and publications. Subscribing to relevant journals and following reputable organizations and researchers on social media platforms can provide access to the latest findings and insights.

In-Service Training and Professional Development Days: Take advantage of in-service training and professional development days offered by educational institutions or districts. These sessions often focus on specific aspects of inclusive education, such as classroom adaptations, differentiated instruction, or creating inclusive learning environments.

Action Research and Self-Reflection: Engage in action research and self-reflection to assess the impact of inclusive practices on student learning. Collect data, analyze results, and use findings to inform instructional decisions. Reflecting on teaching practices and student outcomes helps educators identify areas for improvement and refine their approaches.

Professional Development Resources and Online Platforms: Utilize online platforms, resources, and organizations dedicated to inclusive education. These platforms provide access to articles, videos, lesson plans, and interactive tools that support professional development in inclusive education.

Overcoming challenges and barriers to inclusion:

Inclusion in education is not without its challenges and barriers. However, with a proactive and collaborative approach, these challenges can be addressed and overcome. It emphasizes the need for proactive problem-solving, collaboration, and a supportive school and district environment to overcome obstacles.

Attitudinal Barriers: Attitudes and beliefs towards inclusive education can be a significant barrier. Negative attitudes, stereotypes, and misconceptions about students with disabilities or diverse learning needs can hinder the successful implementation of inclusion. To triumph over attitudinal barriers, it's far vital to sell awareness, sensitivity, and empathy amongst educators, students, parents, and the community. Professional development, awareness campaigns, and open dialogue can help challenge and change negative attitudes towards inclusion.

Lack of Resources: Limited resources, including funding, personnel, and specialized support services, can pose challenges to inclusive education. To address resource barriers, it is important to advocate for adequate funding and allocation of resources to support inclusive practices. Collaboration with community organizations, leveraging technology, and seeking grants or partnerships can also help supplement available resources.

Inadequate Training and Professional Development: Educators may face challenges in effectively implementing inclusive practices due to insufficient training and professional development opportunities. To address this barrier, it is crucial to provide comprehensive and ongoing training to educators. Professional development should focus on inclusive teaching strategies, understanding diverse learning needs, and implementing individualized supports. Collaboration with special education professionals and sharing best practices within the education community can also enhance knowledge and skills.

Curriculum and Instructional Adaptations: Adapting curriculum and instructional materials to meet diverse learning needs can be challenging. It is important to ensure that curriculum content is accessible, engaging, and appropriately differentiated. This may involve providing alternative formats, using assistive technologies, incorporating multi-sensory approaches, and employing Universal Design for Learning (UDL) principles. Collaborating with curriculum specialists, using inclusive instructional strategies, and seeking feedback from students can help overcome curriculum and instructional barriers.

Collaboration and Communication: Collaboration among educators, parents, support professionals, and students is essential for successful inclusion. However, challenges may arise due to communication barriers or lack of coordination. To overcome this, establish effective channels of communication, including regular meetings, shared planning time, and open dialogue. Encourage collaboration through co-teaching models, professional learning communities, and inclusive team meetings. Providing training on effective collaboration and fostering a culture of shared responsibility can also enhance collaborative practices.

Individualized Support: Meeting the individualized needs of students in inclusive classrooms can be a complex task. Students with diverse learning needs may require individualized accommodations, modifications, or specialized supports. To address this challenge, develop Individualized Education Plans (IEPs) or personalized learning plans that outline specific goals, strategies, and supports for each student. Collaborate with support professionals, involve parents in the planning process, and regularly review and update the individualized support plans.

Social and Emotional Considerations: Inclusive education involves fostering a positive and supportive social environment for all students. Students with disabilities or diverse learning needs may face social and emotional challenges, including bullying, isolation, or low self-esteem. It is important to address these challenges through promoting a culture of acceptance, empathy, and respect.

Parent and Community Engagement: Lack of parent and community engagement can be a barrier to inclusive education. To overcome this, actively involve parents and families in the educational process. Establish regular communication channels, involve parents in decision-making processes, and provide opportunities for parent education and support. Engage the community through awareness campaigns, partnerships, and inclusion-focused events to build a supportive network around inclusive education.

By recognizing and addressing these challenges and barriers, educators can create a more inclusive learning environment that meets the needs of all students. It requires a collaborative and proactive approach, continuous learning and improvement, and a commitment to promoting equity and inclusivity in education.

Conclusion

In conclusion, the planning and management of an inclusive classroom require proactive strategies, collaboration among stakeholders, and the implementation of effective instructional practices. By creating a supportive learning environment that celebrates diversity, addresses individual needs, and promotes a positive classroom culture, educators can empower every student to reach their full potential. Embracing inclusive education not only benefits students with diverse abilities but also fosters a positive and enriching experience for all learners in the classroom.

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PSYCHOLOGY OF AI USING AI TOOL: CHAT GPT

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Abstract

This paper explores the Psychology of AI using the AI tool Chat GPT, which is a large language model trained by OpenAI based on the GPT-3.5 architecture. The paper delves into the concept of AI and its psychological implications, including the way humans interact with and perceive AI. It discusses how AI has evolved and how it has become an integral part of our lives. The paper also explores the potential benefits and drawbacks of using AI in various industries, such as healthcare, education, and finance, and how it can impact human psychology. Additionally, the paper examines the role of Chat GPT as an AI tool and how it can be used to understand human psychology and behaviour. Finally, the paper discusses the ethical considerations of using AI in psychology and emphasizes the need for responsible AI use.

Keywords: ChatGPT, Interaction with AI, and Psychology of AI

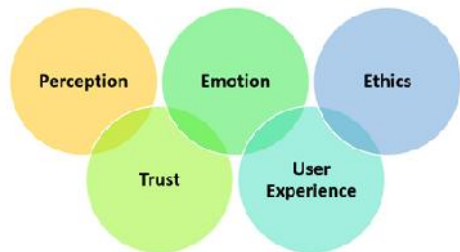
Introduction

The Psychology of AI refers to the study of how humans perceive and interact with artificial intelligence systems. As AI becomes more prevalent in our daily lives, understanding how people think and feel about these systems is becoming increasingly important. Psychologists are studying how people form initial impressions of AI systems, develop trust in them, and interact with them on an emotional level. They are also exploring how AI systems can be designed to create positive user experiences and how ethical considerations can

be integrated into the design and use of AI systems. By understanding the psychology of AI, we can design and use AI systems that are more effective, user-friendly, and aligned with ethical principles. The field of Psychology of AI (Artificial Intelligence) explores the psychological aspects of human interaction with AI systems. It aims to understand how people perceive, interact with, and respond to AI systems, and how AI systems can be designed to better meet the psychological needs of users.

The Psychology of AI can be divided into several key areas of study:

How do people perceive and make sense of AI systems? How do people form initial impressions of AI systems, and how do these impressions influence their subsequent interactions with the system?



People's perceptions of AI systems are influenced by a wide range of factors, including their prior experiences with technology, their level of familiarity with AI, and their cultural and social backgrounds. People may have different expectations, fears, and attitudes towards AI systems based on these factors, which can influence how they form initial impressions of the technology.

Research has shown that people often make initial impressions of AI systems based on their perceived usefulness, ease of use, and reliability. People are more likely to trust and use AI systems if they perceive them to be useful,

easy to use, and reliable. Additionally, people may form initial impressions of AI systems based on their perceived similarity to humans, with systems that are perceived to be more human-like often being viewed more positively.

Once people have formed initial impressions of AI systems, these impressions can influence their subsequent interactions with the system. For example, if someone has a positive initial impression of an AI system, they may be more likely to trust the system, use it more frequently, and be more forgiving of any errors or mistakes the system may make. On the other hand, if someone has a negative initial impression of an AI system, they may be less likely to trust the system, use it less frequently, and be more critical of any errors or mistakes the system may make.

It is important to note that people's perceptions and attitudes towards AI systems can change over time, based on their experiences and interactions with the technology. For example, if someone has a negative initial impression of an AI system but has a positive experience using the system, their perceptions and attitudes towards the technology may become more positive.

People's perceptions of AI systems are complex and influenced by a wide range of factors. Understanding how people form initial impressions of AI systems and how these impressions influence their subsequent interactions with the technology is important for designing AI systems that are user-friendly, trustworthy, and widely adopted. It is also important to consider the potential ethical implications of AI systems and to ensure that these systems are designed to be transparent, fair, and ethical in their interactions with humans.

How do people develop trust in AI systems? What factors influence trust, such as the system's perceived reliability, transparency, and accountability?

Developing trust in AI systems is a complex process that involves a variety of factors. Here are some of the keyways in which people may develop trust in AI systems:

1. **Transparency:** People are more likely to trust AI systems that are transparent about how they work and how they make decisions. This includes providing information about the data used to train the system, the algorithms used to make decisions, and the criteria used to evaluate outcomes.
2. **Consistency:** People are more likely to trust AI systems that consistently produce accurate and reliable results. If a system is inconsistent or produces unexpected results, people may become less trusting of the technology.
3. **Explain ability:** People are more likely to trust AI systems that can explain their decisions in a way that is understandable to humans. This includes providing explanations for why a particular decision was made or why a particular outcome was achieved.
4. **User Experience:** People are more likely to trust AI systems that are easy to use, intuitive, and provide a positive user experience. If a system is difficult to use or requires a lot of effort to interact with, people may become less trusting of the technology.
5. **Social Influence:** People may also develop trust in AI systems based on social influence, such as recommendations from friends or family, positive reviews, or endorsements from trusted sources.

6. **Brand Reputation:** The reputation of the company or organization that created the AI system can also play a role in developing trust. If the company has a good reputation for ethical behaviour and reliability, people may be more likely to trust the AI system.
7. **Personal Experience:** Finally, personal experience with the AI system can play a significant role in developing trust. If someone has a positive experience using an AI system, they are likely to develop trust in the technology and be more willing to use it in the future.

Developing trust in AI systems requires a combination of technical transparency, user experience, and positive social influence. By designing AI systems that prioritize these factors, developers can help build trust in this emerging technology.

How do AI systems evoke emotions in users? Can AI systems be designed to recognize and respond to users' emotional states, such as frustration, confusion, or satisfaction?

AI systems can evoke emotions in users in a variety of ways, including through their interactions with users, the decisions they make, and the outcomes they produce. For example, an AI system that consistently provides accurate and helpful recommendations may evoke feelings of satisfaction and trust, while a system that frequently makes errors or produces unexpected results may evoke frustration or confusion.

In recent years, there has been increasing interest in designing AI systems that can recognize and respond to users' emotional states. This is known as affective computing, and it

involves using sensors and other technologies to detect users' emotions, such as facial expressions, voice tone, and body language.

By recognizing users' emotional states, AI systems can adjust their responses and interactions to better meet users' needs and preferences. For example, if an AI system detects that a user is becoming frustrated, it may provide additional guidance or support to help the user complete a task.

Designing AI systems that can effectively recognize and respond to users' emotional states is a complex task that requires a deep understanding of human emotions and behaviour. It also raises important ethical considerations around privacy and consent, as users may not want their emotions to be tracked or analysed by a machine.

While AI systems can certainly evoke emotions in users, designing systems that can effectively recognize and respond to users' emotional states is an ongoing area of research and development in the field of AI.

How can AI systems be designed to create positive user experiences? What factors contribute to a positive user experience, such as ease of use, personalization, and engagement?

Designing AI systems to create positive user experiences is crucial for increasing user adoption and satisfaction. Here are some factors that contribute to a positive user experience:

- The AI system should be intuitive and easy to use. Users should be able to interact with the system without needing extensive training or technical expertise.

- The AI system should be tailored to the individual user's needs and preferences. This can be achieved through personalization algorithms that use data on the user's behaviour and preferences to customize the system's recommendations and interactions.
- The AI system should be engaging and enjoyable to use. This can be achieved through gamification techniques, such as reward systems and challenges, or by providing users with a sense of accomplishment and progress.
- The AI system should be transparent about how it works and how it makes decisions. Users should be able to understand the logic behind the system's recommendations and decisions, which can help build trust and confidence in the technology.
- The AI system should be responsive to users' needs and feedback. This can be achieved through user feedback mechanisms and algorithms that adjust the system's behaviour based on user input.
- The AI system should be reliable and consistent in its performance. Users should be able to trust that the system will consistently produce accurate and helpful recommendations.
- The AI system should be accessible to users with a variety of abilities and needs. This can be achieved through a design that considers accessibility and usability guidelines.

Human vs. AI

User experience (UX) is an important aspect of the relationship between humans and AI systems. The UX of a system refers to the overall experience that a user has when interacting with the system, including factors such as ease of use, intuitiveness, and responsiveness.

There are several key differences between the user experience of humans and AI systems:

1. **Learning:** Humans can learn and adapt to new situations and environments, while AI systems are only able to respond to pre-programmed instructions. This means that human users have a greater degree of flexibility and adaptability in their interactions with the world, while AI systems are limited to the parameters set by their programming.
2. **Intuition:** Humans can use intuition and common sense to understand and navigate the world, while AI systems rely on data and algorithms to make decisions. This means that human users are better able to navigate complex and ambiguous situations, while AI systems may struggle to interpret and respond to unstructured data or unexpected inputs.
3. **Emotion:** Humans can experience and respond to emotions, while AI systems do not have emotions. This means that human users may have a greater degree of empathy and understanding in their interactions with others, while AI systems may struggle to recognize and respond to emotional cues.
4. **Consistency:** AI systems can provide a consistent and reliable user experience, while humans may be more prone

to errors or inconsistencies in their behaviour. This means that AI systems can be more reliable and predictable in their interactions, while humans may be more variable and prone to error.

While there are significant differences in the user experience of humans and AI systems, both have unique strengths and limitations that can be leveraged to create more effective and engaging interactions with users. By understanding these differences and designing systems that are tailored to the needs and expectations of users, it is possible to create more positive and productive relationships between humans and AI systems.

How do ethical considerations impact the design and use of AI systems? How can AI systems be designed to align with ethical principles, such as privacy, autonomy, and social responsibility?

Ethical considerations are critical when designing and using AI systems. AI systems are becoming increasingly prevalent in our daily lives, and they have the potential to affect a wide range of societal issues, such as privacy, fairness, and social responsibility. It is, therefore, essential to consider ethical principles throughout the design and use of AI systems.

Here are some ways AI systems can be designed to align with ethical principles:

1. **Privacy:** Privacy is a critical ethical consideration when designing and using AI systems. AI systems should be designed to protect user privacy by collecting only the necessary data and ensuring that data is securely stored and processed.

2. **Autonomy:** AI systems should be designed to support individual autonomy. This means that users should have control over the decisions made by the AI system and that the system should not override user preferences without explicit consent.
3. **Fairness:** AI systems should be designed to avoid unfair biases and discrimination. This can be achieved by using unbiased data sets, testing for potential biases, and regularly auditing the system's performance.
4. **Social responsibility:** AI systems should be designed to consider their broader societal impact. This means considering potential negative consequences and taking steps to mitigate them, such as ensuring that the system does not reinforce harmful stereotypes or exacerbate existing social inequalities.
5. **Transparency:** AI systems should be transparent in their decision-making processes. Users should be able to understand how the system makes decisions and what data is used in that process. This can help build trust and ensure that the system's decisions are aligned with ethical principles.
6. **Accountability:** AI systems should be designed to be accountable for their actions. This means ensuring that there are mechanisms in place for identifying and addressing errors, biases, and other ethical concerns.

AI vs. Human

The ethics of human vs. AI refer to the ethical considerations and principles that guide the relationship and interactions between humans and artificial intelligence systems. There are several key ethical considerations related to this relationship:

1. **Power Imbalance:** One of the key ethical considerations related to the interaction between humans and AI is the power imbalance that exists between the two. AI systems can be designed to be highly intelligent and capable, with access to vast amounts of data and processing power, while humans may not have the same level of expertise or knowledge. This power imbalance can raise concerns about the potential for AI systems to manipulate or control human behaviour, or for humans to exploit or mistreat AI systems.
2. **Responsibility:** As AI systems become more autonomous and self-learning, it can be difficult to determine who is responsible for their actions and outcomes. This raises questions about accountability and responsibility, particularly in cases where AI systems are used to make important decisions that have significant impacts on human lives.
3. **Bias:** AI systems can be prone to bias and discrimination, particularly if they are trained on biased data or algorithms. This can lead to unfair and discriminatory outcomes, such as denying opportunities or services to certain individuals or groups. It is important to develop AI systems that are designed to be fair and unbiased and to carefully monitor and mitigate the potential risks of bias and discrimination.
4. **Privacy:** AI systems can collect and analyse large amounts of personal data, raising concerns about privacy and data protection. It is important to develop AI systems designed to respect individual privacy and comply with data protection laws and regulations.

5. Trust: One of the key ethical considerations related to the interaction between humans and AI is the issue of trust. Humans may be hesitant to trust AI systems, particularly if they are not transparent or explainable. It is important to develop AI systems that are transparent and explainable and to provide clear and understandable explanations of their behaviour and decision-making processes.

The ethics of human vs. AI are complex and multifaceted and require careful consideration of a wide range of ethical and social issues. By developing AI systems that are designed to be fair, transparent, accountable, and trustworthy, it is possible to build positive and productive relationships between humans and AI systems while minimizing the potential risks and ethical implications.

Conclusion

The psychology of AI investigates the cognitive and emotional processes involved in human-AI interactions. It explores how humans perceive and interact with AI systems, and how AI systems are designed to emulate human-like qualities. This field raises important ethical considerations around issues such as trust, transparency, and bias. The psychology of AI is crucial in shaping the future of AI development and its impact on society.

The Psychology of AI is a complex and multifaceted field that requires interdisciplinary research and collaboration. The development of AI tools like Chat GPT has opened up new avenues for understanding human psychology and behaviour. However, it is important to recognize the ethical implications of using AI in psychology and to ensure that responsible and

ethical practices are followed. As AI continues to evolve and become an integral part of our lives, it is crucial to consider its impact on human psychology and to work towards creating a balance between technological advancements and human well-being. Ultimately, the Psychology of AI can help us better understand the way we interact with technology and how it affects our thoughts, emotions, and behaviour, leading to the more effective and ethical use of AI in various fields.

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FEATURES OF EDUCATION 5.0: TRANSFORMING LEARNING IN THE DIGITAL ERA

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Abstract

Education 5.0, the most recent paradigm in education, is changing the way information is obtained, communicated, and implemented. This theme paper investigates the essential components of Education 5.0, emphasising its revolutionary influence on learning in the digital age. This study addresses the integration of new technologies, learner-centered methods, and the relevance of lifelong learning in Education 5.0, drawing on a wide range of research sources. It also explores the problems and possibilities that come with this new educational paradigm. The findings emphasise the importance of educators and policymakers adapting to the changing environment of Education 5.0 in order to generate future-ready learners.

Keywords: Education 5.0, Transformation, Learning, Digital Era

Introduction

Education 5.0, the most recent paradigm in the field of education, is altering the way information is learned, shared, and implemented. In the digital age, when technology plays an increasingly important role in all parts of life, the educational environment is altering to suit the changing requirements of learners. Smith (2022) defines Education 5.0 as a trend towards integrating emerging technology, learner-centered methods, and the promotion of lifelong learning. This theme paper discusses the fundamental elements of Education 5.0 and its transformational influence on learning in the digital era.

Traditionally, education depended on traditional teaching techniques such as lectures and textbooks to transmit knowledge. However, as technology advances, the way we acquire information and engage in learning has fundamentally altered. The incorporation of developing technologies such as artificial intelligence, augmented reality, virtual reality, and blockchain has expanded educational potential (Smith, 2022). These technologies give students and instructors interactive and immersive learning experiences, personalised learning pathways, and real-time feedback.

Education 5.0 promotes a learner-centered approach that recognises each student's individual needs, interests, and objectives. In Education 5.0, Anderson (2021) emphasises the significance of student autonomy, cooperation, and problem-solving abilities. Learners are no longer passive consumers of knowledge, but rather active participants in their education, free to pursue their interests and take charge of their learning path. Lifelong learning and skill development are prioritised in Education 5.0. In a quickly changing world where new technologies and industries arise, individuals must acquire both technical and soft skills in order to adapt and prosper. Johnson (2020) emphasises that Schooling 5.0 goes beyond formal schooling and encourages lifelong learning. This paradigm change necessitates instructors to create a nurturing environment.

While Education 5.0 offers exciting prospects, it also introduces new issues that must be addressed. Among the obstacles connected with this new educational paradigm include the digital gap, privacy issues, and the necessity for educators to develop digital literacy and pedagogical abilities

in order to successfully use emerging technology (Brown, 2023). Education 5.0, on the other hand, opens up tremendous opportunities for closing educational gaps, addressing marginalised communities, and encouraging global cooperation.

Educators and policymakers must grasp and embrace the revolutionary qualities of Education 5.0 as they navigate the emerging landscape. The purpose of this theme paper is to explore deeper into the fundamental components of Education 5.0 and give insights into its possible influence on learning in the digital era. We can guarantee that learners have the skills, knowledge, and competencies they need to flourish in an increasingly linked and dynamic world by tackling the problems and capitalising on the possibilities given by Education 5.0.

Integration of Emerging Technologies

Education 5.0 harnesses the power of emerging technologies to enhance the learning experience and create innovative educational opportunities. The integration of technologies such as artificial intelligence (AI), augmented reality (AR), virtual reality (VR), and blockchain has the potential to revolutionize the way knowledge is acquired and shared.

AI technology, according to Smith (2022), can enable personalised learning experiences by analysing student data and tailoring instructional content to match individual requirements. Intelligent teaching systems driven by AI may give students personalised feedback and recommendations, fostering self-directed learning and increasing learning outcomes. AR and VR technologies provide immersive and

interactive learning environments in which students may participate in realistic simulations and virtual experiences. These tools allow students to investigate complicated ideas, visualise abstract concepts, and get a better knowledge of real-world applications (Smith, 2022).

Blockchain, a distributed ledger technology, has the potential to change educational credentials and certificates. It can offer safe and tamper-proof recordings of students' achievements, allowing for lifelong verification of their educational qualifications (Smith, 2022). The incorporation of these developing technologies in Education 5.0 not only improves the learning experience but also offers up new opportunities for collaboration, creativity, and critical thinking. Students can connect with classmates from diverse places, participate in project-based learning, and create inventive solutions to real-world challenges (Smith, 2022).

Education 5.0, by harnessing emerging technology, produces a dynamic and adaptable learning environment that allows students to explore, create, and thrive in the digital age. However, educators and institutions must carefully address the ethical and privacy consequences of adopting these technologies to provide fair access for all learners (Smith, 2022).

Learner-Centered Approaches

A key feature of Education 5.0 is its learner-centered approach, which recognises each student's requirements, interests, and objectives. Educators in this paradigm offer learning situations that promote student autonomy, cooperation, and problem-solving abilities (Anderson, 2021).

Learners become active participants in their education, allowing them to pursue their interests and develop lifelong learning habits.

Anderson (2021) expresses and emphasises the essential concepts of learner-centered education. Learner-centered education, according to the author, emphasises personalising instructional tactics and learning environments to match the particular requirements of students. It promotes student participation, active learning, and the development of critical thinking abilities. Learner-centered methods place a premium on student agency, allowing students to take control of their learning and develop meaningful connections between their interests and academic subject.

Traditional teacher-centered paradigms are rapidly being replaced with learner-centered instructional practises in Education 5.0. This movement is motivated by the realisation that learners are active architects of knowledge, and that their motivation and engagement have a substantial influence on their learning results (Anderson, 2021). Education 5.0 educators offer learning experiences that promote cooperation, problem-solving, and creativity, allowing students to gain 21st-century abilities. Learner-centered methods in Education 5.0 promote personalised learning paths that accommodate to students' various learning styles and skills. The use of technology in education has made it simpler to deliver personalised learning experiences that are adapted to individual student choices and requirements (Anderson, 2021). Adaptive learning platforms, intelligent tutoring systems, and data analytics allow instructors to monitor student progress and give targeted support and guidance.

Education 5.0 fosters an inclusive and supportive learning environment that honours each student's skills and viewpoints by embracing learner-centered techniques. It allows students to take an active part in their education by encouraging self-directed learning and metacognitive abilities (Anderson, 2021). By participating in inquiry-based activities, collaborative projects, and real-world problem-solving tasks, students get a better grasp of the subject matter.

Lifelong Learning and Skill Development:

Education 5.0 emphasises lifetime learning, recognising the significance of ongoing skill improvement in an ever-changing environment. In this setting, education is no longer limited to a certain period but rather becomes a lifetime adventure that goes beyond traditional educational institutions (Johnson, 2020). Education 5.0 encourages the development of both technical and soft skills, as well as flexibility, resilience, and a growth mindset.

Johnson (2020) investigates the notion of lifelong learning in the digital era, emphasising the importance of individuals constantly updating their skills and knowledge to remain relevant in a quickly changing world. Lifelong learning in Education 5.0 encompasses informal and self-directed learning experiences aided by developing technology and digital resources and goes beyond traditional classroom settings.

Skill development in Education 5.0 extends beyond the learning of subject-specific information. It entails the acquisition of 21st-century abilities such as critical thinking, communication, cooperation, creativity, and digital literacy (Johnson, 2020). These abilities are regarded as necessary for

individuals to successfully manage the challenges of the digital world and contribute to the workforce and society.

The incorporation of developing technologies into Education 5.0 allows students to obtain technological abilities that are in great demand in the digital era. Coding, data analysis, digital media creation, and cyber security are all becoming increasingly vital for future jobs (Johnson, 2020). Education 5.0 makes use of technical tools and platforms to give hands-on experiences and practical applications of these abilities, preparing students for the needs of a technologically driven future. Soft skills are important in today's workforce, according to Education 5.0. In a continuously changing and linked global economy, skills like flexibility, resilience, creativity, problem-solving, and emotional intelligence are prized (Johnson, 2020). Through collaborative projects, real-world problem-solving, and experiential learning activities, Education 5.0 provides an opportunity for learners to build these abilities.

Challenges and Opportunities

While Education 5.0 has enormous promise to improve learning, it also has obstacles that must be addressed. Issues like the digital gap, privacy issues, and the need for educator professional development in exploiting new technologies must be addressed (Brown, 2023). Education 5.0, on the other hand, offers tremendous potential for closing educational gaps, addressing marginalised people, and encouraging global collaborations. Brown (2023) investigates the problems and possibilities associated with adopting Education 5.0. The digital gap, defined as unequal access to technology and internet connectivity, is a fundamental obstacle to providing

fair education in the digital era. To bridge this gap, efforts must be made to offer infrastructure, devices, and inexpensive internet connections to underprivileged populations. Furthermore, it is critical to ensure that learners have the digital skills and literacy required to efficiently navigate online learning systems.

The collecting and use of student data for personalised learning and evaluation raise privacy issues in Education 5.0. To preserve student privacy and guarantee ethical data use, it is critical to implement strong data protection policies and practices (Brown, 2023). Striking a balance between personalised learning and data privacy is a difficulty that educators and governments must face when Education 5.0 is implemented. Another difficulty is the requirement for educators to get professional development to successfully incorporate emerging technology and learner-centered methods into their teaching practices (Brown, 2023). To adapt to the changing educational scene, educators must acquire essential digital literacy, pedagogical abilities, and awareness of developing technologies. It is critical for the effective implementation of Education 5.0 to provide continual professional development opportunities and support networks for educators.

Education 5.0, on the other hand, offers intriguing prospects. It can bridge educational disparities by providing underprivileged groups with access to high-quality education. Online learning platforms, open educational resources, and digital technologies can reach learners in rural locations, providing previously unavailable educational possibilities (Brown, 2023). Global cooperation, cultural exchange, and

broadening learning horizons beyond traditional bounds are also possible with Education 5.0. Education 5.0 encourages personalised learning by allowing students to explore their interests, study at their speed, and receive personalised help (Brown, 2023). Individualised learning experiences are provided via adaptive learning platforms and intelligent tutoring systems, which accommodate to each student's unique requirements and learning styles. This personalised approach boosts engagement and motivation, resulting in better learning results.

Conclusion

Education 5.0 is a potential approach to revolutionising education in the digital age. Education 5.0 may empower learners, equip them with the required skills, and prepare them for success in an interconnected and dynamic world by embracing learner-centered approaches, fostering lifelong learning, and tackling the accompanying difficulties. The goal of Education 5.0 can only be completely realised by a collaborative effort among educators, policymakers, and stakeholders, resulting in a more inclusive, adaptable, and successful education system for learners of all ages.

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ENHANCING DIGITAL LITERACY SKILLS FOR ENGLISH LANGUAGE LEARNERS IN THE DIGITAL AGE

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Abstract

New needs of English language learners (ELLs) in the digital age; new learning contexts, in the form of globalized online affinity spaces, where ELLs can interact with other English speakers. This paper deals with the theoretical model for digital literacies, which sees the affordances of digital tools as enabling new ways of doing, meaning, relating, thinking, and being. It then examines the kinds of informal learning opportunities available to ELLs in globalized online affinity spaces.

Keywords: *Digital literacy, English language learners (ELLs), Online affinity spaces, Informal learning opportunities and Technology Integration in Education*

Introduction

Digital literacy is slowly becoming an essential ability for success in the digital age when technology covers almost every area of our lives. The ability to locate, assess and utilise information from diverse digital sources while navigating the complex workings of the online world. Fostering students' digital literacy skills has become crucial in the field of e0ducation. Recent advancements in digital technologies have led to the emergence of new communication genres and settings.

“Digital literacy refers to someone’s ability to use IT and digital technology to find, evaluate, create and communicate

information,” says Matt Dunne, hiring manager at Healing Holidays. (lfeskl bk). These are currently seen as being quite fundamental talents. Even if having them isn't particularly advantageous, not having them is a serious drawback. The capacity to use technology efficiently has become crucial for modern success in everything from social relationships to entertainment, education, and work.

Importance of Digital Literacy

The value of learning digital literacy skills is becoming more and more mandatory as technology continues to penetrate daily life. Students with technical knowledge will find it easy to learn, this will be a great hindrance to the academic progress of those who lack in the technology field. Even with the widespread use of technology in homes and schools, there are still many minority workers who lack basic digital literacy abilities. Making digital literacy a top priority in educational institutions can aid in upskilling students from minority groups so they will have more professional options in the future. Our online world has inherent risks, especially for youngsters, even while it can provide enormous value. While younger generations are referred to as digital natives when it comes to safety, the truth is that they are frequently no more literate than their parents. Particularly during times of lockdown and social isolation, digital networks expose kids to bullies.

Using digital literacy in the classroom

Digital literacy in the classroom refers to a student's capacity to identify reliable sources, comprehend authorship guidelines, and assess the reliability of the online content

about the task that is assigned, which also makes the students join online forums and communities, the difference between the real and the fake news. they can also analyse their behaviour, participation, and interaction on digital platforms. Students today have more access than ever to an online education. The finest people to guide students in safe online behaviour and efficient use of digital tools are educators. Our world is evolving quickly in the technology field, and digital literacy may help students keep both inside and outside of the classroom.

Incorporating digital literacy into education

Schools should integrate digital literacy skills across different subjects and grade levels.

Teacher Professional Development

Providing professional development opportunities for educators is crucial. Teachers need to stay abreast of the latest digital tools, teaching methodologies, and online safety practices to effectively guide and support their students' digital literacy development.

Digital Literacy Programs and Resources

Schools should invest in digital literacy programs and resources that offer comprehensive support to students. These programs can include interactive modules, workshops, online courses, and educational apps designed to enhance digital literacy skills.

Parent and Community Involvement

Involving parents and the wider community is essential in promoting digital literacy. Schools can organize workshops or

informational sessions for parents, offering guidance on digital parenting, online safety, and responsible technology use.

Digital Literacy in English Classroom

English helps our students to communicate in a global lingua franca in an increasingly wired world. New forms of representation in the digital context are increasingly hyper textual, multimodal, interactive, and plurilingual. As a result of such developments, many scholars in language and literacy education have called for practitioners to rethink the curriculum and take such digital literacies into account.

Types of Learning Activities to Promote Digital Literacy at School

The learning activities for promoting digital literacy can be categorized into four broad activities, namely: producing media, gaming, coding, and making. In producing media, students produce their digital art and facts in which the learning process occurs through this process. Some examples of producing media activities include blogging, video blogging (vlog), podcasting, graphic novels and comic strips, and digital storytelling. Blogging is an activity in which the students write their opinions or ideas using safe, secure, and supported blogging sites. Another example of producing media activity is now becoming a trend among young people, i.e. vlog or video blogging. Through vlogs, students may present oral speeches in the form of videos demonstrating skills that have been mastered and upload them to video websites such as YouTube. Podcasting is another learning activity for producing media. In podcasting, students record their voices and present their ideas or opinions on something. Graphic novels and comic strips are some other producing

media activities. Teachers may provide digital comics or novels and ask the students to read them for reading activities. Students may also use comicstrip maker applications such as Bitstrips, Pixton, or Comic Creator to create their comics based on their own stories and creativities.

Imparting digital literacy mode in the English curriculum helps students to develop their communicative skills like, Listening, speaking, reading, and writing right from the primary level itself.

LSRW

As English became the global language which makes the world a family, it became mandatory to take in the language and to build up great terms with others and communicate. In that series listening is the first skill which remains lacking sector among students, more interest must be kindled. only through listening, do we start to think and interpret the information. It also enriches the cognitive structure of an individual. Though the English language is rooted decades before we r still lacking in fluency and proficiency of the language. Speaking becomes the key to expressing emotional thoughts verbally. Teachers handling primary classes used elocution and repetition methods to effectively communicate ideas and information by mastering sounds, rhythm, intonation and modulation. Reading has an equivalent value to listening. It enhances creative thinking, and we get the opportunity to explore the different cultures followed in different areas, it also enriches the vocabulary and the grammatical structure. As speaking is a verbal way of communicating, writing becomes a non-verbal way of

communicating our thoughts. It helps in producing new works and accelerates the creative and thinking skills for the development of all these skills digital literacy adds essence and flavour to reach greater heights.

Apps for accelerating various language skills

Enhancing listening skills through apps like British Council Learn English Podcasts: British Council's free Learn English podcasts cover a range of topics, from learning languages to world information. Every week, new podcasts are released. We can adjust the audio speed to our preferred level if the speaker is speaking too quickly. With the interactive audio scripts, Simple exercises are provided in each episode to help us assess what we have learned and can monitor our progress on the progress screen.

BBC Learning English: The renowned lessons and presenters are all available in one location with the free BBC Learning English app. daily with fresh lessons.

PORO: The free PORO app is appropriate for all levels of learners from newcomers to experts. Over 750 audios covering a wide range of topics and typical conversations are included. From greetings, introductions, and casual talk to more important business interactions, we can all learn them.

Speaking Apps

EngVarta: The greatest English - speaking app in India that facilitates communication between students and live English experts is called EngVarata. For individuals who wish to get better at speaking English on the phone, this English-speaking

software is the ideal answer. In this app, we discuss various topics every day and the professionals assist us in improving our English every day by providing feedback and correcting our errors. This app variously helps us to improve our language.

Duolingo: One of the most - well-known online tools for practising, speaking, and learning English is Duolingo. This English-speakingpractice software looks just like a kid-friendly game app, which makes it more interesting for English learners. additionally, this enjoyable form of instruction aids in the formation of English practicehabits in the students. It is not a burden anymore.

Elsa Speak: An English-speaking practice programme called ELSA, which stands for English Language Speech Assistant, helps us speak English correctly and confidently. Not having the proper accent or pronunciation when speaking English is one of the main obstacles for an English learner. With the help of entertaining games on intonation, rhythm, word stress and pronunciation. Additionally, this app aids with IELTS, TOEFL and TOEIC, preparation, understanding of the fundamentals of English communication and job advancement through this app.

Cake-Lesson updates every day: There are a million users of this amazing English language practice software worldwide. It allows you to have a free conversation with English-speaking natives with the cake app. With the use of a tool in this app, we may record our voice and it will advise us where to stand

with its AI recognition. in addition to this, we can watch videos that provide examples of real-life English spoken in vlogs, episodes and movies.

Reading Apps

Tales2go: This app helps in improving the reading skill of the child through interesting stories. There are more than ten thousand audio books. This kindles the interest at an early age itself.

Book Dash: This app provides more than two thousand free African children's stories in eleven different languages and a group of volunteers. Collaborated to write and illustrate the book.

Writing Apps

Popplet: This app helps in formatting complex sentences. This is technically a productivity programme, it's great for visual organization, which is extremely helpful when attempting to understand the structure of a sentence.

Ginkgo: This app helps in plotting a novel by chapter ideas or themes. It also helps us in restructuring the plot. It is one of the best apps for the budding writer.

Brainstormer: This app advertises itself as the best defence against writer's block. It offers exercise to improve our imagination through which we can build our imaginary world with fascinating fictional characters.

Ginger: This app helps in improving our grammar by correcting our grammar, punctuation, misspelling and misused words. They also rephrase the sentence structure.

Advantages

Digital literacy boosts student engagement: When students use powerful content-creation tools like Adobe Creative Cloud for their assignments and projects, they engage more deeply with the content, which helps them better understand information and communicate their knowledge in visually and digitally compelling ways. At the same time, faculty with digital skills can also make their course materials more interesting, which helps with student engagement as well.

Conclusion

The digital age has brought about new needs for English language learners (ELLs) and has created new learning contexts in the form of globalized online affinity spaces. Digital literacy, which encompasses the ability to use IT and digital technology to find, evaluate, create, and communicate information, has become increasingly crucial for success in the digital age. Incorporating digital literacy skills in education is essential to bridge the digital divide and empower students from minority groups. To promote digital literacy, schools should integrate digital literacy skills across different subjects and grade levels, provide professional development opportunities for teachers, invest in digital literacy programs and resources, and involve parents and the wider community. In the English classroom, digital literacy plays a significant

role in developing students' communicative skills, such as listening, speaking, reading, and writing.

Various apps and tools can be used to enhance different language skills, including listening, speaking, reading, and writing. These apps provide engaging and interactive platforms for language learning and practice, offering students opportunities to improve their language proficiency. The advantages of digital literacy in education are numerous. It boosts student engagement by utilizing powerful content-creation tools and making course materials more interesting. Digital literacy also prepares students for the digital world and enhances their communication skills. Integrating digital literacy into the curriculum and leveraging technology effectively in education can empower English language learners in the digital age. By providing access to globalized online affinity spaces and promoting informal learning opportunities, educators can support ELLs in developing essential digital literacy skills and thriving in the digital landscape.

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