EDUCATIONAL TECHNOLOGY

TECHNOLOGY OF INSTRUCTIONAL DESIGN

PART-1

P.K.S. Ray
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By P.K.S. Ray, Dr. Prabhu A

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CHAPTER 1

A BRIEF OVERVIEWABOUT EDUCATIONAL TECHNOLOGY

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ABSTRACT:

Any academic institution should value cutting-edge educational technologies. The Northern Ontario School of Medicine (NOSM) has been addressing health-care inequities in the north since its establishment in 2005 with academic programmes designed expressly to draw in, educate, and retain doctors for practice in northern areas.Geographically separated students, teachers, and staff members may never set foot inside the health sciences library's physical locations. Instead of teaching customers how to utilise the library, it must meet them where they are. In order to exhibit and deliver library information, the health sciences library has experimented with a number of approaches, such as screencasting, videoconferencing, and recorded tutorials. For librarians and library users, each methodology offers a unique set of advantages and difficulties. This chapter will offer a historical analysis of the tools utilised at NOSM's health sciences library for distributed library education in honour of the organization's tenth anniversary.

KEYWORDS:

Construction, Education System, Educational Technology, Educational Staff, Staff Member, Teacher, Teaching Consumer.

INTRODUCTION

Educational testing is being significantly impacted by changes in educational technology. The adoption of computer-based exams by those who create worldwide, national, and local educational assessments is currently accelerating dramatically. The Organisation for Economic Cooperation and Development (OECD) designed, administered, and analysed the Programme for International Student Assessment (PISA), which is the most well-known and most publicised accomplishment exam in the world. 58 of the 72 participating nations in PISA 2015 took the computer-based test, as opposed to the prior five cycles' chapter-based administration. In line with the OECD's belief that computer-based testing has largely become a part of the educational experience for students, the percentage of nations that chose CBT grew to 89% (70 of the 79 participating countries) for PISA 2018. To highlight another current accomplishmentfirst academic year in which US states gave more computer-based exams than chapter-based ones. Canadian provincial agencies are likewise switching to computer-based exams. For instance, Alberta Education started using computer-based assessments in 2010 but only for the Grades 6 and 9 achievement testing programmes. All provincial exams, including the accomplishment tests and the Grade 12 diploma exams, are now available for computer-based testing. These instances show how computer-based testing has quickly established itself as the standard for 21st-century evaluation and how testing organisations are either conducting their exams on computers or moving to this platform. Computer-based testing has many advantages. Computers, for instance, provide testing on-demand, allowing for flexible, frequent, and easy scheduling of

exams. With computer-based assessment, students can take the exam while they are learning. On computer-based tests, answers are quickly scored in order to give pupils feedback.

However, the introduction and rising acceptance of computer-based testing have also brought up imposing new difficulties, particularly in the field of item development. Because test items are continuously given to students, educators need access to a large number of different, high-quality test items to use computer-based testing efficiently. As a result, creating the test item banks required for computer-based testing will require the creation of thousands of additional things. Test items are stored in banks, which include both the individual things and the item characteristics. To make sure that students receive a consistent supply of objects while at the same time restricting item exposure, these banks must be initially built and then continuously restocked. Due to the fact that each individual item is first written by a subject matter expert (SME), and then reviewed and revised by groups of SMEs to ensure the items are reliable and valid, the development of educational test items is unfortunately time-consuming and expensive. Thus, one of the most significant issues that must be resolved before educators can fully transition to computer-based testing and reap the benefits of formative assessment is test item development.

DISCUSSION

Liability of school districts is restricted

The District's instructional technologies are offered as is, as available and at the users own risk. The District disclaims all liability for any harm that users may experience, including but not limited to loss, damage, or unavailability of data stored on the District's systems, delays, changes in service, interruptions, or incorrect or erroneous delivery of information or materials, whatever the reason. The District disclaims all liability for any advice or information gained through or stored on the District's electronic technologies, including their correctness or quality. Any financial liabilities brought on by improper use of the District's educational technologies or the Internet will not be the District's responsibility [1]–[3].

Supports from Technology for Science Education

Taking the Pressure off Working Memory. By organizing work for pupils, efficient educational technology utilisation can support learning. Technology can help humans overcome their restricted working memory capacity in a number of different ways. Simulations can make a complicated natural phenomenon simpler by concentrating only on important aspects. Working memory burden can be decreased by multimodal simulations that include both phonological and visual channels. In order to free up students' attention to focus on the pertinent idea, mundane tasks like graphing or simple kinds of data analysis can also be handled by technology. However, this offloading must be utilised carefully as it can prevent pupils from understanding essential scientific processes like graphing and analysis.Additionally, using computer technology can facilitate student workflows and deliver rapid feedback. For instance, the use of probeware based on a computer or calculator in the lab enables fast, real-time charting of data, decreasing the need for students to coordinate the lab experience itself with future data analysis carried out over a lengthy period of time. Working memory burden can be reduced through interactive whiteboards that allow teachers to save, post, or recreate class notes, as this frees up students to focus on the construction of meaning rather than storing information in their notes. Printouts of computer-

based presentations can encourage students to focus on taking notes rather than reproducing what is being said in order to assist them understand the class.

The actual classroom settings for technology-supported instruction

In the lengthy, laborious process of integrating information and communication technologies (ICTs) into classroom instruction, there are at least three stages that may be seen if we look back at recent developments in educational technology:In a designated classroom, ICTs are installed and utilised. The computer room has been set up expressly to allow students to attend on a regular basis, sometimes to learn how to use the computers and other times to utilise them for the study of other academic topics.The boundaries of the classroom are dismantled by ICTs, particularly communication technology.

The computer is no longer viewed as a device that needs to be configured or used to execute instructional software, but rather as a potent instrument for getting access to information, digital repertoires, and interacting with other realities like other students, faraway classes, etc. However, the majority of students and staff continue to rely only on the school's internet connection to access the internet.

To promote so-called extended/expanded learning, the classroom is enlarged into virtual space. The computer lab is no longer necessary with the widespread use of the internet, both at home and on mobile devices Wi-Fi, netbooks, tablets, smartphones, etc, as learning activities supported by the network can be developed anywhere: at school not always in a computer roo), at home, or on a park bench.Schools and instructors are still adjusting to Stage 2 even though Stage 3 has been in effect for a while. In the interim, students are increasingly interacting with classmates via social media, mostly for the following reasons utilising a little-known system for exchanging and transmitting answers to workouts and examinations.obtaining information for academic purposes by freely copying and pasting from shady websites. Alternatively put: without any procedure.The paradox is that, if only they had the bare minimal technological know-how needed to achieve the ideal fusion of technology and learning approach, reinforced by the vast array of resources available online, someone else might be able to teach them the way[4], [5].

Availability and usage of technology

During ERT, electronic communication replaces all other forms. The assessment criteria as outlined in Rahim's guidelines are still applicable when using technology.

1. The discipline, as well as the requirements for performing online assessment technology aligned, must be taken into account when choosing the assessment techniques.
2. Ensuring positive alignment between assessment activities and stated learning objectives.
3. Addressing the various contexts and transformations that students experience.
4. Keeping a healthy mix between formative and summative evaluations while conforming to assessment standards.
5. Using technology to stimulate student learning through online assessment.
6. The use of technology in the selection of test format, scheduling, and timing.
7. Creating open lines of communication with students on assessment-related issues contextuality, transformation, and deficit discourse.
8. Ensuring high-quality feedback and mitigating challenges to assessment validity assessment principles.

The last step of the literature review involved identifying the systems and devices that can be used for online instruction. 644 instructors and students from South Africa participated in Pete and Soko's comparative study on the use of technological gadgets by university students in Kenya, Ghana, and South Africa. According to the report, most South African students use laptops or smartphones. tablet computers are not common anywhere.According to this study's findings, most professors and students possessed intermediate digital proficiency. According to the same survey, extremely low levels of satisfaction with the internet connection, cost, and reliability exist in sub-Saharan Africa. These findings are consistent with the fact that the majority of South African students come from low-income families and frequently struggle to pay for devices and digital data rates. Some locations also have very erratic internet and WiFi connections, if any at all. Systems like Moodle, TEAMS, Zoom, and WhatsApp are examples of the digital learning management systems that are utilised by numerous universities, including the one where the researcher is based.The procedure of converting a face-to-face assessment of an Arts module into an ERT assessment mode is described in the following section.

Assessment of Technology Use

It is crucial to think about how and to what extent students and teachers use educational technology while evaluating it. Specific rather than broad measurements of computer use are needed because of the variety of computer-based tools and resources that can be employed to assist teaching and learning. The study is another excellent illustration of the difficulty in assessing computer use. The following survey questions were given to teachers as part of this study:

a. Copies of worksheets.
b. An instruction manual.
c. Games.
d. Computer programmes for instruction or software.
e. TV programming.
f. Additional audio-visual content.
g. Definitely not.
h. At times.
i. Regularly.
j. Nearly always.

The frequency of each teacher's use of computer software or educational computer programmes was used as a proxy for how frequently computers were utilised in maths and Hebrew classes.It may be logical to assume that teachers who report using software or educational computer programmes frequently utilise different teaching practices than do teachers who report using them infrequently or not at all. This broad metric, however, does not offer enough details about who, when, how, or why people really use computer-based products. The instructor who assigns pupils a 30-minute maths tutorial twice a week would appear to utilise computer-based tools more than the teacher who uses PowerPoint many times a week to give content that would otherwise be displayed using an overhead projector. Similar to the first teacher, this second one appears to be no different from a teacher who might similarly assign pupils to use a computer twice a week for 30 minutes to gather data, generate spreadsheets, and produce graphs to investigate relationships in data. The most regular user of computer-based tools can appear to be a teacher who uses a computer every day outside of class to make worksheets or keep track of

grades. To put it another way, simply asking instructors to report how often they use computers does not give enough data to demonstrate how these technologies are being used or what effects they may have on student learning. Computer use in the context of a given study needs to be precisely defined and measured in order to address these research concerns.

Some academics have created a number of items that measure different aspects of technology use by instructors and students (Bakia et al., 2007. Becker, 1999. Russell et al., 2003). These statistics are frequently condensed into a single technology use indicator. This combined measure is useful for giving a broad impression of how much technology is being used by teachers in various aspects of their work. These aggregate measures, however, are insufficient to comprehend the extent to which technology is being used by teachers, the purposes of these uses, and the potential effects these uses may have on learning outcomes, much like the single survey item used by Angrist and Lavy that focuses on computer use in general [6]–[8].When these individual questions are utilised to produce numerous measures of computer uses, as opposed to aggregating several survey items into one measure that represents the general usage of computers, a fuller understanding of computer use arises. For instance, seven different scales to quantify teachers' use of technology using data from several survey items, each of which focused on a particular technological application. Among these seven scales are:

1. The preparation for classes by teachers using technology.
2. the usage of professional e-mail by teachers.
3. how teachers use technology to impart knowledge.
4. the use of technology by instructors as a form of accommodation.
5. student usage of technology under the guidance of the teacher during class.
6. student items created with technology under the guidance of the teacher.
7. The use of technology by teachers for grading.

The seven teacher technology-use measures that were created from the items were all found to have wildly different frequency distributions after analysis. For instance, the use of technology by instructors for preparation was considerably negatively skewed compared to the use of technology for instruction. The distributions for allocating student products and offering accommodations were favourably skewed, similar to instructional use. While student usage of technology under instructor guidance was roughly normally distributed, technology use for grading had a weak positive skew. However, there was a bi-modal distribution in the use of e-mail, with a significant fraction of teachers claiming frequent use and a significant portion of the sample reporting no use. In summary, there were significant differences in the response distribution among the seven scales. However, the distribution closely resembled a normal distribution and revealed none of the trends found in the specialised technology-use scales when all of the survey items that made up these scales were added together to generate a single general composite measure of technology usage.

Multiple measures of specialised technology use provide a more detailed knowledge of how teachers are using technology and how these uses vary among teachers as compared to a single generic measure of technology use. When only generic measures of use were used, numerous intriguing patterns were hidden by the studies that used a comprehensive approach to evaluating technology use. For instance, the examination of the USEIT teacher data revealed that the frequency with which teachers asked pupils to use technology in class was unrelated to the frequency with which they used technology to instruct and accommodate lessons. Similar to how

instructors' use of technology for lesson planning and grading functioned independently of one another. It is crucial that research on educational technology abandon single, generic measures of technology use and instead develop nuanced measures that reflect specific, discrete uses of educational technology. This is because these and other findings show the importance of discrete measures of technology use in understanding how teachers use technology and what effects these uses may have on student learning[9], [10].

CONCLUSION

There has never been a better time to use technology to facilitate and enhance learning for individuals from all backgrounds, at all levels, and everywhere. The essential elements required to best realise the changes made possible by technology in education are in place, from the modernization of E-rate to the proliferation and uptake of openly licenced educational content.These tools and resources should now be integrated into the practises of educators, decision-makers, administrators, and programmes for teacher training and professional development. These groups may minimise inefficiencies, extend learning beyond the confines of conventional classrooms, and build solid partnerships to support learning everywhere, all the time by collaborating with families, researchers, cultural institutions, and all other stakeholders.Even if technology does not guarantee fairness and accessibility in learning, it has the potential to remove barriers to both in ways that were before impractical. All learners have access to resources, experiences, planning tools, and information that can put them on a road to earning knowledge that was unthinkable a generation before, regardless of their perceived skills or geographic locations.All of this has the potential to improve educators' knowledge, competencies, and skills. Beyond the static and out-of-date results of conventional examinations, tools and data systems can be seamlessly integrated to provide information on students' progress in their learning.

Learning dashboards, collaborative tools, and communication tools may make it simple and quick to connect teachers and families. Strong vision and leadership at all levels, from teacher leaders to school, district, and state administrators, make this all more likely. Technology also enables better practise, resource sharing, and communication for these positions so that everyone in the system is committed to working together to promote student learning. The use of technology to support learning has never been more possible or advanced.

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CHAPTER 2

IMPORTANCE OF COMMUNICATION IN EDUCATIONAL TECHNOLOGY

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ABSTRACT:

The term communication education is a catch-all for two interconnected fields of study: instructional communication and communication education. The focus of instructional communication is on the relationships between communication and learning, including how teachers talk and behave while instructing, as well as how students react.Communication education is concerned with what is taught in communication class, how the topics are selected, how knowledge is transferred to students, and the most effective ways to assess student learning in the classroom or through extracurricular activities. And the primary study that covered topics like Communication in Education, Importance of Communications in Education, Communication in Community Development, and Importance of Communication in Adult Education Communications with policymakers in the field of education, Communications in the formal education sector, and Communication Strategies' importance Idea and Characteristics of Educational Communication.

KEYWORDS:

Communication, Communication Aspects, Education, Education Technology, Technique.

INTRODUCTION

Every living thing has an innate drive to interact with other living things. It's one of the subjects that has been studied the most in terms of teaching languages. The word communication comes from the Latin verbs communicare or communico, both of which denote to share. Therefore, communication involves more than just passing along meaning from one person to another by means of symbols. It means that everyone in the community owns, acknowledges, and recognises the communication system in this context. It significantly improves their capacity for gathering and processing information. Before we knew how to write or spell the word communication, it was already happening. It's conceivable that it goes back to the beginning of time. We've come a long way in terms of technology breakthroughs like the telephone, television, and of course the Internet since prehistoric graphic communications etched into rocks 2 or body language. Despite the existence of numerous complex theories and concepts, communication can be defined as the process through which information is shared between people using a common system of symbols, signals, or conduct[1], [2].

Animals undoubtedly have their own means of communication, thus the expression is not exclusive to humans. Communication Education's goal is to publish original research that advances our understanding of how communication affects the teaching and learning process in a range of circumstances, both inside and outside of academia. We think that contributions that make use of a variety of theoretical and methodological stances and approaches have a significant positive impact on research in the field of communication education. All submissions

must uphold the strictest requirements for theoretical rigour and methodological integrity. Individuals are able to freely share their ideas and reach a consensus when communication is successful. Families of children and staff members at schools may gain from efficient communication. A communication network of incredible size either connects or ensnares the entire planet. The revolution in communications, which has taken place via a number of channels, including conventional landlines, mobile phones, and the World Wide Web, cannot be effectively described in words. Previously the property of the wealthy and famous, cell phones and computers are now commonplace. You may imagine a catastrophe of this magnitude: what would we do if all of these means of communication suddenly stopped working?

DISCUSSION

Education Through Communication

Effective communication is crucial in the educational setting. We must regularly communicate with our pupils as educators. When a medium is utilised to transport information from one person to another, communication has taken place. There are numerous choices, including but not restricted to: Visual communication is the use of visuals. Using sound to communicate like human language, but also something like a dog barkinghands-on involvement.The importance of integrating communications into educational institutions can be attributed to a number of factors. Throughout the sentences that follow, a few of them are mentioned and further discussed throughout the book. One could argue that having access to accurate information and effective communication is advantageous because it enables communities and civil society to engage with educational issues at the school level, raise concerns with educational providers, and encourage accountability of provision and public engagement with educational reform initiatives. It also increases public awareness of educational rights and increases the likelihood that people will use educational services, both for children. The significance of communications may vary depending on one's level of education.

For instance, in environments with low literacy rates, some communication techniques might be seen as prejudiced. Because of the use of particular media, some groups of people are more likely to be excluded from the decision-making process. These communication exclusions are less common for literate people with access to a wide range of information sources. In particular, if steps have been taken to guarantee that broadcast programming is constructed to successfully interact with a number of target groups, other forms of communication media are perceived as being more inclusive[3]–[5].Numerous books and articles on the subject may be obtained that discuss good communication techniques.

Examples of this type of communication contact include interactions between academics and policymakers, advocacy by civil society, participation in public policy, and communications for development efforts. It is a concern that the communications in the education sector have not received the same level of attention as other sectors. On the other hand, the general literature does offer a diversity of perspectives that will be employed in this chapter's examination. In order to tailor services to meet the needs of all users, it is necessary to create spaces for communication, integrate communications into institutional structures and systems, and design projects and programmes accordingly. It is also necessary to disseminate research in a manner that is appropriate for the needs of the target audience, and communicate in a way that increases user engagement.

Community Development through Communication

Information sharing and inspiring training for field personnel and rural communities are the two main foci of development communication. Information and technology must be effectively shared in order for development to be completely realised, and rural participants in the process must be motivated to succeed. The aim of community development is to assist a community in reaching its maximum potential. An important component of sustainable development is good communication. Communities can only be mobilised to support community development if members can communicate clearly with one another.

Communication's Role in Community Development

Effective communication improves each community member's participation in local/rural development. Communication for community development aims to change the focus from merely teaching and convincing people to really changing their attitudes and behavior in order to solve a common problem. Additionally, it motivates people to actively participate in determining their own destinies. Effective communication can aid in participatory growth. Promoting community participation in development initiatives is largely accomplished via the use of various communication strategies. All the parties involved in community development are brought together by this system of communication. Since communication makes it easier for people to share their thoughts and viewpoints, community progress depends on its capacity to disseminate good ideas while eliminating negative ones.Since communication studies how people connect with one another in groups and societies, how they influence one another, how they are informed, how they are educated, how they are loved, and how they are amused, it is crucial to the process of community development.

Communication in Adult Education: It's Importance

It's crucial to have open lines of communication between all parties during the teaching process. Throughout the presentation, the student must pay close attention to their instructor, who should talk clearly and rationally. You must possess the mental and emotional fortitude necessary to face your audience and convey your message in a simple, direct way. The communication process is successful when the message is delivered in a way that is understandable. Being able to transmit ideas and accept those of others in any situation is necessary for effective communication. Professional educators consider effective communication to be essential to their success.Effective communication skills must include speaking, listening, and reading in addition to writing and editing.

Each of these abilities is necessary for an effective teacher. When teachers can successfully communicate, students learn more. Teachers must have strong communication skills if they want their students to achieve academically and professionally. More than ever before, teachers present lessons verbally. If a teacher has poor communication abilities, students may not be able to study and advance academically. Students need to be conscious of how and what is spoken by their teachers in order for them to recognize what is right and incorrect.Teachers with good communication skills have an edge when it comes to instruction in the classroom, classroom management, and interactions with students. The teacher must cope with students who have a variety of thinking styles.To ensure that students are motivated to learn, teachers' communication techniques must be adjusted to the students' abilities and capabilities.

Communications in the field of formal education

Typically, educational systems function at three interconnected levels: On the macro level, policy is developed and negotiated at the national level. On the meso level, which supervises the implementation of national policy into practise, this is frequently found in the provincial/local departments of education. On the micro level, policy is implemented in schools and communities where educational stakeholders want to see changes in practises. Effective school communications, depending on the information being delivered, must therefore involve a wide range of stakeholders and occur at various levels. Civil society organisations can interact with educational institutions in a variety of ways, from local to federal levels.The majority of education systems create policy at the federal level, and it is from here that they follow. Towards this level, interactions with funders and international education groups predominate, and the majority of research and development initiatives are targeted towards this audience. There are several layers of communication occurring here, all of which are moving in distinct directions. How and why specific policies are implemented, how different stakeholders participate in the process, and the role of lobbying for research and development in these processes are all hot topics of discussion.

There are also provincial/local educational authorities in the majority of countries, and their responsibilities and communication roles vary based on the circumstances in each country. Over the past few years, there has been a growing decentralisation of many government tasks to the provinces. Decentralising governance may lead to improved social service delivery and the democratisation of decision-making for increased system effectiveness. Based on how it has really worked in practise, concerns have been expressed regarding how much genuine control is given to provincial authorities and how much true centralization there is in education planning. The provincial level offers a wide range of communication positions and responsibilities. Provincial educational authorities frequently act as a bridge between the federal government and schools when it comes to putting national plans into action and overseeing their implementation. There is a perception that local educational authorities (rather than national ones) can better meet the requirements of communities and schools as a result[6]–[8].

Although top-down communication has traditionally dominated interactions between schools and the government policy initiatives communicated to and carried out at the school level, bottom-up communication is starting to gain ground. Since administrative duties in education appear to be moving to the school/community level, communication skills must also grow, as must the availability of venues and opportunities for communication. The democratization of educational systems strives to strengthen local community control of education while also removing some of the burden from the federal and provincial governments to carry out policy. There can never be enough emphasis placed on the value of communication between schools and the communities they serve. A wide range of skills, knowledge, and competenciesall of which are based on some sort of interactionare provided to students through a combination of teachers, students, and learning tools. Relationships between community schools and the potential benefits they might offer have also drawn increased attention recently.

Having conversations with education policymakers

Stakeholders communicate with policymakers in a variety of ways and in a variety of directions at different times. This subject is very important due to the design of educational systems. Provincial education departments affect most educational systems to varying degrees.

Government policy has a considerable impact on the educational system. For instance, the government determines financing, evaluation procedures, and curricula. Because of this, policymakers have a lot of power and are crucial channels for messages that are motivated by supply and demand.

In the knowledge sector, communication with policymakers is vital. Three categoriessupply-side, demand-side, and policy currentsare used to define the complexity of communications, and some of the drawbacks in the dissemination of knowledge and information are listed. Policymakers must provide pertinent, high-quality information. nevertheless, this information is occasionally lacking or delivered inefficiently. Policymakers may find it difficult to use these findings in their decision-making due to personal and institutional limitations. Meeting deadlines may put pressure on policymakers, which could result in anti-intellectualism or ignorance of the kinds of information that are easily accessible. Information can also be utilised arbitrarily to support preconceived notions, prejudices, and political conclusions that have already been established. In an effort to get in touch with policymakers and influence their decisions, researchers, consultants, and advocacy groups frequently share information on the supply side. As a researcher, you should concentrate on establishing relationships with the people who make up your target audience, learning about the political landscape, and providing your audience with pertinent, understandable information. Mechanisms for public input and participation.

The Value of Communication Techniques

It is now more crucial than ever to teach staff strong communication skills to guarantee a business runs smoothly. Using communication techniques, vocabulary gaps in a first or second language can be filled. These methods are intended to make it simpler for language learners to communicate more clearly and fluently in their original languages. Teachers are crucial in guiding students towards understanding how to study a second or foreign language, and learners should be encouraged to identify their unique learning preferences. Effective communication techniques must also be created in order to keep up with the quick speed of societal advancement. As a result, in modern professional organisations, developing and maintaining an effective communication system is of utmost importance. It makes it easier to gather and organise the data needed to make judgements.Therefore, the following points highlight the need of an efficient communication plan:

1. Making communication effective, intelligible, compensating for the communication gap while participating, and bridging the bond between the teacher and students during communication are all goals.
2. Making instruction and learning engaging and efficient.
3. Making kids engaged and capable of participating in communication
4. Communication in Education: Its Concept and Nature

Educational communication encompasses all media of communication for learning. Both instruction and training are intended to support students in learning new material and developing their present skills. There are numerous communication methods used in education and training. Communication is always a planned action in education and training. What is the media used for instruction? Let's take a quick look at it.

1. First of all, educational settings involve purposeful communication. In education and training, communication has a special objective. For instance, in education, a teacher

giving a lecture on data analysis could attempt to instill in students the idea of data analysis, data analysis techniques, and other related concepts. Similar to this, a chemistry teacher might think of strategies to help students understand how to use test tubes, take measurements, and other similar abilities. For instance, the trainer might help the aspiring pilot during training to build the skills required to become a pilot. Therefore, communication is always carried out with a clear objective in mind[9], [10].

2. Second, the advantages of communication, the source may place a high value on what is communicated because of the positive nature of communication. This helps students and trainees acquire moral principles and mature into contributing members of society. Additionally, it facilitates people's orderly integration into society. It can be applied to assist individuals in reaching consensus on fresh goals, better comprehending a challenge, or taking action.
3. A third In other words, the pragmatic aspect of communication suggests that the objective of the communication is useful. It could be connected to specific behavioral adjustments made by the student that result in the development of particular techniques and skills, or it could be connected to showing them how to carry out a particular activity. Public speaking, augmentation, and debates are all examples of pragmatic communication since they influence or support decision-making.

CONCLUSION

There has never been a better time to use technology to facilitate and enhance learning for individuals from all backgrounds, at all levels, and everywhere. The essential elements required to best realise the changes made possible by technology in education are in place, from the modernisation of E-rate to the proliferation and uptake of openly licenced educational content.These tools and resources should now be integrated into the practises of educators, decision-makers, administrators, and programmes for teacher training and professional development.

These groups may minimise inefficiencies, extend learning beyond the confines of conventional classrooms, and build solid partnerships to support learning everywhere, all the time by collaborating with families, researchers, cultural institutions, and all other stakeholders.Even if technology does not guarantee fairness and accessibility in learning, it has the potential to remove barriers to both in ways that were before impractical. All learners have access to resources, experiences, planning tools, and information that can put them on a road to earning knowledge that was unthinkable a generation before, regardless of their perceived skills or geographic locations.

All of this has the potential to improve educators' knowledge, competencies, and skills. Beyond the static and out-of-date results of conventional examinations, tools and data systems can be seamlessly integrated to provide information on students' progress in their learning.

Learning dashboards, collaborative tools, and communication tools may make it simple and quick to connect teachers and families. Strong vision and leadership at all levels, from teacher leaders to school, district, and state administrators, make this all more likely. Technology also enables better practise, resource sharing, and communication for these positions so that everyone in the system is committed to working together to promote student learning. The use of technology to support learning has never been more possible or advanced.

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CHAPTER 3

FUNDAMENTAL OF MICRO-TEACHING: EXPLORING THE VARIOUS TEACHING STRATEGIES

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ABSTRACT:

The teacher training method known as microteaching, which is used now all over the world, offers teachers the chance to sharpen their teaching abilities by enhancing the many straightforward activities referred to as teaching skills. Microteaching supports the growth of in-person teaching experiences thanks to its success with both beginners and older students. The fundamental abilities of microteaching, such as presentation and reinforcement skills, aid new teachers in mastering the craft of instruction with ease and to the fullest. This method's effects have been widely observed in a variety of educational settings, including the biological sciences, health sciences, and other fields. The Medical Council of India's recent revisions to medical curricula and the role of medical teachers foresee the need for this specialized training of teachers and ongoing skill monitoring to ensure that they continue to perform effectively at any age. By adopting this at the departmental level in various sequences, the purported constraints of microteaching can be reduced. The author conducted a literature search of research and review chapters in a number of scholarly journals, books, and databases. Books were also examined based on the references listed in published publications. The several stages of microteaching, fundamental teaching techniques, implementation issues, and the effects of microteaching on medical education are all outlined in this study.

KEYWORDS:

Microteaching, Medical Education, Teacher Training, Teaching Skills, Teach-re Teach.

INTRODUCTION

Education microteaching is a method used to get aspiring teachers ready for the real classroom environment. Another definition of microteaching is a teaching method used in pre-service teacher education to methodically train future teachers by letting them practise key teaching behaviours. This method enables teacher candidates to practise and understand each of the teaching techniques by breaking them down into smaller chunks and without being exposed to the chaotic environment of crowded courses. When teaching students through microteaching, reciprocal negotiation between the students actively participating in presentations and observing performances can greatly aid in the learning of the skills emphasises that with the use of this method, teacher candidates can gain experience with actual teaching and teaching principles. This approach enables instructors to learn about new teaching strategies and provides them with opportunity to identify and reflect on their own and other teachers' teaching philosophies. Applications of microteaching can greatly assist pre-service teachers. First, they provide information about teaching facts and teacher roles. assist pre-service teachers in understanding the value of planning and making decisions. and allow them to develop and enhance their teaching abilities [1]–[3].

Technology advancements have made it possible for video recordings to be used in the microteaching technique. An efficient and thought-provoking technique for educating pre-service teachers about the teaching profession is audiovisual technology. By exposing pre-service instructors to various situations and experiences, video recordings give them the possibility to evaluate themselves. Video recordings have an impact on teachers' opinions on the educational process. Video tools assist reflective learning, while researchers emphasise that these technologies make it possible to recognise and describe potential issues in the educational process. This strategy boosts self-assurance and enhances awareness of one's own abilities. Video recordings can be utilised to analyse microteaching in addition to serving as examples of model teacher behaviour. By highlighting strengths and weaknesses and enhancing competencies, the use of video recording in microteaching applications helps pre-service teachers develop professionally.

DISCUSSION

Definition and fundamental ideas

Microteaching is a method used in teacher education to develop teaching abilities. It uses actual teaching situations to hone abilities and aids in learning more deeply about the teaching craft. This Stanford method, which involved the steps of plan, teach, observe, re-plan, re-teach, and re-observe, has become the main focus of 91% of on-campus clinical teaching development programmes due to the significant reduction in the complexity of teaching when it comes to factors like the number of students in a class, the range of the material covered, and the amount of time allotted for instruction.

Microteaching is a technique that is frequently used in pre-service teacher education programmes and has been shown to significantly increase learning outcomes. A teacher's primary skill should be effective student teaching. Skills and practises for microteaching have been put in place as a creative way to give teachers the tools they need to be successful.

Effective teaching and efficient technique

With just a few pupils and a very brief lesson or subject, microteaching can be practised. The complexity of genuine instruction is simplified because after every practise session, immediate feedback may be obtained. The use of contemporary audio-visual recording devices and other multimedia tools is crucial to the learning process.Self-training methods include watching another teacher in action and using trial and error in one's own lessons. However, each of them has weaknesses of their own. On the other hand, microteaching assists in removing errors and strengthens both new and veteran teachers' instructional abilities. Microteaching boosts self-confidence, enhances in-class teaching abilities, and improves classroom management.

Medical school microteaching

The primary source of information in traditional medical education is therefore the teachers because they place a strong emphasis on imparting factual knowledge. However, the traditional approaches to medical teacher training are insufficient. Thus, the focus of the teaching goals has changed to be student-centered, quantifiable, achievable, relevant, and timely. Microteaching gives students the time to listen, observe, and practise, allowing them to master each skill to the fullest extent possible.

Microteaching is used in medical education

The idea of implementing microteaching methods in Indian medical colleges has gained more traction. This training method has a scientific foundation, complies with the Skinners' theory of operant conditioning, and offers medical educators a fantastic opportunity to develop their teaching abilities. The Medical Council of India has also advised medical educators to complete training to ensure their continuing, effective performance in that role at any age. It is commonly acknowledged that efficient medical education training programmes can raise the standard and competence of medical educators.

The procedures and conditions for microteaching

Transfer, skill acquisition, and knowledge acquisition are the three distinct stages of microteaching.The stages of microteaching. The knowledge acquisition phase is the preliminary, pre-active stage, during which the teacher receives training in the techniques and elements of instruction through lectures, discussions, illustrations, and expert demonstrations. The teacher designs a microlesson to allow students to practise the abilities they saw displayed during the interactive, skill-acquisition phase.

The ability to change their own teaching-earning practises is provided by the colleagues and peers who can serve as constructive reviewers. The instructor can encourage necessary behaviours and skills and discourage those that are not. In the end, they will be able to integrate and apply the abilities they have gained in a virtual teaching environment to actual classroom instruction.

The participant should construct a microlesson for each fundamental teaching skill after thoroughly learning its principles and constituent parts. Then, they should sequentially implement each skill in a microteaching session. On a weekly or monthly basis, the setting can be completed in the department itself with basic amenities. For each talent, adequate and pertinent constructive criticism can motivate reteaching and reinitiating the skill. The feedback information can be used again, and all the fundamental teaching techniques can be incorporated into a larger lesson before being applied to actual classroom instruction or medical education programmes.[26,27] The entire faculty serves in a dual capacity as educators and constructive critics. This enhances a teacher's evaluation abilities as well. Although there is a danger that the initial sessions won't provide the right kind of feedback, as the number of sessions rises, so does the trained capacity to assess and offer helpful criticism [4], [5].

Fundamental abilities relevant to clinical teaching

The fundamental principles of microteaching are based on the idea that teaching may be evaluated and analysed using a variety of straightforward tasks or abilities, which are a collection of actions or behaviours on the part of the teacher that either directly or indirectly aid learning. Nearly 20 different teaching modalities have been identified since the beginning of microteaching. However, it has now grown to 37 or perhaps more. Here are a few of the crucial teaching abilities.

Lesson preparation

It entails the creation of a micro-lesson that must be arranged logically. The information should be brief, pertinent, and able to last the allotted time.

Display and explanation

This calls for the aptitude needed to comprehend the topics and convey them clearly. The elements include the excitement of the teacher, setting the stage for learning with a topic sentence or opening statement, clear explanation, deliberate repetition, and concluding statements or key messages with a summary of the explanation.

Using concrete examples to help

To improve learners' understanding, the teacher candidate should be able to properly explain the subject using brief, pertinent, and engaging examples.

Reinforcement

This ability is intended to increase the learners' involvement in the growth of the instructional process. Utilizing encouraging verbal and nonverbal cues would be essential for this skill.

Different stimuli

A good teacher must be able to capture and hold the student's attention. Gestures, a change in speech rhythm, and a change in interaction style are key elements of the skill.

Probing inquiries

It's critical to enable and promote organized questioning and doubt clarification from your fellow learners. This skill's key components include critical awareness development, redirection, and refocusing.

Classroom administration

This skill's fundamentals include giving the right directions, prohibiting bad behaviour, and addressing the students by name.

Using visual aids

This skill benefits from improved awareness of the audiovisual aids. The essential elements of this talent include appropriate spacing, distinguishing size, appropriate spacing between words and lines, and the usage of pertinent words or phrases.

Consequences of Microteaching

Both merits and faults

All medical education training programmes heavily rely on microteaching, which also significantly advances knowledge of the teaching process and its intricacies. According to a case study on microteaching lesson study that included aspects of Japanese lesson study with the approach, the pre- and post-lesson plans had successfully shown improvement in teachers' subject-matter expertise. The teach, critique, re-teach paradigm in a dentistry education programme recognized microteaching as a method for helping health professionals improve their personalities and confidence. Microteaching, according to Heyroth, is a scaled-down teaching encounter designed to develop new skills and enhance existing ones. Despite having anxiety, microteaching has become the tried-and-true method in nursing education. In addition to improving the teaching abilities of 57 nursing students, microteaching has been shown to be

successful in retaining the acquired behaviours even six months after the course is over. After an intense workshop based on the microteaching technique, dietitian students reportedly had high levels of confidence. In another study, the effect of microteaching on the growth of performance-based abilities at a pharmacy college was assessed. It has been demonstrated that a microteaching exercise included in a series of professional development seminars is an efficient way to improve and develop communication, problem-solving, and critical-thinking skills in pharmacy students. Microteaching facilitates in comparing the efficacy of different microteaching variations in addition to helping rookie teachers strengthen their skills. The abilities of problem solving, critical thinking, questioning, and reflective thinking can all be improved by microteaching. It enhances learning through practical applications. The use of advanced organisers, integrating the lecture with applications on the themes, integrating the lecture with pauses, and turning difficult concepts into learnable units were some of the other significant advantages of this technique. Thus, employing microteaching strategies can effectively fulfil the duty of a health educator.

The microteaching idea has proven to be more effective than conventional teaching methods in teaching mathematics than only in medicine or health sciences. In a practical course on teaching mathematics, the use of extended microteaching activities considerably decreased anxiety levels. Vare Jonatha demonstrated the behaviourist phenomena of microteaching through a case study involving two groups of aspiring teachers who were being trained by a professor and clinical instructor. Using the most recent developments in social learning theory and meta-cognitive learning techniques, the new microteaching model conceptualises the teacher training programme. In an exploratory study, Hansford looked at the connections between different peer microteaching feedback settings, the dogmatism personality trait, and non-verbal perceptiveness.In order for trainees to obtain their first teaching experience and for them to develop the necessary information, abilities, and attitudes, proper practise is considered crucial for teacher training programmes. The biggest obstacle to microteaching sessions in medical education training programmes, however, continues to be time. This has the effect of preventing both the practise of all skills and the opportunity for all trainees to participate in re-planning and re-teaching activities. If the teacher doesn't develop the skill of successful student teaching, the training is rendered ineffective [6]–[8].The following are some other drawbacks of microteaching: Lack of attention on material, dependence on skills, and logistical and administrative issues when there are many students in the class. By carrying out the tasks at the departmental level in various order, this can be reduced. When the teachers has a strong foundation of fundamental abilities, extensive training programmes are feasible. These programmes can then be successfully used for developing new talents as well as enhancing and expanding existing ones. Therefore, it is more crucial for the faculty to have a deeper awareness of the complexity of the teaching process [9], [10].For a variety of reasons, the microteaching technique is undervalued and underutilized in India. Microteaching techniques that are more affordable and straightforward would aid in the development of better teachers for the nation.

CONCLUSION

Microteaching is a helpful tool that allows people of any age to practice important teaching skills in a safe and effective way. This chapter explains that microteaching is a helpful way for teachers to learn how to teach well. Learning is when someone's behavior changes because they do something, get trained, or go through an experience, no matter how old they are. When the

learner has more knowledge and practice, learning becomes better. The most important thing for participants in microteaching sessions is to be able to give and receive helpful feedback with an open mind and meet the right teaching and learning goals. Furthermore, it boosts a teacher's self-assurance in a friendly and calm environment. At any age, microteaching serves as a focused tool for practising fundamental teaching techniques in a safe and efficient manner. This essay explains microteaching as an Efficient Learning Technique for Effective Teaching. Learning is a modification of behaviour that can occur at any age as a result of action, instruction, or experience. Learning is more efficient when the learner has more experience. The ability to provide and receive constructive feedback with an open mind while achieving appropriate teaching-learning goals is the most crucial attribute of participants in microteaching sessions. Additionally, it boosts the teacher's self-confidence in a welcoming and calm environment.

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CHAPTER 4

TEACHING AIDS:EDUCATIONAL TOOLS AND METHODS IN A CHANGING WORLD

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ABSTRACT:

Input components include students, teachers, and instructional materials. Process aspects include research, leadership, and student services. Output factors include employable graduates, knowledge production, and economic progress. The abilities, attitudes, and orientation of the students towards research are additional indicators of teaching and learning activities. Poor physical and social conditions may compromise the effectiveness of instruction and learning. It's critical to create an environment that supports good teaching and learning techniques. Additionally, in order to impart the proper knowledge to students, teachers must have adequate training in the use of teaching aids and a thorough comprehension of their subject. The utilisation of images, videos, artefacts, and internet resources encourages students to visualise the context of what is being taught in a real-world setting. As a result, learning is reinforced: We forget what we hear, remember what we see, and understand what we do. The lack of preparation for life and work, emerging student characteristics, disengagement and high dropout rates, a lack of motivation, the shifting conditions and demands of the 21st century labour market, and global scenarios like economic and social crises, global diversity, and climate change are some of the reasons for changing 21st century learning. Students get transferable abilities to be globally competent, think creatively, and have an informed comprehension of the complexities of technology by being successfully taught knowledge content.

KEYWORDS:

Global Competence,Labour Market,Learning,Students, Teaching.

INTRODUCTION

Input variables such as teachers, facilities, educational resources, students, and curriculum are a part of the activity and technique of teaching and learning. The processes of education, administration, research, quality assurance, and community impact combine these input variables. The results demonstrate employable graduates with the necessary skills, the creation of new knowledge, responsible citizens, and economic prosperity. The abilities, attitudes, and orientation of the students towards research are indicators of teaching and learning activities. Leaners are taught technical skills, exposed to career awareness about the labour market, given the tools to have an intelligent understanding of technology, and encouraged to think creatively in order to design the most efficient method of delivering knowledge content. In recent years, students have shown little enthusiasm in studying and less capacity to remember what they have been taught. This can be due to the teacher's instructional strategies utilised during the teaching and learning process in the classroom. Teachers are encouraged to use images, quick videos, and social media tools to enhance teaching and learning activities and prevent students from

becoming bored during lectures. These aid in giving students a clear picture of a specific situation. The variety of teaching techniques utilised today offer possibilities for teachers to grow and improve. An effective teaching approach unites the efforts of the teacher and the student to organise learning[1]–[3].For teachers to adopt and integrate these teaching strategies, creativity and professional development are crucial.

DISCUSSION

According pedagogical aids

In the teaching and learning profession of the twenty-first century, teachers are excellent facilitators of information and skills. To improve classroom education, grab students' attention, and inspire learning, teachers employ teaching aids. These teaching aids include tools such as a computer or DVD, instructional materials such as a book, chalkboard, or image, or tangible items such as a specimen, map, or globe that make it easier for the instructor to carry out the teaching-learning process. A lot depends on the teacher's inventiveness. By making the learning process engaging and quicker, the usage of teaching aids can help students learn more quickly. With the use of teaching aids, students can actively participate in their learning while using their hearing or vision.

Types of educational tools based on the time period

Usual/regular teaching materials: There were no phones, computers, or the internet back when technology had not yet developed into what it is now. Teachers typically employed chalk, blackboards, and dust and mud sketching as instructional aids. As teaching tools, genuine objects, specimens, and elements of nature were written about and presented. The typical or conventional resource that was available to both teachers and students was books.Non-conventional/modern teaching aids. As technology advanced gradually, teachers and students have access to non-conventional teaching aids such computers, television/radio, interactive whiteboards, and multimedia. The contemporary teaching tools come in a variety of shapes and sizes.Students now have access to a wide range of resources like teaching aids, games, exercises, and movies. They have increased both the enjoyment and difficulty of teaching. Today's teaching and learning processes heavily rely on the usage of unconventional instructional tools[4], [5].

Audio-visual aids are another name for teaching resources. As opposed to earlier teaching aids that only stimulated one sensory organ, modern teaching aids activate both the hearing and the eyes simultaneously. Other sensory organs are used in the new teaching tools.These instructional tools include visual, auditory, and audio-visual aids. Aid that is projected and unprojectedPPT, slides, film strips, overhead projectors, and TV/VCR are examples of projected aids since they can be projected on a screen to provide a magnified image of the material. They are appropriate for both large and small gatherings. Large, vivid, and colorful visuals boost their effectiveness compared to a non-projected aid. Projection screens are not necessary for non-projected aids. Such objects, such as chalkboards, whiteboards, charts, posters, visual materials, and models, are simply shown, hung, or touched.

They give students first-hand experiences, encourage active participation, pique their curiosity, and assure better outcomes and longer retention. Methods of instruction in the past, present, and future Previous educational systems the old educational system was founded on the Vedic, Brahmanical, Muslim, and British periods.

Education was mandated during the Vedic eras, and pupils were turned over to the teacher. War, protection, and the arts and crafts were the main focuses of education. Vocational education was founded on teaching and learning craftwork when it first arose. The British invasion aided in the advancement of the educational system.Modernizing the educational system was given more weight in British education. The British built a number of schools and added amenities to the educational system. Significant adjustments were made to the curriculum, instructional strategies, and educational system. Despite this, in many countries the majority were denied access to education, making it a privilege for a select few. Learning and teaching methods were focused on individual experiences. Interacting with other people and things helped participants enhance their knowledge and fundamental social skills.Because of this, there was little room for change or invention that went beyond the level of expertise and knowledge of earlier generations.current educational systems The education of today differs greatly from that of the past.However, it is still not doing much to prepare young people for a changing world.

The primary goal of contemporary education is to provide students with the skills and information they need to pursue lucrative careers. Owners of schools typically judge success based on financial gain rather than value for students. Evidence suggests that the current educational environment and method of instruction are insufficient to meet and support the needs of 21st-century learners.Education systems in developing nations are typically stagnant. Students then leave school without the skills necessary to make them better citizens or to enhance their way of life and morals.Due to this business-minded educational system, students lack the qualifications for legitimate jobs, and professors lack the motivation to teach pupils useful life skills.Because the educational system does not impart the fundamental knowledge and skills needed in the workplace, candidates are being rejected during the interview process.Technology is given more weight in schooling today. Students are solely given grades based on exams, not on their comprehension of the material.This raises the question of whether pupils are evaluated on their ability to recall information or on their true intelligence.The current educational system does not sufficiently distinguish between students' knowledge and skills.

Future system of education

Although the direction the educational system will take is unpredictable, one may forecast how it will look. Future educational systems are predicted to change from being organisations that place a lot of emphasis on teaching to ones that put more of an emphasis on teach. In order to implement some beneficial reforms in the educational system, governmental authorities must be responsible and act appropriately. The goal of the future educational system is to build a world where everyone can live rather than just addressing new issues. The future of education will place more emphasis on student training, professional qualifications, and country growth. Teachers' responsibilities will change from being subject matter experts to being mentors and coaches. The main resource of a country is its educated population. Education is essential for fostering a personal and social life and preparing the leaders of tomorrow.

It is thought that the educational system is regressing, that the underprivileged would be unable to risk taking out loans to pay for expensive education, and that upbringing, rather than talent, will decide social mobility. There have been discussions on how technology will affect schooling in the future. Although purists advocate for students to return to nature, educators should be open to embracing technological innovations, ensuring their applicability in the classroom, and implementing more efficient methods based on current learning theory. Due to the lack of

current jobs, education is becoming uncertain and unstable. A future-focused curriculum should be created to give students the knowledge and skills they need to handle unforeseen problems.

Global awareness

According to the OECD (2018), global competence is the ability to analyse local, global, and intercultural issues, comprehend and value other people's worldviews and perspectives, interact with people from different cultures in an open, appropriate, and effective manner, and take action to promote social cohesion and sustainable development. It has many facets, including learning about civics, socioemotional skills, and cognitive growth. For pupils to communicate with people locally and globally, four dimensions must be cultivated (Scott, 2015. P21, 2013). The first dimension is the ability to analyse and resolve international problems like poverty, trade, migration, inequality, and conflict. The second is the ability to critically think and comprehend many points of view. The third dimension places special emphasis on teaching children how to work together across cultures and backgrounds.

The Function of Educational Tools and Methods in a Changing World

The issues covered in New Challenges to Education: Lessons from Around the World 214 are social, political, and environmental. The emphasis of the fourth dimension is on taking positive action to address sustainability and well-being challenges. Due to its complexity, the globe needs multifaceted solutions. To study and work towards resolving challenges of local and global relevance, skills in these domains are required.The goal of developing students' knowledge, skills, attitudes, and values that are pertinent to global competency is being pursued by nations, foundations, academics, international organisations, and educators worldwide. Themes that cross the curriculum or lessons that are already taught are used as the basis for the change agents that influence teaching and learning for global competency. Global competency demands a culture that encourages students to constructively interact with each other and their teacher on opposing viewpoints and difficult subjects, regardless of the subject or the teaching/learning approach[6]–[8].

Developing global competency

Students must be actively involved in their learning and given the chance to reflect if they are to develop global competency. They must be taught how to develop their intellectual curiosity and critical thinking skills. Students must be prepared to deal with complex issues such economic, sociocultural, health, environmental, and geopolitical concerns in order to make educated decisions and interact with people from varied backgrounds. In the classroom, students should put their global competency abilities to use by applying them to current events. Although textbooks, lectures, and memorizing the right answers to factual questions have their place in students' education, developing global competency requires more active, engaging pedagogy. In order to investigate, express, and exchange ideas utilizing technology before coming up with answers, today's students study in a supportive atmosphere.

Classroom environment

Effective classroom cultures must be developed in which students are free to respectfully express their opinions to their teachers or fellow students, choose the media they want to access, the tools they want to use, and the ways, times, and places they want to use them to support learning. Although fewer teachers are using these technologies in their teaching, digital learning tools are

now employed to support student learning in comparison to traditional resources.Except when learning activities are precisely defined, technology does not in and of itself drive learning. Benefits come more from the communication, collaboration, and innovation that technology supports. Future education will be impacted by the use of digital tools.Who handles classroom chores, how teachers form teams for projects, and how seating arrangements are planned can all affect how students perceive one another. In this approach, students can take use of the rich diversity in the classroom and use examples from different cultures to illustrate curriculum themes. Human rights, cultural diversity, injustice, inequality, and oppression are some of these ideas.Teachers are familiar with instructional strategies that can be used to help students enhance their global competency. No matter the method of instruction, instructors require specialized professional development opportunities to promote education for global competency. Among the instructional strategies for global competence are:

Structured debates and discussions

Students gain the ability to openly articulate their viewpoints, support them with facts, listen intently for comprehension, and be open to changing their beliefs in the face of new information. The instructor will often utilize a text, a video clip that will get students thinking, or a contentious image to start a discussion or debate among the students. They participate in class discussions by honing their reasoning, communication, and teamwork skills, researching a specific subject, presenting opposing viewpoints on global concerns from various angles, and bringing attention to global issues. Students divide into two teams, one of which supports the other's position on a given statement[9], [10].

Access to learning at any time and from anywhere

The workplace, home, community, and on-the-go offer more potent locations for flexible learning than only the school environment in the current and future systems of education. Due to growing location-independent expectations for educational service delivery, learning activities are no longer solely conducted in classrooms. Due to the ubiquity of smartphones and broadband networks, everyone can access education at any time and from any location. Traditional educational institutions have undergone a significant transition to a more diverse and complex system of learning that makes use of a wide range of educational institutions and third-party suppliers. Schools must reposition themselves in the emerging learning landscape. Students can learn outside of the classroom as well. Students are able to connect their learning to the real world and become more self-directed when learning starts to move out of the classroom and into homes and online communities. Students can participate in more varied settings, interact with others, and apply their knowledge in new circumstances as they become more accustomed to using digital technologies.

CONCLUSION

The teaching and learning strategies connected to future learning and global competency have been covered in this essay. Regardless of the many variables influencing change in how students are educated, it is nevertheless true that under the current educational system, kids are not learning effectively and are not receiving the skills and knowledge necessary to have productive working lives. To assist students attain their greatest potential, instruction should be customized to their needs.In this approach, students will be able to participate in learning activities throughout their life while interacting with their own communities and dealing confidently with

individuals from other cultures. Nations must critically assess traditional education to see whether schools are meeting expectations and preparing students to compete in a global market, just as teachers cannot change the educational system alone. Each country may add to the global body of knowledge on the most effectiveLessons from Around the World 216 implements 21st century learning. Education should equip students with transferable abilities including teamwork to address problems that arise in the real world, reflection on their thoughts, improved critical and creative thinking, initiative, and an understanding of analytical techniques.

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CHAPTER 5

STAGES, LEVELS AND TEACHING METHOD: A COMPREHENSIVE OVERVIEW

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ABSTRACT:

The process of teaching and learning can be characterized as the transfer of knowledge from teachers to pupils. The process through which a teacher identifies and establishes the learning objectives, develops teaching resources, and puts the teaching and learning approach into action is referred to as a combination of several aspects. On the other hand, learning is a fundamental aspect of education that a teacher must take into account. The purpose of this article was to review pedagogy, inclusive practises, and numerous academic journals in order to evaluate the effectiveness of teaching in higher education. The study's goal is to evaluate how well professors educate in a higher education environment. The study analyzed the theory with the support of practice from university experiences by employing experimental research methodologies, notably reflection and literary forms. The results of the research point to the introduction of role-playing and the provision of constructive and appropriate formative and developmental feedback as having a profoundly good effect on students' confidence and self-esteem. Additionally, it was discovered that an inclusive environment fosters inclusivity and enhances student and faculty academic achievement. The results of the study will make it possible for teachers to assist in developing and implementing an inclusive teaching and learning environment in order to raise learners' expectations and academic achievement.

KEYWORDS:

Education, Environment, Levels, Teaching Model.

INTRODUCTION

The dissemination of knowledge from professors to students can be regarded as the process of teaching and learning. A combination of multiple parts refers to the procedure through which a teacher determines and sets the learning objectives, creates teaching materials, and implements the teaching and learning approach. The fundamental component of education that a teacher must consider is learning, on the other hand. This article's goal was to review pedagogy, inclusive practises, and a wide range of academic journals in order to assess how well higher education instructors are doing their jobs. The purpose of the study is to assess how effectively academics instruct in a higher education setting. The study used experimental research approaches, particularly reflection and literary forms, to analyses the theory with the use of practises from university experiences. The research's findings suggest that role-playing activities and the delivery of constructive, pertinent, and relevant formative and developmental feedback have a profoundly positive impact on students' self-confidence and self-esteem. Additionally, it was found that an inclusive workplace fosters inclusivity and improves academic achievement for both professors and students. In order to enhance students' aspirations and academic

accomplishment, teachers will be able to help build and execute an inclusive teaching and learning environment according to the study's findings[1]–[3].

DISCUSSION

Technologies Education's Stages, Levels, and Teaching Models: Promoting 21st-Century Effective Learning

The foundation of society is education, which acts as a means of passing values, skills, and knowledge from one generation to the next. Education methods have changed over time to take into account shifting societal demands, technology developments, and a better understanding of how individuals learn. Stages, levels, and teaching models are three essential ideas that are crucial in determining how education is shaped. These components work together to form a flexible framework for promoting successful learning in the twenty-first century.

Understanding Developmental Progression through the Stages of Learning

Education is a lifetime process with several learning phases. These phases show how learners develop as they pick up new information, abilities, and competencies. The Bloom's Taxonomy, which divides learning into six levelsremember, comprehend, apply, analyse, evaluate, and createis one of the most commonly acknowledged models of educational stages. The progression from simple memory recall to higher-order thinking and creativity is shown in this hierarchy. As they advance through these stages, learners interact with ever-more sophisticated cognitive processes, which equips them to think critically and creatively about issues.Because of the accelerating speed of technology development and the requirement for ongoing skill improvement, learning phases have grown more fluid in the twenty-first century. The distinction between formal education and informal skill development has gotten hazier as lifelong learning has become necessary. Stages now include not only traditional education but also self-directed learning, workshops, online courses, and on-the-job training. This change emphasises how important adaptation and the capacity to learn new things are as necessary abilities for surviving in the modern world.

Education Levels: Creating Learning Environments

The hierarchical structure of learning settings based on age, grade, and academic development is referred to as levels of education. From early childhood to adulthood, these levels constitute a cogent educational system that leads students through their learning journey. Preschool, elementary school, secondary school, and higher education are the usual levels. A progressive and thorough education is ensured by the way that each level builds on the groundwork established in the preceding one.A broad-based curriculum is offered in primary and secondary school with the goal of building fundamental knowledge and skills. On the other side, higher education provides specialized fields of study that prepare students for certain jobs and higher level intellectual activities. Learners can explore a variety of topics, identify their interests, and decide on their educational and professional pathways with the help of the level structure [4], [5].However, the conventional hierarchical model of education has come under fire for being too rigid and homogenous. Innovative strategies, such competency-based education, have been developed in response. With the help of this model, students can have a more individualised learning experience by concentrating on mastering particular abilities or competencies at their

own rate. Such changes signify a movement towards an education system that places a higher importance on individual achievement than strict deadlines.

Changing Pedagogy for Today's Learners: Teaching Models

Teaching models are educational frameworks that direct teachers as they present material and support learning. In response to studies on effective teaching methods, the incorporation of technology, and a deeper knowledge of learning psychology, these models have changed over time. Several well-known instructional models include:

a. **Traditional Lecture:** In this paradigm, a teacher imparts knowledge to a group of receptive students. Despite criticism for its lack of engagement, it is nevertheless a fundamental educational strategy.
b. **Active learning:** This method places a focus on involving students in projects, group discussions, and problem-solving exercises. Collaboration and critical thinking are encouraged.The typical lecture and assignment components are reversed in the flipped classroom paradigm. Outside of class, students interact with the material being taught, and class time is used for discussions and application.
c. **Project-Based Learning (PBL):** PBL concentrates on students completing challenging, real-world projects that call for research, creative problem-solving, and problem-solving. It encourages knowledge application and a greater grasp of concepts.Learning that is personalized to the needs, speed, and learning preferences of each learner. Delivering tailored content frequently involves significant use of technology.
d. **Blended learning:** This method encourages self-directed learning by combining traditional classroom instruction with internet resources and activities.
e. **Flipped Mastery:** This model, which combines characteristics of the flipped classroom and mastery-based learning, enables students to advance when they show that they have mastered particular abilities or ideas.
f. **Cooperative Learning**: Students engage in groups to accomplish common learning objectives, promoting cooperation, communication, and support among one another.

Similar to problem-based learning (PBL), this approach emphasizes tackling complicated issues while fostering critical thinking and interdisciplinary learning.Teaching paradigms in the twenty-first century are becoming more and more influenced by cognitive psychology and neuroscience research. The significance of utilizing a variety of teaching techniques that cater to various learning preferences and take use of the brain's ability to adapt and change has been highlighted by ideas like neuroplasticity and multimodal learning.

Integration and Moving Forward

The development of a future with successful education depends on the integration of stages, levels, and teaching approaches. Teachers must modify their teaching methods in order to present students with pertinent and interesting experiences as technology continues to revolutionise how we access information and learn. Artificial intelligence, virtual reality, and the development of online learning platforms all provide opportunities and difficulties.Education is becoming more individualized, with personalized learning paths created for each student based on their specific skills, limitations, and interests. Micro credentials and digital badges are two emerging formats for recognising and accrediting learning that are becoming more popular as education becomes more decentralised and available outside of traditional institutions.In

conclusion, a strong framework for education in the twenty-first century is produced by the interaction between stages, levels, and instructional methodologies. The levels of education organize students' transition from childhood to maturity, while the stages of learning chart their cognitive development. Research-based and technologically advanced teaching models modify pedagogy to meet the needs of various learner types. To ensure that effective education continues to advance as we navigate a constantly shifting environment, the answer is to embrace flexibility, innovation, and a profound understanding of how people learn.

Enhancing Stages, Levels, and Teaching Models: New Educational Trends

Several new trends are having a big impact on how stages, levels, and teaching models interact as education changes in response to societal changes, technological improvements, and shifting learning needs:

Lifelong learning and ongoing skill development: The idea that education should only be pursued during certain stages of life is vanishing. As people become more aware of the need to adapt to quickly evolving job markets and technological breakthroughs, lifelong learning has become more popular. The conventional stages of education now include ongoing retraining and up skilling throughout a person's career in addition to formal study.

Globalization and Multicultural Education: Multicultural education is crucial in a society that is becoming more linked. Education must now prepare students to comprehend and interact with other cultures, viewpoints, and global concerns because it is no longer limited to local contexts. This development emphasises the significance of including cross-cultural competence at all levels and phases of education.Digital literacy and technology integration have changed how we acquire information and learn. For the purpose of promoting digital literacy and preparing pupils for the digital age, instructional methodologies must use technology. The way that education is given and received is changing as a result of blended learning, online courses, and digital resources [6]–[8].

Personalization with Data Analytics: Learning platforms and educational institutions are using data analytics to customise the learning experiences they provide. In order to personalize instruction and support, educators can identify individual learning requirements by analyzing student performance data. Algorithms are used by adaptive learning platforms to change the content in accordance with students' progress and areas of difficulty.

Flexible Learning Environments: There are changes being made to the conventional classroom design. Different learning styles are accommodated via flexible learning environments that include actual classrooms, virtual environments, and experiential learning settings. By offering adaptable venues for collaborative, hands-on, and digital learning experiences, this trend promotes a variety of teaching approaches.

Sustainability Education: As environmental concerns escalate, sustainability education is becoming more and more important. It is being included into lessons at all grade levels, motivating students to comprehend the ecological, social, and economic aspects of sustainability and preparing them to take on major environmental problems on a worldwide scale.Accessibility and inclusion are essential components of contemporary education. It is made possible for students of all abilities, backgrounds, and learning styles to access high-quality education

through differentiated instruction and the Universal Design for Learning (UDL) principles. Different levels and stages of education are incorporating inclusive education ideas.

Critical Thinking and Problem Solving: At all educational levels, more emphasis is being placed on developing critical thinking and problem-solving abilities. Teaching strategies are being developed to push students to analyse complicated problems from numerous angles and come up with creative solutions.Development of practical skills and an entrepreneurial attitude is becoming increasingly important in addition to traditional academic talents. The goal of education is to provide pupils the creativity, adaptability, communication, and teamwork skills necessary for success in a world that is changing quickly.Social and emotional learning (SEL) is being included into teaching approaches as educators become more aware of the value of emotional intelligence. It improves students' overall wellbeing and prepares them for life after school by assisting them in the development of self-awareness, self-regulation, empathy, and interpersonal skills.

Global Issues and Interdisciplinary Learning: A lot of global issues, like climate change, call for interdisciplinary solutions. Education is dismantling discipline barriers to encourage interdisciplinary learning, in which students combine their knowledge from many disciplines to solve complicated problems.Digital citizenship and ethics Education places a strong emphasis on the creation of moral online citizens as technology becomes a bigger part of society. Teaching pupils media literacy, ethical online conduct, and the effects of their actions in the digital world are all part of this.Project-based learning and hands-on experiences are becoming more popular. These methods immerse students in authentic situations while promoting involvement, critical thinking, and the application of knowledge in real-world settings [9], [10].

Innovation in assessment and credentialing: More comprehensive techniques that evaluate not only knowledge but also skills and abilities are challenging traditional assessment methods. Assessments based on competencies, digital badges, and portfolios offer more thorough and accurate depictions of students' abilities.These patterns show how education is constantly changing, and how intricately it is connected to stages, levels, and teaching methodologies. While navigating these developments, educators, legislators, and stakeholders must create a balance between tradition and innovation to keep education relevant, efficient, and open to all students.

CONCLUSION

In order to control the behavior of individuals or groups, it may be necessary to use a variety of strategies, including questioning, role playing, rewarding good behavior, punishing bad behavior, discussions, paired and group work, observations, switching activities, audio and visual aids, etc. Teachers must comprehend their own dynamics in order to modify their actions or methods of instruction. In this regard, teachers need to understand the needs and preferences of the learners and construct the lesson plan accordingly to satisfy the learning aim of all learners rather than specific people. Once again, learning needs, techniques, or styles of the learners may differ. Teachers must first and foremost pinpoint the obstacles to learning as soon as possible. For instance, occasionally students act out because of obstacles like a language barrier, low self-esteem, lack of confidence, or a sense of inappropriateness. It is preferable in this situation for the teachers to understand the underlying problems and react appropriately rather than issuing warnings.Sometimes constructive criticism can have a powerfully uplifting effect on students' self-confidence and self-esteem. Last but not least, it is crucial for teachers to increase student

involvement through active learning, to foster inclusion among students through the learning process (experiential and blended learning), and to ensure that results meet faculty and student standards through assessments. If instructors can successfully communicate, maintain control, adhere to the rules consistently, offer choices, adapt, and lastly be innovative in regulating behavior, it may be simple for them to do so.

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CHAPTER 6

TEACHING METHODOLOGY: EFFECTS ON QUALITY LEARNING

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ABSTRACT:

The teacher's organization and implementation of a variety of instructional strategies and activities to meet predetermined objectives is known as their teaching methodology. The effectiveness of the learning process and the teacher's competence are measured by the methods used in instruction. Being a teacher requires me to always explore for innovative ways to impart knowledge to my students. On numerous instances, I have discovered that the present state of technology has rendered traditional teaching methods less successful than they once were. Teaching is more effective when it is delivered quickly in response to the demands of the student, necessitating the blending of diverse knowledge-delivery approaches. In order to select a method that satisfies the objectives and gives the instructor high competency, this chapter discusses the characteristics of many teaching methods, including online teaching. A comparison between them is also highlighted.

KEYWORDS:

Competency,Online Learning,Quality,Strengths, Teaching Methodology.

INTRODUCTION

It is preferred to refer to Teaching and Learning Methods rather than Teaching Methods because teaching and learning are two activities that mirror one another. Since learning is the end result of instruction, it is inappropriate to separate the two activities. The quantity and calibre of the learning that pupils get serve as the benchmarks for measuring effective instruction. Our goal here is to set standards by which to compare teaching strategies to student learning outcomes. Teachers typically plan to employ the traditional method of teaching, which is the simple approach he adopted. With this approach, the teacher is the only thing being paid attention to. All kids do not study in the same manner at the same time, as the teacher must be aware. There are varied skill levels among the pupils in the class, therefore the teacher must adapt her teaching strategies or find a way to effectively reach every student. The development of communication technology, information technology, and particularly education technology, which has altered the minds of current generations, are additional reasons to explore for new methods of instruction[1]–[3].

Assessing the effectiveness of a teaching strategy

In order to select the teaching method and provide learning outcomes that satisfy all of the learning process' objectives, a model approach must be established. Regardless of how well a teaching approach engages pupils or what kind of information it imparts, this model takes into account a number of criteria. The criteria's of this model can be summarized in the following table. The degree to which the procedure is appropriate given the time available. How much of a chance the strategy provides for student participation. How much opportunity there is for

exchanging knowledge and ideas the approach provides? How much opportunity there is for implementing real-world experiences is provided by the approach? How much of a possibility for self-development the method offers. How much of a chance the approach allows the learner to work together. How much of a chance the method allows the student to be a self-evaluator. How much the approach increases the learner's enthusiasm and responsiveness? How much opportunity there is for correlation between various topics the method provides? How well it can put people in groups together. How much of it deals with individual differences. What degree of tracing flexibility it has?

DISCUSSION

Choosing a teaching strategy

While each of the aforementioned criteria engages students in a different way and offers benefits based on the subject matter they teach, the most effective teaching methods are those that have a track record of employing the greatest number of them. Knowing how these approaches differ will make it easier to choose the optimal method for a given class of study and to specify a particular teaching style. Along with the aforementioned model, the following features of the most popular teaching approaches, as outlined in numerous linked literatures, will undoubtedly aid in making the best decision.

Lesson

One of the teaching techniques uses the teacher as the principal actor, the students as the passive component, and the speaker as the active component. He gave a planned speech or oral presentation to the audience, going over the issues in an orderly fashion. The only real interaction the audience has is during the brief question-and-answer period that follows the speaker. This approach saves time and effort[4], [5].

Characteristics

Strengths

1. Reduce effort and time.
2. Appropriate for complex subjects like literature, history, etc.
3. Presents factual information in an easy-to-understand manner.
4. Has inspirational experience.

This method is cost-effective and beneficial for a large group of students. It may cover information in a systematic way, and the teacher has excellent control over time and material. It stimulates thinking to open conversation.

Weakness

1. Distracting for students.
2. Pay attention to the information rather than the students.
3. Experts aren't always effective educators.
4. The audience is inert.
5. It's challenging to measure learning.
6. One-way communication.
7. Don't make distinctions based on the learners.

Preparations

1. A clear introduction and summary are required.
2. Must have a time and content constraint.
3. Must have examples and stories.

Conversation and debate

It is a dialogue and discussion technique that relies on questions and replies to get to a certain fact. This technique dates back to the Greek philosopher Socrates, who employed it to lead his followers to the truth. The sender, recipient, and message are the three components that this technique depends on. The message stands in for the topic of conversation, and both the sender and the receiver can simultaneously be in the conversation.Discussions vary depending on their objectives. There may be some conversation that is restricted to teaching topics or that is open to all topics connected to human life or human concerns.The ides trial between students and between students and the teacher is represented by discussion and interaction.

Goals of Conversation and Dialogue

1. The students' self-confidence tends to rise as a result of this strategy.
2. Develop your proving and persuasion skills.
3. Strengthen the inclination for the studied topic.
4. Increase your ability to concentrate and focus.
5. Arrange your thought process.
6. Finding errors and fixing them.
7. Increase students' power and activity.
8. Encourage participants to think, allowing them to evaluate both their own and other participants' responses.
9. Information is more easily interpreted and understood when it is discussed.

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1. It improves the capacity to formulate useful queries.
2. Expand the chances for involvement that improve problem-correlating and -solving skills.
3. Improve your oral communication skills and linguistic usage.
4. Assist in meeting the social needs of pupils, such as companionship, acceptance of others, and other virtues.
5. The following points must be taken into account in order to reach the discussion's objective:
6. The teacher should ask every student the question rather than just one in particular.
7. The question needs to fit the teacher's plan and the objective.
8. Questions should inspire thought, inquiry, experimentation, and conversation among the class.
9. Increase the number of inquiries that begin with Why, How, or What, while decreasing the number of queries with Yes or No responses.
10. Increase the number of inquiries on the student's daily activities and living situation.
11. Guide the students towards the plan's goal and assist them in staying on topic during the discussion.

12. Paying attention to the student's responses and assisting with correlation.
13. Emphasize to the children the value of attentive listening.
14. Encourage the creation of questions by the pupils.
15. Organize and manage your time.
16. Motivate and inspire pupils to engage in research and critical thought.

Characteristics

Strengths

Appropriate for all academic topics. Discussion and discourse are more suited to the teaching of subjects relating to social studies and social problems, such as smoking, vengeance, drug addiction, and alcoholism[6]–[8].

1. Combines the group's views and experiences.
2. Effectiveness following a presentation, a movie, or an experience requires analysis.
3. Enables everyone to take part in a dynamic process.
4. Encourage an upbeat and enjoyable environment among participants.
5. Participants improve their speaking and expressing abilities as well as their communication and interpersonal skills.
6. Considers the individual learning styles of students.

Weakness

1. Time and effort are required time-consuming.
2. You need to have the ability to compose questions and throw them.
3. Not appropriate for complex subjects may go off course.
4. Only a select few may exert dominance others might not participate.
5. Impractical for groups larger than 20 people.
6. Things might go awry in class.

Preparations

1. Requires extensive preparation on the part of the discussion facilitator.
2. Outline for required questions.

A real-world example

Practical demonstration is regarded as one of the general teaching techniques that is successful in imparting knowledge on how to use tools, conduct scientific experiments in the lab, educate students to give speeches, and other topics. The teacher demonstrates and demonstrates the abilities in front of the students in the best way possible. He may repeat or allow the pupils to demonstrate the skills under his supervision.Although the effectiveness of this method greatly depends on the teacher and his own abilities, it is nonetheless crucial because some talents cannot be learnt without actual demonstration.

Characteristics

Strengths

1. Three-dimensional real-world.
2. Occasionally affordable and easily accessible.

3. In addition to seeing, experience may also be tactile or audible.
4. Reducing the risk that might arise when students practice the skill on their own.
5. Enable effective participation from everyone.
6. Create a joyful and enjoyable environment group education

One of the cornerstones of the effectiveness of group learning is the teacher's ability to build groups. Studies have shown that when the group's members are diverse, the learners gain more academically and socially. The teacher divided the class into groups of varying ability levels to provide the students the chance to learn from and evaluate one another. The findings of research indicate that the most effective group is one that includes students with a range of ability levels. In this approach, students are divided into semi homogeneous groups, and each group is taught separately in a different learning environment. To achieve the objective, each group consists of five to eight students. The group's members can be categorized as: Loudly read the assignment to the group, reader. Register the responses, registrar.

Checker: Ensures that all team members understand their tasks and requests justifications and solutions.

Materials gatherer: gather and organize all pertinent materials.The project and each person's performance are both presented by the coordinator.In order to help the team focus on their job through time monitoring, the observer should gauge the level of noise in the group.

Research

While conducting an inquiry in a language class entails achieving the goal, conducting an investigation as a teaching strategy entails overcoming obstacles by taking numerous deliberate steps towards the desired outcome. In order to find a new concept or meaning, researchers must first examine a variety of concepts, phenomena, and situations. Through the use of various scientific activities, including investigation, observation, experimentation, classification, prediction, and interpretation, students can develop their scientific thinking through investigation.In order to learn anything new on their own, students explore a variety of phenomena, facts, and information using this strategy.

Characteristics

1. The student will play a positive, not a negative, role because he is the method's focal point.
2. A teacher is not someone who feeds students' minds.
3. Assists students in honing their analytical and scientific skills, such as observation, measurement, experimentation, prediction, and evaluation.
4. Encourage pupils to think scientifically.
5. Aids in the development of positive traits in students, such as self-assurance, independence, and corporations, etc.
6. Boost the student's excitement for learning processes, taking on challenges, and coming up with solutions on his own.

Resolving issues

Problem is an undesired circumstance that a person or group of people must deal with. This new circumstance results from modifications to work processes or from outside influences. This

scenario needs to be resolved or corrected, but before we begin the process of doing so, we should understand what brought about the issue, what had changed, and what the results were. Only then can we suggest appropriate solutions that will help to resolve the issue or produce a satisfactory outcome. It can be challenging to teach through problem-solving because many of us have been trained to memorise information regardless of their relationship to one another or our interest in the subject. In fact, many teachers may assert that problem solving is either impossible, ineffective, or only practicable in limited circumstances in their practical subject areas[9], [10].However, everything that can be taught can be taught from the perspective of problem resolution.We gain knowledge from the model of solution, which includes: Understanding the issue and the changes made.Compares anticipated outcomes to the objectives.

1. Criticism from without.
2. Comparing with related circumstances.

Characteristics

1. Encourage students to learn. the topic will be difficult to research and investigate in order to identify unknowns.
2. By solving problems, students are exposed to a variety of concepts.
3. Students discover through their own effort whether or not their presumption is true.
4. The positive emotion experienced after finding the solution.

Online Education Technique

Information technologies are transforming how people live and learn. Internet-based learning takes place outside of a traditional classroom. As learning styles have changed, so have teaching methods. Tutors today must demonstrate new types of competency that reflect their knowledge, abilities, attitudes, and performance context. This competency must then be validated by one of the many methods that go through a certification process that takes into account all the factors that tutors may need to demonstrate the competency.Strengths and weaknesses of the online teaching technique are also present, and they can be summarized as follows:

Strengths

1. If a student has access to a computer and the internet, they can attend classes from anywhere in the globe.
2. Online learning is effective because it provides students with the time and space to think, discuss, respond, and solve problems. It also enables dynamic interaction between the tutor and the students as well as between the students themselves.
3. Resources and concepts are exchanged. ongoing synergy produced by the learning process leads to high calibre conversation and learning.
4. Students actively participate in online discussions by responding to discussion questions posed by their peers, expanding on what others have said. This helps them become involved in what they are learning and what they need. Students learn about the teamwork required for the learning process as part of their learning experience.
5. Discriminatory elements like age, race, gender, and disability are missing in the internet world. The discussion's topic and ability to contribute to the learning process are the main points of focus.

6. Resources and materials that may be found everywhere in the world are freely available to students.
7. The partnership between the tutor or facilitator, the students, and the online interactive learning settings results in self-direction and critical thinking.

Weakness

1. Students who can use a computer and the internet to access the online learning environment are required for online instruction.
2. Computer and internet navigation and use skills are required for both students and facilitators.
3. Since technology is meant to be a tool used in the learning process, it should always be dependable, accessible, and maintained.
4. Because online learners must be more responsible for setting their own rules, be well-organized, motivated, and have excellent time management skills, online education is not suitable for younger, more dependent learners who find it difficult to take on the responsibilities required by the online paradigm.
5. Online instruction is not always successful for professors who are successful in traditional teaching.

In order to effectively teach in a virtual classroom, the instructor must be well-versed in writing and the language used for the course.

1. The administrator's narrow perspective on online programmes as a way to boost profits rather than as a way to deliver high-quality education would have an impact on their success. This would include giving them access to suitable technology, proper facilitator training, and class size restrictions.
2. As class sizes increase, the projected high degree of collaboration fostered by active discussion among participants in the virtual classroom begins to wane and eventually turns into independent study.

CONCLUSION

In this study, we've outlined the requirements that a teaching strategy must meet in order to successfully accomplish its objectives and enable teachers to work more productively so that students can learn more effectively. In order to meet our research objectives, we also provide general specifications for the most popular teaching approaches, including the online education approach, highlighting each approach's advantages and disadvantages to assist teachers in selecting the best approach for a given subject. As a programme that offers a technology-based instructional environment that expands learning chances and can deliver top-quality education through a range of formats and modalities, we also supplied the most crucial aspects of online teaching.

Because the current electronic medium does not allow for the optimal manner of learning, not every subject can be taught online. Examples include topics like public speaking, surgery, sport, and exercise.

The advancement of technology might be able to resolve this issue or allow for the temporary use of hybrid courses.Carefully planned curriculum is a requirement for every online programme. Successful curricula in tradition.

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CHAPTER 7

TECHNOLOGY'S IMPACT ON STUDENT LEARNING: A COMPREHENSIVE OVERVIEW

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ABSTRACT:

This study set out to examine how technology affects student learning. As technology evolves constantly, classrooms must adapt by adding additional technology and integrating it into student instruction. Technology has the potential to both enhance student learning and harm the educational process.Technology improves many learning possibilities and provides comfort for students, but it may also be a tool that is overused, which may have negative effects on students' ability to develop their fine motor skills and problem-solving abilities. In this study, K–12 teachers were questioned to gain their opinions on how technology affects the classroom. This study contributed to our understanding of how technology affects student learning. The results indicated that greater training for educators is required in order to improve the use of technology in the classroom.Additionally, this study revealed that although students are more comfortable and involved with technology, it might become a management worry.

KEYWORDS:

Fine motor skills,Motivation, Problem solving,Student learning, Teaching, Technology effects.

INTRODUCTION

The young of today are growing up in an era where technology is always available to them. The popularity of children is growing as a result of the expansion of social media platforms and online communities. In addition, today's society is obsessed with cell phones, computers, tablets, free Wi-Fi, game consoles, and electronic toys. Students are maturing in a period when technology is a trendy trend in the marketplace. Every day, many students are spending countless hours immersed in popular technologiessuch as Facebook, MySpace, World of Warcraft, or Sim City, write. Technology-based learning is gaining prominence in today's classrooms. Teachers put a lot of effort into integrating technology into their daily lessons because of the rapidly evolving technological landscape so that students' interests can be linked to their learning. There is a lot of demand on today's teachers to give kids a quality education that is in line with 21st century norms. These requirements include giving pupils the technological and informational abilities necessary to compete in a society that is always evolving and driven by technology.Teachers are continually looking for technology tools that can improve their pupils' learning. The use of technology in the classroom has been hailed as a terrific tool that has improved student learning, but it also has drawbacks[1]–[3].

New information technology has made schooling more flexible in terms of time and location. To achieve lifelong learning, every student still has to be connected to a support system. Students require mentors who are both teachers and coaches, such as their parents, friends, and bosses. The main goal of the school-to-work movement is to mobilise support and understanding so that

kids can develop the knowledge, skills, routines, and values necessary for success in all facets of life. Students' lives today are significantly impacted by technology. Although bringing technology into the classroom has been advantageous, there are some downsides as well. Technology has improved student involvement and willingness while also enabling the improvement of learning. The finest sorts of learning will be those that feature choices that the student may make and learning where there are relevant situations where the student is involved.

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They found that utilizing modern technology could alter fundamental psychomotor and cognitive abilities in 106 motor functions. Utilizing devices like computers, electronic organizers, navigational aids, etc. is part of this. Concerns about student development in the classroom may result from this. Additionally, study explores the advantages and cons of technology in detail and highlights whether it may or may not be helpful.The objective of this study was to investigate how K–12 instructors felt about using technology in the classroom, its advantages and disadvantages, and in particular, how it affected students' learning. For the purposes of this study, technology solely referred to tools that were computer and internet-mediated for educational purposes. Understanding how technology affects student learning is crucial because it has the potential to either dramatically hinder or empower the learner. The goal of this study was to better inform instructors about classroom best practises. Aiming to help students succeed, instruction can be beneficial to students.Students' parents can learn more about how technology affects their children's learning. The results of this study will advance our understanding of how to use technology in the classroom[4], [5].

DISCUSSION

Although using technology in the classroom has grown in popularity, some people worry that children are using it excessively. Although technology can be a useful tool, are kids ready to handle tech-related problems?Some teachers are implementing the flipped classroom strategy with the use of technology. Students are able to learn the content at home and then come to class to participate in more discussions, exercises, and activities.Few research have examined how to improve students' conceptual understanding and problem-solving abilities in flipped classrooms for mathematical enquiry,. Students in this environment learn more independently, but they miss out on part of the lecture time that could lead to in-depth discussions of issues. This article examines the various advantages and drawbacks of a flipped classroom. How teachers' roles have changed and how schools are using technology to teach and learn. Instead of 'teaching' the pupils, the teacher adopts the role of facilitator and travels with them as they learn. Students must be able to evaluate the information they collect and determine its worth. Technology is being used by learners to assess themselves. This aids in transitioning learners from being information consumers to producers.

Motor Skills, Fine

The impact of technology's increased integration on fine motor skills is debatable. Although some research has been done on this subject, not much is known about it. Research offers a thorough analysis of the effects of social media on writing. Teachers and students discuss what they believe writing to be. Teachers frequently talk about the positive and negative effects social media has had on student writing. Teachers encourage their students to do at least some handwriting because they feel students do more active thinking, synthesising, and editing when

writing by hand, and handwriting discourages any temptation to copy and paste other people's work.Students can collaborate when writing, share their works with more people, and express themselves more creatively thanks to social media.There are in fact distinct changes in basic fine motor abilities depending on how much time is spent typing and handwritten texts. Their research focuses on both handwriting and overall fine motor skills. The usage of computers affects key behavioral criteria as well.

Motivation

Our top priority as educators is to inspire pupils to pursue their education. Students are more likely to remember the material if they are driven to learn something new. According to research, integrating technology into education helps pupils stay motivated to learn despite growing up in a world where technology is always evolving. For instance, talk about a project they did where third grade leaders and first graders collaborated to make an app that kindergarteners can use to practise arithmetic strategies. Students were able to use technology, cooperate, and teach during this week-long project. The method the students underwent and the project's results were detailed in the Schaen, et al. study. Students who wanted to continue creating and working at home were inspired by this initiative that used technology to enhance it. The undertaking gave young students a real-world purpose for collaborative planning and creation[6], [7]Teachers can feel at ease knowing that learning is taking place since they know. Technology gives all pupils the chance to participate, It's hard to be honest when you have to put your hand up in front of the room.Similar to this, notes how technology has helped them understand what they were talking about in class and makes it simple for students to look for and obtain information. This aids with the classroom learning that is taking place. They take great pride in disseminating their efforts and technologically acquired knowledge. Students are also at ease using technology and doing assignments. Their increased confidence enables them to develop learning motivation.

Extending Knowledge

Many educational sources claim that integrating technology into the classroom can increase and improve student learning in a variety of ways. After years of working with teachers and technology, compiled eight main areas that appear to support teacher integration. The following eight topics are the main emphasis of their article:

1. Aversion to Change.
2. Basics instruction.
3. Individual usage.
4. Teaching aids.
5. Education-based.
6. Atmosphere.
7. Inspiration.
8. Support.

The essay then goes into further depth on each of the topics and explains why it's crucial to include technology into the classroom in these areas. The best way to assist students in extending their learning after these criteria have been met is to include technology.In a different study, talked about how digital technologies are totally ingrained in students' upbringing. Many students in this group are using new media and technologies to create new things in new ways, learn new things in new ways, and communicate in new ways with new peoplebehaviors that

have become hardwired in their ways of thinking and operating in the world, according to the study's explanation. There is a lot of opposition to using technology, yet as stated on page 2, there are countless examples of these technologies demonstrating their educational value to other industries, confirming the powerful learning opportunities and advantages they afford Klopfer, et al. firmly feel that the use of technology strengthens the classroom when examining the influence it has on our classrooms. They contend that while solid lessons can still be taught in the classroom without the use of recent technologies, there is a sharp disconnect between the way students are taught in school and the way the outside world approaches socialization, meaning-making, and accomplishment.They placed a strong emphasis on group collaboration, blended learning, and information and communication technology (ICT). ICT stands for information and communication technologies, according to page 21. Teachers can become more familiar with technology and some of the problems that can occur by utilizing ICT in the classroom. The remainder of this essay explores several ICT applications and their advantages for teaching[8]–[10].

Methodology

In order to comprehend how the incorporation of technology affects students' learning, the researchers used a mixed method approach. To gather data, a survey was created and sent via Qualtrics. A total of 14 questions, including open-ended, multiple-choice, and Likert scale questions, were included in the survey. The survey study design approach is described as being fairly adaptable. Using this method, the researchers analysed the data to identify trends. K–12 teachers at a nearby school district in central Illinois were received the survey. It was optional to participate. Descriptive statistics including means, standard deviation, and percentages were used to analyse the data. Emerging themes from the analysis of qualitative data were identified. To aid in addressing the study questions, the quantitative and qualitative data were triangulated.The following research questions were addressed by the study:

1. How do teachers generally feel about using technology in the classroom and for student learning?
2. What do teachers think about how using technology affects students' learning?Volume 20 Issue 1 of TOJET, The Turkish Online Journal of Educational Technology, was published in January 2020.
3. What other advantages and disadvantages of using technology in the classroom do teachers think about?

CONCLUSION

The results of this study demonstrate that there are both many advantages and disadvantages to using technology in the classroom. Upon reviewing survey data, teachers did mention more good than negative effects of technology.

Although there were certain areas where teachers felt they could have used more assistance, they felt that the use of technology in the classroom had increased student involvement and motivation. In the future, teachers might profit from receiving more individualized training on how to use technology in the classroom so that they are more at ease with its incorporation. Teachers also believed that in order to foster greater independence, children needed more practise using the available technology. The researchers think additional study is necessary to understand how technology affects learning in the classroom.

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CHAPTER 8

INSTRUCTIONAL DESIGN IN EDUCATION: A COMPREHENSIVE FRAMEWORK

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ABSTRACT:

The discipline of instructional design (ID), which is closely related to instructional technology and is defined in this article as the systematic design of learning systems using scientific knowledge, is introduced. We will start by describing the connection between instructional technology, design, and system development. Then, in order to describe important facets of ID, we give a succinct historical summary. Gagné's nine events of instruction, which he first proposed in the 1960s, have historically been seen to have produced a large number of systematic ID models that have been integrated into a comprehensive framework focused on five tasks: analysis, design, development, implantation, and evaluation also known as the ADDIE model. In addition to systematic ID methods, other learning and teaching strategies based on constructivism and cognitive psychology also become popular. Before describing the current ideas and uses of ID in more detail, these strategies will be briefly reviewed. Finally, we'll talk about several issues that may arise in the theory, research, and advancement of ID.

KEYWORDS:

Construction, Development, Education System, Instructional Design.

INTRODUCTION

Learning is organized by a framework of teaching and learning activities called instruction. The lesson plan inspires pupils to learn. The purpose of instruction is to facilitate the learning process. Instruction is a methodical process in which each elementincluding teachers, students, materials, and the learning environmentis essential to learning. Activities for teaching and learning are considered instruction. These exercises ought to help pupils retain information and transition it from short-term to long-term memory. Students must learn how to practice, encode, process, and provide feedback on new knowledge in order to recall it later[1]–[3].Numerous elements need to be taken into account during the instructional design process. These elements have some degree of mutual influence and are intimately tied to one another. The steps of instructional design should organise these elements. For instance, if the aims and objectives are not properly chosen, described, or written, the subsequent and other processes will have issues due to the improper and unfinished elements in the prior step. The steps are all tied to one another in the instructional design. It is crucial to arrange the phases in a logical sequence that is related to one another. In other words, creating teaching and learning activities is a key role of instructional design. Each step should be carefully considered, selected, and put in a logical order. During implementation, every little thing might be crucial.Every choice should be made for a valid purpose and not only out of habit. The relationship between the steps should be fully understood by the designer. The designer should gather trustworthy information on the students, their backgrounds, and their prior learning during the teaching and learning process. They should

be carefully considered and used to help designers develop a model that will help them maintain a balance between them because they have a significant impact on the results of instruction.

A model for instructional design outlines the process and implications for creating education. I.D. models aid instructors in visualising issues during the instructional design process. If the learning-teaching issues are resolved by the instructional design approach, then the lesson is successful. Effective education is instruction that enables students to acquire particular skills, knowledge, and attitudes. Students can be effectively motivated during effective education. It is important to carefully assess every component in order to motivate pupils during the learning process. There are four major principles that are crucial to the decision-making process. Here is a list of these guidelines:

To successfully apply their instruction, teachers should adhere to these guidelines. The main objective of instructional design is to show how the educational process is planned, developed, evaluated, and managed.At the conclusion of this procedure, student learning performance in instructional activities based on specified goals and objectives can be seen. In contrast to the traditional method, instructional design focuses more on instruction from the standpoint of the learner. A variety of factors, such as the answers to questions like the following, affect learning results[4], [5].

1. To what extent are certain pupils prepared to meet the objectives?
2. Which teaching and learning techniques are most suited to the goals and characteristics of the students?
3. What types of media or other sources are best?
4. What further assistance is required for effective learning besides the teacher and the tools at hand?
5. How are objectives achieved determined?
6. What changes are required if a programme trial does not live up to expectations?

Since achieving the specified goals and objectives in the instructional activities is the primary objective of instructional design, these inquiries are concerned with student learning. The four main components of the instructional design process are listed below. These are:

1. Who Should Be Taught ?
2. What Should Be Taught ?
3. Teaching Methods
4. Evaluation Methods.

Knowing a student's personality is crucial in the decision of whom to teach because students are the intended audience. The implementation of educational activities is impossible without students. Teachers need to learn more about the qualities of their students in order to create effective instruction.Instructional goals and objectives are crucial when deciding what to teach. Teachers must first decide what their aims and objectives are for the instructional design process. The aims and objectives of education provide teachers with guidance on what to cover in lessons.The instructor receives information on how to convey aims and objectives to students during instruction in how to teach.Methods of instruction delivery let teachers know what kinds of teaching and learning strategies will be employed.Assessment tools are important in evaluating pupils since teachers can use them to learn whether or not they met their goals and objectives. Assessing methods including multiple choice, short-answer, true-false, matching,

essay questions, problem-solving questions, and others must be utilised to identify student learning activities during the educational measurement and assessment process. To evaluate learning outcomes, these assessment tools should have properties of validity and reliability.

An instructional design model is often built using these four components. Instructional models come in four different varieties. These include trends and concerns, product models, educational system models, and classroom models. Teachers were put first when designing classroom models. This model can be used by teachers to create lessons. Bergman & Moore and Van Patten are two product models that are interested in developing additional educational materials, either for specialized clients or for commercial marketing. A full college course is constructed using instructional system models from Branson, Seels & Glasgow, Bridggs, Gagne, Smith & Ragan, Gentry, and Dick Carey. To create instruction using this model, a team effort is always required. The models for instructional design have some patterns and problems.One of them is hypermedia or the internet. It has an impact on educational design. The design of learning environments is another area where there is a lot of excitement and innovation. Constructionism is the alternative. It has also had an impact on the teaching process. Teachers who are not content with behaviorism and cognitive psychology have given it a lot of attention. It is predicated on the idea that every person creates their own reality.

DISCUSSION

New Model For Instructional Design

The main objective of the new model is to demonstrate how to properly design, develop, implement, assess, and organise comprehensive learning activities to ensure that students perform competently.The behaviourism, cognitivism, and constructivism viewpoints form the theoretical cornerstone of the new model.The link between stimulus and response, the importance of reinforcement, and the creation of favourable environmental conditions are all taken into account by behaviorism as a theory of learning. In this technique, those are used to encourage students to learn more.There are five components to the behaviorist theory of instructional design. Analysis, design, development, implementation, and assessment are these steps. The instructional designer identifies input data during the analytical processes.The instructional designer creates instructional materials and teaching-learning strategies during the development stage. The teacher puts teaching and learning activities into practice in this level. The instructional designer verifies learning outcomes in the final step.

Designing learning and teaching activities makes use of analysis, design, and development, implementation, and assessment components.Motivation, the process of intellectual learning short-term memory, retrieval, and long-term memory, experiences, and contents are all of importance to cognitivism. How information is kept in long-term memory is of relevance to this new paradigm. Instructional exercises are created in the model with the goal of helping students retain the content.With their own experiences, learners build new knowledge according to the cognitivist theory of instructional design. The ability to think critically and to address challenges in their learning should be taught to students. The purpose of a teacher is to create educational situations that are meaningful. The goal of such meaningful experiences is to inspire pupils to store new information in their long-term memory. Students' job is to participate in group discussions and collaborative activities[6]–[8].

The new instructional design paradigm is being evaluated in terms of creating new knowledge, designing meaningful learning experiences, motivating people, and organizing information.

Constructivism is drawn to practical applications for oneself. The experiences and situations that give the learner the motivation and capacity to learn are crucial to the learning process. This is one of the elements that the new model incorporates into learning activities. Students take an active role in the classroom, reflect on their own ideas, and develop autonomy. Students aim to gain firsthand experience during the learning activities. Students are encouraged to actively participate in the process via their own personal experiences. With the aid of experience, students will connect their own meanings to the knowledge gained, and because it will be much more meaningful, it may be simpler to remember.Learning by doing is central to the constructivist approach to instructional design. In other words, the core of constructivist instructional design is active learning. Constructivists are intrigued by active process during educational events because of this. To build new knowledge, learners should be engaged and engage in cognitive activity.

The learning environment is crucial in the construction of new knowledge during cognitive activity. Real-world activities must be reflected in the learning environment. In this setting, since how something is learnt depends on what is taught, what is learned and how it is learned should be designed jointly.Active learning is the foundation of the new instructional design methodology. The learner actively participates in teaching and learning activities and applies cognitive learning to create new knowledge. Materials for instructional technology are used to create new knowledge. These resources have goals and objectives in common.In a new model, a five-step systematic planning process is provided. There are five of them: input, process, output, feedback, and learning.From teacher lectures to practical student-centered activities, this technique can be utilised to prepare a range of educational modalities. Additionally, teachers should be able to create effective lessons as a result of employing this technique. With this efficient education, kids can learn more and retain the new information longer. These pupils will be inspired to participate in class activities.

ADDIE method

The ADDIE paradigm is arguably the most popular paradigm for developing educational materials. The five phases of the modelAnalyze, Design, Develop, Implement, and Evaluateare represented by this acronym.A Synopsis of ADDIE's Development Florida State University created the ADDIE model in the beginning to describe the processes involved in the formulation of an instructional systems development (ISD) programme for military underservice training that will adequately train individuals to do a particular job and which can also be applied to any underservice curriculum development activity. The model's five initial phasesAnalyze, Design, Develop, Implement, and Evaluation and Controlincluded a number of stages, each of which had to be finished before the model could move on to the following phase. The steps were altered over time, and the model ultimately grew more interactive and dynamic than its initial hierarchical iteration, until its most well-liked iterationthe one we now know and useappeared in the middle of the 1980s.Below is a list and explanation of the five phases:

ADDIE Model Analyse: Analysis is the initial stage of content development. Analysis is the process of acquiring data on the target audience, the tasks at hand, the learners' anticipated reactions to the content, and the overarching objectives of the project. The information is then categorized by the instructional designer to make it more useful and effective.

Design: The second stage is called Design. Instructional designers start working on their projects during this stage. The information gained during the analysis phase, in combination with instructional design theories and models, is intended to explain how learning will be accomplished. For instance, creating a learning objective is the first step in the design phase. The tasks are then categorized and divided into digestible chunks for the designer. In order to achieve the objectives specified in the Analyse phase, the audience will need to engage in a variety of actions in the last stage.Create the actions that will be carried out: This is the third phase, Development. The design phase's blueprints are put together during this phase.

Implement: After the content has been created, it is subsequently put into practice. The instructional designer can now test each piece of content to see if it is useful and appropriate for the target audience.

Evaluate: The last step, Evaluate, checks to see if the items met their objectives. The formative and summative assessment phases make up the evaluation phase. The ADDIE model is an iterative approach for instructional design, so the designer can evaluate each stage's components and make changes as needed. Formative assessment is used in this process, while summative assessments include examinations or evaluations made specifically for the adopted subject. Because it gives information that can be utilised to change and improve the design, this last stage is crucial for the instructional design team.Opportunities for external and reciprocal revision connect all phases of the model. The entire procedure should and can be revised, just like during the internal Evaluation phase. The ADDIE paradigm is the foundation for the majority of modern instructional design models [9], [10].

Prototyping quickly

Rapid prototyping is a technique that is often employed and is an adaption of the ADDIE paradigm. The verification of the design documentation, according to proponents, saves time and money by identifying issues early on when they are still simple to solve. This method is not new to the design of instruction. it is used in a wide range of design-related fields, such as software design, architecture, planning for transportation, developing new products, designing messages, user experience design, etc. In fact, some advocates of design prototyping contend that, regardless of the level of analysis rigour that may have been used initially, a deep knowledge of an issue is lacking without the development and evaluation of at least one form of prototype. In other words, choosing an instructional model with confidence rarely results from upfront investigation. Because of this, many conventional approaches to instructional design are now being viewed as lacking, unsophisticated, and even ineffective.However, some people believe that fast prototyping is a too-simplistic kind of paradigm. According to this theory, the analysis step is the core of instructional design. Following a thorough study, you can select a model based on your results. Most people fall into trouble in that area because they do not conduct a thorough enough analysis.

CONCLUSION

A paradigm change in learning has been sparked by the convergence of instructional design and educational technology. This merger has transformed education and opened up new, limitless possibilities for it. Instructional design combines traditional pedagogy with the enormous potential of technology through careful planning and purposeful integration. Personalized learning routes, immersive encounters through virtual and augmented reality, and a global

connection that transcends geographical boundaries are the results of this synergy.Additionally, the fusion of technology and instructional design equips teachers with resources that increase the impact of their lessons. It encourages inclusion by taking into account a variety of learning styles and skills, making sure that no learner is left behind. However, this change doesn't just affect the pupils.

Like other professionals who play dynamic roles, instructional designers constantly adapt their approaches to fit the demands of new technology and learners.The forefront of this evolution continues to be ethical issues. As technology permeates education, ethical conundrums including data privacy, digital equity, and impartial algorithms must be carefully managed. In addition, innovation is seen as the vital component of instructional design. The environment is constantly changing, necessitating fresh strategies that appeal to digital natives and foster critical thought.

Finally, the canvas of educational technology, enhanced by instructional design, produces a picture of learning that goes beyond established limitations. The reinvention of education itself is symbolized by this synergy, which is more than just an instructional approach. As instructional designers use technology to shape learning experiences, they become the builders of a world in which education is unrestricted.

The collaboration of instructional design and educational technology, in this age of quick technical development, is the compass pointing us in the direction of a future where learning is boundless, engaging, and transformative.

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CHAPTER 9

TECHNOLOGY-BASED TEACHING STRATEGIES, METHODS AND TECHNIQUES

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ABSTRACT:

This study aims to assess the effectiveness of a three-phase technology-based teaching methodology based on the ICT usage of 72 students enrolled in Academic Writing, Project Management, and Knowledge Management courses during the first semester of the academic year 2015 at the Faculty of Business Administration and Liberal Arts, RMUTL Phitsanulok Campus. 72 students' ICT use was assessed both before and after the implementation of a three-phase technology-based teaching technique. The study's findings demonstrated that, following learning using a three-phase technology-based teaching technique, ICT use was much higher than it had been prior to teaching ($t = 60.693$, $p = 0.05$), with a strong connection between the two evaluations ($r = .943$, $p = 0.01$). The utilization of this teaching paradigm for productive technology-based learning might therefore be inferred.

KEYWORDS:

Development, Education, Teaching Methods, Teaching Strategies, Technology Based, Teaching Techniques.

INTRODUCTION

Learning Technology has emerged as a potent catalyst in the constantly changing educational scene, revolutionizing how knowledge is transmitted and gained. A wide range of technology-based strategies, methods, and procedures that improve engagement, personalize learning, and prepare students for the digital age are being weaved into traditional teaching methods. This introduction illuminates the dynamic interplay between technology and education, revealing the potential for these cutting-edge methods to influence how people learn in the future [1]–[3].Technology integration in education is not just a passing fad. it is a profound phenomenon that has affected every facet of the educational process. Technology-based teaching methods are changing how education works everywhere from kindergarten classes to university lecture halls. An unparalleled era of involvement and interactivity has been made possible by the development of interactive whiteboards, digital textbooks, online collaborative platforms, and immersive simulations.

Customization and Personalization

The capacity of technology-based instruction to accommodate different learning styles and speeds is one of its most impressive features. Teachers may adapt coursework, assignments, and tests to each student's strengths and limitations thanks to adaptive learning systems and data analytics. This personalisation generates a sense of ownership and empowerment among learners while also improving understanding.

Participation in Multimodal Learning

Technology provides access to a wide range of media types that can accommodate different learning preferences. Traditional lectures are transformed into multisensory experiences that enthral and stimulate learners using videos, podcasts, infographics, and interactive simulations. By presenting information through a variety of lenses, this multimodal strategy fosters critical thinking while also improving memory.

Collaboration and global connectivity

Geographical barriers are gone thanks to the digital age, allowing students and educators to communicate and work together on a worldwide scale. Cross-cultural contacts are facilitated via virtual classrooms, video conferencing, and online discussion forums, which lower boundaries and broaden viewpoints. This connection creates a greater comprehension of various points of view and promotes group problem-solving.

Getting Ready for the Digital Future

Digital literacy training for students is now essential, not optional. Technology-based education imparts knowledge of how to use digital tools, assess online sources, and make the best use of digital communication. These abilities are crucial for both academic performance and career success in a technologically driven workforce.It's crucial to take into account both the advantages and difficulties that come with this transition to technology-based teaching practises as it happens. In this evolution, ethical issues like data privacy and digital citizenship must be prioritised. To use the full potential of these tools, educators also need continuing training and professional development[4], [5].

DISCUSSION

Technology-Based Learning (TBL) – what is it?

In this report, we use the generally accepted definition of technology-based learning, which is the acquisition of knowledge using any form of electronic media, such as the Internet, intranets, satellite broadcasts, audio and video tape, video and audio conferencing, Internet conferencing, chat rooms, e-bulletin boards, webcasts, computer-based instruction, and CD-ROM.TBL also includes terminology that are closely similar, such as online learning, web-based learning, and computer-based learning, which are each limited to learning that takes place online. TBL is now generally superseded as the preferred word in academic circles and business by e-learning. The report therefore alternately utilises these names.TBL differs from technology-delivered learning or remote learning in that it uses approaches where instructors and students are in the same room or when the education is computer-based with no distance involved. TBL, on the other hand, has a more limited definition because it excludes correspondence courses and text-based courses that would fall under either remote learning or technology-delivered learning. In addition, technology-enhanced learning refers to a way.

Advantages and Drawbacks

TBL offers a wide range of advantages. Most importantly, it extends training and educational efforts geographically and allows for greater scalability than face-to-face engagement can. Additionally, it provides a variety of learning opportunities, as well as the chance to monitor development and assess results as an integral component of learning. However, much like with

any technology applications, using technology itself introduces some fresh difficulties. The digital divide, which continues to separate the nation into digital haves and digital have-nots, is the biggest issue in TBL. For educators and training designers, transferring learning into a TBL setting also poses new difficulties.

Benefits

When compared to face-to-face learning, TBL has many benefits. The following five are the main advantages. Accessibility, providing delivery at any time and location. Self-paced instruction that is tailored to the needs of the learnersFull scalability. prompt information transmission. and streamlined, efficient learning deliveryThe fact that students can enroll in a course at any time, rather than only at the beginning of a semester, is a significant advantage of many TBL courses. Additionally, they have the flexibility to complete their learning obligations day or night. This flexibility is especially beneficial for parents and working adults whose schedules conflict with the time of day a specific course is given.It may also be appealing to current employees who are unable to afford to take time off work to advance their careers.Additionally, technology-based training can expand its geographic scope and provide access to those who have transportation challenges. For instance, Creighton University offers a TBL programme to get a doctorate in pharmacy. In this programme, 40% of the students live more than a two-hour drive from the nearest pharmacy school. TBL may actually be viewed by students with laptops from any location with Internet access.10 Many TBL programmes have now switched totally to an online-only delivery paradigm.

Self-Paced Education Adapted to Need: The ability to progress through requiredor desiredcourse content at one's own pace is another advantage of TBL programmes. For instance, Toshiba offers its sales personnel a self-paced sales training course. The duration of each module is self-paced, but before moving on to the next, students must pass a test with a score of at least 80%.11 TBL courses can also be used as a low-cost, self-paced refresher course. For instance, British Airways mandates that all of its staff members complete TBL programmes. They are then required to return to the same programme every few years to review and retake the exam. Scalability: Effective TBL programmes may easily handle higher customer numbers without incurring significant additional costs. Increasing class size or having trainers repeat the course at various times or locations are the two ways to scale up a training programme for traditional face-to-face instruction and reach additional students. TBL, on the other hand, may be scaled out for more students with comparatively little additional work and money. The boundaries of the classroom are irrelevant, and contemporary learning management systems (LMS) enable the control of learning outcomes for large organizations.

The ability to centrally construct and centrally update TBL courses whenever necessary is another important benefit, particularly for those that are offered online.As a result, it becomes substantially cheaper to replace out-of-date course materials and retrain teachers and instructors, and frequent changes are much easier to handle. The majority of corporate learning market course upgrades now are done on an as-needed basis, and trainers simply receive the updated information when they login in the next time.Streamlined and Efficient Learning distribution: When a course is changed from traditional to TBL distribution, course developers occasionally discover that learning content can be streamlined in that the amount of duplicated information can be significantly decreased. For instance, a year-long technology-based training programmer at the University of Tennessee's Physicians Executive MBA programmer included 14 standard

courses. They reduced the overall training time by identifying and eliminating redundant learning objectives and content across the 14 courses by unifying all of their coursework.Cognitive psychology has provided some evidence that TBL has benefits for enhancing learning retention. In the paradigms of discovery learning and autonomous learning, it has long been argued that learners learn best and retain knowledge better when they actively participate in the discovery process rather than serving as passive recipients of content delivered by others.15 TBL offers the obvious opportunity to capitalise on this potential with its chances for the hands-on manipulation of course materials, simulations, and game-playing.

Digital Divide: Since a sizeable segment of the population still lacks access to computers and the Internet, the Digital Divide directly affects the implementation of TBL. Low-income folks, those over 50, the unemployed, and those without college degrees use the internet the least frequently.16 African-Americans and Hispanics also have lower rates than members of the majority of other racial or ethnic groupings. Additionally, compared to urban and suburban areas, computer use has decreased by around 10% in rural areas during the previous four years[6]–[8]. In the United States, internet access has started to plateau and, more lately, has actually started to modestly drop.This means that, unless significant market or public investment results in increased access, the digital divide will not be reduced significantly in the near future.TBL is also more likely to result in social loafing, in which students put in less effort because they believe it won't have a negative social impact. Because they lack the human interaction of an instructor and peers, TBL students may be more susceptible to social loafing because they may feel unmonitored. Larger class sizes, which are frequently cited as a benefit of TBL, can encourage social loafing if people aren't made accountable for their behaviour. Examples of such accountability measures include asking people to write comments on group discussion boards or setting regular deadlines for deliverables. Users who are annoyed by the technology or who learn knowledge more effectively through direct connection with an instructor may exert less effort when using TBL, which could be interpreted as social loafing.

Attrition Rates: The fact that attrition rates for online courses can be higher than those for classroom-based courses is not surprising given the social loafing effect. TBL students commonly have dropout rates between 50 and 80 percent, which is significantly higher than in traditional classroom settings. Numerous factors contribute to high dropout rates. Students enroll in TBL courses for the incorrect purposes. Some TBL courses lack aural stimulation and face-to-face interaction with others with a specific goalThe technology includes accounting with government.Students may not have the technical skills necessary to succeed in some courses due to overbooking. They may only enroll in classes until their objectives are completed before dropping out regardless of potential future demands.Students understand that TBL involves more work than they initially thought. The 19thes for People with Disabilities It can be difficult for people with impairments to enroll in TBL courses. While TBL typically provides options for accessibility for people with disabilities, modifications are necessary for TBL to be accessible. For instance, assistive equipment must be purchased to meet people's demands, such as by utilizing suitable keyboards, computer stations, and mouse gadgets. People with visual impairments must also have access to assistive technology programmes like Zoom Text and JAWS so they can read text on computers. Web pages must also be developed by TBL developers to be compatible with assistive technology.Additionally, TBL content created or acquired in accordance with Section 508 of the Rehabilitation Act of 1973, which mandates that people with disabilities have access to electronic information technology on a par with people

without disabilities. Most TBL and web developers are now using a set of design principles that Section 508 has produced when creating material for a larger audience.

Technology Compatibility: Finding compatible technology is another issue for TBL

A variety of learning management systems (LMSs) must be able to interface with the information in order for training programmes to exchange and recycle it. Nevertheless, as LMSs were developed and promoted, learning materials tailored to each system were produced by developers. The interoperability of one system with content from another system received very little consideration. Due to the necessity of recreating material whenever, for instance, a programme changes management systems, this has led to significant development costs. Leading companies have worked to standardize LMSs over the past five years. Section D of this report talks about the Department of Defense's most comprehensive endeavor.

Development Costs Overview: High upfront development expenses are another drawback of technology-based learning, which can necessitate a substantial investment. A mittee of 60 higher education institutions discovered that respondents preferred to hire applicants who earned a tutions. For instance, Pace University calculated that they lost over $46,000 during their first year of offering technology-based learning.Programmes, since after investing many hours in creating the materials, the course only attracted a small number of students. They do anticipate realising a small return by the end of the second year, making up for their substantial original expenditure. After that, they anticipate continuing to make money from the course with only modest extra expenditure[9], [10].

Finally, TBL degree programmes still don't have the same level of legitimacy as conventional degree programmes. For instance, a survey given to people with a degree in business administration from a traditional university and those with a degree from a distance learning schoolSome respondents were even reluctant to hire candidates who had taken a few courses at a traditional university online. They were generally concerned that TBL was more prone to fraud and poor quality than conventional face-to-face and classroom-based learning.

CONCLUSION

It is impossible to create a successful learning environment in a single approach. The setting where pupils will learn needs to be suitable for the situation. However, we should consider what this learning environment might resemble before even starting to develop a course or programme. The students must actually do the lesson, regardless of the learning setting. We must make sure that students can work in a setting that supports them in doing this. To put it another way, it is our responsibility as educators to foster success.The instructor herself is a part of a successful learning environment that I haven't talked about, despite the fact that she occupies the central position. It goes without saying that a teacher or instructor is important in a learning environment, but the most of the book is focused on the teacher's place in this setting. This chapter also opens the door to the possibility of a learning environment without a teacher, though it may require the design and upkeep of such a learning environment to be handled by a teacher, educator, or even a single learner. Today's technology allows us to create a wide range of productive learning environments that can be very different from the conventional classroom. But using just technology is insufficient. Many learning environments based on technology are missing some of the essential elements needed to create a productive learning environment. The additional elements required for learner success must be present in an effective learning

environment. This is not to imply that self-managing learners cannot create their own successful, individual learning environments, but they must take into account both the technology and the other elements.

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CHAPTER 10

LEARNER-CENTRIC APPROACHES

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ABSTRACT:

The study looks at learner-centered approaches and their needs in the classroom. It also explores the idea of learner-centered methods, the different kinds of them, and how they differ from teacher-centered methods. It also discusses the traits of the learner-centered approach, the advantages that the approach offers to both students and teachers, and the obstacles that prevent the approach from being used in our classrooms. The learner-centered approach is the best approach for teaching the soft skills required to successfully navigate the environment, get along with others, perform well, and accomplish goals in the twenty-first century, the research says. According to the study, in order to fully apply learner-centered approaches, the character of the curriculum needs to change from traditional to progressive, and teachers should be exposed to current teaching trends.

KEYWORDS:

Approaches, Centric, Education, Learning, Teachers.

INTRODUCTION

Learning A paradigm that puts students at the centre of the educational experience has gained prominence in the dynamic educational landscape, replacing the old teacher-led approaches. A guiding philosophy that turns classrooms into lively centres of engagement, personalization, and active involvement is learner-centered techniques. The essence of learner-centered practises are revealed in this introduction, which also emphasizes their importance in promoting meaningful learning outcomes and preparing students for the challenges of the modern world.The traditional teacher-centric approach is being fundamentally replaced by learner-centered tactics, which promote each learner's uniqueness, curiosity, and autonomy. Students actively participate in their own learning processes as opposed to being passive recipients of information, thereby influencing the course of their education [1], [2].

Pathways for Personalized Learning

Personalization is the primary idea behind learner-centered techniques. These techniques give teachers the ability to modify education to meet the requirements of particular students because they acknowledge that each learner has distinctive talents, interests, and learning styles. Learner-centered techniques increase comprehension, retention, and excitement for learning by taking into account different speeds and preferences.

Building Critical Thinking Skills

Critical thinking skill development is given priority in learner-centered instructional practises. Instead of just accepting material at face value, teachers educate their students to critically think

about it. This encourages a deeper comprehension of the material and gives students the tools they need to successfully negotiate the challenges of a complex information-rich culture.

Active Participation and Ownership

Learner-centered tactics, which incorporate active learning strategies, encourage participation through practical experiences, conversations, group projects, and problem-solving exercises. Students become active knowledge builders as a result, which not only boosts motivation but also cultivates a sense of ownership over one's learning.

Getting Ready for Lifelong Learning

Learning abilities that go beyond the classroom are increasingly important as the world changes. Learner-centered initiatives give pupils the tools they need to become lifelong learners. They develop into self-directed learners who can deal with new situations, learn new things, and continue to study throughout their lives.

The Function of Teachers

The role of educators changes to that of facilitators and guides in a learner-centered approach. They establish a welcoming climate that promotes inquiry, teamwork, and critical thinking. Instead of serving as the only source of knowledge, educators take on the role of mentors, motivating and empowering students to become lifelong learners.

The Way Forward

Learner-centered techniques have a lot of potential, but they can have drawbacks. A change in perspective, sufficient funding, and continued educator professional development are all necessary for implementation. The delicate skill of juggling topic mastery with unique learning objectives calls for careful planning and adaptation. As we go forward, we'll explore a variety of learner-centered tactics that improve the teaching environment. Every educational strategyfrom inquiry-based methods and flipped classrooms to project-based learning and peer collaborationcontributes to the development of students' creativity, autonomy, and desire for knowledge. With the help of these techniques, education becomes a dynamic, learner-driven journey that equips students with the skills they need to succeed both in and out of the classroom[3]–[5].

DISCUSSION

Mastery learning and the Keller Plan are comparable. The Skinner rules served as the foundation for its growth. This annex-response has served as a key educational principle. The American approach is more prevalent at the college level. The Keller plan, which they owned and designed, included suffixes for both learning aspects and instructional methods. Acts-related accessories use this student-controlled, automatic learning method. Beginning a course is an agreement between the student and the teacher that, after a certain amount of work, the students will be able to learn at their own speed and begin to do their own work. There will be small group discussions and teacher tutorials to aid with the instruction. The teacher gives the kids direction and provides them with incentives. Under the plan, the student's primary responsibility is.He sets up his studies on his own. It is employed in classes where the pupils are older and more disciplined, allowing them to manage their own learning.An order is employed in the Keller Plan for self-study. Since each student learns at their own rate and approach, individual learning is possible. Based on the student's mastery of the unit display, a written exam. It is necessary to go on to the following pre-owned unit of study. The only way to hold students accountable for

failing to reclassify is to offer the following study unit.Coursea course is often broken up into 30 units, with a week between each unit's fixations. The material for the Programmed Instruction is also provided, and students are given time to study it. They are given textbooks from the library, along with learning practice exercises. Students take different courses to learn material from other courses. To do this, the student discovers that while there is no formal classroom instruction, the other students are studying.They must perform experiments and inspections in the laboratory while studying science courses there. Senior students guide them through their difficulties in these situations. Students also receive aid from the lab assistant.The student applies for the test after completing 30 units. An exam with 10 short answer questions is given to them. If the student's performance is unsatisfactory, he will need to retake these units of study. The following homework assignment is offered to the student if he or she has achieved a suitable level. If the student passes the specified number of units, they are awarded bonus points for the lecture and demonstration. Although essential, her success is seen to be distinguished by her attendance at lectures and performances.Keller's strategy states that 25% of the entire course should be graded in order to determine the final test scores, which should include homework evaluation. This test is a follow-up, according to Keller. He added that it is a readiness test since it gets students ready for impending homework. In terms of respect, this works similarly to norms. There are numerous test preparation opportunities, and their performance is crucial. However, failing students must retake the course. They would take part in the instructional instruction[6], [7].Each pupil must achieve achievement, Anupryvekhn. Students who fail must offer counselling services. The Principal starts out by providing consulting services. When necessary, the class teacher helps him.This strategy places an individual focus on each pupil. Students who find it difficult to understand the teacher's explanations and demonstrations are permitted to study the chosen course materials. The teacher acts as a representative by making all necessary arrangements. Success in class is measured. Additionally, remedial instruction is given.

Each student has the option to learn at their own pace in the Programmed Instruction series.Concerns regarding study objects are taken into consideration. The gifted pupils are frequently uninterested in their studies because everyone has to study the same way.Principles and laboratory operations frequently clash. Students therefore struggle to learn courses in a reasonable manner. Not all courses call for a laboratory.Tutorial-teaching is organized to help students overcome their difficulties. Even tutorial teaching is imparted just like regular classroom instruction. Therefore, nothing changes. Teaching in tutorials is not planned based on diagnosis.Teaching and assessment are not provided in accordance with the needs of the students. From the beginning, reconnaissance should be conducted. Prerequisites for the course should be satisfied.Making tests more student-friendly by using the testing process. The teacher is not given full testing information.The Keller assessment method includes verbal, theoretical, and practical components. The language of mathematics is utilized during maths exams. Exercise test is administered after. The actual answer to the question is provided to pupils as examples. All test kinds employ this procedure.The Keller Plan has been improved by taking into account the challenges and difficulties of instructing kids. In the reform, the following factors were taken into account:

1. Giving pupils' needs top priority.
2. Before beginning classroom instruction, a try-out is required to complete the course-related prerequisites.
3. Following the students' preparation, the students' test should be scheduled.

4. The system of diagnostic testing should be consistent with tutorial learning.
5. Programmed instruction materials shouldn't be supplied to gifted students.
6. After the test, teachers and students should talk.
7. The study needs to be utilized frequently to check for continuity.

Computer Instruction

Programmable instruction comes in a variety of formats. Because Skinner uses programmed monitoring of pupils' responses, it is regarded as a supremacist approach to programmed instruction.Responses from students are not allowed to be free. In self-study, it is employed. These individual variations are adequately accommodated.

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1. The purpose of courses is to gradually teach the learner.
2. The solution is to reply in writing after reading each message. Response helps students gain new knowledge.
3. Students who struggle with reading, as it is necessary to verify that the response is accurate. The student is forced by its accuracy.

Skinner, Act of Programmed Instruction A five-part, computerized education approach whose research is based on findings from the Rendering psychology laboratory:

1. Minor Steps.
2. Reacting Actively.
3. Instantaneous Information.
4. Self-pacing.
5. Student Assessments.

Use of Programmed Instruction: The main purpose of programmed instruction is to foster learning. The fundamental truths, laws, and rules are successfully realized in this way. The emotional side cannot be developed by this. This is a tailored instructional approach. Students' unique requirements are given the chance to be met.

Limitations of Programmed Instruction

The following are its main drawbacks:

1. There are some subjects where programmed instruction cannot be employed, such as teaching history.
2. Its composition is challenging. It calls for experience and training.
3. It is applicable to low-level cognitive side goals. The employment of affect and action is prohibited in order to achieve the goals.
4. When writing and reading comments, students must always double-check their facts.

Ideas for Programed Instructions

Its main recommendations are:

1. It ought to be applied to acquire objective knowledge.
2. Courses that contain a lot of irrelevant facts. It should be utilised to teach about the Act and regulations, suffix.

3. It is more beneficial for children in the secondary grades.
4. It serves correspondence courses better.

Learning Approach for Mastery

It is employed to accomplish instructional goals and foster mastery learning. Teaching methods used in a typical classroom, as well as corrective and personal learning strategies, are all included. Additionally, time is allocated to subject-specific weak pupils. In this sense, group-based instruction is regarded as using the Bloom's taxonomy. The following is how remedial instruction is carried out. The following phases are carried out using the Bloom's Ownership learning methodology:

1. The teaching and learning curriculum is broken up into units.
2. The learning unit's instructional objectives specify which goal will be accomplished.
3. The format of academic accomplishments is attempted to be understood.
4. The degree of ownership is fixed by considering each learning unit's goal. Its computation is depending on how many formative test phrases there are. The ideal ownership percentage is between 80% and 85%.
5. General classroom instruction should be used to teach each learning unit. This education is done in a group setting. This stage is comparable to conventional instruction.Achievement tests are used to track the amount of students who have achieved ownership level. Such pupils are coerced into continuing their education. Students who failed to reach the ownership level are given diagnostic tests that reveal their learning difficulties [8]–[10].

CONCLUSION

The ability of institutions to create and support learning communities and to leverage technology and innovation both within and outside of the classroom will determine the success of learner-centered pedagogy in the future. The educational ideologies of the past cannot support the health care education of future generations as the delivery of healthcare becomes increasingly personalized and digitized. We must change our perspective, recognize that students have access to information at their fingertips, and innovate how students learn in order to better prepare them for the field of medicine in the future. Innovation breeds innovation. Human flourishing must be understood as an organic process rather than a mechanical one. Additionally, you cannot foresee how human development will turn out. Like a farmer, all you can do is set up the right environment for them to grow.A method of corrective instruction is used to teach students who have learning difficulties, and they are provided extra time and study notes. Books have been recommended for study, and additional time is provided for this purpose. For this programmed disciplinary instruction material can be employed. There are also tutorial classes scheduled. For the pupils' difficulties, corrective techniques are also applied so they can achieve ownership level.Students are stratified and remedial teaching and instruction for each learning unit are tested at the end of the difficult parts. The goal of every student is to increase their level of ownership.The purpose of summative testing is classification, whereas the purpose of formative testing is the provision of remedial teaching and instruction. Both tests aid in gaining ownership, therefore they complement one another. There is also support for both teachers and students. Diagnostic testing makes students aware of their learning challenges so that the right teaching may be given.

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CHAPTER 11

TEACHING PHASES: PRE-ACTIVITY, ACTIVITY AND POST-ACTIVITY

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ABSTRACT:

Numerous courses have typically been taught using lecture-based methods with little hands-on or interactive exercises that engage the students in the learning process. Employers are looking for graduates with increased levels of logical thinking, teamwork, leadership, sophisticated problem-solving, and communication skills due to rising market demands. This calls for the employment of more student-centered learning strategies as opposed to instructor-based focused learning strategies, where students are more involved in the classroom learning environment. In order to make the Applied Fluid Mechanics course more engaging, a collection of exercises were used. Based on the instructor's observations and the students' performance in each task, the exercises were graded. The effectiveness of the activities in the proposed course was evaluated using pre- and post-activity questionnaires, student scores, and comments from post-activity surveys. The study compared the three-year results of the activities' application to the results of the activities' absence. Students' performance has improved from year to year based on the overall course marks. Based on results from pre- and post-questionnaires, each questionnaire revealed varying degrees of improvement, ranging from 4 to 75%. According to the surveys, many other skills have improved for kids. The results of the applied activities can assist in achieving course learning objectives defined by the department as well as ABET learning objectives, such as applying engineering knowledge, critical and logical thinking, complex problem solving, communication skills, and teamwork abilities, in addition to improving performance.

KEYWORDS:

Activity, Pre-activity, Post-activity, Students, Teaching Phases.

INTRODUCTION

In The dynamic process of teaching includes various stages that work together to produce a well-rounded learning environment. Effective pedagogy is built on the pillars of Pre-Active, Inter-Active, and Post-Active phases. These stages capture the process educators take to empower students and promote meaningful comprehension, from careful planning and engaging interactions through thoughtful assessment and refinement. This introduction digs deep into each stage, illuminating how they work together to create a thriving educational ecosystem.The Pre-Active stage creates the foundation for effective instruction. Lesson plans are carefully planned, along with learning goals and approaches, by educators [1], [2].

1. **Defining Learning Goals:** Learning objectives that are precisely specified act as lighthouses to direct educators and students towards a common understanding of the desired outcomes.
2. **Planning a curriculum:**In order to promote an organized learning path, educators select the information and create a sequence that fits with the learning objectives.

3. **Making of Materials:**Making pertinent materials, visual aids, and resources that promote engagement and comprehension is part of preparation.

Facilitating Engagement during the Interactive Phase

The Inter-Active phase, where educators use interactive approaches to promote learning and collaboration, is the core of teaching.

1. **Participation Activated:**Active engagement is encouraged through lively conversations, group projects, and practical work, which improves learning retention.
2. **Learning Scaffolding:**Teachers offer assistance, which gradually decreases as pupils gain greater independence in order to foster a deeper understanding of subjects.
3. **The Feedback Loop:** Peer and educator feedback encourages progress over time and directs students towards their objectives.
4. **Practical Application:** Learners are better able to understand the practical relevance of their studies when concepts are connected to real-world situations.

Reflection and refinement during the post-active phase

1. **Evaluation and Assessment:**Assessment techniques check students' understanding and let teachers modify upcoming lessons.
2. **Introspection:** Teachers evaluate their effectiveness as teachers, finding their strengths and potential areas for development to improve.
3. **Constant Development:**Teaching tactics are modified and improved to improve following lessons based on assessment results.
4. **Learning Reinforcement:**Summarizing the main points and offering further resources help learners grasp and practice subjects.
5. **Learner Independence:**The Post-Active phase encourages lifetime learning skills by empowering learners to self-direct their continuous learning journey. The Post-Active phase places a strong emphasis on reflection, assessment, and improving teaching methods for further improvement.

The Pre-Active, Inter-Active, and Post-Active phases in this educational journey smoothly entwine, weaving a rich tapestry of instruction. These stagescareful planning, active interaction, and reflective assessmentall work together to promote a vibrant and effective learning environment.

DISCUSSION

Three factors that work during the teaching phases and determine the type and structure of learning contexts or situations make up teaching.The teacher plans the role of the independent variables in the first scenario. He is a key component of the learning process for the students. For the purpose of affecting behavioral changes in the students, the teacher plans, organizes, leads, and controls the classroom.Students as a Dependent Variable.

The student is expected to behave in accordance with the teacher's organization and preparation. The teacher's instructional actions have an impact on the pupils' learning.Presentation content and methodology as intervening variables: Interaction between teachers and students is facilitated by the intervening variables. The type of presentationtelling, showing, doing, etc.is determined by the material [3]–[5].

The Three Learning Phases

Being characterized as an interactive and dynamic process, teaching encompasses various activities prior to the real teaching of a lesson as well as countless activities after the actual teaching of a lesson in a classroom.Philip Jackson made a distinction between the pre-active and the inter-active phases of instruction in 1966. Phases of Teaching is also known as Philip Jackson's analysis of teaching because of this. There are three stages in teaching:

Pre-active phase

The analysis of the instructional task at the time of planning is the only aspect of this phase. Planning lessons is done during the pre-active stage of teaching. This stage entails all of the tasks a teacher completes before beginning a lesson or entering the classroom. Planning a lesson is the main component of pre-teaching.Lesson planning should be viewed in a broader context than just creating a lesson plan. Planning involves determining the learning objectives to be attained by the students, the tactics and methods to be used, the usage of teaching aids, and so forth. Here are all the things the instructor does before entering the classroom.For instance, the pre-active phase of teaching involves the teacher creating lesson plans. It is totally necessary for the interactive phase to be successful. It encompasses everything the teacher does prior to meeting with the pupils in person. The Pre-active phase consists of four operations. These are what they are:

Instructional Objectives Formulation

1. The first task concerns the purpose of a teacher's presence in the classroom.
2. The teacher's goal is the knowledge the pupils will learn in a 40 to 50 minute time.
3. The following factors are taken into account when developing the objectives.
4. Mental capacity and socioeconomic status of the students, the lesson's level, the class's resources, the surroundings and aspirations in the room, and more.
5. The country's sociopolitical philosophy

Decisions Regarding The Subtle Matter

The topic that will be used to achieve these goals is chosen after the target has been established. There are four main choices in it.

1. Which information?
2. Which ideas?
3. What abilities?
4. The organization of the content

The chosen content points are grouped and presented in this order. For each topic, the best method of training is considered and developed, including lectures, group discussions, instructional materials, adherence to teaching maxims, appropriateness, etc.This also involves the overall teaching approach, as well as a last review and revision of what will be done in class. For various aspects of the subject matter, several tactics and procedures are used, and occasionally a mix of strategies is used to get the desired result.

The age and psychological makeup of the students also play a role in the technique and strategy selection. For instance, if story-telling and opposite-word approaches can be used to communicate subject. The first is helpful for younger children, while the second works for older youngsters.

Transient Phase

Jackson claims that during the interactive phase, the teacher engages students verbally in a variety of ways, gives explanations, poses questions, pays attention to their answers, and offers guidance. This step or phase is the most time-consuming and crucial one.There is direct communication. Teaching is being done here. In general, these actions go as planned throughout the pre-active period. If necessary, however, some adjustments are permitted. The following operations can be used to identify those active in this phase:

1. How many students are in the class?
2. Which kids will work cooperatively with him throughout instruction?
3. Who will be the ones causing him problems?

The teacher quickly learns the following facts after taking a bird's-eye perspective of the class as soon as he joins it.On the other side, students also attempt to visually evaluate their teacher in order to determine their worth. This operation describes the process of estimating the number of the class and gauging the students' attitudes. It is made aware of how many group members appear to be paying attention, how many are careless and uninterested, who is the smartest, and who is the troublemaker or slow learner.

Learners' Diagnosis

After evaluating his students visually, a teacher pays close attention to the students' learning needs so that he is aware of the individual variances in the students' talents, interests, attitudes, needs, and entrance behavior. It is accomplished with the aid of direct queries regarding the subject.Students respond to stimuli when a teacher asks questions or displays material aids in class, which causes the teacher to likewise respond in some way, encouraging the students' correct responses. As a result, the cycle of action and reaction continues unabatedly in class.It is a stage of the operation's appraisal and follow-up at the pre-active and inter-active phases. The teacher doesn't learn whether or not the goals have been met until after the evaluation. Operatives in the post-active phase are those who are involved in this period.Here, the instructor uses the standards of desired behavior to define or determine the many aspects of behavioral change. The teacher contrasts the students' actual behavior changes with what is expected of them. If there is a significant similarity between the two, it is assumed that the objectives have been met. For instance, the teacher assumes that the pupils must have learned about the roles, houses, and representatives of parliament after teaching the lesson on it to the class[6], [7].

Application the Correct Testing Techniques and Devices

The testing tools that are appropriate for evaluating if the terminal behavior has been attained are chosen from the list of available testing instruments. These resources could include various chapter-and-pencil test formats, benchmark reference tests, informal assessments created by teachers, aptitude tests, attitude measures, etc.

Modifying the instructional strategies

The tests' results, as acquired, allow for the identification of those terminal aims that were either wholly or partially accomplished. Through these exams, the teacher learns about the academic progress of the students and also gains insight into the efficiency of his own teaching methods. These tools might also assist the teacher in identifying his weaknesses. When a teacher is unable

to pinpoint the final objective, he or she may once more decide on a teaching strategy, review the approach they used, educate their class once more, switch up their teaching methods, and judge the students' initial behavior in order to arrive at the final behavior.[8]–[10].

CONCLUSION

As a conclusion, we may state that teaching refers to actions carried out with the purpose of fostering learning in another.

The relationship between the teacher and the students is productive. It promotes the healthy development of students and is a professional activity. The pre-active, inter-active, and post-active phases of teaching aid to increase learning productivity and effectiveness and foster a good attitude towards learning.

The instructor must communicate the subject matter utilizing skills, methods, and tactics in order to inspire students and boost morale while also evaluating their progress through evaluations, supervisions, and feedback. The three phases are dependent on and related to one another. Each stage is crucial to the success of teaching and learning.

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CHAPTER 12

SIMULATION INSTRUCTION: A MODERN TEACHING APPROACH

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ABSTRACT:

To attain the desired educational outcomes, teachers design simulations, which are experiential learning methods that simulate or reproduce real-world situations, issues, processes, or abilities. Students engage in the scenario, apply their knowledge and abilities, exercise critical thought, and derive meaning from the experience. Constructivist teaching and learning theory is well-aligned with the ideas of simulation as a teaching approach, and it can be tailored for social and physical learning experiences to meet the needs of all learners. This essay discusses simulation in light of cognitivist theory, which holds that people learn best in contexts rather than from isolated incidents, and it takes into account any potential human factors. Social and physical learning experiences, simulation, teaching method, instruction, constructivism.

KEYWORDS:

Experimental, Education System, Learning Method, Simulated Instruction, Virtual Reality.

INTRODUCTION

Learning opportunities provided by simulated instruction go much beyond those found in the typical lecture, classroom, tutorial, or laboratory situation. It may give the learner the chance to assume a new job, to practice their learning, and to make decisions in a setting that is safe and as close to the real workplace as possible.Simulated teaching is a form of creative pedagogy that takes place in a synthetic setting and gives students the chance to present the material themselves rather than listening to lectures from the teacher. Similar to a rehearsal, the student assumes the position of the teacher, dresses the part, creates high-quality materials, and instructs the class as a genuine teacher would. However, there are certain behavioral skills that can only be learned by practice and not by merely listening to lectures or reading books. This viewpoint sees simulation as a potent tool for developing more experienced and realistic learning environments[1]–[3].

Students play the part of teachers in simulated teaching, which is designed to closely resemble real situations. Students respond to changes in the circumstance as the simulation progresses by considering the effects of their choices and subsequent actions. In this sense, the usage of simulated teaching outperformed the traditional style of instruction in terms of producing superior academic performance. As a result, it improves instructional expertise, motivation, self-assurance, and self-esteem.However, it is crucial that instructors who use simulation in the classroom allot time for post-simulation conversations. The discussion's goals are to provide direction on how to properly prepare for simulated teaching and then provide comments for improving instruction and changing behavior. Naturally, discussion should be just as carefully organized as any lesson, serve to wrap up the activity, and concentrate on the simulation's learning objectives. As a result, discussion gives students the chance to compile their personal experiences, talk about the simulation's guiding principles, and apply those concepts to actual situations.

DISCUSSION

Simulated teaching requirements

1. Simulated instruction fills the gap between academic knowledge and practical application.
2. Simulated teaching offers a chance to become aware of issues that arise during instruction and discover solutions.
3. Simulated teaching aids in teacher candidates' development of appropriate classroom interaction skills.
4. Through the use of simulated classes, teacher candidates can better identify and address behavioral issues in the classroom.
5. Simulated teaching aids in the development of teaching methodology skills.
6. Simulated classes give teacher-trainees the chance to assume the roles of teacher, student, and supervisor.
7. Simulated teaching boosts teacher candidates' confidence.

Simulated Teaching Procedures

Teachers-in-training receive their education in simulated classroom settings, free from the direct use of students for skill-building exercises. Through simulated training, they are first given the chance to gain the required teaching experiences. In which trainees are given practical teaching experiences, such as acting as teachers within their own institution among their own other trainees, and are then dispatched to schools for practise teaching. All teacher candidates are required to take on the three roles of instructor, student, and observer.

The trainee conducts the class in front of colleagues who are acting as pupils during the simulated teaching. Peers and the supervisor (the subject-teacher also watch the session and record all the positive and negative aspects ofthe interactions in the classroom, the manner in which the material is presented, the skills that are being practiced, the methodology employed, etc.Following that, a discussion session is planned in order to gather comments and enhance trainee teaching behaviors.

In the mechanism of simulated teaching, the following steps are often followed.The teacher arranges a thorough orientation session to explain the idea of simulations, their applications in training, the procedures to be followed during simulated teaching, the role of trainees as a teacher, students, and observers, and how to set up a setting for teaching practise[4], [5].

Demonstration

Following orientation, the teacher conducts a model lesson demonstration in the same classroom in front of inexperienced instructors, going through all the motions of a role-playing lesson. The learners watch the example lesson in order to get understanding of each and every component of simulated teaching.They also use the same techniques when simulating instructional practise.

Group formation

The teacher establishes groups in this stage while taking the class's size into consideration. This group includes a teacher, pupils, and observers to ensure that the simulated teaching goes off without a hitch.

Roles are assigned

The teacher now divides up the roles among the group members (eacher candidates. Every trainee is required to take on every role.Trainees typically play the roles of teacher, student, and supervisor.

Choosing which skills to practise

Teacher-trainees choose a theme and a few specific abilities for their simulated teaching practise after the roles have been assigned. They can also talk to the subject teacher about the issue and their skills for extra clarification. However, the subject should be such that it integrates all the talents.

Create a work schedule

The teacher creates a work schedule for the simulated teaching practice after choosing the abilities and topic. It is decided who will start the simulated instruction, interrupt throughout the practice session, and end the session based on that work schedule. Finally, the work schedule determines when the session will be concluded.

Selecting an observational strategy

In this step, a choice is made on the observational method. It outlines the categories of data to be gathered and how they should be interpreted. As a result, this stage is connected to the evaluation process.

Plan the practice session

Once all the planning is finished, the first practice is set up with responsibilities being assigned. The supervisor and other trainees then give quick feedback based on the teacher trainee's performance. To enable evaluation, data on trainee performance is also meticulously documented. As a result, the session goes on until all of the teacher-trainees have finished their initial round of teaching practice.

Modifying the process

After the lesson is finished, there should be a discussion so that the teacher-trainees can make the required adjustments. The students get ready for the second session of instruction by making changes to their method in light of the data that was captured and provided feedback. In this step, the trainees' roles, the subject matter, and the necessary abilities are changed. as a result, everyone will have a chance to assume every part during the simulated teaching practice[6]–[8].Thus, until each trainee has received training, this cycle of simulated teaching continues.

Teacher's Function in Modelled Instruction

The numerous demands of students, their developmental challenges or concerns, their topic knowledge and teaching abilities, as well as their culture, which may have a positive or negative impact on the mentoring process, are the main factors that contribute to the complexity of mentoring. Because objective evaluation of the students' teaching performance is involved, mentoring is more difficult than teaching. The following are a few crucial characteristics of mentors:

1. Teachers need to be able to interact with people in a range of professional settings.
2. The teacher should be well-versed in instructional strategies, alternate modes of learning, and teaching philosophies that influence student accomplishment.
3. The teacher should be able to effectively communicate in order to comprehend and meet the emotional, social, and cognitive requirements of the students.
4. The teacher needs to be well aware of the various stages of growth in the context of how kids learn.
5. Teachers should adopt a positive outlook in order to value the creativity, abilities, and skills of their charges.
6. The teacher in the simulated lesson should adhere to the following rules for effective mentoring purposes.
7. Teachers should always provide a good example for their students.

Be an example of the advice and messages being given to the students.

1. Teachers should exhibit a variety of cognitive coaching skills, including asking thoughtful questions to elicit reflection, paraphrasing, probing, employing wait time, and gathering and utilizing data to enhance teaching and learning.
2. Because mentoring is a collaborative process, teachers should promote students' reflective sharing of thoughts and experiences.

Benefits of Simulated Instruction

1. Simulated teaching is intended to help pre-service teachers with their training and professional growth.
2. Simulated instruction bridges the theoretical and practical divide.
3. Through simulated instruction, the student can draw directly from his own experiences.
4. Simulated teaching aims to improve students' self-worth and degree of confidence in handling future teaching issues. As a result, the trainee will face his or her students with confidence and have conquered their concerns.
5. When compared to the conventional teaching style, simulated teaching was more successful in raising academic achievement. In contrast to passive exposure to the subject, the learner is therefore actively involved.
6. Learners receive feedback from simulated instruction. The teacher-in-training may readily translate their skills in classroom management, communication, and the creation of effective teaching materials from the artificial to the actual classroom setting with only little alterations and adjustments.
7. Critical thinking is developed as a result of the students' active participation.
8. Simulated instruction helps students and teachers develop their situation-specific decision-making skills.

Six drawbacks of simulated instruction

1. Simulated teaching is a training technique, not a style of instruction.
2. Practises multiple abilities at once with simulated instruction. Therefore, it is impossible to become an expert in just one skill.
3. Simulated instruction emphasizes both topic and instructional technique. Therefore, striking a balance between the two and placing equal focus on both the behavioral component and the content information is difficult.

4. Simulated teaching makes an extremely challenging endeavor to depict genuine classroom settings in an understandable manner.
5. Administrative issues for the teacher, such as how to set up the classroom, allocate responsibilities to the students, and lead discussions, may arise from simulating teaching.
6. It is very likely that observers will occasionally report inaccurate observations during the simulated teaching that go against the actual spirit of simulation.
7. Simulated teaching is a time-consuming exercise. The regular operations of the school are impacted.

Steps in Simulated Teaching

Orientationin the first step, all information about teacher education is given. The technique is discussed, along with the significance and usage of the teacher and the sample, which are all made evident.

The function of the students, teacher, students, and observers is to explain the role and provide the necessary training for survival.Thus, the three primary purposes of the space beneath the stair are:

a. Give the pupils' learning accurate information.
b. Role selectiona choice is made regarding what the role would entail. What are the roles that are being explored for how to play this?
c. Select the instructor for the role-playing exerciseafter discussion, the teacher, student, and teacher of the inspector are chosen.

Skills to be Selected for Practice: They will receive training in teaching techniquesthe stair beneath which it undoubtedly is. Utility is the main consideration when choosing the focus for teaching skills. Such abilities are available and should be used as much in the instruction of all topics in schools.

The choice of interpretation abilities is made after debate and consideration. The instructor designs lesson plans based on the chosen teaching strategies after introducing key elements to their nature.Reality through the development of skills that are chosen based on their application after lesson planning is completed, make programmer notes. When determining the sequence, what talents will come first and which skills will come second? This step is used to establish the sequence in which the teacher and various teaching techniques will be practiced[9], [10].

Determination of Observation Techniques: This step is used to choose the instructional methods that will be used to practise observing the system. The old audio cassettes will be employed. As a result, it is chosen what tools will be utilized to observe and practise teaching techniques as well as what approaches. Here, it is also guaranteed that observations will be made, and which method will be used to nourish those observations.

First Practise Session Organization: When the first practise session for the complete system is held.Following the page's distribution by supervisors, a nutrition practise session is required. Improvement recommendations are also required. The session continues until the teacher's time to practise does not arrive.

Providing Mastery over Teaching Skillseach teacher practises his or her teaching techniques until he or she possesses full dexterity. He uses his teaching abilities for a second time. The third practise in teaching techniques is something else to master. The sequence goes on from there.

CONCLUSION

Using virtual simulations can change the way that people learn and teach. In an ideal scenario, the educator collaborates with a team to decide how to strategically integrate virtual simulation into the curriculum, how to do so, and how to assess the learners' experiences. The use of virtual simulations in the classroom requires continuing learning and professional development.We encourage you to get experience through a variety of approaches, including mentorship, informal learning, and formal learning, because we recognize that facilitating virtual simulation is an area of growth and study that is constantly changing. For using virtual simulation, the Healthcare Simulation Standards of Best Practiced is another great resource.

The information in this chapter and the following chapters is meant to challenge and encourage you to try teaching with virtual simulation or to improve your virtual simulation teaching abilities.

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CHAPTER 13

INTERACTION ANALYSIS SYSTEM BY FLANDER: QUANTITATIVE AND QUALITATIVE ELEMENTS DETERMINATION

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ABSTRACT:

Using the approach of interaction analysis, one may measure both the quantitative and qualitative aspects of verbal behavior by teachers in the classroom. As a system of observation, it records the verbal conduct of instructors and students that is closely tied to the social and emotional atmosphere of the classroom. In the classroom, interaction analysis is a tool used to record both quantitative and qualitative elements of verbal instructor behaviour. It records the verbal interactions between instructors and students as a method of observation that is closely related to the social-emotional climate of the classroom. Theoretical premises of interaction analysis (IA) hold that verbal contact is common in a regular classroom setting, the teacher exerts significant control over the students, and this type of teacher behaviour witnessed has a significant impact on the behaviour of the students. The Flanders ten-category framework seeks to classify all of the linguistic activities in this study. Since teacher-student contact is a crucial component of effective teaching and enhanced learning in the classroom, the goal is to encourage the adoption of FIAC in the educational process in schools.

KEYWORDS:

Education System, Education Analysis, Interaction Analysis System, Learning, Quantitative.

INTRODUCTION

In the educational and learning process in the school setting, classroom communication is a crucial component. It is essential for optimal growth, just as food is. An essential component of successful classroom instruction is the number and quality of teacher-student contact. The term interaction suggests an action-reaction or a mutual or reciprocal influence, which may be between persons, such as students and students or students and teachers in a classroom, or between materials and individuals or groups. Usually, one can deduce an interaction from the way people behave in the setting they are studying. The major modes of this behaviour, which may be vocal or nonverbal, are cognitive, emotive, or controlling [1]–[3].

Interaction Analysis (IA) is a method of analytical observation that sheds light on the actions a teacher takes while delivering a lesson. It is a methodical observation that serves as a beneficial tool for discovering, researching, categorizing, and measuring particular factors while a teacher and his or her pupils interact in a learning environment that is intended to be instructional. It employs a system of categories to quantify and codify instructor and student conduct in the classroom. The observational system was developed so that a teacher could be trained to utilize it for behaviour analysis in the classroom, lesson planning, and evaluation in order to improve learning in the classroom. The verbal conduct of teachers and students that is closely related to the social-emotional atmosphere of the classroom is captured by interaction analysis as an

observing system.The process of encoding and decoding the teaching and learning study pattern is known as interaction analysis. A trained analyst interprets the display of coded data and reconstructs the original events on the basis of the encoded data using the coding process, which establishes categories of classifying statements and assigns a code symbol to each category, even though he may not have been present when the data were collected. As a method for collecting the qualitative and quantitative aspects of teachers' verbal behaviour in the classroom, interaction analysis is used.

DISCUSSION

The following are the numerous theoretical presumptions that underlie every concept in interaction analysis:

1. Verbal communication predominates in a typical classroom environment.
2. Although using spoken language in the classroom may lead to non-verbal gestures, verbal behaviour can be monitored more reliably than most non-verbal behaviour and can ostensibly serve as a representative sample of classroom activity overall.
3. Typically, we can infer that a teacher's nonverbal cues and overall demeanour are consistent with his vocal comments.
4. The student body is significantly influenced by the teacher. This kind of teacher behaviour has a significant impact on student behaviour.
5. The relationship between students and teachers is an essential component of learning and must be taken into account while determining approach.
6. It is well known that social atmosphere influences both output and the caliber of interpersonal relationships. It has been demonstrated that a democratic environment tends to retain work at a reasonably high level even when the teacher is not there.
7. Children frequently express their greatest affection for democratic teachers and are aware of their teachers' enthusiastic reception.
8. The learning process depends greatly on the atmosphere in the classroom.
9. By using an observational technique intended to catch the natural modes of behaviour, it is possible to monitor verbal interactions between the teacher and students in the classroom objectively. This will also allow for measurement to be done with the least amount of disruption to the group's daily routine[4], [5].
10. It is possible to influence a teacher's classroom behaviour through feedback, but additional research will be needed to determine how much can change and whether these changes will last.
11. Verbal remarks by teachers are the main means of exerting their effect. Although they do happen, non-verbal influencing acts are not captured by interaction analysis. The claim that the quality of nonverbal actions is comparable to verbal actions, which makes verbal influence the most simple of all influences to analyse, supports the legitimacy of this statement.

Categories for Flanders Interaction Analysis

Ned Flanders was principally responsible for creating the initial version of the interaction analysis system. In fact, the technology is frequently referred to as the Flanders System of Interaction Analysis (FIA), a breakthrough that allowed for important new perspectives on the evaluation and enhancement of education. An observational method used to categorise verbal behaviour of teachers and students as they engage in the classroom is the Flanders interaction

analysis system. Non-verbal gestures are not considered in Flanders' instrument, which was created to simply observe spoken communication in the classroom.Because verbal behaviour can be observed more reliably than non-verbal behaviour and because it is presumed that verbal behaviour is a representative sample of an individual's overall behaviour, Flanders Interaction Analysis is a system of classroom interaction analysis that only focuses on verbal behaviour. The ten categories of the Flanders Interaction Analysis Categories (FIAC) system of communication are thought to cover all possible communication scenarios. There are 10 categories used when someone speaks, including seven for teacher discourse, two for student talk, and one for quiet or bewilderment.

The Coding Method

The Flanders Interaction Analysis system is used to code unscripted speech. Either in a live classroom or on a tape recording, interaction may be seen. Regardless, the teacher-student interaction pattern is examined and improved using the coding system. The observer records the category number of the interaction he has seen every three seconds. He enters these figures in a column in order. After some time, he will have several lengthy columns of numbers because he will be writing about 20 numbers every minute.Before actually starting to categorise, it is recommended for the observer to spend five to ten minutes being familiar with the circumstance. This gives him a sense of the overall environment in which the teacher and students are working. Every time a classroom activity is changed, the observer halts classifying in order to prevent incorrect coding. For instance, when kids are reading aloud to themselves or working on worksheets. When the entire class conversation resumes, he will typically draw a line through the recorded numbers, note the new activity, and then resume categorizing. The observer makes note of the type of classroom activity he is watching at all times.In order to facilitate analysis and interpretation, data is plotted on a matrix. The approach for keeping track of the occurrences involves putting the number sequences into a table with 10 rows and 10 columns. This matrix makes it simple to look at the teacher-student interaction's generalized sequence.

Social Studies Instruction

Student: After giving it some thought, I believe that one of the main reasons why the Niger Delta is in such bad shape is that we haven't had many chances to leave the area and acquire the virtues of hard labour and respect.

Teacher: Good, Timi, I appreciate your suggestion. Now let me check to see whether I fully comprehend your concept. You argued that we might not be in this situation right now if we had been exposed to other cultures that valued and admired respect for elders, authority, and hard labour.

How to Read the Matrix

1. There is a consensus that no classroom engagement can ever be duplicated. Through monitoring, encoding, tabulating, and finally decoding, interaction analysis aims to maintain specific elements of interaction.
2. The ratio of student and instructor speaking to quiet or confusion: The ratio of the total tallies to the tallies in columns 1, 2, 3, 5, 6, 7, 8, 9, and 10 shows how much the teacher and students talk and how much time is spent in quiet or bewilderment. Researchers

predict an average of 68 percent teacher talk, 20 percent student talk, and 11 or 12 percent quiet or perplexity after several years of observation.

3. The proportion of indirect to direct influence: This ratio is calculated by dividing the sum of columns 1, 2, 3, 4, by the sum of columns 5, 6, and 7. the teacher is considered to be acting indirectly if the ratio is 1 or above. Therefore, this ratio reveals if a teacher uses more direct or indirect teaching methods.
4. To determine the proportion of positive reinforcement to negative reinforcement, divide the total of columns 1, 2, and 3 by columns 6, and 7. The teacher is considered to be effective if the ratio is greater than 1.
5. Student participation rate: Divide the amount by the sum of columns 8 and 9. The response will show how much engagement the pupils have had with the teaching-learning process.

This research examines Flanders Interaction Analysis as a method for collecting the qualitative and quantitative elements of teachers' verbal behaviour. The goal is to advocate for the use of this method in our primary and secondary schools' teaching and learning processes. Adoption of it will have a favorable effect on the learning environment's social climate, which is unfortunately lacking in most public primary and secondary schools. It is well known that social atmosphere influences both output and the caliber of interpersonal relationships. The development of students' social and interactional skills is a key educational goal, and Flanders' Interaction Analysis method stands out as a daring step in the right direction to raise the bar on educational excellence [6]–[8].

It may be argued that a problem-based learning (PBL) curriculum, which is what our educationalists are promoting as a strategy to transform our educational system, will push instructors to embrace indirect teaching methods. For optimum self-development and self-fulfillment, educational activities must be learner-centered, according to the National Policy on Education. According to FIAC-based research, classes tend to perform better on achievement tests and have more positive attitudes towards the teacher and their instruction when teachers use their students' ideas and opinions in their statements, which is sometimes referred to as indirectness.It is therefore important to train and retrain our teachers in interaction analysis (IA), a method that sheds light on student-teacher interactions and puts teachers in a better position to assess and improve their instruction and develop students' social skills.A technique called interaction analysis should be used in teacher education in a way that is in line with the idea of personal inquiry. Transforming knowledge into action as part of the teaching process is what inquiry in teacher education entails. To achieve self-insight while functioning as a teacher, it entails experimenting with one's own behaviour, gathering objective knowledge about one's actions, and assessing this information in light of the teacher's role [9].

The established norms in schools, according to Flanders, are 80% teacher discourse, 20% student talk, and 11–12% silence. In fact, this is the typical situation in our current educational system at all three levelsprimary, secondary, and postsecondary. It is very necessary to turn this situation around. In a traditional classroom setting, it is expected that the teacher will take the lead more frequently than the students. The percentage of student speaking that involves an act of initiating is measured by the Pupil initiating Ratio (PIR). A high PIR demonstrates that students take the initiative to contribute their own ideas to the class discussion. This energizes the intellectual environment of the teaching and learning process, geared towards a robust growth of the person into a sound and effective citizen, crucial for the development of the nation [10].The

interpersonal connection between teachers and students is related to interaction analysis. The teacher's control over classroom engagement and his instructional authority are clearly interrelated. The benefit of verbal engagement is building a relationship between the teacher and children so that the students feel comfortable confiding in the teacher about their feelings, ideas, and early learning difficulties. Negative influences, which are the scourge of our current educational system, could be reduced when a free talk environment is formed within the school system.

CONCLUSION

Interaction Analysis has been shown to have a lot to offer in the reform that our educational system so desperately needs. It provides instructors, aspiring teachers, and supervisors with a system for analyzing verbal behaviour in the classroom and a tool that can provide objective data regarding teaching behaviour important for instructional improvement. On the other hand, providing our children with a solid foundation for critical, analytical, and reflective thinking in the classroom.

The way teachers conduct in the classroom, which has a substantial impact on students' behaviour, is an undesirable state of affairs in our current educational system. Therefore, this chapter emphasizes the need for FIAC to be used as a reliable method to assess the social and emotional climate in the classroom.

To ascertain the consistency between a theoretical and practical setting of FIAC as a true tool for establishing social climate and interpersonal relations, research is required to test the hypothetical sample in this review in a real classroom session.

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CHAPTER 14

MUTUAL CATEGORY SYSTEM: A COMPREHENSIVE OVERVIEW

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ABSTRACT:

The linguistic interactions between teachers and students in the classroom are observed and evaluated using the Reciprocal Category System (RCS). The RCS is made up of nine verbal categories that can apply to either the student or the teacher and as a result, are numbered differently, producing 18 categories as well as one additional categorysilence or bewilderment. By writing the number allocated to any one of the 19 categories such as number 1 for 'warms' the climate or number 5 for responds on a tally sheet, the observer notes the verbal behavior in the classroom at least every three seconds. For a visual depiction of behavior patterns and their frequency, the raw data columns on the sheet are then bracketed into pairs and plotted on a 19 by 19 matrix. Additionally, the matrix is used to assess the flexibility of classroom behavior, percentage correlations between patterns, and the frequency of behaviors in any of the four sub matrices, including teacher-teacher, teacher-student, student-teacher, and student-student discussion. The RCS allows for the conceptualization and measurement of many verbal behaviors when used as a research tool, and when used as a training tool to make teachers more aware of subtle and unusual verbal behaviors, it helps to create teachers who can direct or plan verbal behavior and who can use the RCS for feedback in their own classrooms. Self-practice exams and a five-item bibliography are given.

KEYWORDS:

Category System, Linguistic Interaction, Mutual, Reciprocal, Research Tool.

INTRODUCTION

There have been a number of criticisms to Flanders' Ten Category System that have been corrected and modified by other academics. R. C. Ober has made a significant contribution as well. Flander's Ten Category System was modified, who also established the Reciprocal Category System. Articles are created using one-sided encoding in the Ten Category System, whereas two-sided encoding is used in the Inter-Process Communication. Five categories, for instance, will be marked every three seconds while the teacher is speaking. Additionally, for the next three seconds, five categories will be marked. nevertheless, pupils' responses are not prepared. The instructor instructs the pupils to take a seat. Although pupils are seated and six categories are marked, this response is not prepared. When a teacher poses a question, four categories are marked, but pupils can also respond by raising their hands. It is not encoded in the draught. When a student requests clarification from the teacher or asks a question, 9 categories are marked, but the teacher's response is not marked in the encoding. When the teacher compliments the students but the students do not give a response, two categories are marked[1]–[3].In the classroom, interaction takes place through face-to-face conversation. Self-initiation and replies occur simultaneously, however the Flander's Analysis System exhibits one-sided drafting.

DISCUSSION

According Reciprocal Category System

Instead of isolating items based on distinct characteristics, the Reciprocal Category System categorizes entities based on their reciprocal relationships and interactions. This is a departure from traditional category thinking. It acknowledges that actions and repercussions in a dynamic and interconnected environment are frequently bidirectional, with entities impacting each other in a variety of ways. This paradigm shift from rigid categories to flexible interactions promotes integrative thinking and teamwork.

Consequences for Society: The Reciprocal Category System encourages a more comprehensive comprehension of complicated systems. It nudges us to see things not as isolated things but as interlinked parts of complex networks with interconnected roles and influences.

Collaboration and Synergy: The approach promotes collaboration among entities that may have previously been classified separately by highlighting the reciprocity of relationships. This may result in the discovery of complementary approaches to problems that appear when various categories converge.

Shared Responsibilities: The system draws attention to the reciprocal obligations that different entities have to one another. It emphasizes the notion that decisions have effects that reach beyond the immediate realm, calling for accountability and taking wider effects into account.The system's emphasis on interconnection fosters resilience. By realizing their interdependence, entities can alter and react to changes and disturbances more successfully. Implementing the reciprocal category system presents some difficulties [4], [5].

Cognitive Shift: A considerable cognitive shift is needed to move from conventional categorical thinking to a reciprocal perspective. It can be difficult to switch to a more flexible and interconnected mindset because people are used to thinking in terms of fixed categories.

Management of Complexity: The system's concentration on relationships may add complexity, which could make it challenging to traverse and manage. It can be difficult to come up with useful ways to represent and comprehend these complex networks.

Cultural and contextual variation: The Reciprocal Category System may be interpreted and applied differently depending on the culture and context. Due to differing worldviews, creating a framework that is universally applicable could be difficult.

Data and technology: In a data-driven society, implementing the system calls for cutting-edge technological instruments. It could be resource-intensive to gather and analyse reciprocal data for a variety of businesses.

Potential for Transformation: The Reciprocal Category System has the ability to completely change how we approach solving global problems. For instance, complex interactions between numerous components play a role in climate change. By taking into account the interdependence of ecosystems, industries, and society, a reciprocal approach might provide more practical answers.Understanding the reciprocal links between various groups in conflict areas may help develop more sensible and long-lasting peace-building tactics. Cooperation may be facilitated by acknowledging shared dependencies and interests.

Economic Models: Conventional economic models frequently oversimplify inter-industry linkages and ignore their mutual influences. Reciprocal Category System, which recognizes the interdependence of multiple sectors, could improve economic modelling.

Education and Mindset Shift: Including the system in the curriculum may help to raise a new generation of thinkers who are drawn to holistic and interrelated viewpoints. In turn, this might hasten the framework's adoption across multiple industries.

Conceptual foundations

The idea of reciprocal teaching. Reciprocal teaching was created as a method to assist teachers in bridging the gap for pupils who showed a disparity between their decoding and comprehension abilities. This means that the method is intended to help children who are proficient in letter-sound correspondence such as sounding out words and chunking but are unable to derive meaning from the texts they decode. Reciprocal teaching makes use of the prediction approach, in which students make predictions prior to reading and use those predictions to gauge their accuracy as they read.The four elements of reciprocal teaching are comprehension, inquiring, predicting, and clarifying. The four steps involved in reciprocal teaching were referred to as the fab four. The next step is for students to ask questions of the teacher or have the teacher ask questions while reading to help them grasp concepts they are having trouble with or to highlight areas where they should pay close attention. To improve retention and determine how much was learnt, questions are asked of a student or group of students after the book has been read. The students are then asked to summarise a page or the whole text selection they just read, which helps to ensure comprehension. By reframing or expanding on their responses, remarks, and questions, the instructor helps the students.

Function of reading tactics

Reciprocal teaching is a combination of reading techniques that proficient readers are said to employ. Research shows that proficient readers use specific comprehension strategies in their reading tasks, whereas poor readers do not, as stated by Pilonieta and Medina in their article Reciprocal Teaching for the Primary Grades. Until some form of triggering event alerts them to a comprehension failure, proficient readers can go through texts rather automatically thanks to their well-honed decoding and comprehension skills.This trigger could be anything from an undesirable buildup of unrecognized ideas to an expectation that the text hasn't met. Whatever the cause, skilled readers respond to a breakdown in understanding by applying a variety of tactics in a planned, intentional manner. These fix-up techniques include everything from merely slowing down the reading or decoding pace to conscious summarizing the content. The effective reader can continue without consciously using the approach once the method has helped to restore sense in the text.

No matter how proficient they are, all readers occasionally experience cognitive failure while reading materials that are difficult, strange, or inconsiderate, that is, structured or written in a peculiar way. Poor readers, on the other hand, don't react the same way when they have a comprehension problem. Some people just are not aware of the cues that indicate understanding breakdown. Others are aware that they don't grasp the content, but they lack the tools or skills to use understanding-enhancing tactics. Some people employ maladaptive techniques that hinder comprehension, such as avoidance. In his article on learning methods, Mayer points out that reciprocal teaching can aid even inexperienced students in improving their use of learning

strategies and deepening their comprehension of a subject. Mayer also points out that by using the professors as role models, the students have the opportunity to learn more, and by rotating who leads the class, novices in a subject area have the opportunity to learn from the experts.

Instruction style

The process of reciprocal instruction is dialogical or dialogic. To choose dialogue as the medium. First of all, it uses a language structure that kids are used to as opposed to writing, which could be too challenging for some reluctant readers. Second, discussion offers a valuable means of systematic and deliberate control rotation between teacher and pupils.Based on both developmental and cognitive theories, reciprocal teaching exemplifies a variety of novel teaching and learning concepts. Successful students use the same approaches to connect with texts that are incorporated into reciprocal teaching. They are believed to support purposeful learning, self-regulation, and self-monitoring [6]–[8].Reciprocal teaching also follows a very scaffold curve, starting out with a lot of instructor involvement, modelling, and instruction before being gradually reduced until students can utilise the tactics on their own. Reading a brief passage of text aloud to one another marks the start of reciprocal instruction. The teacher begins by demonstrating the Fab Four tactics needed for reciprocal teaching, and then the teacher and students converse to reach an understanding about the text. The teacher then uses each of the four reading strategies to plainly and particularly model his or her thought processes aloud. Pupils use their own ways to replicate the teacher's teaching methods while also explaining their own thought processes to their fellow pupils.

As students become more skilled and confident using the tactics, the teacher begins to model less frequently. In the end, it is up to the students to guide the small-group discussions on the text and the tactics. This provides the instructor or reading tutor with the chance to identify students' strengths, weaknesses, and misconceptions and to offer any necessary follow-up.Instead of specific facts and procedures, cognitive methods for reading comprehension are what are learnt. Instead of emphasizing what to learn, the instruction emphasizes how to learn.Instead of teaching each cognitive technique separately, the strategies are combined to form real-world reading comprehension challenges. Instead of learning everything separately, learning occurs in a specific order.Within a cooperative learning group that is collaborating on a task, students learn as apprentices. Through themselves and the other members of their group, the students are learning.

In use over the past 20 years, the reciprocal teaching paradigm has been embraced by a number of school districts and reading intervention programmers across the US and Canada. A variety of commercially available reading programmers, including Soar to Success, Connectors, and Into Connectors, have also been based on it. The fact that never even heard of it is how most students and teachers in this nation would describe it. The Connectors and Into Connectors Series, written by Jill Eggleton, is offered by Global Ed in New Zealand. Both nonfiction and fiction texts can be found in these two series. Other than the United States, reciprocal teaching is being adopted and studied abroad. For instance, Yu-Fen Yang from Taiwan studied the effectiveness of reciprocal teaching and learning in remedial English reading classes in 2010. Students expressed that they observed and learned from the teacher's or their peers' externalization of strategy usage, Yang's study said in its conclusion. Pre- and post-test results were used to track students' reading development during remedial education using the RT method. According to this study's findings,

Teachers may benefit from encouraging students to interact with one another to clarify and discuss comprehension concerns as well as continuously monitor and regulate their own reading.

Using reciprocal teaching effectively with kids who have been diagnosed with mild to moderate disabilities was the focus of a 2008 study. 10% of the students in this group exhibited learning difficulties related to Down syndrome. The participants' ages ranged from about eighteen to eighty. The study was created by the researchers Miriam Alfassi, Itzhak Weiss, and Hefziba Lifshitz for children who were deemed academically unprepared for the challenging abilities of reading comprehension. It was based on Palincsar and Brown's approach of reciprocal teaching. In the study, remediation/direct instruction and Palincsar/Brown reciprocal teaching were examined. Reciprocal teaching was found to have a higher success rate in boosting the reading skills of participants with mild to moderate learning difficulties after twelve weeks of instruction and evaluations. Researchers suggested reciprocal teaching once the study was finished so that students might be taught in an interactive setting with relevant and connected literature. This study, written for the European Journal of Special Needs Education, advocates reciprocal teaching because of the way dialogues are structured and the way that students learn to use them after reading throughout lessons [9], [10].

Research is currently being done in the United States on the application of reciprocal teaching in the primary grades. In order to apply their version of reciprocal teaching with primary school kids, Pilonieta and Medina carried out a series of processes. Reciprocal Teaching for the Primary Grades, or RTPG, is the name the researchers gave to an age-appropriate reciprocal teaching paradigm they employed. According to their research, reciprocal teaching appears to have benefited even younger kids, as evidenced by the students' recall of the RTPG when tested again six months later.In pre-post trials or research studies, reciprocal instruction has been praised for its potential to help pupils enhance their reading abilities. Reciprocal Teaching has repeatedly been shown in further studies to improve reading comprehension as judged by standardized reading tests.

CONCLUSION

In conclusion, the Reciprocal Category System offers a paradigm-shifting strategy that has enormous potential in our society, which is becoming more interconnected and complex. This framework challenges conventional category thinking by categorizing entities based on their reciprocal interactions and interdependencies rather than isolated traits, and it promotes a more holistic and collaborative perspective. The Reciprocal Category System demonstrates its capacity to revolutionise how we address global challenges, conflict resolution, economic modelling, education, and more through its consequences for society, implementation obstacles, and revolutionary potential.The system's focus on collaboration and interconnection addresses the drawbacks of traditional category systems and provides a new lens through which we can comprehend the complex dynamics of our environment. The system creates the groundwork for a more sustainable and peaceful society by recognising shared obligations, encouraging resilience, and developing holistic understanding.The Reciprocal Category System's adoption is not without difficulties, though. The barrier to moving from conventional thinking to a reciprocal mentality is the cognitive shift that is necessary. It is crucial to give significant thought to managing the complexity of interwoven interactions, accepting different cultural interpretations, utilizing technology for data analysis, and negotiating ethical issues.Nevertheless, the Reciprocal Category System has a tremendous potential for transformation. Its applications can be found in

a variety of sectors, from resolving international conflicts to changing economic theories and urban planning. This framework fits with the complex and dynamic character of the world we live in by promoting a wider viewpoint and encouraging collaboration.

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CHAPTER 15

MODELS OF EDUCATION: A COMPREHENSIVE OVERVIEW

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ABSTRACT:

This means that there is a big focus on improving the quality of education in ongoing educational changes in both local and international settings. Policies put in place to bring about improvements in education quality often don't succeed because the people making them don't fully understand how complicated education quality is in schools and colleges. This text presents seven different models for measuring the quality of education. These models include: setting goals and specifications, considering the resources available, looking at the process of education, measuring satisfaction, assessing legitimacy, focusing on the absence of problems, and considering organizational learning. This means that these models can be used to create a complete framework for understanding and thinking about quality in education from different points of view. They can also help in developing strategies for managing and achieving quality. The framework can help with talking about and deciding on policies, how schools work, and finding out more about education quality. The model's goals include helping students reach their full potential, maximizing satisfaction, and fostering fun learning environments. The model is divided into two phases, the first of which is posing and finishing the work. Discussion or analysis of Phase One follows next. The model can be used, among other things, to help students engage in a variety of educational activities, improve personal awareness, foster interpersonal success, and aid educational designers, curriculum creators, and teachers.

KEYWORDS:

Education, Evaluation, Educational Model, Modes Education,Theory.

INTRODUCTION

In Knowledge or comprehension of a topic, issue, or circumstance is referred to as awareness. William Schutz specifically outlined the Awareness Training Model in his books FIRO: A Three-Dimensional Theory of Interpersonal Behaviour, Joy: Expanding Human Awareness, and Elements of Encounter.Schutz's writings placed a strong emphasis on interpersonal development as a way to boost happiness and self-awareness. This teaching approach also takes into account the work of other Human Potential movement practitioners, particularly Howard Lewis, Harold Stretfeld, and George Brown[1], [2].The incapacity of people to be aware of their own wants and feelings is one of the biggest barriers to fulfilment and joy in interpersonal relationships. People's knowledge of other aspects of their environment and of society at large is similarly lacking. As Joyce, Bruce, and Weil Marsha noted, The majority of adults have a high propensity for being emotionally disconnected. We turn them around, push them away, and disguise them as someone or something else. These tools, created to shield us from our emotions, might occasionally be useful and necessary, but when used excessively, they can result in unsatisfying life patterns. Schutz argues that it's important for people to break free of these psychological restraints on their emotions. We require a closer connection to our emotions. We are going to feel our own

emotions. Most people are not keenly aware of their emotional state, claim Lewin and Stretfeld. All educational activities must be created by the teacher to support the emotional reactions of his students. In this situation, the teacher should set up advantageous circumstances and a favourable environment to enable the pupils to recall familiar emotions and usual behavioural patterns in reaction to those emotions. The kids may be able to become aware of how they respond to and handle circumstances with the aid of these experiences.

Given Schultz's pledges, it is clear that one of the key ways feelings are expressed is through the body our tone of voice, gestures, posture, facial expression of emotions as are words and behavior.More often than not, physical manifestations bring true emotions to closure than verbal ones do. When we try to suppress a feeling, we often assume the opposite bodily position. Our feelings of inadequacy are concealed by an attitude of assurance, and we frequently smile to mask our intense anguish. Being able to perceive our emotions through our bodies helps us stay more in touch with both our own and other people's interpersonal needs[3]–[5].A person's sense of self, in Schultz's words, is derived from contacts with others. The term inclusion describes the necessity for one to be noticed, attended to, and given reasonable attention by others. One aspect of this need is demonstrated by the want for identity, which includes the desire to feel justified in one's individuality and to know that others recognize and identify with him or her as a fellow human being.The need for control ranges on a continuum from the desire for power, authority, and control over others and, consequently, over one's destiny to the urge to be controlled and have responsibility removed from oneself. The drive to control and the desire to be controlled do not necessarily go hand in hand.One may combine the two or lean more towards one.Close personal feelings between two individuals are referred to as affection, particularly love and hate in their varied intensities. Wherever we are with other people, all of us have a strong urge to experience affection and to give and receive it.

DISCUSSION

Exploratory games are part of the encounter strategy.

Schutz defines encounter theory as a collection of ideas and techniques. Encounter is a method of human relating based on openness and honesty, self-awareness, responsibility, awareness of the body, attention to feelings, and a focus on the here and now, claims Schutz. It frequently happens in a social context. Thus, encounter is insofar as it emphasises reducing obstacles to improved functioning. In that it fosters conditions enabling the most fulfilling use of individual capacities, encounter is similar to both education and religion.Under the Awareness Training Model, classroom activities proceed in the following order: Students participate in a task or educational game, then they discuss their reactions to the experience. Students are encouraged to take ownership of their behaviours and feelings during the discussion and to provide feedback to one another on what they observe and hear during the discussion itself. The fundamental tenets of encounter sessions are take responsibility for yourself, concentrate on feelings, and engage in feedback.

Model of Instruction

The Awareness Training Model differs from one group to another and from one leader or therapist to another. In the Awareness Training Model, we provide a group with a table that encourages frank and open expression of affect while exploring a topic in a warm, emotional manner and using a lot of conversation. The model makes use of a shared library of exploratory

games. Regardless of style, they place a strong emphasis on bringing out each person's ability and maximizing the group's particular opportunities.The model includes certain steps including syntax, social system, reactionary principles, support system, application, and results that are both instructive and nurturing.

Schutz writes that everyone in the gathering is urged to assemble close to one another, either sitting on the floor or in chairs. They are then instructed to close their eyes, spread out their hands, and feel their spaceall the space above them, below them, behind them, and all around them. After that, they are instructed to be mindful of their contact with others as they overlap and get close to one another. This process may continue for around five minutes.Schutz continued, Usually there are a number of distinct reactions. Some people would rather remain in their own space and view any intrusion as offensive. Others are highly wary of entering another person's space out of concern that they might not be welcome. Others go looking for individuals and like physical interaction. One individual may be inviting while another is forbidding and simply touches and leaves. Following this practice, a discussion is typically quite beneficial in bringing up the entire subject of sentiments regarding touch and solitude.

The instructor begins by setting up the students before giving them instructions. The pupils take part in activities and learn from them. The teacher classifies many types of responses. The teachers encourage the pupils to consider their feelings and come up with some important theories about how they are progressing with their theme. Before the group members, the group leader presents the task. Each and every group member contributes to the conversation in a nondirective manner.In the social system of the model, a social environment must be created that includes traits like openness to discussion of topics, readiness to investigate oneself, and duty to help others discover themselves. For them to increase their potential and capabilities as both individuals and groups, a collaborative effort is also necessary.

Guidelines for Reaction

The teacher protects the group's weaker members from having too intense of a conversation or being overexposed to the other group members. The teacher assists students in developing awareness of their own behavior. In order for students to control their behavior, the teacher also encourages them to build mental skills for doing so. The instructor always has an open mind to embrace the ideas and sentiments of the students. For the sake of the students, he strives to convey a tone of directness and honesty. The teacher conveys any type of communication to the students using clear and appropriate language.For this model leader to be effective, Joyce and Weil state that they must have knowledge of or access to a variety of exploratory games related to the interpersonal domains of inclusion, control, and affection. Additionally, he or she must be capable of recognising sentiments, avoiding feelings, and promoting an accepting and open social environment[6], [7].

Application

This teaching model can be used in the following ways:

- **a.** To increase one's own awareness.
- **b.** To foster interpersonal harmony
- **c.** To support instructors, curriculum writers, and educational designers.
- **d.** To promote emotional learning

e. Involve kids in various educational pursuits
f. To improve one's ability to understand and accept the emotions of others.
g. To participate in each class every day.
h. To raise kids' emotional intelligence
i. Create appropriate awareness experiences.
j. To use across all disciplines and grade levels.

This teaching approach is specifically created to assist learners in coming to a fuller understanding of themselves. In general, awareness trainers are blatantly messianic. More and more we can enjoy other people, learn to work and play with them, love and fight with them, touch them, give and take, to be with them contentedly or more to be happily alone, to lead or follow them, to create with them, Schutz said in the closing of Joy. Even in our institutions' organizations and establishment, we are learning to exploit these things for our own satisfaction. Our institutions can be enhanced, used to foster and encourage personal development, and reexamined and reformed to reach the highest level of human fulfilment. These items are all on their way. Although none are present, they are nearby. More closely than ever.

Models of Instruction and Instructional Techniques

Both teaching models and instructional methods serve comparable purposes. These two methods are used by the teacher to create the learning environment. The process of receiving feedback is crucial to learning. Only the strategies are determined by educational strategies. These have nothing to do with evaluations of teaching. One of the most significant tasks in teaching models is the feedback process. It is a crucial component of every instructional strategy. The feedback system is referred to as the support system in teaching models. As a result, it may be claimed that teaching models are generally more comprehensive than teaching tactics.Teaching models can be thought of as the results of experience and experimentation. The following actions are included in these formats:

a. To give the new behaviour or accomplishment behavioural form.
b. Deciding which stimuli are appropriate and correct so that students can respond as they like.
c. Defining the situation.
d. To fix the accepted norms for conduct or feedback.
e. To identify and choose instructional strategies for classroom interactions between teachers and students.
f. Adapting teaching techniques, models, and strategies to student requirements.

Models for Teaching Elements

There are four fundamental components to every teaching strategy. The fixed goal that each teaching strategy must have is referred to as the strategy's focus.These focuses continue to work towards the development of these skills and abilities and are influenced by the educational objectives and goals.Syntaxin the context of teaching models, syntax refers to the points that cause students to take actions in line with the goals or objectives chosen during the various educational phases. In other words, the syntax of teaching models demonstrates the proper order in which teaching actions, methods, approaches, and interactions should be used to accomplish the desired goals. It has to do with how the course information is presented.It includes a description or organisation of instructional activities throughout several teaching phases. The

syntax refers to the model's phasing structure, or the types of activities one would like to plan at clearly defined points in the overall instructional programme.Each model has a unique social system that outlines how to structure student-teacher interactions and actions in which they exhibit regulated behaviour. Additionally, desired alteration can be introduced to them. The social system describes the methods that motivate us.Each model starts with the premise that every class is a society, and that society needs a certain social system to be managed and improved in order for education systems to continue operating efficiently.The most important summary variable that operates and determines the success of teaching is the support system, a scholar said.The fourth significant component of the teaching paradigm is the evaluation mechanism. It reveals how well we are meeting our teaching objectives and how much we can influence student behaviour. As a result, the system describes whether a teaching strategy is successful or unsuccessful. In other words, the support system is the process of enhancing and changing instruction by determining its value. Diverse models direct diverse support systems in accordance with their objectives.

Creating Teaching Models

The process of developing and enhancing the teaching paradigm is still in its infancy. Teachers should therefore put a lot of thought into how to make their instruction effective. Developmental psychology, social theory, behavioural modification in various theories, system approach, etc. are all ways that we can approach a certain model.These approaches will undoubtedly provide teaching and learning a new direction and significantly improve communication between the two parties.Teaching models construct a possible one-to-one relationship between educational objectives, curriculum design, and instructional approach. When they serve the same educational purposes, they are in equilibrium.

Families of Teaching Notes Models

Many academics have proposed many kinds of teaching model families. The teaching approach was categorised by John P. Dececco into four fundamental psychological groups or families. Three families of these models are covered by the system that has supplied. Four different types of teaching models were categorized by E.C. Hayden. The entire model was separated into three main components or families by Marsh Weil and others, and these are:

- **a.** The family of information process models.
- **b.** A socially desirable family.
- **c.** The family of my model.

According to Travers' methodology, these instructional models are classified into three families. The most well-known justification was provided by Joyce & Weil. More than 20 models have been created by them. These models are usually split into four families based on their fundamental characteristics and nature [8]–[10].

Model of behaviour modification

The following graph, according to another researcher, represents family models of instruction. The four types or families of this paradigm have been described by Dr. S.S. Mathur in the following terms:

Social Interaction Model: This model places an emphasis on how a person interacts with society. It focuses on how information are discovered through social interaction. These models tend to enhance the capacity for forming positive connections with others. They place a strong emphasis on enhancing democratic behaviour and society-building capacity. However, this model not only clarifies the goal of social interactions but also emphasises the importance of a person's mental and spiritual growth as well as learning course material.

Information Process Model: Students' capacity for information reporting techniques and the systems that may strengthen their capacity are improved in this family. The categories that people follow when handling environmental stimuli, organising data, comprehending difficulties, and using verbal and nonverbal symbols are pointed out by information reporting methods. Some models emphasise the person's capacity for creative problem-solving, while others place more emphasis on common sense. Some people concentrate on the teaching techniques that are learned from teaching subjects. These models emphasise social interactions as well.

Personal Model: The third family of the model is centred on the growth of self-employment and is person-oriented. It focuses on the method by which people construct and arrange their unique situation. Additionally, it highlights the person's emotional life. If people are helped to establish positive relationships and come to terms with their abilities as a person, it will be efficient to learn more effectively and lead to the development of healthy interpersonal relationships.Give details about the social interaction model. The fourth type of model, called a behaviour modification model, was created in response to attempts made to create effective systems for scheduling learning acts and to alter feedback.

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We continue to classify this kind of model as behaviour modification since it emphasises changing the learner's outward behaviour and describes them in terms of direct behaviour rather than hidden or hidden behaviour. Many fields, including education and others like military training and hospital care, apply Skinner's idea, often known as seeming instruction.The aforementioned model families are all connected to one another. Even if they come from various households, most of them focus on the same strategies when they describe how to build educational actions. In addition, elements of the same family's model, such as the learning activities and objectives they are tied to, are shared. Educational activities might signify different things to different people. We might state that every duty we complete is a personal one in this situation.Comparably, the majority of experiences, particularly educational ones, are intellectual or serve to increase knowledge.The teaching model can be considered to have been dominated by increased educational efficacy. The efficacy also grows as a teacher's capacity to use the model successfully does. A good teacher creates new teaching strategies and puts them to the test while they are in the classroom.

CONCLUSION

Researchers generally concur that feedback is necessary for better performance and can help with task achievement reported effect sizes are as high as 0.73, but we also know that learners frequently dread and ignore it and the effectiveness of feedback varies depending on specific characteristics of feedback messages that learners receive. With varying degrees of success, numerous research have tried to define what constitutes appropriate feedback, what factors are most important for students' receptivity, and how to motivate students to use it effectively.

Studies from various methodological viewpoints and disparate terminology used to label pertinent student-, feedback-, or context-level factors that link feedback to improved performance may be partially to blame for this inconsistency. Many scholars have made an effort to suggest models and theories that define feedback, student engagement with it, coupled with particular circumstances that make feedback useful in order to offer more clarity to the topic. However, because there are so many of them right now, it is unclear to the field what kinds of feedback models are available and how to use them to create instructional materials, tests, and interventions. With this review, we sought to characterise the most prominent models in the field, summarise key findings, and offer recommendations for future study.

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CHAPTER 16

BASIC TEACHING MODEL BY GLASSER: AN DEPTH ANALYSIS

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ABSTRACT:

In this study, the impacts of the Bloom's Mastery Learning and Glaser's Basic Teaching models on the English language proficiency of secondary school pupils were examined. A non-equivalent pretest-posttest quasi-experimental design was used. 5,181 senior secondary school two (SS2) students from public schools in the Enugu Education zone made up the study's population. The sample included 380 pupils in SS2. Data were gathered using two types of researcher-made instruments: the 10-item English Language Affective Response Scale (ELARS) and a 50-item multiple-choice English Language Performance Test (ELPT). When the instruments were pilot tested using the K-R 20 and Cronbach Alpha coefficient formulas, the reliability co-efficients for the researcher-made multiple-choice tests and the affective response scale were 0.71 and 0.70, respectively. The data were analysed using the mean rating statistics, standard deviation ANCOVA F-test, and t-test. The outcomes demonstrated that English language learners who were taught using Bloom's Mastery Learning model outperformed those who were taught using Glaser's Basic Teaching model. As a result, it was determined that using Bloom's Mastery Learning model more often than Glaser's Basic Teaching model led to improved performance and ensured that more students had access to high-quality English language instruction in schools. It was suggested that Nigerian teacher education programmes should promote and put Bloom's concept to use.

KEYWORDS:

Construction, Education System, English Learning performance Test, Education System, Glasser Teaching Model.

INTRODUCTION

Access to high-quality education is one of the fundamental problems facing emerging countries like Nigeria. This is due to a lack of infrastructure, inadequately trained teachers who are not assisting pupils in learning successfully, and the inappropriate use of instructional models and teaching methodologies. The effectiveness of the classroom instruction and the instructional models used during the teaching and learning process will determine how well pupils are educated. Educators have long looked for efficient teaching strategies to improve learning. New approaches have developed as a result of research and technical advancements in education, particularly with an eye towards accomplishing education's ultimate goal, which is to instill information and skills in a person to improve him or her as a person. To guarantee that everyone has access to high-quality education, efforts are currently being made to improve teaching and learning. The focus of education has changed in the current system from teacher-centered to learner-centered, with the student serving as the central figure in all learning activities. This is thought to ensure access to high-quality education.argued that the learner should be the center of all classroom learning and that problems that need to be addressed include the issue of having

too many students in classes with insufficient physical [1], [2]facilities and the issue of having to have students with different learning styles and individual differences receive the same education from the same teacher in the same conditions and environments. This situation in our educational system undoubtedly shows up in significant differences in the abilities and accomplishments of various student groups. Alarming accomplishment inequalities between various student groups had been observed in numerous educational institutions. These must be effectively handled through flexible teacher instructional planning, design, and practises to ensure access and high standards of instruction.It is possible to have access to high-quality education by using effective teaching and learning techniques. In a class with a variety of student groups, an effective teaching and learning process must offer both equitable opportunity for all students and opportunities that would ensure access to a high-quality education. Particularly given that they are exposed to instruction in our schools using a standard teaching paradigm, children seem to struggle with this.

DISCUSSION

Framework for Conceptualization

The System Approach served as the foundation for the conceptual framework of the Mastery Learning model. A method where the inputs and outcomes of the teaching and learning process are discussed. Based on the Systems Approach, Mastery Learning is an explicit and systematic learning plan created to help learners achieve their goals. It guarantees that the learner will experience advancement and achieve a high rate of learning outcomes. Additionally, it suggests that training is intended to make sure that almost all students master each skill in a hierarchical order or sequence. The pupils are also given the prerequisite abilities needed to begin and learn the ending skills thanks to this methodical learning strategy. It also suggests that Mastery Learning holds the theory that instructional time and resources should be used to bring all students up to an acceptable level of achievement rather than accepting the idea that variations in students' aptitudes will result in corresponding variations in students' achievement.

The idea behind the Bloom's Mastery learning model also has roots in the earlier theories of Carroll, who in 1963 proposed through his model of school learning that if sincere efforts are made to aid students in gaining mastery over all aspects of that learning with due provision of adequate time and appropriate instruction, there may be 100% learning by 100% of students in a class in a particular learning task. It is predicated on the idea that everyone is theoretically capable of mastering a subject, area of knowledge, or aspect of human behaviour as long as they receive instruction of the highest calibre possible tailored to their unique needs and given the time necessary. It is also predicated on the idea that Mastery Learning adapts to individual variations by supplementing standard classroom education with unique feedback and correction procedures and by allotting more time for learning for those who require it.The Basic Teaching Model's conceptual foundation is derived from Robert Glaser's 1962 notion of Instructional Design. The Basic Teaching Model by Robert Glaser places a strong emphasis on the creation of instructional[3]–[5].

The Intuitionprocedure by the instructor or the teacher. This model shows how teaching and learning are related. It offers a straightforward and suitable conception of the instructional process. Because it provides a very basic explanation of the teaching process in terms of teaching aspects, it is known as the Basic Teaching Model. Divided into four sectionsInstructional Objectives, Entry Behaviour, Instructional Procedures, and Performance Assessmentit clarifies

the entire teaching process. In other words, it outlines what the instructor should do to instruct and the guidelines for regulating student behaviour to ensure that the stated goal is attained as effectively as possible. The methodology thus depends on the teacher's proficiency and competence in terms of a variety of skills.The Basic Teaching paradigm, may be used in practically all learning-teaching scenarios because it is very methodical and structured.

He continued by saying that Glaser's Basic Teaching model shows that teaching involves a variety of choices and actions, many of which necessitate little to no direct interaction between the teacher and the students. The Basic Teaching model can only be successful if and when the instructor is adept at carrying out the model's four steps. In order to be able to create instruction taking into account the learners' talents, interests, and academic achievements, he should, for example, be able to formulate instructional objectives in terms of behaviour and be able to assess learners' entering behaviour. In order to accomplish the intended goals, teachers must also be knowledgeable about creating examinations and other evaluation tools. The goal of Glaser's model, according to Physics Catalyst (2017), is to identify the steps and key activities that make up the complete teaching and learning process. It also highlights the order of the lights that must be used during training. While the pupils are responsive and supportive of teaching activities, the teacher dominates the classroom environment. Therefore, the two teaching approaches used in this study had an impact on the learning outcomes of the students in the two classes.

Treatment

The study was conducted at two public, co-ed secondary schools, one in Isi-Uzo LGA and the other in Enugu North LGA. The two treatment groupsgroup A for Bloom's Mastery Learning model and group B for Glaser's Basic Teaching modelwere formed from the four intact class groups that were sampled from the two schools. The study's instruments were given to the treatment groups twice.Before the start of instruction in the two treatment groups, the pre-test instrument was given. The regular English language instructors for the sampling SS2 classes at the schools chosen for this study assisted in delivering the lesson plans. To make sure that teachings were delivered as intended, the researcher oversaw the teaching process.The first week was devoted to orientation and briefing sessions for both the students and the regular English teachers who served as research assistants. The orientation/briefing for the instructors covered the teaching methodologies used for the study and unit themes, as well as how to apply the lesson plans created by the researcher to instruct the students on the subjects. In particular for the Mastery learning group, the students were given a briefing on what is expected of them and the level of mastery to be obtained[6], [7].

Additionally, the first week was utilised to group students for the Mastery Learning and Glaser's Basic Teaching seminars and administer the 50-item test. The two groups in the two chosen schools took a pre-test created by the researcher. Beginning the second week, instruction continued until the ninth week. The sub-unit subjects were covered in lessons for both groups. For the units covered, two sets of lesson plans were used: one for the Bloom's group and one for the Glaser's group. Students were given personal lesson changes and Mastery Learning Supplementary Notes/Guide for the lessons in the Bloom's Mastery model classes. A follow-up test was given to students in the Mastery Learning groups after each unit of instruction to see if they had mastered the material.After each sub-unit, these quick formative tests were provided to gauge student understanding and identify their weak areas. Correctives were used when necessary. individuals who did not reach up to 70% Mastery Learning were given corrective

exercises to complete until mastery was attained. For the Basic Teaching model groups, normal or Conventional Teaching continued throughout all of the course units.

Techniques for the Mastery Group's Corrective and Enrichment Activities

The diagnostic data from the formative evaluation was used to inform the remedial instruction that was given in order to maximize the learning of the students. The following techniques were employed by the researcher for the remedial and enrichment activities individual tutoring was used in this study as it is thought to be efficient and effective at addressing specific learning issues. After the formative assessments, the researcher identified the students who required one-on-one assistance, and they were given instruction in the areas where they did. This technique was used when a significant portion of students struggled to understand a particular concept. This method was used to help the units achieve their goals. Only those pupils who did not demonstrate mastery of the units underwent reteaching during the after-school lesson period.

The 10th week was used for review and the administration of the researcher-made Post-test consisting of fifty item multiple-choice questions and the ten English language affective response rating scale to the two treatment groups after eight weeks of instruction, which finished on the ninth week.The Mean rating score was used to provide answers to the research questions posed for this study. To test Hypothesis One, the Analysis of Co-Variance F-Test (ANCOVA F-Test) was employed. The ANCOVA F-Test was employed to ensure that the experimental group's data were collected with the necessary precision, to eliminate biases that could be introduced by utilising intact groups, and to factor out the experimental subjects' baseline differences while using the covariate as a foundation. The second hypothesis was examined using the t-test. The hypotheses were examined at a significant threshold of P 0.05.According to the study's findings, pupils who were exposed to Bloom's Mastery Learning model performed better than those who were exposed to Glaser's Basic Teaching model.

It was determined that this difference in the mean scores was significant.

The performance of students exposed to the Mastery Learning model was higher than that of students exposed to the Glaser's Basic Teaching model, indicating that Mastery learning was an effective teaching model. This finding is supported by earlier findings of many researchers who conducted studies comparing the effects of the Mastery Learning model and the Glaser's Basic Teaching model, as well as with other models. Using time efficiently and keeping students' attention with more teacher-directed and active presentation of information has a considerably greater impact on grammar learning than learner-centered techniques like Mastery Learning[8]–[10].The Mastery Learning methodology, as opposed to Glaser's Basic Teaching, was effective at grabbing students' attention by offering those engaging cues and prompts.

Again, this specific conclusion of the current study is consistent with that referenced, who found that students do better in the topic when they are exposed to teaching/learning approaches that they are interested. Identified mastery learning as one of these cutting-edge instructional strategies that supports increasing student interest in learning and performance. When) pointed out that the Mastery Learning model is useful for presenting new content with sequential relevance, transitional relationships, and component relationships, step-by-step progression from sub-topic to sub-topic high performance is likely to occur, she explained why there is interest in learning when teaching using it as opposed to Glaser's Basic Teaching Model. Therefore, in this research, Glaser's Basic Teaching Model was the same teaching strategy that both the teachers

and the students were already familiar with, but Mastery Learning was a new way for both the teachers and the students.Additionally, it is clear from the examination of the data from Research and Hypotheses that the Bloom's Mastery Learning group outperformed the Glaser's Basic Teaching model group, which outperformed the mean scores by a larger margin. This suggests that the Bloom's group had a more favourable opinion of the teaching strategy used to teach them the tenses and sequence of tenses than did the Glaser's Basic Teaching Model group with regard to the strategy used to teach them the same lesson topics.

CONCLUSION

Both According to this study, the Bloom's Mastery Learning model is superior to Glaser's Basic Teaching for the teaching and learning of English in secondary schools. By implication, if Bloom's Mastery learning model is used for language teaching and learning in our secondary schools, it can improve student performance and so promote access to a high-quality education.The following suggestions were made based on the research's findings that the Mastery Learning model is more effective than Glaser's Basic Teaching Model in the teaching of English language, and is thus expected to ensure access to high-quality English language instruction in our schools:For efficient teaching and learning in English Language as well as other topics, schools should implement the Mastery Learning paradigm.The reason for this is that other school courses are taught using English language instruction since it is a core subject in the curriculum.To help them master the usage of this teaching model, educators should be exposed to substantial in-service training, seminars, conferences, and workshops.Formative and summative assessments, as well as corrective enrichment activities, should be included in the development of curricula that are appropriate for mastery learning, as it is believed that doing so will improve students' performance and achievement in English language and other school subjects on Certificate Examinations as well as the realization of affective outcomes. The curriculum of Teacher Education programmes should be changed to match the needs of the Mastery Learning model's application in teaching and learning, since this will help to develop instructors who can create an environment conducive to learning English.

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CHAPTER 17

THE INDUCTIVE THINKING MODEL OF TABA: DEGREES OF COMPARISON

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ABSTRACT:

A teaching model offers recommendations for creating educational environments and activities. The different types of teaching models include personal, academic, psychological, and group dynamics information processing attitudes, behaviour modification, etc. The design of instructions or instructional material has functional and structural guidelines provided by teaching models. They are dynamically interactive with the social and cognitive goals, the supporting practises of the learning theory, the support technologies at hand, and the intellectual and personal traits of the learners. Inductive Teaching of English Grammar concept of Degrees of Comparison by employing group work technique (Inductive Thinking Model) was tested in this study to determine whether it had a good impact on secondary school students' academic performance. In order to teach the ix standard pupils about degrees of comparison in English grammar, the researcher used the inductive thinking model. Inductive Thinking Model was proven to be useful for conceptual competency in Degrees of comparison. In the test on Degrees of Comparison, there is a substantial difference between the mean performance of the students in the experimental group and the control group.

KEYWORDS:

Education, Education System, Inductive Thinking, Inductiv, Thinking Model, Taba's Educational Model.

INTRODUCTION

PISA is one of the most prestigious international comparison studies that offers data on general measures in reading, math, and science abilities. PISA focuses on the literacy component, which has three parts: situational contexts, mathematical contents, and competency clusters. These parts help students develop their problem-solving skills.

According to PISA, mathematical literacyCapacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements, as well as to engage with mathematics in ways that meet the needs of that person's life as a constructive, concerned, and reflective citizen. PISA is essentially a benchmark for how students think in real-world situations.Early in the 1970s, classroom procedures were frequently linked to students' academic progress. However, a new version of the process-product model that incorporates indicator and environmental factors has generated discussion. As a result, it has had a significant indirect impact on students' academic achievement. These cover a variety of topics such curriculum content, classroom procedures, teacher and student knowledge, instructional time, and more. Additionally, the idea of mediation promotes the integration of teaching, learning, and student achievement [1]–[3].

Instructional settings must be proactive scenarios with interactive and retroactive elements if students are to perform better. Additionally, each dimension is especially important for learning to occur. To develop a learning environment that supports exceptional teaching performance, factors related to the curriculum and lesson design must be taken into consideration. These factors include student expressions regarding reflections, evaluation, assessment, and feedback. Combining these frameworks will ensure that learning takes place effectively. Metacognitive learning strategies are another element, particularly in instructional aspects. OECD analysis revealed that it is challenging to study this attribute in PISA. However, asserted that this factor had the greatest influence on success.Understanding how the thinking classroom is implemented and how it affects students' achievement is also crucial for policymakers, such as those in the Ministry of Education, to take the appropriate actions and steps in order to achieve respectable results on any high-stakes international assessment. It was thus determined that Hilda Taba had created a teaching strategy that encourages the thinking classroom, but her strategy was used in the social studies and made for an elementary school setting. To improve students' mathematical thinking and general performance, this study used Taba's inductive-thinking teaching model (TITM). PISA materials for secondary mathematics classrooms have been issued.

DISCUSSION

A pedagogical framework called the Taba's Inductive Thinking Model, put out by educational psychologist Hilda Taba, focuses on helping students develop critical thinking abilities and in-depth knowledge. This paradigm promotes a learner-centered approach to instruction by placing a focus on information exploration, analysis, and synthesis. Several important steps that direct the teaching and learning process are included in Taba's paradigm.The first step in the paradigm is Experiencing, where students interact with a circumstance, idea, or challenge from the outside world. This phase piques students' curiosity and encourages them to learn more and get familiar with the material.

After then, pupils are encouraged to ask questions, seek out information, and spot patterns or relationships within the subject during the Inquiry stage. The development of a sense of control over the learning process depends on this stage.In the third phase, Creating Hypotheses, students develop educated guesses or hypotheses based on their research. This phase fosters pupils' critical thinking skills by encouraging them to make connections and predictions. As they go to the Gathering Data stage, students actively do research and compile pertinent data to support or disprove their ideas. This practical method encourages self-directed learning and sourceanalysis [4], [5].

The next phase, Interpreting Data, involves pupils analysing the data they have gathered, making inferences, and honing their ideas. This step improves their capacity to combine intricate knowledge and make reasonable deductions. Students must apply their conclusions to new circumstances or contexts as part of the last stage, Applying, in order to show their understanding and flexibility.The Inductive Thinking Model by Taba fosters group learning and develops abilities beyond rote memorization. The concept encourages inquiry-based exploration and places students at the centre of their learning process, which deepens understanding, problem-solving abilities, and critical thinking. It adheres to constructivist ideas by putting an emphasis on meaningful interaction and active participation. Overall, Taba's Inductive Thinking Model offers teachers a well-organized framework for raising curious minds capable of taking on difficult problems in the always changing field of education and beyond.

Conventional Methods of Instruction

According to traditional teaching strategy, also known as the teacher-directed approach, is described as the tactics teachers use to control a whole-class instruction and to set a single benchmark for grading students' performances. Additionally, education is driven by the coverage of texts and curriculum guidelines, whereas learning is concentrated on mastery of knowledge and abilities outside of context. Assignments with a single alternative and a single method of assessment are typical. In a typical classroom, time is relatively rigid.

Mathematics instruction at KBSM

According to the national curriculum, a curriculum is a collection of educational experiences geared towards a specific goal or intended result, which is to assist in the full development of a pupil, with respect to physical, spiritual, mental, and emotional, as well as to inculcate and develop desirable moral values and to transmit knowledge.As a result, Mathematics curriculum is described as a strategic strategy and a set of instructional tools. Mathematics, whether it is studied individually or in groups, focuses on knowledge, abilities, and attitude, and includes tests to gauge the effectiveness of the learning process. Additionally, the KBSM Mathematics curriculum for secondary schools aims to create people who can think mathematically, as well as use mathematical knowledge responsibly and effectively in problem-solving and decision-making. in addition to coping with the challenges in daily life brought on by the advancement of science and technology.

Imaginative Classroom

The setting of a thinking classroom provides a context in which the application of inculcating the development of thinking capacities in the true sense can take place. Lessons, conversations, and activities need to incorporate thinking time, according to teachers. According to the Thinking Classroom, how well students reflect on their work affects the quality of their learning. Every pupil is unique in their own way. For children to learn intelligence, teachers must identify their intelligences through important pedagogical experiences. Additionally, the thinking classroom emphasises problem-solving knowledge and skills, as well as using evidence and identifying research avenues within the disciplines. As a result, the teacher must offer opportunities for students to practise problem-solving [6]–[8].

PISA

Programme for International Student Assessment is known as PISA. The Organisation for Economic Co-Operation and Development (OECD) conducted this educational survey in response to the demand for internationally comparable data on student achievement. According to the OECD (2003), PISA aims to provide a new basis for policy dialogue, as well as for collaboration in defining and implementing educational goals, in innovative ways that reflect judgements about the skills that are relevant to adultlife. PISA surveys, which are conducted every three years, are intended to gather data from 15-year-old pupils in participating nations. Instead of focusing on how well students are mastering certain courses, PISA assesses how well they are prepared to face the problems of the future.

Additionally, PISA's internationally comparable data gives nations the opportunity to evaluate how well their 15-year-old pupils are equipped for life in general and to compare their respective strengths and shortcomings.

Literacy in Mathematics

The PISA definition of literacy is the ability to understand, reflect on, and use written texts, in order to achieve one's goals and participate effectively in society.Mathematical literacy gives meaning as an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements, as well as to engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned, and reflective citizen. PISA measures content-area literacy using items from the reading, scientific, and mathematical domains.PISA employs mathematical reasoning and competency-based test problems to assess students' mathematical literacy.

The Study Sample and Sampling Process: A Plan and Procedure

Purposive sampling was used in the current investigation. The population of Satara's Annasaheb Kalyanai Vidyalaya, which is operated by the Rayat Shikshan Sanstha, was used as the researcher's sample. IX Standard is divided into six sections. In total, 362 pupils were divided into these divisions. Four divisions were randomly chosen from among these divisions. Out of 257 pupils, the first batch of disgruntled ones were immediately eliminated, and the remaining individuals were added according on their previous academic standing, or viii. In descending order, all of the pupils were placed. In order to create a sample for the study, every third number on the list was chosen. Finally, 60 of the 200 students were fixed for the study. 30 people made up the sample size as a percentage.

Sampling Technique

The researcher created a forty-mark achievement test based on their prior understanding of conceptual competency in written English grammar and also took into account their English performance from the previous year in order to create two equal groups. The researcher kept close watch over the test's execution.Their test results and prior accomplishments were combined, and the results were arranged in descending order. He divided the subjects into two groups by assigning them one at a time. The students' scores from both groups were further examined and evaluated[9], [10].

Research resources: The researcher employed the following research instruments for the current study:

The Complete Diagnostic Examination

Based on the Inductive Thinking Model, four lesson plans. Lesson on Inductive Thinking Observation Tag. Six pre- and post-tests are used to evaluate conceptual English grammar proficiency.

Research Plan

The researcher chose a Pre-test-Post-test Equivalent Group Design for the current study. To determine the impact of the Inductive Thinking Model on students' conceptual proficiency in written English grammar, pre- and post-tests were given.

Research Data Gathering

The data was gathered by the researcher after the instruments were standardised. Students in the IX standard at Annasaheb Kalyani Vidyalaya in Satara took pre-tests, post-tests, and a

comprehensive exam to gauge the success of the inductive thinking model. The researcher employed questionnaires to get data from IX Standard pupils as well as Secondary School English teachers.Descriptive Data Analysis Using mean, SD, and the 't' test, statistics were generated for data obtained from diagnostic tests, pre-tests, post-tests, comprehensive tests, and retention tests of the control group and experimental group. The't' test was used to determine the significance of the hypothesis.

CONCLUSION

As a whole, and student-centered, approach to learning, Hilda Taba's Inductive Thinking Model is an important addition to the field of education. This strategy equips students with crucial abilities that go far beyond the classroom by supporting active investigation, critical analysis, and deep comprehension.Students develop a sense of intellectual ownership as a result of the model's emphasis on experiential learning, inquiry-based investigation, and hypothesis formation. It helps students develop into autonomous thinkers who are able to sort through complicated information, make defensible judgements, and use what they know to solve problems in the real world. By accomplishing this, Taba's approach meets the requirements of the quickly evolving world of today, where adaptability and analytical reasoning are crucial.The Inductive Thinking Model's collaborative structure also encourages peer interaction and the sharing of other viewpoints. This not only deepens students' comprehension of the material but also develops their teamwork and communication skills, which are crucial for success in a variety of personal and professional contexts. Taba's approach offers educators a structured yet adaptable framework by focusing on the steps of experience, inquiry, hypothesis creation, data gathering, data interpretation, and application. It equips teachers with the tools they need to lead learners through a process of inquiry and critical thought, developing a passion for learning that lasts a lifetime and the self-assurance to take on challenges.However, it's crucial to recognise that while Taba's Inductive Thinking Model presents a useful educational strategy, its successful application necessitates qualified teachers who can assist and lead pupils through the many stages. The model might also require modifications to accommodate various learning contexts, topic matters, and the ever changing technology environment.The main reason Taba's Inductive Thinking Model has endured is because it emphasises the value of inquiry, critical thinking, and active participation in the learning process. This approach serves as a reminder that encouraging enquiring minds and deepening conceptual understanding are fundamental to preparing children for a society that calls for adaptability, creativity, and analytical prowess as education continues to advance.

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CHAPTER 18

PROGRESSIVE ORGANIZERS MODEL: A ADVANCED SYSTEM

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ABSTRACT:
In order to promote student reasoning in primary schools, this work attempts to design an advanced organiser learning model based on an open-ended approach. This study focuses on the development of advanced models based on an open-ended method for student reasoning improvement and the needs analysis stage of learning that occurs in primary schools. A research and development (RnD) methodology is used in this work. The preliminary investigation, development, and testing phases of the research process were separated. 45 teachers were the subjects of a questionnaire during the preliminary study stage, and 28 instructors were the subjects of observations in the city of Semarang. In the development phase, a prototype model is prepared, five experts validate it, and restricted testing is done in five Semarang city schools with six subject teachers.

From the preliminary study results, it can be inferred that it is essential to create a learning model for primary schools that is focused on the elements of student thinking. The results of the expert validation assessment show that the development of an advanced organiser model based on the open-ended approach satisfies the following criteria: the development of an advanced organiser model based on needs, the development of an advanced organiser model based on an open-ended approach based on current knowledge, the development.

KEYWORDS:

Advance Organizer, Elementary Schools, Educational Model, Progressive Organizer Model,Reasoning.

INTRODUCTION

Based on the idea of cognitive subsumption considering in a group or not, Ausubel proposed a theory of Meaningful Verbal Learning. He contends that knowledge is acquired by the application of prior information.

Learning that makes no sense, like memorising random alphabet letters, lacks significance because it cannot be connected to prior information.The Subsumption Theory of Learning is founded on the idea that the effectiveness of new learning is most significantly influenced by earlier learning. When a student has a stable, hierarchically organized, and highly comprehensive set of abstractions and generalisations, his ability to connect new information to what he already knows improves learning [1], [2].Cognitive structure refers to a person's current level of subject-specific knowledge and how it is organized. The primary determinant of whether new material has the potential to be relevant and how effectively it will be learned and maintained is the structure that is accessible. Therefore, it is preferable to make our students' prior knowledge more stable and clear before introducing the new one. It makes it easier for them to learn and remember new knowledge.

Advanced Planner

An Advance Organiser, according to Ausubel, is a generalised group of concepts that might include details that will be revealed later. A generalised statement that is delivered before specific facts that are pertinent to the statement is known as an advance organiser.

DISCUSSION

A fundamental tenet of the theory is that the amount, clarity, and organisation of the learner's existing knowledge are the most significant factors influencing learning. According to them, the learner's current knowledgewhich includes the facts, concepts, propositions, theories, and raw perceptual data that are at his or her disposal at any one timeis referred to as their cognitive structure.

The type of the content to be learned is the second key area of Ausubel's thesis.A widely accepted theory, asserts that whether material is relevant depends on the learner and the material, not the technique of presentation, as point out. One of the main objectives of the Advance Organiser model is to facilitate students' acquisition and retention of new information by strengthening their cognitive structures prior to the effective presentation of new content. The item to be learned is actually just a specific instance of something the learner already knows, according to if the learner is presented with a new concept or proposition, such as equilateral triangle, and has already encountered and can recognise and define the general concept of triangle. In this situation, he or she can make sense of the new information by connecting it to what they already know. As a result, meaningful learning takes place when an idea is related in some reasonable fashion to ideas that the iearner already possesses.

Lecture Types

Meaningful learning requires relatability that meets two specific criteria: substantiveness, which means that the relationship is maintained even if a different but equivalent word is used, and nonarbitrariness, which means that the relationship between the new item and pertinent items in cognitive structure is the relationship of specific instance to general case. They contend that these characteristics give the content to be studied what they refer to as logical significance. They contend that even while this is undoubtedly a characteristic of the information to be acquired, it is insufficient to ensure that the learner will find meaning in it. According to them, meaningful learning can only take place if the learner has pertinent concepts to which to relate the information and the intention to tie these ideas to cognitive structure in a meaningful and no arbitrary way[3]–[5].

Opinion that precise fact memorization is necessary for some tasks, but he contends that learning will become more rote-like only to the extent that the learning material lacks logical significance, the learner lacks pertinent concepts in his or her own cognitive structure, and the person lacks the intent. He asserts that any one of these circumstances will result in learning that is largely repetitive.Last but not least, asserts that the learner's part in reception learning is active rather than passive, in contrast to common perception. He makes the assumption that in order for verbal learning to be meaningful, the learner must actively participate in relating new information to prior knowledge and selecting which notion or proposition to categorise the new information under. He does, however, note that as these active mental activities do not happen naturally, the teaching model for reception learning must be created to facilitate them.

Information Organisation

There is a similarity between the way subject matter is organised and the way people organise knowledge in their minds.He expresses the opinion that each academic discipline has a hierarchy-based structure of concepts or propositions that may be recognized and taught to students. The pupils can then process enormous volumes of data using these structural principles as part of their information processing system. The mind is a hierarchically organised system of concepts that functions as a repository for knowledge and ideas and as anchors for information. According to him, new ideas can only be effectively taught and retained if they can be connected to pre-existing concepts or propositions that serve as ideational anchors. He claims that new knowledge or ideas may not be integrated or kept if they are incompatible with the cognitive structure already in place or are too unconnected to make a link. In addition, they contend, the learner must actively reflect on the new material, consider connections, balance discrepancies with previously learned material, and identify parallels.

Overall Objective

The Advance Organiser Model of instruction seeks to adapt these ideational anchors in order to support the students' cognitive development and improve retention of new knowledge. Knowledge that one 2 has learned without enough structure to connect it together is knowledge that is prone to be forgotten.

Illustration Of The Organiser Model

Scenario For Teaching

Using the advance organiser model, a group of Year 9 home economics students completed their assignments. It was decided to take advantage of this situation and create a model that would be most helpful to the students and to myself at this time as they started a new area of study in their second semester unit on Food and Nutrition. The advance organiser approach would assist the students in connecting the new information to their prior knowledge because this was the last topic taught in this unit, allowing for a more fulfilling learning experience.I could use the approach to organize my lessons for the remainder of the semester. The learning material in this instance takes the shape of printed handouts about cuisine from other civilizations. The students' learning assignment is to retain the key concepts, which include the kinds of food consumed, preparation methods, presentation styles, and meal schedules. The idea of food habits is used to categorise the data on actual dietary practises in various cultural groups.

Planning, preparation, and presentation analysis

The following planning, preparation, and presentation are taken from Planning Guide, which is based on the concepts expressed in Ausubel's Theory of Meaningful Verbal Learning: The diagnosis of the learner's cognitive structure, determination of the learning problem, and identification of the Advance Organiser were the first steps in the planning of the Advance Organiser lessons. The concepts that may be significant to pupils will be chosen from this knowledge hierarchy.The identification of the key ideas and propositions, as well as their gradual distinction and integrative reconciliation, are key components of creating a knowledge hierarchy, as Well and Joyce point out. This entails presenting the discipline's broadest concepts first, followed by a gradual increase in complexity and precision, with new concepts being explicitly linked to previously studied material. According to the home economics work programme,

students should be taught about Food Habits from Australia and Other Cultures as part of the semester's Food and Nutrition topic. This broad concept was divided into two subordinate concepts, Australia and Other Cultures, which in turn were divided into Food Habits. The sub-concept Other Cultures was further broken down into the specific and more concrete concepts of food available, staple foods, types of food eaten, preparation, presentation, and meal patterns for the specific cultures of Japan, China, France, Germany, Italy, Spain, and Mexico. The concrete concepts under the sub-concept Australia were also subdivided into smaller groups.

There is truly no one right way to build a knowledge hierarchypoint out. The only criteria is that at each level of the hierarchy, the remaining conceptions grow less inclusive, with the most inclusive notion at the top. Analysis of the concepts to be taught is necessary, and during analysis note, subordinate, co-ordinate, and superordinate linkages are developed. These relationships can then be used to structure the lesson's content. The learning material is arranged such that it can be related to what the student already knows in order to guarantee that the concepts will make sense to the pupils. Given this particular framework, the students should be familiar with the principles being taught since they have already studied food in Australia. Following the creation of the knowledge hierarchy, the learning task was determined by observing the learner. This was achieved by recognising the concepts that were already present and that might be meaningful at this time in the learner's cognitive framework[6], [7].

The choice was decided to forego the Advance Organiser presentation on the potentially insightful notion of Food Habits after consideration of the learners' cognitive make-up. It was thought that this idea might be used repeatedly as pupils studied various cultures, so increasing their understanding of food.An expository organiser was chosen to help the pupils relate to the new information because they were unfamiliar with the topic that will be given. The Advance Organiser was a generalisation that was at a much higher level of abstraction and generality than the learning material itself. The statement Food Habits include the ideas, beliefs, attitudes, and practises related to the food available was chosen as the generalisation. The decision was made to deliver the work to students in the form of a handout to be read and discussed, illustrations to be observed, and a movie to watch. The learning material was chosen from the knowledge hierarchy.

A presentation of a learning task or resource

Note that in addition to presenting the new learning content, there are other duties that must be completed in order to complete this chase. Some of these tasks need typical teaching techniques that improve reception learning, such as giving the learning material a logical order, keeping focus, and making organisation obvious. The teaching materials, a handout on Japanese cuisine, were distributed to the students. Prior to the lecture, the data was organised, and students were informed of the key regions to search for. Before the lesson material was introduced, these were verbally reaffirmed and placed in the graphic on the blackboard. The learning tasks changed to keep students' interest. They included hearing a succinct oral presentation, looking at a diagram on the chalkboard, reading information from a handout, and answering teacher questions.

Improve Cognitive Organisation

The goal of this phase is to integrate the new learning content into the student's pre-existing cognitive framework. In order to do this, Ausubel suggests four activities: encouraging integrative reconciliation, encouraging active reception learning, evoking a critical perspective

on the subject matter, and clarification.To encourage integrative reconciliation, this phase's introduction asked students to list the key features of the readings they had done. By answering a series of questions from the teacher, students were encouraged to confirm their understanding of the key concepts of the new material. Students were able to identify some of the presumptions and inferences that had been made in the learning content as a consequence of this questioning. Students were asked about things like the factors affecting the supply of food in Japan, for instance. Students were invited to compare and contrast Japanese foods with Australian foods after viewing pictures of Japanese foods and dishes.

To help clarify and solidify the new learning information, a little film was shown at the end of the course.The Advance Organizer's food habits served as the foundation for the teachings that came after Lesson 1, and as each new culture was introduced, its cognitive structure was added to the knowledge hierarchy. Even though the learning task was the same as what was covered in the previous lesson, different presentation styles were employed to break up the monotony. For instance, in the second class on Chinese cuisine, students watched a 20-minute video before engaging in conversation and completing worksheets[8]–[10].The first ten minutes of this specific session were chosen for the audio-tape because they cover all three phases of the model and contain the Advance Organiser, which is a key component of the model.It is important to recognise the importance of advance organisers in this process. These planners act as informative stepping stones between the familiar and unfamiliar. They direct learners' attention to critical components by emphasising linkages, core ideas, and overarching themes, resulting in a more focused and efficient learning experience. Additionally, because they offer a mental framework for organising incoming information, advance organisers reduce cognitive overload. The model's capacity to improve learning transfer is one of its main benefits.

The Advance Organiser Model assists in the application of learned information to real-world contexts by enabling students to recognise the underlying principles and relationships within a subject. This idea is consistent with educational theory's desire to promote analytical abilities and critical thinking rather than just rote memorization. However, a number of variables affect how well the model works. The impact of the advance organiser can vary depending on the difficulty of the material, the background knowledge of the students, and the advance organizer's quality. Teachers must adapt this model's application to the unique learning situation and take into account students' differing learning preferences and needs. The Advance Organiser Model, which leverages cognitive psychology concepts to improve learning, is revealed as a powerful tool in the educator's toolbox. This methodology aids in deeper comprehension, effective learning, and enhanced retention by offering structured frameworks that connect prior knowledge to new material. The Advance Organiser Model continues to act as a link between theoretical concepts and real-world instruction by facilitating knowledge transfer and encouraging meaningful interaction with information.

CONCLUSION

A cognitive psychologist, developed the Advance Organiser Model, a powerful instructional style that aims to maximise learning results through a systematic and comprehensive approach. This technique, which has its roots in cognitive psychology, tries to speed up the process of learning by giving students a broad overview before diving into more detailed knowledge.The Advance Organiser Model, at its core, acts as a cognitive road map that leads students through the impending course material. This is achieved by providing a structured sample of the content

that outlines the main ideas, connections, and organising principles. This initial exposure primes learners' cognitive schemas, activating their past knowledge and creating a framework in their minds that allows for the easy integration of new information. The idea of meaningful learning is one of the model's main tenets. According to Ausubel, deeper comprehension and retention result from the incorporation of new knowledge into pre-existing cognitive structures. The strategy makes sure that learning becomes a purposeful endeavour rather than a passive reception of isolated facts by connecting new content to what learners already know.

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CHAPTER 19

MODEL OF CONCEPT ATTAINMENT BY BRUNER

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ABSTRACT:

Based on research done by Jorome S. Bruner, Jacqueline Goodnow, and George Austihn, namely on the nature of concepts and methods for idea development, the concept attainment model has been created. The fundamental building elements of the importance structures of the many academic disciplines are concepts. Similar to the fundamental relevance of valence in chemistry, give in biology, or energy in physics, cognitive idea has theoretical significance in psychological theory. Concepts are the sensory experiences reduced to their essential elements and the crucial link between outside influences and overt behaviour. They serve as thinking machines. They are the crucial facets of a person's cognitive framework. The concept attainment model was created to educate pupils about particular concepts as well as on the nature of concepts. Additionally, they offer opportunity for students to modify and enhance their concept-building techniques as well as practise using inductive reasoning.

KEYWORDS:

Concepts, Experimental, Students, Study, Teaching.

INTRODUCTION

The ability to maximise each student's learning potential makes a teacher successful. A key component of effective teaching and student learning is the growth of a teacher-student connection.Positive teacher-student interactions help pupils feel like they belong at school and encourage cooperative participation. Students get the confidence to try new things and achieve in situations where they might otherwise be constrained by their fear of failing. The most modern idea in education is to educate children how to study, discover, think, and inquire. Knowing how is more important than knowing what. The speed of intellectual advancement and societal change in the current world is frightening. Education cannot be viewed as the creation of a finished good anymore. The development, testing, modification, and adaptation of numerous innovative teaching and training methodologies to various teaching-learning contexts have taken place over the past 20 years. A novel teaching strategy is the model of education. As we live in a high-tech era, efforts must be focused on changing teaching techniques all the way up to the advancement of science and technology[1], [2].

Additionally, teacher orientation needs to be given priority, as does curriculum and material research. Teachers have been given the ultimate responsibility for knowledge processing by society. Therefore, a theory of teaching must make an effort to lay out the mechanisms of optimising student learning. Intellectual growth, knowledge acquisition, and particular mental processes like reasoning, logical thinking, deductive reasoning, and scientific innovation should be the top priorities for effective and efficient information processing if we are to achieve the desired learner behaviours.There are many different teaching strategies that have developed to create instruction, but the question of which strategy or model of teaching is most appropriate,

having a better impact, active, efficient, and interesting can only be resolved via research that considers the instructional nurturing effects of each model.

DISCUSSION

Model for Concept Attainment

A structured inquiry process is used in the indirect teaching technique of concept acquisition. It is based on Jerome Bruner's work. In concept achievement, students identify the characteristics of a group or category that the teacher has already created. In order to achieve this, students contrast instances that include the attributes of the ideas with models that do not have those attributes. They divide them into two groups after that. The process of finding and identifying traits that can be utilised to tell examples of a specific group or category apart from non-examples is known as concept attainment.Clarification of concepts and the introduction of content elements are the goals of concept achievement. Through the use of examples, word cards, or images, it involves pupils in articulating a concept. While other students are still trying to construct the concept, students who get the idea before others are able to resolve it are invited to suggest their models. For this reason, concept attainment is a good activity for use in the classroom since it can be designed to test all levels of thinking. Children learn to recognise relationships in word cards or specimens with practise.Concept attainment can be used to instruct students on practically any concept across all subject areas with the help of well-chosen examples.

An examination of related writing

The concept attainment model of education had a significantly positive impact on the overachievers, standard-bearers, and underachievers. There is a connection between preschoolers acquiring statistical mathematical concepts by concept attainment and youngsters in the conventional group. The study's goals were to ascertain the idea attainment model's efficacy in teaching English to the entire sample and its efficacy in teaching sex base. A sample of 62 IX-grade students from Evans High School in Parassala participated in the study, which used an experimental approach using TVPM. The study came to the conclusion that teaching English using the idea attainment model is more productive than teaching English using the conventional technique.) discovered that the concept attainment model is superior to the traditional approach for teaching Arabic grammar to students in the IXth grade[3]–[5].

Thomas (2005) carried out a study on the efficacy of the test book approach and concept attainment model in chemistry at the HS level. The study's goal was to evaluate the concept attainment model's efficacy in helping the entire sample learn chemistry. The study involved 110 standard XI students from three divisions of the Government High School System. The experimental approach Karapusha Kottayam was used. The study came to the conclusion that teaching chemistry using the idea attainment paradigm is more effective than using a textbook. Conducted a study to compare the degree to which knowledge objectives, understanding objectives, and application objectives were attained using the traditional approach versus the concept attainment model. They discovered that the idea attainment model is successful in raising chemistry students' general level of achievement. The concept attainment model enhances students' capacity for inductive reasoning. The efficiency of the concept attainment model and the active teaching model in promoting maths achievement at the secondary level was compared by Antonym. The study's goals were to ascertain the idea attainment model's effectiveness in

math performance and to compare the model's effectiveness in arithmetic success based on sex.An experimental methodology was used to perform the study on a sample of 80 eighth-grade students from two divisions at SHCGHSS Chalakudy, Trissur. The study came to the conclusion that teaching English using the idea attainment model is more productive than teaching English using the conventional technique.

The Data Collection Process

Pre-test post-test experimental design was adopted for the current investigation. All of the 12th-grade students who were chosen were given the investigator's objective-type achievement test, and the test results were recorded.In order to choose the groups, they were simultaneously given an intelligence test created by Dr. S.S. Jalota. According on their cognitive test results, students were chosen. Then, the students were split into the experimental group and the control group. The experimental group received instruction using the idea attainment model, while the control group received instruction using the conventional approach. The same test that was used initially before the experimentation began was administered to both groups once more.Also noted were the post-test results for both groups' scores. These pre-test and post-test scores were used in the data analysis.

Examination of the Data

Mean, standard deviation, and inferential statistics were employed in the statistical comparison of the groups' pre- and post-test results. To determine the impact of the concept attainment model on achievement in the social sciences, the t test was used to compare the mean post-test scores of the experimental control groups.

The Findings and Discussion

Inferential statistics and testing the significance of the difference between the mean pre-test and post-test scores were used to compare the samples. To determine the impact of the concept attainment model on academic accomplishment in the social sciences, the’t’ test was used to compare the mean post-test scores of the experimental and control groups.The mean pre-test scores of the control and experimental groups of XII standard students in social science teaching do not significantly differ from one another.

The Concept Attainment Model's Core Components

Following is an explanation of the key components of the concept attainment model. Focusthis model's primary goal is to help pupils improve their capacity for inductive reasoning. It is founded in psychology. Through the division of numerous events, people, and objects into multiple sections, kids learn various concepts based on their level of thinking capacity.Four goals of this strategy have been identified by Bruner and his associates.

- **a.** To give students knowledge about the nature of concepts so they may become effective at classifying objects based on their traits and qualities.
- **b.** To develop students' abilities in order for the proper notions to be implanted in them.
- **c.** To help students acquire particular concepts.
- **d.** To help students build thinking strategies.

Grammar: Four steps are taken to build proficiency in syntax.

Data collection: Students are shown data pertaining to an occasion or individual. Students limit various types of attributes to the concepts in order to construct various concepts with the aid of these data.At this point, material is given to the pupils so they can understand the subject through examples.

Strategy Analysis: Students now evaluate the knowledge they have gathered. These tend to be analysis- or normal to specific formula-based.Presentationin this stage, the student evaluates several topics in light of his age and experience before drafting a written report.Trainingin this step, concepts that have been learnt and practised as well as their justification and point of genesis from disorganized information are covered.

Social System: The instructor inspires the class and helps them understand the history and context of things.The teacher plays a crucial role in this paradigm because he presents the data to the students, develops the strategy, and directs the pupils. Helping students understand the origins of concepts is the teacher's primary goal.Essay-type and objective exams are used to evaluate this model, and information is given by them through evaluation, correction, and modification[6], [7].This strategy requires pupils to learn the preceding concepts rather than discover new ones. The evaluation technique is highly helpful for conceptual understanding.

The Concept Attainment Model's traits

- **a.** This model works better when concepts are attempted to be learned and understood using examples.
- **b.** This model cannot be utilised to convey factual knowledge, to answer why questions, or to provide an explanation.
- **c.** This model is better for language learning.
- **d.** It aims to make arithmetic and scientific fundamentals understandable in a straightforward manner.
- **e.** In all topics where there are more opportunities for concept creation, this paradigm is more effective.

For all subjects, using this model has been shown successful. At every point, this model has proven to be helpful. Simple graphics and straightforward concepts should be used when using it with young children. It would be preferable to employ information processing from other models instead of this model for the purpose of giving innovative information.[8]–[10]All disciplines are taught using this paradigm, but it is most useful in the fields of learning languages, understanding concepts in languages, and language science.

CONCLUSION

Post-test results of the control and experimental groups show that the concept attainment model was successful in enhancing social science achievement among students in the XII standard. The results of this study have significant ramifications for parents, educators, curriculum designers, and students. They must be aware of the factors influencing pupils' accomplishment levels in order to build on their strengths and maintain motivation.A cooperative and participatory educational system that gives students a place to learn should be situated somewhere that will give them plenty of chances to put their skills to the test and satisfy their thirst for knowledge. Therefore, regardless of their location, gender, or the kind of school they attend, all students should be provided equal opportunities and encouragement.

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CHAPTER 20

MODEL FOR TRAINING IN INQUIRY BY RICHARD SUCHMAN

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ABSTRACT:

The Indian educational system has evolved over time, from the early Gurukul system to the current smart classroom system. Periodically, enormous developments have been occurring in the realm of education. Education is essential for altering a student's preferred method of learning. pupils are constantly motivated to discover new information, formulate fresh concepts, and refine existing ones.

This is especially true of secondary school pupils studying geography. In order to address this issue, Richard Suchman created new teaching methodologies in 1961, such as the Inquiry Training approach. In this concept, a young child enters through a perplexing scenario and progresses step by step until satisfied.

The teacher just encourages and advises the students, showing them the way. This study aims to investigate the impact of the inquiry training model on secondary school students' motivation and academic progress in geography.A sample of 164 pupils from several hand-picked high schools in the Jajpur area made up this study. It has been discovered that using the Inquiry Training Model to teach geography to secondary school pupils has a positive impact on their motivation and academic success.

KEYWORDS:

Achievement, Class room, Inquiry, Motivation, Training Model.

INTRODUCTION

In her classroom, India's future is being moulded.This remark implies that the classroom setting should be used to pursue educational goals that will aid in the development of a good country. Education is what determines a person's level of prosperity, welfare, and security in a world founded on science and technology. But for a nation to develop, high-quality education is required. The effectiveness of teachers and the system of teacher preparation directly affects and determines the quality of education. It is a massive and difficult task to bring about qualitative change in the institutional efficacy of teachers. Several attempts to alter, amend, and indigenousize the inherited educational system have been made over the past five decades. However, the system still largely relies on the same concepts, similar information, and[1]–[3]Utilizations of the Inquiry Training Model 2 methods distinguished by consistency and resistance to change. In this sense, various forms of instructional tactics are successful in promoting the adoption and spread of educational innovations. It supports the growth of the kids' adjustment, motivation, values, ability to solve problems, attitude, and achievement, among other things. Therefore, the Inquiry Training Model is greatly needed to help secondary school pupils increase their motivation and achieve in geography.

DISCUSSION

Models of Instruction

Guidelines for creating educational activities and surroundings make up a model of teaching. A model of teaching is a strategy that can be used to develop study plans, create instructional materials, and direct classroom instruction. A model of teaching can be defined as instructional design, which describes the process of identifying & creating a specific environmental situation that prompts the students to interact in such a way that a particular change in their behaviour occurs.

Types of Teaching Models

These models are grouped into the following four families by Bruce Joyce and Marsha Weil (1985) according to their primary focus, which is how they handle educational goals and resources. The list of them is below.Models of changing behaviour, models of information processing, models of the self, models of social interaction, and models of information processing (IPM)This model was created specifically for teacher training. Here, the student instructor examines academic issues and finds each one's solution separately. Information processing is the handling of environmental stimuli, the organisation of data, the perception of problems, general concepts, and solutions to problems, as well as the use of verbal and non-verbal symbols by individuals. While some models emphasise creative problem-solving and the learner's capacity for broad intellectual aptitude, others are more focused on the learner's capacity for problem-solving.

Model for Inquiry Training

Richard Suchman created four different types of teaching models, and the Inquiry Training Model is one of them. It is founded on the idea that students may learn the mental techniques that scientists use to solve problems and enquire into the unknowable. Students can be taught and disciplined in the methods of inquiry by harnessing their inherent curiosity. The model was created by scrutinising the techniques employed by creative research employees. After being discovered, the components of their inquiry process were included into the inquiry training instructional model. Through exercises that condense the scientific process into brief periods of time, inquiry training is intended to immerse students immediately in the scientific method. As students establish facts, develop concepts, and then come up with and test explanations or theories, the training has improved students' comprehension of geography, their ability to think more creatively, and their skills for gathering and analysing information. The students are engaged in active learning activities such as investigation, inquiry, problem-solving, inductive reasoning, innovation, labelling, and discovery[4], [5].

Richard Suchman created the inquiry training approach in 1961 with the goal of encouraging students to use causal reasoning, improve their questioning skills, and create and evaluate hypotheses. Additionally, it was designed to assist kids strengthen their critical thinking skills by teaching them how to analyse and explain strange phenomena. It is most frequently applied to social studies and science.The general objectives of inquiry training are to develop the intellectual discipline and skills necessary to raise questions and search for answers arising from their natural curiosity. to acquire and process data logically. Moreover, they should learn how to

employ intellectual techniques to determine the causes of events.The Inquiry Training Model is based on Suchman's theory that:

- **a.** Students naturally inquire when they are perplexed.
- **b.** They can become conscious of and learn to analyse their thinking strategies.
- **c.** New strategies can be taught directly and added to the students' existing ones. and
- **d.** The cooperative inquiry enriches thinking and helps students to learn about the tentative, emergent nature of knowledge and to appreciate alternative explanations.

The way the data are presented makes this model unique from previous inquiry models. Instead of actually manipulating the data, students use a simulated procedure to collect data through inquiry. As a result, the approach is more process-focused because the main objective is to help students become better at connecting the information they have learned to the conclusions they have drawn.

The model's presentation

Choose a situation that needs an explanation. The following criteria must be taken into account when choosing the issue or event. A problem-solving explanation must be needed for the event in order for it to qualify as learning an event rather than imparting knowledge of a fact, idea, or generalization. The student ought to find the issue really intriguing and motivating.The problem's difficulty level ought to roughly correspond to the learner's difficulty level.If the problem is presented in a manner that makes it seem inconsistent, the student's interest and motivation are increased.Instead of focusing on a group of issues in general, the event concentrates the student on a specific issue.When choosing the format for the problem or event, create activities that will expose students to situations that are likely to cause them problems. Disparate events, demonstrations, movies, audio cassettes, graphs, tables, issues, and case studies can all be used as the basis for an inquiry. The students' perception of the situation must be perplexing and at odds with reality. There are numerous ways to present the model. Students should cooperate in groups and adhere to the worksheet's framework to assist them develop their thinking abilities.The student gathers information regarding the new circumstance and gives it the desired shape. Within the competition of new framework, he organises his expertise.

Justification for the study

The study of geography has an impact on every aspect of our lives. It is very helpful in studying economics and the interaction between resources and human activity. The study of geography teaches students about the various cultures around the world and the contributions they have made to the advancement of global culture.It is a required course and the most important topic in secondary school. It is also strongly tied to what we do every day. At the secondary level, geography places a strong focus on knowledge acquisition as well as the capacity for precise observation, inference, and decision-making. However, it has come to light that our secondary school kids are not capable of achieving the desired outcomes in geography.Numerous variables could be to blame for kids' poor performance in geography. The use of inductive teaching tactics by the teachers is one of the crucial elements. Therefore, it is necessary for geography teachers to use new, effective, and efficient teaching methodologies in order to raise the level of instruction.The Inquiry Training Model of Teaching has been chosen by the investigator for the current research study in order to increase secondary school students' motivation and academic success in geography.

Major results of various those who conducted the study

The results of the study showed that the social inquiry model had improved student achievement and self-concept. Memory Model has a greater impact on one's self-concept than traditional Method. The Inquiry Model has a greater impact on one's self-concept than the Memory Model. The Inquiry Training Model was found to raise student achievement. In a mixed-ability class, it offered the chance for the growth of reasoning ability. ITM was found to have greater advantages over conventional techniques of instruction. According to the study, the number of siblings had a substantial impact on the inquisitiveness of future instructors. In an unusual study, the approach was successfully used with deaf youngsters, indicating that it can be effective with pupils who have severe sensory impairments.The purpose of the study was to compare the impact of traditional versus ITM scientific instruction on student achievement. It was demonstrated that the modifications to the teachers' methods enabled them to encourage scientific inquiry in laboratory lessons. The study found that teaching with a scientific inquiry approach significantly improves students' attitudes towards and comprehension of science[6], [7].

Aims of the research

The study's goals are as follows:

1. To examine how the Inquiry Training Model affects the growth of motivation in geography.
2. To investigate the impact of the inquiry training model on geographic achievement.
3. To ascertain the variations in how boys and girls develop their motivation for geography.
4. To determine the differences in geographic achievement between boys and girls.

The study's hypothesis

The subsequent there have been some put forth.

1. The mean motivation gain scores of the experimental group and control group do not significantly differ from one another.
2. The mean achievement gain scores of the experimental group and control group do not significantly differ from one another.
3. The mean motivation gain scores of boys and girls who were taught using the inquiry training model did not differ significantly.
4. The mean achievement gain scores of boys and girls taught using the inquiry training model do not significantly differ from one another.

The equipment

The following colleges were used to gather information.

1. A test of intelligence created by Dr. S.S. Jalota.
2. Dr. D. Rao established a motivation scale.
3. An investigator-developed achievement test in geography.

The study's methodology

The current study was designed as an experiment. To adequately quantify and compare the differences in student performance caused by treatment, a pre-test-post-test and parallel group design has to be used. Two schools were chosen to participate in the trial for this reason.

Separate lesson plans for 30 lessons were created. Two experimental groups received the lesson plans using the Inquiry Training Model, whereas one control group received them using the conventional way.Following preparation, tests for achievement, motivation, and IQ were given to students from three high schools.After the data were collected, the mean and standard deviation were computed to evaluate whether there was a significant difference between the means of the scores for the same group at the pre-test and post-test as well as the means of scores for different groups. This was done using the't' test[8]–[10].

Results of the research

The following conclusions were reached following a thorough examination of the data gathered and result interpretation.

1. The Inquiry Training Model had a considerable impact on students' motivational growth.
2. The Inquiry Training Model had a considerable impact on students' academic achievement.
3. The Inquiry Training Model had no discernible difference in results for males and girls in terms of motivational growth.
4. In the accomplishment test, the Inquiry Training Model did not significantly differ between boys and girls.

CONCLUSION

All secondary school students are required to take geography. Because the inquiry training model is more efficient than conventional methods, it should be studied in this way.The Inquiry Training Model should be implemented at various levels by all training institutions and educators. Through seminars and orientation programmes, instructors should receive more emphasis on the Inquiry Training Model. Additionally, such a paradigm needs to be emphasised in many textbooks. Inquiry Training Model training for teachers is necessary to improve the efficacy of actual instruction.In terms of academic achievement, educational aspiration, sex role stereotyping, or attitudes and actions related to academics, single-sex schools specifically benefit their pupils, particularly female students. This will help the girls cultivate positive attitudes towards science and boost their performance in biology.

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CHAPTER 21

INFORMATION AND COMMUNICATION TECHNOLOGIES IN EDUCATION

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ABSTRACT:
Learning occurs when two knowledgeable people communicate with one another. Students are more effectively impacted by learning when material is presented in an original or engaging manner. The aforementioned factors push the educational system to integrate information and communication technology into the teaching profession. In order to improve the state of the education sector and aid in student and teacher stress reduction in a variety of ways, this study focuses on the analysis of the integration of information communication technology. In schools that have used ICT as an innovative element, its impact on improving the teaching and learning process is greater. The acceptance of ICT in education, its location there, and its role there are the other main topics of this essay.

KEYWORDS:

Acceptance, ICT, Learning, Education System, Stress Reduction, Teaching.

INTRODUCTION

The most advanced and expensive computer-based technologies are frequently referred to as information and communication technologies (ICTs). However, ICTs also include older, more traditional technologies like radio, television, and telephone.Although there are many different definitions of ICTs, it may be helpful to adopt the one supplied by the United Nations Development Programme (UNDP): ICTs are essentially information-handling tools, which include a wide range of products, programmes, and services used to create, store, process, disseminate, and exchange data. They encompass both the 'new' ICTs of computers, satellite and wireless technologies, and the Internet as well as the 'old' ICTs of radio, television, and telephone. Our networked world is made up of a vast infrastructure of interconnected telephone services, standardised computer hardware, the internet, radio, and television that stretches into every part of the planet. These various instruments can now cooperate with one another[1], [2].When we talk about information and communication technologies, we don't just mean the most recent computer and Internet-based innovations. we also mean basic audio-visual tools like transparency and slides, tape and cassette recorders, radio, video cassettes, television, and film.The more recent computer and Internet-based technologies are referred to as digital media, whereas the more established and more dated ones are referred to as analogue media.

DISCUSSION

Notes on the Need and Importance of ICT

The calibre of their instruction has been a concern for teachers. Because teachers receive training in the creation and use of audio-visual aids, some use teaching aids including charts, models that are static and functional, specimens, slides, etc. to improve the quality of their lectures. It is a

well-known truth that the majority of schools lack suitable teaching resources for the curriculum. Therefore, there is no way for teachers to employ A/V aids when teaching. Due to unmotivated people becoming instructors, the usage of A-V aids is becoming ever more restricted. It has been recognised that there is a need to raise educational standards by using television, where the best qualified teachers provide the material with the most effective teaching tools. This aided in raising the standard of instruction in institutions that lacked a subject-matter instructor, had instructors with limited qualifications, had enough teaching resources, etc.

Television programmes were created by various State Institutes of Educational Technology (SIET) in many languages. Even though video instructional materials were created and provided to instructors, most schools chose not to use them. Some of the causes included lack of electricity, lack of TV and VCR facilities, broken TV and VCR equipment, absence from the timetable, lack of initiative on the side of the instructor and principal, etc. The print medium must play a significant role in enhancing the calibre of instruction and learning alongside audiovisual aids. Currently, the print instructional materials utilised in the various Open University programmes are in module format. All of the aforementioned initiatives fell short of meeting the expectations of teachers, students, parents, and other stakeholders regarding the quality of instruction. There is a search for the best resources that teachers may employ to deliver high-quality instruction.

ICT Use for Learning and Teaching

IT was only capable of transmitting information quickly and easily via text. However, the users must also receive the information in audio, video, or any other form, in addition to text. ICT has created new opportunities such as e-learning, online courses, virtual universities, online coaching, online education, online journals, etc. Third-generation mobile devices are included under ICT. Information is distributed quickly and affordably via mobile technology. Additionally, it has email capabilities. It is available everywhere. It will be reasonably priced. ICT increases the amount of rich content available to instructors and students in the classrooms and libraries. The student now has the chance to obtain information using all of their senses. It has given the teaching-learning scenario some diversity and broken up the monotony. The most recent ICT can be used in the following fields at both the secondary and postsecondary levels of education[3]–[5]. Teaching, diagnostic testing, remedial instruction, evaluation, psychological testing, creation of a virtual lab, online tutoring, improvement of reasoning and thinking, and creation of instructional materialsNotes Most of the time, teaching at schools and in higher education focuses on imparting knowledge even if this is not its only goal. The following goals are in addition to providing information.

Improving conceptual knowledge and application

Improving comprehension, speed, and vocabulary. Developing self-concept and value clarification. Creating good study habits. Developing tolerance and ambiguity. Developing reasoning and thinking power. Developing judgement and decision-making ability.It is challenging to meet all the goals with the current infrastructure, class size, availability of instructors, quality of teachers, training of teachers, etc. Additionally, the majority of teachers employ the lecture method, which has little chance of fulfilling the bulk of the aforementioned objectives. Due to the multidimensional character of the objectives, various approaches should be employed in concert to attain them. ICT may be useful right now. It is a well-known reality that no teacher is able to provide accurate information on everything related to his or her field.

Because it can give users access to many information sources, ICT can fill this informational vacuum. It will offer accurate knowledge in as many formats and with as many examples as feasible. ICT offers a platform for online interaction. Students and teachers have the opportunity to share opinions and ideas while receiving clarification on any issue from a variety of experts, practitioners, etc. It aids students in diversifying their knowledge. ICT offers variation in the way that knowledge is presented, which helps students focus, grasp, and retain information for longer periods of time than would be otherwise feasible. The students have the chance to collaborate on real-world projects with students and professionals from other nations. The superhighway and the internet also contribute to the advancement of the teaching-learning process' quality. ICT offers a student flexibility that the conventional procedure and method do not. For mastery learning and high-quality learning, flexibility is essential.

ICT Use for Diagnostic Testing

The standard of instruction in classrooms is often observed to be deteriorating. Students are relying on private tutorial classes more and more. Private instruction is now a business as well. It implies that education is likewise being outsourced. ICT is being used to do this. Some pupils struggle to grasp particular ideas or remember key details. This can be evaluated by incorporating the diagnosis into the teaching-learning process. Computer-based diagnostic tests are effective and have aided both teachers and students in identifying each student's areas of concern. The kid can access this from home if it is posted on the school website. The student can study the subject/chapter and take the exam to determine exactly what he doesn't understand. This cannot be done manually by the teacher. The progress of the learner may be tracked, and his performance can be enhanced. Students' confidence will grow as a result, and their attitude towards the subject may shift. Students could begin to appreciate learning. The principal benefits of computer-based diagnostic testing are as follows.

1. No unique location or arrangement is necessary. Software and computer systems are the only requirements.
2. If it is made available on the school website, the student can utilise it even from home.
3. The teacher does not need to provide them with any special help. It does not necessitate the teacher arranging and correcting the chapter, unlike the chapter-pencil test.
4. Both the teacher and the students benefit from time savings.
5. The student receives an intrinsic reinforcement because the feedback is supplied right away following the test.
6. When compared to the chapter-and-pencil diagnostic test, the student finds it to be more engaging and inspiring.
7. It may occasionally be updated.
8. Since just one time investment is necessary, it is cost-effective.

ICT Use for Evaluation

It is possible to employ ICT during the evaluation. who created a computer-based test in research methodology and statistics, made one such attempt. Test your Understanding: Research Methods and Statistics is how it is titled. Each student may utilise this test to assess his or her learning. The student can receive immediate feedback on the level of his comprehension. Even if the answer is incorrect, he can still receive the right response. It significantly enhances learning, and the teacher has no part in it. It is up to the pupils how they use it. Such tests can be posted online for further distribution. It can be used by students from other institutions as well.Teachers can

use it to evaluate their own knowledge of the subject, in addition to students.Teachers can effectively prepare a topic by using it before teaching it. Such software is suitable for internal evaluation. ICT can therefore be utilised to enhance the quality of both pre-service and in-service teacher preparation.

Psychological testing using ICT

There are variations between people. Some academic achievement correlates have been investigated through research. Teachers at schools and colleges hardly ever use this information. Many of them are even unaware of these studies. Even if they are aware, they do not use it while organizing groups for various academic pursuits. One of the main causes is the lack of qualified psychologists at the school or institution who can evaluate the pupils on some of the correlates of academic achievement. Additionally, the psychological assessment is time- and money-consuming. Even the necessary psychological exams are not readily available. The era of digital technology is now. All psychological exams, including the scoring and evaluation, can be digitalized using this method. Students and teachers can use the same materials as needed from the website, which may have them available. Even a student can use it on their own and share the results with their teacher, who can then work with them to assist the kid get better grades[6]–[8].

Developing a virtual laboratory through the use of ICT

ICT can be used to create a Virtual Laboratory that gives students lots of freedom. The experiment's variables and attributes can all be changed by the students, who can then observe how their changes effect the results. Let's say a student wants to research the variables that can impact a mirror's focal length.The student is now unable to modify numerous variables that he believes might be connected in the actual laboratory. The student can use various sorts and shapes of objects, alter the distance between the mirror and the item to any degree, alter the mirror's thickness, etc., and observe how these characteristics affect the mirror's focal length. By posting the virtual laboratory to the website, it may be made available at every student's doorstep. Additionally, each nation should consider creating a science website that provides free access to Virtual Laboratories. Such a website will not only benefit Indian students, but it can also significantly benefit students from developing and underdeveloped nations.

Online tutoring with ICT

Private tuition programmes are offered in India to a large number of students from the USA and other nations. They are being taught this online. Only the development of ICT has made this feasible. The learner receives tutoring online while remaining at home. Using software and the Internet, he logs into his tutor.

He can see the Indian teacher, and the Indian teacher can see the American student. The teacher uses a power point presentation or writes on a soft board to respond to the student's inquiry. Typically, this is a one-on-one exchange.

It has simplified many students' academic lives. This is how other nations can utilise the labour force that India has to offer. Some pupils not only use online tutoring but also outsource their assignments. Teachers from different nations have completed these assignments. Academically speaking, it is obviously incorrect because the assignment's intended goal was not met. The pupil does not advance academically and could lose strength in the subject. ICT is the sole cause of all of this.

Using ICT to Create Educational Materials

There are numerous instructors who are well-known for teaching the particular subject. All users should have access to the lectures' digital recordings. It will raise the standard of classroom instruction. They can be used in the classroom, and the teacher can plan a discussion afterwards during which additional points can be offered by both the teacher and the students. It will make the lesson engaging, effective, and fun.Digitalized lectures will undoubtedly have some restrictions on modification and built-in interaction. Students and teachers can access any lecture they choose by uploading these lectures on any website.E-content is a different style of digitalized lectures. The CEC is working to create e-content in a variety of disciplines for the benefit of various users. Teachers with the necessary skills can create e-content in their own areas of expertise. This has a great deal of potential to improve teacher preparation. ICT can be utilised to create e-content and instructional materials.

ICT's Place in the Education Sector

The field of education is evolving significantly as a result of information, communication, and technology. With the introduction of laptops, desktop computers, and even smartphones into regular classrooms, these gadgets are altering how teachers and students share knowledge and how schools communicate with both their own community and the outside world. It plays the following highly significant roles in the innovative teaching and learning process for the knowledge society:

1. It contributes to creating a comfortable environment in the classroom: Mobile devices, tablet computers, and projectors are examples of the types of technology that make teaching and learning more accessible to all participants. Since we believe that a person's health is their greatest asset, the internet is a gold mine for knowledge. This creates a collaborative learning environment for faculty and students at the institution, making it simpler for them to communicate within and outside of the classroom.

2. ICT's Place in Management: Digital ink, a recent advancement in technology, is a good example. It is employed by touch-screen devices like tablets and PCs. Information technology offers the long-term potential to save money and simplify and ease administrative labour with the capacity to digitally capture any data, from test results to transcripts.

3. The role of ICT in literacy: Recent technological advancements have brought up new software and application programmes that instruct educators to choose novel topic mastery strategies. rather based on the classic lecture mode of instruction. It offers the possibility of learning the subject anywhere and whenever you like. It enables direct sensory learning and includes students with disabilities in the classroom.The role of ICT in enhancing the potential of the educational system: Teachers and students can connect with many people and locations throughout the world, which greatly improves distance learning courses and gives those who are less fortunate the chance to pursue an education. It enables people to maintain their family obligations while also pursuing an education.

As a child's behaviour changes as a result of education, ICT helps to shape that child's personality. Additionally, a good education aids in the growth of the youngster. Multiple people can communicate with each other, allowing information to pass between them. Through the internet, the teacher interacts with numerous other teachers, developing the right attitude in them.

Both personality and the school's reflection are mirrors of the students. ICT thereby actively contributes to the growth of student interest. Additionally, as they browse the internet, they encounter numerous items, current problems, and various people's points of view, which allows them to generalise their own ideas. ICT helps pupils become more fluent language users. ICT aids in stimulating a person's thinking to come up with new ideas.The role of ICT in expanding access to remote learning: ICT has many benefits and is therefore widely acknowledged in the educational system.

This made it easier for people to combine their work and study. when a result, rural areas develop when distance learning is used to promote higher education. Rural areas now have an increased literacy rate of 89%, which is still rising.ICT is a motivator for both students and teachers. ICT offers a variety of tools that allow students to learn at their own speed. ICT fosters student interest in the subject matter and helps them become experts in it. Since the students can access the content at any time, their questions are answered. Students will become motivated if they get the right response[9], [10].

ICT's Function in Stress Management:

As a result of the stress that traditional teaching methods place on students, more students are dropping out of school. Poor teaching is caused by teachers' stress from having to teach a challenging idea. Both issues contribute to the world's lowest level of educational quality. It was onerous work for the librarians to keep track of the books, their availability, new publications, etc. Teachers, pupils, and all other staff members were under stress as a result of the introduction of ICT in the sphere of education.Because of ICT, teachers are also becoming more motivated because pupils are responding and paying attention at a higher level.ICT's role in online and on-demand services. The educational system offers many courses, but because there are few employees, it is difficult to evaluate students and correct their chapters. ICT is crucial in instances like these because it reduces the workload, improves accuracy, and promotes student equity.

CONCLUSION

We cannot afford to disregard pedagogical and technological change if we want to ensure the success of teaching and learning in the future. Constructivist theories, which support students in their learning by building on existing knowledge and learning in a way that is relevant to them, should continue to replace teacher-based theories in pedagogy. It must be integrated into the environment in which it will be applied in the future. In order to integrate technology into regular educational practise and create authentic learning settings where students can succeed at any skill level, ICT should be incorporated into all curriculum areas. The fact that the Australian Institute for Teaching and Learning continues to be relevant by providing ICT graduation criteria for educators is optimistic for ICT in contemporary Australian education. All teachers should be using ICT to enhance learning of all kinds because it is not just the future but also the present of education.

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CHAPTER 22

A REVIEW: RADIO, TV AND CCTV IN EDUCATION

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ABSTRACT:

This study investigates how high school students see closed-circuit television (CCTV) systems at their institutions. It is based on interviews with 83 teenagers chosen from 39 Israeli schools' 10th to 12th grade courses. According to the results, how students feel about CCTVs is reflected in how they feel about their school as a whole, particularly in terms of relationships and trust between students and teachers. The many metaphors that students employed to explain their relational status with reference to school CCTVs demonstrate how surveillance has ingrained itself throughout organizational-educational life. The results also demonstrate a tension between privacy and security concerns in students' monitoring of school CCTVs. The many balances that the students use to address this contradiction echo general constitutional concepts while also being rooted in their individual educational experiences. We extend Nissenbaum's paradigm of contextual integrity for evaluating privacy infractions, but we disagree with its presumption that there is a single set of informational rules that apply in every situation.

KEYWORDS:

Digitalization, Education, Impact, Radion, Social Media.

INTRODUCTION

The opinions of Israeli high school pupils towards CCTVs and other forms of school surveillance are investigated in this study. We concentrate on how children perceive and react to privacy invasions and school surveillance. The study of school surveillance is becoming more popular. However, there is little research on how pupils perceive surveillance. It's crucial to comprehend how children react to the growing number of school CCTVs. One of the main conclusions of our study addressing how students relate school CCTVs to their academic experiences is exemplified by the opening quote from a 16-year-old girl[1]–[3].We start by reading up on school CCTVs, how pupils feel about being watched at school, and the right to privacy. The study's conceptual framework is further developed in the part on the right to privacy, which builds work on contextual integrity (CI).

The research design, which is based on semistructured interviews with 83 teenagers in Israel, is described in the part that follows. The results show that students' impressions about school monitoring are a reflection of how they feel about their school as a whole. The results also demonstrate that students often resolve issues between security and privacy by weighing opposing factors, which is consistent with general constitutional concepts but also rooted in the students' own educational experiences.

The findings are discussed in more detail in the final section, where we also criticise Nissenbaum's theory in light of the various viewpoints and norms that students' perceptions of school CCTVs are characterized by.

DISCUSSION

CCTV in the classroom

One of the most popular strategies for reducing school crime and violence is the use of school CCTVs. In addition to metal detectors, biometric identification, radio frequency identification tags, and CCTVs were among the first surveillance technologies to be used in schools. CCTVs were the first and are still the sole surveillance device utilised in schools in Israel, the study's location. As a result, unlike other places where various monitoring technologies have been put in place, the Israeli situation allows us to investigate how schools are transformed into surveillance environments before surveillance becomes an accepted and uncontested norm.External security threats are frequently cited as the official basis for the usage of school CCTVs. However, CCTVs that are deployed for security purposes are frequently utilised for monitoring and looking into minor disciplinary issues involving students as well as teachers. This tendency, known as surveillance creep, is similar to function creep, a term used to describe the process by which a measure designed for one purpose is later used for another. Incompatible secondary uses are forbidden by law, as we will go into more detail about below.

A number of studies have raised concerns about how school CCTVs criminalise discipline and impede an ethos of growth and the development of trust. In a study based on interviews with school administrators, stated that CCTVs provide a hidden human rights curriculum through which children learn that their rights are connected to power dynamics. By examining the correlations between school security measures, including CCTVs, and students' assessments of their relationships with teachers and the fairness and consistency of school rules, Fisher, Gardella, and aimed to quantify the effects of surveillance on schools. The findings showed that other school security measures had no significant effects on student-teacher relationships or students' views of school norms, whereas the presence of security officers in schools was associated with worsening student-teacher relationships. The authors argued that additional research is required to fully evaluate the potential implications of CCTVs in various educational settings. This problem is addressed in the current study by demonstrating how students' perceptions are linked to their entire educational experiences[4], [5].

The perceptions of students towards school surveillance

The perceptions of kids towards school monitoring have been examined in several qualitative research. Only two of these were CCTV-specific. Taylor reported that the majority of students claimed that CCTV harmed their privacy and perceived monitoring as an expression of mistrust based on focus groups with 21 British teenagers. Some pupils voiced resignation over the lack of authority they had to protest the surveillance inside the context of the school. In a different research based on the same data, Taylor highlighted that pupils' initial worries had quickly subsided when the cameras were integrated into daily life at the school. Based on focus groups with 57 Israeli elementary school students, a study on young children's perceptions of school CCTVs revealed a contradiction between normalisation and resistance.Other studies investigating how pupils felt about surveillance at school lacked a specific security component. Bracy carried out an ethnographic investigation at two secondary schools in the US. Her research showed that although students believed many of the school's security measures were superfluous, these measures had become commonplace parts of the educational setting, thus the students did not object to them.

Additional research uncovered more student criticism and opposition. 85 British teenagers participated in focus groups led to learn more about how they felt about surveillance both inside and outside of school. Depending on the pupils' social positions, their reactions to surveillance varied. pupils attending private schools believed they were immune to most surveillance practises, but marginalised pupils attending public schools had to deal with a variety of monitoring and punishment practises. By avoiding, haggling with, and rejecting the monitoring regimes, these students helped to shape them. Weiss carried out an anthropological investigation to see how New York's kids of colour responded to school surveillance. Findings demonstrated a variety of resistance tactics, such as protests and avoidance. These latter studies are consistent with other research showing that children and adolescents value their privacy, despite widespread claims that it has disappeared in the digital age.

The normative underpinning for the right to privacy

Students' privacy is primarily impacted by school surveillance, and while privacy studies and surveillance studies do not entirely overlap, privacy law provides the legal foundation for both. In several jurisdictions, like the European Union and Israel, privacy is a basic human right. Privacy is not, however, a fundamental right. For instance, Article 8(1) of the Council of Europe stipulates that private and family life, the home, and correspondence must be respected. A public authority may interfere with the exercise of a right under the European Convention on Human Rights if doing so is legal, furthers a just cause, and is required in a democracy. The last criteria stipulates that the invasion of privacy must be reasonable in relation to the legitimate goals sought, in accordance with the European Court's jurisprudence.In a similar vein, Israeli law allows public entities, including schools, to invade a person's privacy which is defined as going beyond just their home, family, and correspondence as long as the invasion is legal, has a valid purpose, and is proportionate. Israeli Law, Information and Technology Authority provided recommendations for the use of CCTVs in public areas, and the Ministry of Education issued regulations for school monitoring. The regulations apply the broad constitutional principles to the setting of a school.

Concept-based structure

Important psychological and social requirements, such as fostering trust, are served by privacy. In addition, privacy plays a crucial role in managing the private-public interface and has social value for society as a whole. There are many different theoretical justifications for the right to privacy. Solove found that these and other theories are either overbroad or too narrow, and instead proposed a taxonomy of privacy. Nissenbaum proposed CI as a conceptual framework for privacy infringement. She made the case that technology has a social significance that is dependent on the context, making context the key idea in her paradigm. According to Nissenbaum, context is a social setting whose characteristics change over time. Examples include healthcare facilities, polling booths, and educational settings. Complex settings with a variety of social circumstances may also exist.

According to CI, once each context has been identified, we need to turn to its informational norms. Changes to these norms should be compared against the context's values and objectives. So, CI involves making sociological, contextual, observational, and moral judgements. The new practise is marked as breaching ingrained informational standards and is prima facie evidence of CI if it leads to changes in actors, characteristics, or transmission principles.

Methodology

The methodology for the study was qualitative. 83 teenagers (41 males and 42 females) between the ages of 16 and 18 were recruited from classes of students in grades 10 through 12 at 39 Israeli schools having CCTVs. The schools varied in terms of student enrollment, legal status, ethnic makeup, socioeconomic standing of the student body as measured by the MoE index, and socioeconomic standing of the municipalities as measured by the Israel Central Bureau of Statistics.33 individual interviews and 21 group interviews with two or three individuals each were included in the research tools. To balance the advantages and disadvantages of each methodology, both one-on-one and group interviews were done. Individual interviews generally provide a more comfortable environment for disclosing sensitive information because they are less likely to be subject to peer pressure and are less frightening than groups and more likely to encourage contact between teenagers. Through schools or personal connections, we found the participants. Access to schools was made easier because the procedures and research instruments were approved by the institutional review boards (IRBs) of our universities and the MoE. Participants all agreed to participate, and minors had to have parental permission as well.

The interviews took place in the 2017–2018 academic year. They took place in the participants' residences, academic institutions, or public spaces. The interview process includes open-ended questions that elicited the participants' thoughts about the installation and use of the CCTVs as well as general factual questions about CCTVs. We didn't ask the participants about how the CCTVs had impacted their privacy or education until after that. All participants were aware that their schools had CCTVs. Only 11 of the participants, who attended nine different schools, said their teachers had told them about the cameras. The personnel did not inform the remaining 72 participants of the cameras, and they learned about them only after spotting them around the campus[6]–[8].The interviews were taped and written down. We all individually created a coding scheme after reading the transcripts to assure its dependability. We reviewed and spoke about the categories before deciding on a coding system that would capture all of the themes that emerged from the data. In order to analyse this coding scheme, we employed Dedoose software. We explored potential analytical avenues and reviewed the coded transcripts for the second round of analysis.

The results of the investigation revealed that of the 83 participants, 11 were against the CCTVs, 28 were in favour of them and considered them standard operating procedures, and 44 opposed some uses of the CCTVs while defending others. We chose not to focus on these three opinion groups, instead focusing on two key themes that emerged from the transcripts: students' contextual conceptualization of school surveillance and how students addressed conflicts between privacy and security concerns. Other studies have focused on students' acceptance of or resistance to such surveillance. The second subject, proportionality, which refers to means-to-end, cost-benefit, spatial, and temporal balances, was further characterized by two subthemeslegitimate goals of school monitoring, and proportionality.

Together, after consulting the literature and debating their content, we came up with these themes and subthemes. We did a theoretical sampling and chose to use Nissenbaum's CI theory, which emphasizes contextual norms, because both themes illustrate how surveillance and the larger school setting intersect.

The results are presented in the section that follows in accordance with the two defined themes. The letter S (for student) and a serial number are used to identify interview excerpts.

Monitoring and the broad school Context

When we posed the question of whether they thought schools should have CCTVs, students framed their responses in the context of their whole educational experience, particularly as it related to relationships and trust. Regardless of their opinion on school surveillance, almost all participants tended to contextualize their responses. The installation of CCTVs, for instance, was criticised by S23 because there are teachers in her school who give students the feeling that they are against them because they don't trust them. She made a comparison between her own school and the open school where her brother was enrolled, noting that in the latter, the teachers are special, there are close student-teacher relationships, and students don't feel mistrusted. Similar to S30, S30 refused the CCTVs because of the strict attitude of her school principal, who doesn't know how to use the cameras and how to treat people. She gave other instances of his monitoring and disciplinary techniques, such as utilising Bluetooth to track down children who brought their cellphones to school, and said that his actions were humiliating and insulted even the teachers. The following are some further instances of contextual criticism of the CCTVs.

When discussing the typical features of school CCTVs, some students made reference to their satisfying educational experiences. For instance, S61, who thought CCTVs were crucial, expressed her gratitude for her school's freedom to allow her to come to class with tattered jeans, hold her partner close, and come to class without a school uniform without someone pointing an accusing finger? Similar to S38, S38 agreed that CCTVs should be installed for security reasons since he felt secure enough to approach his homeroom teacher and the school principal in the teachers' lounge anytime he was bothered by something. S59, who had conflicting opinions about CCTVs, claimed that while a camera did capture the school's entrance, it was never used to track down students who left early or skipped class because the school's policy was open gates, not to ask where we're going just say ciaohave fun and go to eat. S67 claimed that cameras could demonstrate that the school doesn't trust the students, but in her school, it's not like that, since this was a charming and adorable institution[9], [10].

Resolving Privacy and Security Conflicts

Students frequently understood the value of CCTVs as a security measure. Remember that most students were unaware of the goals of the system, therefore they tried to understand them. The students brought out a mismatch between objectives perceived as reasonable usually security and their privacy concerns. Here, we first discuss how the kids perceived the justification for utilising school CCTVs before concentrating on how they attempted to make sense of the predicament. Intuitively echoing constitutional and privacy law principles that define proportional derogation of rights, students identified numerous ways of balancing the various considerations and the constraints on the use of CCTVs. These overarching ideas were, however, grounded in the students' individual educational experiences, which provided context for their views on school CCTVs.

CONCLUSION

This article examined CCTV technology concepts and its applications in teacher education programmes. In order to properly achieve the objectives of the teacher training course in an effective and efficient manner, the article gave explanation on the employment of CCTV technology in microteaching, laboratory surveillance, and instructional reasons. The article also examines the present difficulties of using CCTV in Nigerian teacher preparation programmes.

The majority of the issues with the microteaching practicum, according to the article, are theft and other unruly behaviours in the labs. The huge class size and all related issues might be easily resolved with the proper application of CCTV equipment.In conclusion, the usage of CCTV in education faculties and colleges will enhance the methods used to train pre-service and in-service instructors in microteaching classes. The effective deployment of CCTV equipment in such laboratories could also significantly lower theft, burglary, damage of property, and other anti-social behaviour. Using CCTV technology would assist decongest packed lecture halls, allowing lectures to be given more effectively in teacher training schools. The effectiveness of large class lecturers, laboratory facility durability, and microteaching effectiveness are all goals of CCTV technology, which was also highlighted in this chapter. These goals will improve the production of effective teachers who are knowledgeable, motivated, and professionals in the current technologically oriented society.

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CHAPTER 23

INTERNET-BASED EDUCATION AND E-LEARNING: WEB EDUCATION ERA

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ABSTRACT:
The use of the internet as a teaching tool is evolving quickly. The prospects offered by information and communication technology are appealing to many organisations. Better communication between teachers, students, and coworkers as well as more effective learning opportunities are among the goals of educators. University officials have concentrated on the economic potential of cutting-edge technology and their potential role in the reform of higher education. This has prompted numerous colleges to start incorporating information technologies into their curricula. The adoption of new technology in education during the past ten years has produced new and improved teaching techniques. As a result, web technologies (Web) were added as a useful informational tool for distance learning courses during face-to-face lessons.

KEYWORDS:

Education System, Evaluation, Education, E-learning, Internet, Technology.

INTRODUCTION

Technology has played a genuinely dramatic role in how education is delivered at institutions.While largely unknown ten years ago, today's internet searches for internet-based distance learning turn up literally hundreds of sites that are dedicated to the topic.Most universities offer regular opportunities for online learning, and more and more schools throughout the world are making it possible to complete a full degree programme.The predictions made only a few short years ago that communication via the internet would become as widespread as communication via the telephone or television have quickly come to pass. Every level of the educational hierarchy is actively using the internet to deliver distant learning, and this trend appears to be continuing. Almost every nation in the world has seen a very significant increase in the use of information technologies during the past ten years. Millions of individuals who go online every day at home, at school, at work, and other places like internet cafes have changed because of the rise in computer ownership and internet access. They use the internet to send and receive emails, communicate, do work or school research, download music or photographs, and perform a variety of other tasks[1]–[3].

According to recent data for the United States, 166 million users, or 59 percent of the population, were online at the end of 2002, according to the International Journal of Scientific Engineering and Applied Science. Americans employ fast connection methods like cable modems at a higher rate than those in other countries, and they also spend a lot more time online than people in other countries do.The significance of information and communication technology (ICT), particularly the internet, in the education sector today is significant, particularly as technology integration into educational activities progresses. The education sector may be the most successful at

foreseeing and reducing ICT's negative effects. On the other hand, technology (the internet) can be the most efficient approach to improve the student's knowledge.

DISCUSSION

Internet uses

In the 20th century, the Internet quickly became a part of everyday life. We were forced to acknowledge its global growth, especially in underdeveloped nations, in less than ten years. In addition to being the largest source of knowledge on the planet, it has also emerged as the fastest way of communication. In a relatively short period of time, people from many nations have the ability to communicate with one another. E-mail travels across time zones, national borders, and even distances faster than snail mail or even airmail.Thus, relationships between people deepen. They now have the opportunity to get to know one another better, to recognize what unites and differentiates nations, and to learn which cultural and religious quirks need to be taken into consideration in order to promote understanding. They gradually come to understand that because we all live on the same planet, the Earth, we must depend on one another and support one another in order to survive. The Internet, however, is just one tool for understanding this and cannot ensure that everyone will comprehend it just because of the technological and informational options it offers. Everything is based on the individuals themselves, their mindset, willpower, and intellect.

On the other side, people are able to attend renowned universities all over the world, not just in the cultural and scientific hubs. Children with disabilities and invalids can learn remotely in schools, colleges, and universities.Using the information resources available on the Internet is obviously not an easy process. information requires the capacity to digest information in order to use it effectively for the cognitive goals, in addition to the ability to seek for it in the vast Internet Ocean[4], [5].The second aspect has to do with the culture of online communication, namely intercultural communication. It is a challenging and crucial problem to solve. The truth is that many people lack the communication skills necessary to use appropriate greetings, write concisely and clearly, use literary language, avoid acronyms, etc. The issue with cross-cultural and international communication is particularly severe. Lack of awareness of a foreign culture, national traditions, the quirks of various confessions, etc., can lead to miscommunication between the spouses and even lead to a fight. Only people of different ethnicities may communicate using new technologies.

Their shared comprehension or miscommunication, sympathies or International Journal of Scientific Engineering and Applied Science antipathies, depend not on technologies but rather on how much each group of people respects the other's culture and traditions and is aware of the unique characteristics of those cultures. It is a human factor rather than a technological one. Therefore, since teachers and tutors are in charge of the educational process, they are the only ones who can help address the problem. It is not just a problem of learning specific information. it is also a problem of tolerance.They should be prepared to give the pupils the information they need and to explain the quirks of a foreign culture. If we want the Internet to be effective in education, some advance planning is also required in this regard. Certain information, experience, and observational skills are necessary for the development of critical thinking. The Internet offers chances for people to interact more closely and to better understand one another, but it is up to individuals to take advantage of these opportunities and to be willing to learn from and respect the opinions of others.

The fact that most teachers are unprepared for the practise of incorporating the information resources of the Internet, its capabilities in teaching and learning processes, let alone distant education, is the next aspect that affects the effectiveness of Internet use in education. Education institutions in a vast majority of nations do not prepare aspiring teachers for the unique task of managing online resources.

The formation of specialised associations for in-service teacher training (STT) is changing the situation in various nations. However, given the use of Internet technologies, the need to obtain materials for projects, reports, essays, use of e-mail when appropriate, etc., many teachers and educators still view this as a self-sufficient activity. However, if we are talking about education, we must remember that this is a collaborative effort that should be managed and guided. The students should be given the essential instructions on how to do it, what additional information is to be used in the Internet or other resources, even if they are expected to study a course or material that is available on the Internet by themselves.

Therefore, this issue relates to the teacher training programmes offered by universities or at in-service training sessions.

The analytical chapters listed below discuss a few other issues, such as navigation, that are also crucial and frequently brought up by experts. We won't reiterate them here. The conclusion is that despite the Internet's ability to solve a variety of educational issues, improve the effectiveness of education generally, and make education democratic and accessible for countless numbers of people, it still necessitates concerted efforts to prepare students not only to use Internet technologies but to work with information, which in turn implies the development of critical thinking using constructivist ideas and principles. It also implies that educators will receive training on how to incorporate tools and information from the Internet into the classroom.

Therefore, we cannot share the optimism of the experts who only take into account the benefits of the Internet while neglecting the issues that arise when using it as a regular tool incorporated into curricula or on its own.

Internet's Value for Education

The Internet has improved technology, communication, and online entertainment, but it has also made significant contributions to education. There are numerous excellent universities that have opened up, and teachers use the Internet to augment their teachings.Everyone can access free online lectures and courses. Even retired instructors can now read to and instruct kids in less developed nations. More people than ever before have access to a significant amount of knowledge thanks to the widespread use of the Internet[6]–[8].

Improved Lessons

By providing supplementary resources and content from the Internet to students, such as interactive lessons and instructional games, teachers can make use of the Internet. A hybrid paradigm is used in many college courses, which means that fewer lectures are completed in-person and more are completed online. Students are spared the daily drive to university with their bulky textbooks. Any computer with Internet access can be used for tests, assignments, cooperation with students, and research. The Internet is used in addition to conventional study methods in non-hybrid classes as well.

Research and Study (S&R)

Any search on the Internet will immediately yield a lot of information. As a result, libraries are no longer the best place to obtain information or do study.Online encyclopedias offer a wealth of information on practically every subject imaginable, and many teachers now direct their students to visit specific websites to study at home. Having access to a wide range of sources frees kids from being restricted to the materials their teachers bring home and enables them to explore topics in much greater depth.

Communication

In the past, students who failed to turn in their work, skipped a class, or had trouble remembering an assignment were in trouble until they spoke to a teacher or a classmate in person. However, you may instantly connect with your classmates and teachers thanks to the Internet. Kids and instructors should work together to improve communication so that teachers can help kids without having to remain after school. Additionally, it enables students to be more productive when collaborating on projects with their friends when everyone is unable to attend or when seeking clarification when something is unclear.

Accessibility

Several colleges, including Harvard, Yale, and Stanford, have made free courses on a range of subjects available to anybody. Most of these take the form of lectures on video, while some additionally include notes. This means you can easily get a tonne of free lectures without depleting your savings to pay for tuition. Poorer populations can now obtain education thanks to the Internet. The Granny Cloud, for instance, used Skype to have volunteers, most of whom were retired teachers, read aloud stories to Indian youngsters in order to help them learn how to read.

Students need internet access

The pupils engaged in a variety of activities online. Sending and receiving email was the most popular of these. It was intriguing to learn that only 7.5% of respondents used the school's official email, which played a minor influence. This finding would imply that Turkish colleges should make greater investments in Internet infrastructure, according to the International Journal of Scientific Engineering and Applied Science. The top three e-mail account providers for the sample members were Hotmail (48.3%), Yahoo (44.7%), and Mynet (34.3%). The second-most significant activity was reading news and sports articles online. The third crucial activity was research for school-related work, and chatting was the fourth. While roughly 45% of the group utilised the Internet to look up goods and services, just 30.6 and 29.7% of respondents said they had downloaded music or photographs. Additionally, just 20% of the respondents made genuine internet purchases.

Effect of the Internet

As was already indicated, students use the Internet for a variety of purposes, from sending and receiving emails to making purchases. According to the data, 40.6% of students agree and strongly agree that using the Internet has caused them to read less, whereas 46.5% disagree or strongly disagree, and 12.9% are neutral. Obviously, this could interfere with the students' ability to establish their literary and cultural identities. Less than half of the respondents also said that due of their internet activity, they watch less television currently.

Depending on who one talks to, this could be beneficial or terrible. But it's unquestionably bad news for television marketers! The socialisation process and relationship with friends and family are said to be negatively impacted by the internet on occasion.Others contend that using the internet to communicate with friends and family members via chat or e-mail actually enhances encounters. Online friendships are possible. In chat rooms, 46.2 percent of respondents said they had established new acquaintances.A quarter of respondents (25%) said having access to the Internet at home raised their grade-point average, compared to 49.5% who disagreed. Here, there were some gender-specific disparities. A higher percentage of guys 38 percent of females versus 27 percent of males said having access to the Internet raised their GPAs.Students worry that they may be using the Internet too much despite having very positive opinions towards it. 37 percent of the students admitted that they use the Internet more often than they should[9], [10].

Internet in the future

Over 80% of professors at North American colleges and universities agree that web-based technology is a significant factor in student performance, according to a recent study. It was also revealed that 62% of professors in the US and Canada use the Web to prepare coursework, 56% use it to augment textbooks, and 51% use it to make sure course material is current.Today, many teachers in the United States use software like Blackboard or WebCT to post lecture summaries, course requirements, homework, compulsory readings, and instructions on the Internet. They frequently send emails to their students as well. Because of this, American students greatly benefit from having access to the Internet at home.

CONCLUSION

The advent of the Internet drastically altered education. When used properly, information from the Internet adds value to education.Due to the government's limited personnel and financial resources, new educational approaches are now more important than ever. E-learning has been around for more than ten years.

The benefits and drawbacks of using the Internet for learning have become abundantly obvious over time. The growth of OER in recent years has helped e-learning become more effective and of greater quality.

The idea behind employing instructional resources has undergone tremendous modification. The transition from free content that one could learn on their own to social learning, where users could converse with one another and exchange ideas, took place. Linking resource databases, which will enable the user to use the information tailored to his prior knowledge, is anticipated to happen soon. The book E-Learning ng Good Practises, which will be released both online and in printed copy in 2012, will provide further information about e-learning, its future, and good practises.There are numerous good practises sprinkled throughout the internet, but there is still more that needs to be done to reach the critical mass of high quality educational content that is available for free to everyone and simple to use in a variety of learning contexts and needs.

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CHAPTER 24

E-LEARNING, WEB 2.0 AND VIRTUAL LABORATORIES: A REVIEW

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ABSTRACT:
Web 2.0 tools have opened up new possibilities for corporations, governments, schools, and individuals to improve efficiency and effectiveness while carrying out respective professional obligations. These technologies' primary characteristics include online accessibility and character, support for open content licences, open sharing and social engagement, and frequent availability of free or supportive features. These have produced innovative opportunities for teachers to incorporate in-person instruction with online materials using social media platforms like blogs, wikis, and discussion forums. Based on socio-cultural learning theories including interaction, collaborative content production, critical thinking, learning by doing, and cooperation, web 2.0 education is designed with these concepts in mind. The use of ICT in education, the development of the Web, its impact on e-Learning, and other related topics are evaluated in this study. It explains how ICT is gradually incorporated into education at different stages. The chapter discusses the communication and content aspects of e-learning for classification. It addresses numerous chances for effective teacher-learner, learner-learner, and teacher-teacher communication, engagement, and collaboration enabled by Web 2.0 tools in education. It highlights several initiatives and situations concerning the usage of some Web 2.0 tools to improve learning. Additionally, it explores several potential solutions for its management and outlines some difficulties for the effective deployment of e-learning using Web 2.0 tools.

KEYWORDS:

Education, E-Learning,Technologies, Virtual Study, Virtual laboratories, Web.

INTRODUCTION

More people are utilising Web 2.0 and virtual world technologies in the classroom to communicate, express ideas, and build relationships centred around topical interests, whether it be a social networking site like Facebook, a video stream delivered via YouTube, or collaborative discussion and document sharing via Google Apps. Participants are submerged even further in interactive technology worlds in virtual worlds. To encourage information interchange, users establish complete communities made up of self-built worlds and avatars based on shared hobbies, education, or socialisation rather than just building information[1]–[3].How can we best use these technologies to transform, supplement, or even replace current pedagogical practises as information systems (IS) classrooms quickly fill with the Google/Facebook generation accustomed to being connected to information sources and social networks all the time and in many forms?

Can anything be gained by hosting office hours in a chat room? What about using wikis to create collaborative Web content? How about offering kids limitless opportunities to experiment by giving complex subjects a virtual world setting? We shall examine these issues and others in this JISE special issue.

DISCUSSION

Web 2.0 technologies cover a wide range of concepts, such as increased user-generated content, data and content sharing, teamwork, novel ways to interact with Web-based applications, and the use of the Web as a social platform for creating, repurposing, and consuming content. Tim Berners-Lee's early Web software, which debuted in 1980, presaged Web 2.0's shared content model. However, the original Web's content-sharing features were lost, and they didn't surface again until Ward Cunningham created the first wiki in 1994–1955. Weblogs were the moniker given to blogs, another early manifestation of the Web 2.0 phenomena, in 1997. The phrase Web 2.0 was originally used in 2004.

The term Web 2.0 describes a supposedly second generation of Web development and design that ensures information sharing, interoperability, and collaboration on the World Wide Web while facilitating communication. Wikis, blogs, folksonomies, social networking sites, and video-sharing websites are just a few examples of the Web-based communities, hosted services, and applications that have developed and evolved as a result of Web 2.0 concepts (Web 2.0, 2009). The Read/Write Web, also known as the User Participation Web, is emphasised in most definitions of Web 2.0.Web 2.0 technologies come in a wide variety of forms, and fresh products are released practically every day. The majority of Web 2.0 offerings can be grouped into the following fundamental categories.

Blogs

A blog is a form of website that is often run by an individual and contains frequent commentary pieces, event summaries, or other content like graphics or video. The use of question blogging, a sort of blog that answers questions, is one illustration of how blogs are used in education. Additionally, these queries and debates may involve cooperation between teachers and students.

Podcasts

A podcast is a digital media file that may be downloaded for free via the Internet using software that can handle RSS feeds. These files are often digital audio or video [4], [5].The listener may then play the file whenever convenient on a desktop computer or mobile device. The digital media file can be audio, full video, or audio supplemented with graphics typically using PPT presentation slides. The most popular website right now for posting and viewing podcasts is YouTube.Three different types of podcasts exist. Since audio podcasts are the most popular, they are often MP3 files.The audio in enhanced podcasts may be accompanied by visuals. Additionally, they might feature chapter markers, which would make it simpler to jump throughout an episode. Some devices do not accept AAC files, which are used by enhanced podcasts. VodCasts, or video podcasts, are sound-enabled films. Although there are many different formats for video podcasts, MPEG-4 is the most often used. Compatibility can be difficult with many Web 2.0 technologies, however programmes like Double Twistaim to address these problems.The fact that podcasts can be listened to on laptop computers, iPods, PDAs, mobile phones, MP3 players, and other portable devices is one of the factors contributing to their popularity.

Online worlds

A virtual world is a computer-simulated setting that enables users to communicate with one another across physical boundaries. An avatar is used to represent each user.The user's avatar

may be a generic depiction assigned to them, resemble them somewhat for example, by gender or hair colour, or, in more advanced Virtual Worlds, be totally customised to their tastes. Users can explore, interact with others, and work together to solve problems in these persistent simulations whose worlds are accessible 24 hours a day, 7 days a week.With over 15 million registered accounts, Second Life (SL) from Linden Lab is now the largest virtual world. Users of Second Life, or residents, have the option to manufacture and exchange virtual goods and services with other users in addition to exploring the SL grid and interacting with communities. Additionally, SL users have the ability to design and alter their own worlds using prims, or programmable objects, and the Linden Scripting Language.

Because of this, the world is especially appealing to individuals who want to design and evaluate real-world issues such system stress tests using simulations inside the SL grid. The virtual worlds Active Worlds and Twinity are among others.Web 2.0 tools are becoming more prevalent in IS classrooms. The technologies are being creatively used by IS educators. Wikis, blogs, and other online teaching tools are used in education to improve learning and teaching, not merely because they are available, according to Snurb's Blog. We cannot emphasise this enough: Web 2.0 technology use must support pedagogy rather than undermine learning and teaching.Many academics are urging greater research to improve the links we may forge between the classroom and a technologically advanced culture. Wikis, blogs, and other open technologies are suggested[6], [7].

Wikis

There is a place for wikis in IS education. They can be used, for instance, in group writing, project tracking, data collection for class projects, class and teacher evaluation, and research group tracking. They can also be utilised in project creation with peer review. Wikis can also be used by educators to create collaborative curriculum and course materials. A wiki can be used to host an icebreaker activity that encourages communication among participants in online learning groups, Wikis' educational applications are covered, who draw the conclusion that they have not yet reached their full potential.Wikis can be used in the classroom for the following purposes, however this list is not exhaustive: Knowledge construction over the course of a term through the use of versions and groupsProgressive problem-solving particularly useful for open-ended problems and problem redefinition are also important. Students should be given the opportunity to learn how to add a minor degree of difference and complexity to concepts.

Social Media Sites

Whether it's Facebook, LinkedIn, or Twitter, social networks must be addressed and used in IS education as they are swiftly taking over. Facebook and YouTube have enormous promise in education, , but Twitter hasn't yet found its place in higher education. Despite the fact that teachers across all subject areas are using YouTube videos in their lessons, few have created Facebook pages or regularly tweet pupils.We both think that greater study in this area is necessary.

Fortunately, there is research on these specific difficulties in this issue. In Section 5, we'll go through this in further depth. Online worldsSince the early 2000s, the use of virtual worlds (VW) in educational settings has increased slowly but gradually.But since 2007, the number of educators using Second Life (SL) in particular has increased dramatically. Between 2007 and 2008, the response rate to the NMC's Annual Survey climbed by more than 170%. More

surprisingly, the NMC discovered that in 2007, educators mainly explored and used existing Second Life (SL) areas, but that by 2008, most had switched to constructing their own virtual environments.

How Virtual Laboratories Work

Virtual Laboratories aims to bring a variety of educational materials developed in accordance with school curricula to students' homes or other designated locations. The following details provide a thorough understanding of this management's process:

1. During the virtual laboratory system's initial operation, a subject-specialist creates the instructional material for one episode in accordance with the course and publishes it online or through satellite teleconferencing, as is done in the EDUSAT programmes of the educational technology department of N.C.E.R.T.
2. During the second phase of the virtual laboratory system, subject specialists who have completed the course are uploaded on the websites of the schools. The school's students are familiar with the website's location, and they download this course from it at their convenience.
3. The virtual laboratory system's third stage involves the distribution of course-prepared topic specialists to students once they have downloaded them onto CDs and DVDs. As a result, students receive their instructional materials by opening these CDs and DVDs on their computers. With this instructional material, the teacher also offers supplementary materials and potential answers to challenging topics so that students can easily conduct independent study.
4. For other aspects of the virtual laboratory system's operation, massive information communication tools like online messaging, the Internet, e-mail, mobile phones, etc. are used. Students are thus given access to the course materials, which were created by subject specialists, through advanced communication methods.
5. The virtual laboratory system's last mode of operation is when various admistrative arrangements for academic activities are carried out. The main goals of this step are to inform students about instruction programmes, monitor their academic growth, evaluate, exercise, provide feedback, discuss corrective and therapeutic ideas, assign grades based on their accomplishments, and award them diplomas and certificates. These procedures are carried out online in a virtual lab.
6. Teachers employ this kind of contact and communication during the educational process to retain the students' active participation. By asking questions and conducting occasional evaluations, the teacher tests the students' comprehension and subject-matter expertise.As the virtual laboratory system is operating, students are motivated after having their knowledge evaluated. Different sorts of required learning exercises, such as project work, reflection, and providing assignments, take place through websites, e-mail, and electronic mail. Assignments are returned to students after being reviewed, giving them feedback occasionally [8]–[10].

Notes on the benefits of virtual laboratories

Distance learning is taking on new dimensions in the computer age of today, while technologies that make it work smoothly are also finding a place in the educational system.These features make virtual classes valuable for both teachers and students.

1. It is helpful for students in the classroom at any time or location.
2. Because students can learn by getting involved in any business, it supports online education.
3. The employment of cutting-edge methods and media makes it an intriguing and motivating medium.
4. Every student can benefit from the abilities, expertise, and knowledge of a good teaching of any subject in the words that are beneficial to everyone in terms of cost-effectiveness through a virtual laboratory system.
5. In a virtual laboratory system, everythingincluding registration, payment, evaluation of teaching and learning, disclosure of accomplishments, and resultstakes place online.

In comparison to regular classes, virtual laboaratory is conducted using the best human resources.

In the virtual lab, you can avoid many of the drawbacks of a traditional classroom setup, including creating a schedule, upholding discipline, monitoring student attendance, having enough teachers on hand, teacher resentment, punctuality, etc.

Virtual Laboratories' Restrictions

Virtual classes have numerous benefits in terms of meeting modern requirements and conveniences, but they also have several drawbacks in comparison to traditional classes, which are more objective. The following paragraphs briefly specify these limitations:

1. The overall development of the child is the primary goal of the educational system. as such, education is responsible for the mental, physical, ethical, moral, social, and emotional development of qualities. however, these qualities cannot be developed in a virtual laboratory system.
2. The traditional educational system is meant to serve three basic purposes: cognitive, emotive, and functional. The education process is viewed as incomplete without the development of the emotional aspect. Of the three, even the virtual laboratory achieves the cognitive and function objectives to some level.
3. The interaction between teachers and students is seen as the essence of the conventional educational system, in which the personality, expertise, and experience of the teacher directly impact the student's character and serve as a financial investment in the student's future. But in a virtual lab, that is not conceivable.
4. This educational method is undoubtedly flexible in that it disregards factors like time, place, pace, and communication flow, but this flexibility may also steer students in the incorrect direction. Discipline and teacher control are especially important for secondary and higher secondary students.
5. The student learns more through simulation from childhood to adulthood, observing their elders at home and the teacher and other students at school, it is also true. There is no opportunity for simulation in the virtual laboratory system.
6. It is believed that classroom engagement and experiences similar to those found in traditional classroom instruction would be made feasible through electronic devices, however this is not true in any way. Virtual environments do not allow for live experience, interaction, or a sense of human social ties.
7. In the old educational system, kids who use electronics frequently are more likely to have physical flaws and illnesses. The results of studies have shown that the excessive usage of electronic.

CONCLUSION

Both landscape of education and educational activities. The way information is shared, accessed, and used has been revolutionized by these interrelated ideas.By removing geographic restrictions and enabling flexible access to a variety of courses and resources, e-learning, the practise of using electronic technologies to support learning, has democratised education. It accommodates various learning tempos and styles, improving inclusivity and adaptability in the educational system.

The collaborative nature of learning has been enhanced by Web 2.0, which is characterised by user-generated material and interactive online platforms. Engagement, peer interaction, and the development of learning communities have been facilitated by social media, discussion forums, and content-sharing platforms. Beyond the conventional teacher-centered approach, learners can now actively participate in conversations, share their thoughts, and contribute to knowledge development.E-learning and Web 2.0 principles have found an effective use in virtual laboratories. They provide a secure and affordable approach to participate in hands-on learning by digitally simulating real-world experiments and scenarios.

With the use of virtual labs, practical information is now more readily available, making STEM disciplines more approachable and experimentally-driven for students all over the world.But there are problems with this worldview. Some people still lack access to technology and steady internet connections, which could exacerbate educational disparities. Additionally, the absence of physical contact in virtual environments might occasionally result in a loss of tactile experiences and chance learning opportunities that are provided by conventional classrooms and labs.The E-learning experience will probably be significantly improved in the future thanks to technological developments like the incorporation of artificial intelligence, augmented reality, and immersive simulations. To deliver a holistic and thorough educational journey, it will be crucial to strike a balance between digital and in-person learning.In essence, Web 2.0, E-learning, and virtual labs have changed education by enhancing its accessibility, interactivity, and adaptability. These ideas will likely continue to be essential in determining how education will develop in the future as technology develops.

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CHAPTER 25

PROGRAMMED INSTRUCTION AND LEARNING: DEVELOPING THE CO-EDUCATIONAL SYSTEM

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ABSTRACT:

This study looked at how SAPT-related attitudes among students in mixed secondary schools in Kenya's Butere district and Kakamega County were affected by programmed instruction. The nonrandomized Solomon four-group research design was used in the adoption of the quasi-experimental research design. 300 form two studentsthe second grade in the Kenyan secondary school cycleand eight purposefully chosen Chemistry teachers made up the sample. While the control groups received traditional instruction, subjects in the experimental groups designed, verified, and used instructional software. The Students' Attitude Determination Questionnaire (SADQ) was developed, validated, and used to gather raw data, which was then analysed inferentially (using one-way ANOVA) and descriptively (using mean, mean gain, and standard deviation) at =0.05. Since the results showed that the sampled students' attitude mean scores were statistically equal before intervention, it was concluded that Programmed Instruction is more effective at changing students' attitudes towards SAPT than the widely used conventional ways. However, following intervention, the experimental groups had considerably higher attitude mean ratings than the control groups. This substantial alteration was linked to the care given to the experimental groups.

KEYWORDS:

Education, Mindset, SAPT, Mixed Schools, StandardizedInstruction, Traditional Methods.

INTRODUCTION

In The overall goal of science education is to help students develop the information, abilities, and attitudes that will be necessary for their future careers. Education in chemistry notably attempts to cultivate students' positive outlook towards appreciating the value andTherefore, chemistry is a crucial topic in the secondary school curriculum since it gives students knowledge that equips them for further study, careers, and environmental appreciation. Chemistry also integrates knowledge acquired from other topics, making it useful in many different fields, including engineering, agriculture, medicine, biotechnology, and industrialization.Therefore, a lot of focus is placed on using chemistry expertise to address environmental and other real-world issues[1]–[3].Technology advancements have raised living standards, health care quality, and infrastructure in China, the USA, Japan, the UK, and other industrialised nations. These countries have made significant investments in scientific education through scientific and Technology Innovations (S&TI), giving them a competitive edge on the international stage. Unfortunately, due to their poor condition of science education, African nations and the majority of third-world nations fall significantly behind in technological. African nations still struggle with a number of issues related to science education, such as a lack of funding, insufficient resources, poorly qualified teachers who are underpaid and under motivated, a lack of teaching materials, brain drain, and

waning political. One of the major issues facing chemistry education in Kenya at the moment is students' unfavourable attitudes towards the subject's abstract concepts, which is seen to be one of the causes of their low performance in the subject on form four national examinations. One of the abstract Chemistry topics, Structure of the Atom and the Periodic Table (SAPT), has been identified as one in which students do badly, and this has been linked to teachers' use of teacher-centered teaching strategies. The term attitude, as employed in this study, refers to students' opinions about the educational process. According to research, using effective student-centered teaching strategies has a big impact on the learning outcome described above, especially when it comes to abstract subjects. Because of this, chemistry teachers should use these teaching methods to contribute to the solution of this issue.A form two topic called SAPT should ideally be covered in 22 classes lasting 40 minutes each. By the end of the topic, the learner should be able todescribe and label the structure of an atom. perform basic calculations on atomic number, mass number, and relative atomic mass. write the electron configuration of the first 20 elements. construct a simple periodic table and explain the position of an element in the table. and (v) define and derive the valency and oxidation number of an element. The achievement of these curriculum goals is yearly assessed by KNEC Science Education International 490 through the KCSE test, which is given at the conclusion of the four-year secondary school cycle[4], [5].

DISCUSSION

Programmed Learning Definition Notes

Smith and Moore state that Programmed instruction is the process of arranging the material to be learned into a series of sequential steps, usually it moves the student from a familiar background into a complex and new set of concept principles and understandingProgrammed instruction is a planned sequence of experiences leading to proficiency in terms of stimulus response relationship, claim James E. Espich and Berl Williams.According to Stoffel, programmed refers to the organization of discrete pieces of knowledge into a logical sequence, and its method is referred to as programmed learning.Programmed learning, in the words of Leith, is a sequence of short steps of instructional material (called Games), the majority of which need a response to be given by filling in a blank in a sentence. A cueing mechanism is used to ensure that expected replies are supplied, and each response is verified by the supply of immediate knowledge of findings. According to N.S. Mavi, Programmed instruction is a technique of converting live instruction into self-learning or auto instructional readable material if the form of micro-sequence of subject matter which the learners are required to read and make some response, the correctness or incorrectness of which is told to him immediately.Programmed instruction is a method of designing reproducible sequence of instructional events to produce measurable and consistent effect on the behaviours of each and every acceptable student, claims Susan Markle.Programmed instruction is defined by James E. Espich and Berl Williams as a planned sequence of experiences leading to proficiency in terms of stimulus-response relationship.Programmed learning is a word that is occasionally used synonymously to refer to the more general idea of auto-instructional approach, according to D.L. Cook.

Programmable Learning Material Characteristics

The key properties of programmed learning material are as follows:

1. Individualized instruction allows only one person to learn at once.
2. The course material is broken up into manageable sections.

3. Next, little units are put in order.
4. In programmed material, each phase is logically and practically connected to the one after it.
5. The student must provide active responses.
6. Students are informed right away whether their effort was successful or not. They therefore get the feedback.
7. Students can pick their own speed for learning.
8. Fully verified and accountable programme material.
9. It specifies the entry behaviour and emotions of the pupil. Levels of linguistic comprehension and simplification, levels of achievement, feedback, and mental level are all taken into consideration in these behaviours.
10. The stimuli, responses, and reinforcement are still present.
11. It has a relatively low fault and error rate.
12. Since feedback is given right away, students are forced to give honest responses, which aids in successful teaching. Every student reaction offers him additional information.
13. Students absorb instructional content more quickly because of their increased readiness and curiosity.
14. Instructional materials are evaluated based on student feedback, and they are then enhanced and modified as necessary.
15. Programmed instruction also arranges instruction to take away pupils' weaknesses and difficulties.
16. Psychological learning is the foundation of the programmed instruction system.

Guidelines for Computer-Assisted Learning

The description above makes it evident that the following ideas form the foundation of programmed instruction:

1. The Small Fractions Principle.
2. The idea of active engagement.
3. The idea of quick feedback.
4. The Self Pacing Rule.
5. The content's legality.
6. The pupils' exam results' knowledge and development.
7. The foundation for student responses.

Basics of Computerized Instructions

The following are the fundamentals of programmed instruction:

1. Stimulation and Response.
2. The Repertoire of Behaviour and Behaviour.
3. Strengthening.
4. The Stimulus Control Transfer.
5. Recommendations
6. Information.
7. Generalization and Discrimination.
8. Gradual Advancement.
9. Next-Best Approximation.

10. Identification and correction welfth.
11. Regressive Chain
12. Programmed Text.
13. Instruction under Learner Control.

These components are each explained in turn as follows:

Stimulation and Reaction Stimuli are those circumstances, people, events, or alterations to the environment that cause changes in a student's conduct. The stimulus sets up circumstances for a particular response. Course material is divided into manageable chunks and given logically through programmed instruction. Each fraction serves as a stimulus, and these fractions get students ready to respond by putting them in the right situations. The right stimulus teaches kids how to respond correctly and offers new information [6]–[8].The correct timing for reinforcement is provided by notes. A unit of active behaviour is a response. Response, whether complete or in part, serves as a trigger for the following portion. Learning can be improved by students responding correctly.These are fundamental components of programmed instruction because stimulus and reaction are helpful for changing students' behaviour, and behaviour modification is in some ways a learning process.The repertoire of behaviour and behaviourBy behaviour, we meant the actions taken by students to meet educational objectives.Behaviour is the entire organism's response to life's circumstances. It takes into account both covert and overt behaviour and combines the investigation of covert mental processes with other overt behaviour.

A collection of stimulus-responses is referred to as behaviour in the context of programmed instruction. A behaviour unit is a response. Behaviours are developed collectively by stimulus-response. A behavioural repertoire is a collection of reactions that are organised logically into groups.The behaviour of students is determined by a variety of behavioural repertoires. Students have access to his qualities and characteristics through his behaviour repertoire. Three categories are used to classify behaviour repertoire according to learning level. Simple Discriminative Repertoire In this exercise, the learner chooses the independent variables, outside factors, or circumstances.Reinforcementan occurrence that happens after a process is complete and serves to reinforce that process is called reinforcement. In other words, there is a greater chance something will happen. Reinforcement is related to environmental occurrences that raise the likelihood of a reaction. Such responses, which are fueled by the stimulus, constitute the foundation for new behaviour or change. Reward-producing situations or events are referred to as reinforcement. There are two forms of reinforcement:

1. **Positive Reinforcement:** when a stimulus improves the likelihood that a response will occur or when the appropriate reaction is commended or rewarded, this is referred to as positive reinforcement.To improve the desired behaviour or answers, which lead to the learner repeating that behaviour, positive reinforcement is offered.
2. **Negative Reinforcement:** Negative reinforcement is used to reduce pupils' undesirable behaviours and reactions so that they don't repeat actions like punishing, criticizing, or becoming irate. Keep in mind that reinforcement that is positive rather than negative is more effective. Therefore, it is best to employ largely positive reinforcement.
3. **Continuous Reinforcement:** With Continuous Reinforcement, kids keep answering questions and receive praise for each one. In other words, behaviour strengthens because reinforcement is given following a response. This kind of reward is given at each fraction in linearly coded instruction.

4. **Intermittent Reinforcement**: In this, rewards aren't given all the time. in other words, sometimes rewards are given and other times they're not. In Hindi, this is known as intercomment reinforcement. This reinforcement is scheduled twice:
    a. Reinforcement of the ration schedule.
    b. Interval Schedule Reinforcement,
5. **Ratio Schedule Reinforcement**in the ratio schedule of intermittent reinforcement, students' responses are prioritized, and reinforcement is given in a fixed ratio, such as 5:1, which means that reinforcement is given after every five responses. This kind of encouragement causes students' responses to speed up.
6. **Fixed Ratio Schedule Reinforcement**in this type of reinforcement, it is determined how many replies will receive reinforcement. When reinforcement is delivered, it is supplied after each of the first five responses in the same proportion that the ratio is fixed. In the classroom, this reinforcement has proven to be successful. According to Lundane offering smaller ratio in the being and steadily increased ratio can deliver better benefits.

The variable ratio schedule reinforcement method (A2) makes it obvious how many replies must occur before reinforcement is delivered. Reinforcement is occasionally given after two responses, occasionally after five responses, and occasionally after twelve responses. Therefore it is referred as variable ratio schedule reinforcement. Students continue to reply, but they stop when they are about to receive praise [9], [10].Reinforcement of the interval schedule Time interval enforcement is another name for it. After a predetermined amount of time, such as five, one, or eight hours, reinforcement is delivered. Time is stressed more, and the passage of time serves as reinforcement. These come in two varieties:Reinforcement is delivered after a fixed interval, in which case it is referred to as fixed interval schedule reinforcement (B1). It has been determined how often reinforcement will be given, such as every five minutes, every fifteen minutes, or every hour. More emphasis is placed on the fixed period of time than on the amount of work.Variable Interval Schedule Reinforcement. This sort of reinforcement is known as variable Interval Schedule Reinforcement since the time interval is not fixed but rather is changeable. The student's behaviour modifications and knowledge gains as a result of this reinforcement are not consistent.

Instructions for using the aforementioned Reinforcement

1. To speed up pupils' responses, teachers should apply fixed ratio reinforcement.
2. Continuous reinforcement should be used to achieve informational goals, whereas intermittent reinforcement should be utilized to achieve higher goals like understanding and experimentation.
3. Interval reinforcement should be utilized to stabilize new information and change behaviour.
4. Continuous reinforcement is used initially, followed by fixed ratio or interval reinforcement, and in the final scenario, the use of variable interval reinforcement is increasingly supported.
5. Continuous reinforcement is proven to be more beneficial for extroverted individuals and changeable fixed ratio reinforcement for introverted pupils.
6. It is believed that the use of continuous or fixed ratio reinforcement for mediocre students and variable ratio and variable interval reinforcement for clever students is more productive and successful.

The Transfer of Stimulus Control Students are already familiar with the stimuli when they respond with them at the beginning of programmed training material. As he advances, responses assist in transitioning from the starting behaviour to the finishing behaviour, and stimulus control maintains the learning order. The transmission of stimulus control is what this is known as.

FeedbackFeedback is the process by which students are made aware of their shortcomings, flaws, and errors in order to improve. Additionally, feedback explains to students their positive traits, excellent work, and strengths so that they can incorporate them even more into their behaviour. Rewarding conduct improves the likelihood that it will occur, whereas feedback is a potent tool for behaviour modification. The use of feedback techniques helps pupils behave better, grow, and undergo the required adjustments.

Confirmation, also known as the third principle of programmed education, is the process through which pupils receive instant feedback whether their responses are right and go on to the next step. Confirmation is a type of feedback that helps pupils learn new material and receive reinforcement. By progressing through the ordered fractions based on the confirmation of his response, the student learns the completeness of the lesson material.

Prompting: In programmed teaching, each fraction for which an additional stimulus is used requires a student's reaction. We refer to this as prompt. Prompts or cues are pieces of information that are included in a frame to assist learners in giving accurate responses.

Generalization and Discrimination Generalization is the capacity to acquire the abilities, aptitudes, information, etc. in a context and to respond to them in a comparable setting for the same elements.

CONCLUSION

The trend for programmed education began as a radical redesign of the conventional teaching methods. The lock-step group lecture method was intended to be abolished, liberating students from their suffering.

The inventors who came after them had the same desire to increase human freedom and dignity by providing students with more individualized educational programmers in a compassionate environment with lots of one-on-one interaction. They created instructional strategies that could be tested, evaluated, and revised objectively. They equated successful instruction with caring instruction.

For years, my objective has been to work towards improving the lives of children, especially those who are at danger. No, I wouldn't call myself a kinderphile. It's more of an ethical requirement for me. Kids are certainly charming, but they also have a future, and if they have options, that future will be much brighter. Through education, we can give them the freedom to select between careers as engineers, musicians, accountants, or vagrants. They encouraged empirical testing of their goods and insisted that others do the same. It was just malpractice to waste students' time or deflate their enthusiasm during class. Their legacy continues, mostly in business and military training, where effectiveness and efficiency are important since reductions in learning time and cost directly impact organizational success. As public budgets become more constrained, a day may come when learning time and learning costs in public school and university education are likewise closely monitored.

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