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THEORIES AND PSYCHOLOGICAL PRINCIPLE IN THE USE OF ICT IN TEACHING AND LEARNING

Prof. Nilesh Ingale
Assistant Professor, GHRIEBM Jalgaon, Maharashtra, India
nileshvingale@gmail.com

Prof. Sharayu Bonde
Assistant Professor, GHRIEBM Jalgaon, Maharashtra, India
sharayubonde29@gmail.com

Prof. Yogita Dhande
Assistant Professor, GHRIEBM Jalgaon, Maharashtra, India
dhandeyogitah@gmail.com

Prof. Tushar Wagh
Assistant Professor, GHRIEBM Jalgaon, Maharashtra, India
tushar.wagh0061@gmail.com

Abstract:
In 1990s, the rapid development and dissemination of digital technology, which helped advance industrialization and boost the economies of the nations. Every element of human life is being influenced by IT (Information Technology). It is influencing every single area, including workplaces, academic institutions, the entertainment industry, commerce, societal trends, and more. Utilizing technology in the classroom gives pupils the chance to develop and employ digital skills in today's digital environment. Society is changing quickly as a result of ICT. As teachers and students are given more opportunity to easily adapt to the teaching and learning needs of an individual, we may see these shifts in education more frequently. ICT offers resources for transforming and reforming education.
Keywords: *Information Technology, education, entertainment, business, economic trends and digital Skills.*

Introduction

Many people believe that the emergence of computers marked the third revolution in education. Although significant educational trials were carried out throughout the 1950s and 1960s, the possibility of educational applications was largely speculative at the time. Computers have brought about unheard-of improvements in a variety of fields, including education. E-learning is a cutting-edge way to use computers in the teaching and learning process. Text, video, audio, animation, and virtual worlds are all included in e-learning, which can be network-based, intranet-based, or internet-based. E-learning, which permits learning anytime and anywhere, is made possible by the availability of the Internet and intranet.

E-learning offers everyone involved in the learning process clear accountability as well as quicker learning at lower prices. Every area of education has been affected by the rapidly expanding impact of information and communication technology (ICT) and e-learning on content creation and delivery.[1-3] Online learning, computer-based learning, virtual classrooms, and digital technologies are all examples of what is referred to as e-learning[3-6]. Many psychological principles are used in learning and teaching, whether it be in real classroom settings or through computer applications, whether consciously or unconsciously.

Some forecasts for the future of education tend to place less emphasis on technology and more emphasis on the ways that pedagogy and technology interact and how this has an impact on psychology, epistemology, and teaching. The three schools of psychology that are most frequently used or mentioned are constructivism, behaviourism, and cognitivism[7]. Early adoption of technology in educational contexts was characterised by a behaviourist understanding of instruction and learning. Behaviorism focuses on observable behaviours and does not completely take into account themental activities that learners engage in. Cognitive psychology is different from behaviourism in that it focuses on how the mind's internal mental processes might support efficient learning. Constructivist learning ideas are now being applied to electronic environments as a result of technological advancements, particularly those that are visible in multimedia and growing awareness of the complexity of learning. Constructivism was founded on the idea that students could build their own understanding of the world by first reflecting on their own experiences. All of these schools of psychology were created based on theories put forth by numerous psychologists and are successfully used in real-world classroom settings.

Applications of Learning Theories in E-Learning Context: Constructivism and Connectives Constructivism

According to constructivism, learning is an active process in which students generate, combine, and apply new ideas based on their prior and current knowledge. According to constructivism, rather than simply absorbing information passively, students actively create their own knowledge. People create their own representations of the world and incorporate new information into their prior knowledge as they encounter it and reflect on it. Constructivism is, in essence, the process of designing experiences that make it easier to build knowledge. The assimilation and accommodation processes are associated with this.

- Assimilation is the process of incorporating new knowledge into an already-existing schema.
- The term "accommodation" refers to the revision and development of an existing schema using recently acquired information.

Since students and teachers collaborate to create information, learning is a social process that is ingrained within a social context.Since knowledge cannot be directly transferred to students, teaching aims to give experiences that aid in knowledge creation. This final point deserves reiteration. While constructivism contends that you cannot directly impart information to children, a traditional method to teaching places a strong emphasis on providing students with information. The only thing that can help pupils build their own knowledge is experience. Designing these encounters is the purpose of teaching.

1.1Constructivism in E-Learning

The creative application of knowledge is constructivism's main objective. The learning process is the main focus of constructivism, and it is this process that yields the results. Students have lots of chances in constructivism to build their knowledge and communicate what they understand. Constructivist learning theory advises teachers to do the following actions:

Use realistic and pertinent situations, use different modes of representation to relate new knowledge to what is already known, foster self-guided learning, embrace social methods to learning, and encourage reflection.

1.2 Constructivist learning theory in e-Learning:

Let's analyse how these theories might influence E-Learning methods after considering how they have impacted education generally.

i) Act as a mentor or learning facilitator:

When using traditional teaching techniques, the teacher frequently serves as an authoritative source of information. As a result, the educator may need to

reconsider the idea of serving as a "guide". Instead of resources that merely broadcast knowledge, this entails adding activities, discussion forums, and wikis in an eLearning context. This enables students to cooperate and benefit from one another's knowledge. Combining these resources or creating tasks that demand independent investigation can also be helpful.

ii) Use pertinent and realistic circumstances.

One of constructivist theory's most crucial tenets is this. Given the idea that new information is processed based on prior knowledge, instructors must be aware of what students already know before engaging them in topic. They should endeavour to build on current information in order to establish new knowledge, in other words. Using real-world examples with relatable circumstances or personalities is one method to achieve this. Additionally, it achieves a higher level of complexity, authenticity, and relevancy.

iii) Use a range of representational techniques

For the purpose of promoting knowledge acquisition, Bruner suggests the following three modalities of representation:

Symbolic representation, iconographic representation, enactive representation, and action-based representation (language-based)

It is crucial that educators think about the connections that can be made between different types of content using various modes. Here, visual representations could go together with information that is conveyed symbolically (such as in written form) (e.g. images or videos). After that, a test or other activity might be utilised to gauge how well the knowledge has been applied by the students. The best possible learning outcomes should follow from this.

iv) Fosterself-explorative learning

Resources for e-learning are frequently very structured and have a well-defined learning path, especially when they are utilised for assessments. Although it helps learners navigate their learning experiences, this situation nevertheless allows for the promotion of self-explorative learning. Linking to external websites or implementing word search features in the learning management system is two ways to accomplish this (LMS).

v) Accept social learning strategies

Constructivists contend that social environment enhances learning more so than a solitary setting. This can be challenging to accomplish in a virtual setting. As a result, it's critical to spot chances to maximise student connection. Synchronous learning becomes essential in this situation.You can promote learner participation by holding live-streamed sessions or by offering online forums. Group activities, workshops, or wikis, on the other hand, are likely to lead to a more natural kind of collaboration.

vi) Promote contemplation

Constructivist theory also promotes learning process reflection, which is beneficial when the learning process has involved self-exploratory research. Blogs and leading questions are both effective resources for promoting reflection in an eLearning setting. Even if constructivist learning theory diverges considerably from conventional theories, eLearning practitioners can still benefit from these theories. Traditional theories can still inspire instructors to evaluate their own methods and look for ways to help students understand and reinforce their acquisition of knowledge. Constructivism, however, contends that teachers should serve more as mentors than as reliable providers of knowledge. In the end, this entails promoting independent inquiry, interpersonal

interaction, and practical application rather than creating resources that only transmit information.

1.3 Connectivism

A learning theory called connectivism recognises the influence of technology, society, interpersonal networks, and employment-related activities. It claims that the development of online browsers, search engines, social media, etc. has altered learning.

According to the relatively recent learning paradigm known as connectivism[8], students should effectively combine ideas, theories, and general knowledge. It acknowledges that technology plays a significant role in the learning process and that staying connected all the time allows us to make decisions about our learning. Additionally, it encourages group participation and conversation, allowing for various points of view and views when it comes to making decisions, solving problems, and understanding information. Connectivism encourages learning that takes place in environments other than a person, such as social media, online communities, blogs, or knowledge databases. The idea that technology is altering what, how, and where we learn is one that connectivism advances by building on preexisting theories. Siemens and Downes found eight connectivism guiding concepts in their investigation.

According to connectivism, learning is a connecting process and knowledge is based on the diversity of viewpoints.

- Non-human devices may contain learning.
- Knowing is not as important as learning.
- Continuous learning requires nurturing and maintaining connections.
- A key skill is the capacity to see connections between concepts, theories, and fields.
- The goal of all connectivist learning is accurate, current knowledge.

Making decisions is a process of learning. What we know right now might not be true tomorrow. There may be a correct response right now, but given how quickly information is changing, that answer may be incorrect tomorrow.

1.4 Connectivism in the context of online learning:

Understanding connectivism is one thing; putting it into practise in teaching and learning activities is quite another. Keep in mind that with a connectivist perspective, the learner assumes more responsibility for their own education. Contrary to conventional teaching strategies and other theories like constructivism or cognitivism, educators' roles are to support students in becoming powerful agents of their own learning and growth. In other words, it's the learner's responsibility to design their own learning experience, make decisions, and develop their learningnetworks.The first step in establishing a connectivist classroom is to increase opportunities for digital learning, such as online courses, webinars, social networks, and blogs. Connectivism heavily relies on technology.More strategies for teaching connectivism in the classroom are provided below:

- Socialmedia
  Using social media in the classroom is one way teachers put connectivism into practise. For instance, information can be shared, conversations can be had, and homework assignments can be announced using the class's Twitter account. This may increase student participation in class and encourage teacher-student dialogue.
- Gamification
  To make learning more participatory, gamification transforms assignments and activities into competitive games[9-10]. Teachers can employ a variety of learning-based apps and instructional technology to include gamification into the classroom. One illustration is DuoLingo, an online learning programme that facilitates language learning for pupils through enjoyable, game-like sessions[11]. Students can accrue "points" for moving through

lessons, and teachers can monitor students' progress. Apps like Brainscape, Virtual Reality House, and Gimkit are a few further examples.

- Simulations

In contrast to surface learning, which merely requires memorising, simulations engage pupils in deep learning that enhances understanding. They also make a classroom atmosphere more interesting and enjoyable. Consider a physics lesson where the students use an internet application to design an electric circuit. They are learning about physics by mimicking a real physical setting, rather of receiving instruction from a book or a lecture in a classroom.To give your pupils more influence over the pace and subject matter of their study, incorporate some or all of these examples. Additionally, it offers chances for personalised instruction that are tailored to each student's particular requirements and abilities. Connectivism in the classroom has advantages for both the teacher and the students.

Consider the following advantages if you're thinking about implementing this idea in your present or future classroom:

It fosters collaboration because, according to connectivism, learning happens when peers connect and exchange ideas, thoughts, and viewpoints in a cooperative setting. Connectivism makes it possible for a group of individuals to give legitimacy to the work they are doing, which speeds up the dissemination of knowledge among several communities.

Connectivism transfers the burden of learning from the teacher to the pupil. The learner is responsible for designing their own educational journey. The educator's job thus is to "build communities, release learners into the environment, and construct learning ecologies" (Siemens, 2003).

1.5 ICT enabled Environment: Characteristics of E-Learner and E-Learning Environment

i. Tech-savvy students:

With the expansion of the World Wide Web, high-capacity corporate networks, and high-speed desktop computers, learning will be accessible to individuals across the world twenty-four hours a day, seven days a week. This motivates students to be technologically literate and to update their knowledge of various technologies (such as social media and e-learning platforms).

ii. Self-Assessment:

Through stimulating self-reflective learning tests, learner-centered eLearning gives students the chance to connect material to their jobs or personal situations.

.iii. Effectiveness of learners and learning:

E-learning has a good impact since it makes the content simple to understand. This leads to higher certification, test, and evaluation scores. It improves the capacity to acquire and apply new skills or processes in the job. This motivates students to gain new technology abilities and pass those on to their peers (for instance, by discovering new Teaching-Learning platforms, eBooks portals, etc.), which helps them become more productive students.

iv. Exploration aptitude:

Learners may take charge and easily find what they need using learner-centered E-Learning, which is simple to use. The course should be designed with strong user experience standards in mind so that learners may move around it naturally.This motivates students to explore, discover, and take pleasure in the entire process.

1.6 Features of an Online Learning Environment

The E-Learning Environment is a term used to describe the telecommunications software that gives any number of educational institutions, regardless of their professional expertise and educational level, technological tools to conduct the educational process, its information support, and documentation in the Internet. The Characteristics are:

i) Should give any number of educational institutions, regardless of their professional experience and educational level, technical tools to carry out the educational process, its information support, and documentation in the Internet.
ii) The collaborative interactions used for knowledge acquisition within the online computer-mediated digital system are also referred to as the "e-learning environment."
iii) According to the needs of the teacher and the students, the environment should change and adapt. It ought to be able to meet the learner's demands for inclusive instruction.
iv) The environment should be open-sourced and have an intuitive user interface.
v) For a good learning experience, the e-learning platforms should be developed with all the solutions in the same instructional setting. VIZ student management for all forms of education, including registration, forums, student communities, and virtual classrooms with timetable publication, class reservation, and the download of course materials, among other features.

ICT-enhanced classroom learning based on psychological principles

The learning psychology principles that are used in an ICT-equipped classroom are as follows.

a) Readiness

People learn best when they are physically, emotionally, and psychologically prepared to learn, and they learn poorly if they do not perceive a need for learning. It is typically the instructor's role to get pupils ready to study, pique their attention by demonstrating the importance of the material, and offer consistent intellectual or physical challenge. Students advance more quickly than those who lack motivation if they have a clear goal, a compelling purpose, and a compelling rationale for learning anything. In other words, when pupils are prepared to learn, they at least meet the teacher halfway, which makes the teacher's job easier.

Example: A simulation game might be played by the teacher in an e-learning setting, and the results could inform the teacher of the students' readiness.

b) Exercise

According to the idea of exercise, repetition makes for better memory. It is the cornerstone of training and drill. It has been demonstrated that when students engage in meaningful practise and repetition, they learn more effectively and retain material longer. The practice's significance is what's important in this situation. It is evident that practise only results in improvement when it is accompanied by favourable feedback.Human memory is not perfect. After only one exposure, the mind is rarely able to remember, analyse, and apply new ideas or techniques. Complex tasks are not learned by students in a single lesson. By putting what they have been taught and told into practise, they learn. Learning continues each time practise is conducted.

Example: A lecture tape can be utilised as a homework assignment or even as a video summary that repeats the examples covered in class. Students will be able to retain, assess, and apply new ideas thanks to this.

c) Effect

The student's emotional response serves as the foundation for the principle of effect. It is According to the principle of effect, learning is boosted when accompanied by a

positive or fulfilling sensation and is decreased when accompanied by a negative feeling. The learner will make an effort to keep doing whatever has a satisfying result in order to keep learning.

The instructor should acknowledge and praise progress since positive reinforcement is more likely to result in success and drive the learner. Whatever the learning environment, it should have components that have a favourable impact on the pupils and make them feel satisfied. As a result, educators should exercise caution when applying punishment in the classroom.

Example: The instructor can use emoticons to encourage students in an online learning environment. The learners will also be more motivated if they hear clap and cheer sounds.

d) Primacy

Being first, or being in the position of primacy, frequently makes a lasting, nearly irrefutable impression. Things that are first learned leave a lasting imprint that is hard to get rid of. This means that the teacher must get the lesson properly the first time. It implies to the student that learning must be accurate. It is more difficult to "un-teach" incorrect first impressions than to educate them correctly the first time.

For instance, if a pupil picks up an incorrect method, the teacher will have a tough time "Re-teaching" the right habits to the student. The first interaction with the student should be fruitful, positive, and set the stage for everything that comes after. Procedure-correct learning must be applied the first time by the pupil. In order to ensure that the pupils have understood the step before them, the instructor must give the material in a step-by-step, logical order. The process can be difficult and time-consuming if the task is learnt separately, is not immediately applied to the total performance, or needs to be relearned. A lesson plan that is prepared and followed makes it easier to deliver the material accurately the first time.

e) Recency

According to the concept of recency, information that was learnt most recently is better remembered. In contrast, it becomes harder for a learner to recall new information the more away in time they are from it. For instance, recalling a recent phone number is quite simple, but recalling a fresh number from a week ago is typically really difficult. The learner will be more likely to perform successfully the closer the training or learning period is to the real need to implement the training.Since most people remember information best when they learn it last, frequent review and summarising the information helps it stick in their minds.

Example: This principle is best applied in an ICT-based lesson. To maintain the freshness of the material taught online, summary videos and concept maps of the entire lesson can beused.

f) Intensity

The more intense the instruction, the more probable it is that the information will stick. A learning experience that is sharp, clear, vivid, dramatic, or thrilling teaches more than one that is mundane or uninteresting. According to the concept of intensity, a student will gain more knowledge from the genuine article than from a copy. For instance, viewing a movie rather of reading the script can help students understand and appreciate it more. Similar to how performing tasks rather than reading about them is likely to help students understand them better. The impact of learning on a student is greater when it is immediate and dramatic in relation to a real situation.

Example: A dramatic voiceover over a series of images in an ICT-based class could serve to increase the content's emphasis. This notion could be realised through the use of visual storytelling.

g) Freedom
According to the freedom principle, knowledge is best acquired through free choice. On the other hand, the more a student is pressured, the harder it is for him to learn, absorb, and apply what he has learned. Personal development is inimical to coercion and compulsion. The level of intellectual and moral growth that a society as a whole experiences directly correlates with the degree of freedom that its members have.Students must have freedom because learning is an active process. These three major freedoms—freedom of choice, freedom to take action, and freedom to live with the consequences of that action—are what make up personal responsibility. Without independence, pupils might not be as interested.

Conclusion

Constructivism and connectivism's applications in the setting of online learning. We quickly reviewed the meaning of these theories before seeing how they were applied in a classroom using ICT.The characteristics of an e-learner and the e-learning environment that followed helped us comprehend the benefits of e-learning. Next, we looked at psychological principles of learning in an ICT-enabled classroom, where we saw how the traditional ideas were put into practice.

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