ISSN 2278-8808
An International Peer Reviewed
SCHOLARLY RESEARCH JOURNAL
FOR INTERDISCIPLINARY STUDIES

Managing Constructive Learning through ICT Empowered Teaching

Dr. Dhananjai Yadav
Reader
Education Department,
University of Allahabad,
dhananjaiyadav@yahoo.com

Abstract

The learners can build knowledge actively through the interactions with environmental stimuli. Constructive learning incorporates a learning process wherein the learner gains his own conclusions through the creative aid of the teacher as a facilitator. The teacher must ask open-ended questions and leaving time to allow the students to think and analyze a response, based on their experiences and personal inquiry. Open-ended questions and critical thinking encourage students to seek more than just a simple response or basic facts and incorporate the justification and defense of their organized thoughts. This leads to challenging other hypotheses, defending their own, and supporting real-world situations with abstract supporting data.

Therefore, there is a need to plan teacher's behaviour thoroughly and study skills for the students, to create a curriculum which may allow each student to participate in problem solving and critical thinking exercises. Instead of relying on others information and accepting the truth, the learners should be exposed to primary sources of information and allowed to interact with others, so that they can learn from the incorporation of their experiences. The basic tenet of constructivist learning is discovering and maintaining an individual's intellectual identity in a democratic atmosphere. This forces students to support their own theories, in essence taking responsibility for their words and respecting

those of others. These exercises can allow children to develop the skills and confidence to analyze the world around them, create solutions or support for developing issues, and then justify their words and actions and respecting the differences in opinions for the contributions that they can make.

Present paper tries to examine critically - What is the philosophy of constructivist approach of learning? What are the basic requirements of constructive learning? Can our present traditional approach meet the demands of constrictive learning atmosphere? What are the strengths of ICT empowered teaching? Can ICT empowered teaching learning atmosphere foster constructive learning? What are the basic issues of management in ICT empowered constructivist approach of teaching?

Introduction

Constructivism attempts to explain how learners learn by constructing understanding for themselves. This is basically a student-centered instruction inspired many instructors to examine and think about the importance of interactions between teachers and students, students and students, and students and learning materials as well. Therefore, both instructors and students may have opportunities to enhance the effectiveness of their teaching and learning. Constructivism gives teachers another perspective to rethink how students learn and to focus on process and provide ways of documenting change and transformation. It also reminds teachers to look for different ways to engage individual student, develop rich environments for exploration, prepare coherent problem sets and challenges that focus the model building effort, elicit and communicate student perceptions and interpretations.

Constructivism does not dismiss the active role of the teacher or the value of expert knowledge. Constructivism modifies that role, so that teachers help students to construct knowledge, rather than to reproduce a series of facts. In fact, constructivism taps into and triggers the student's innate curiosity about the world and how things work. And then, students create organizing principles that they can take with them to other learning settings.

The constructivist learning approach involves educators building school curriculum around the experience of their students. Constructivists believe learner-centric instructional classroom methods will strengthen the commitment and involvement of self-motivated learners because of their high level of interaction. Nevertheless, constructivist methods of instruction with using computer technology have developed to meet the instructional goals and conditions. One of the most powerful and versatile tools is the web-based learning. The web-based learning provides learners with optimal learning environment. They can be exposed to the multiple perspectives through collaborative social negotiation within peers or teachers. Additionally, in spite of PC games which

originally have not been developed for instructional purposes, even in games such as games for virtual flight simulation or city planning simulation, learners can be exposed to the complex or probable environments. In order to improve the problem-solving skills, it is important for learners to be exposed to complex environments. Constructivism might be broad learning theory because it is synthesized with multiple theories into a single form. Thus it is evident that the method of instruction using technology can be applied with various approaches.

The historical development of constructivists approach dates back to Socrates's dialogues with his followers, in which he used to ask directed questions that led his students to realize for themselves the weaknesses in their thinking. The Socratic dialogue is still an important tool in the way constructivist educators assess their students' learning and plan new learning experiences. Later on Jean Piaget and John Dewey developed theories of childhood development and education, what we now call Progressive Education, that led to the evolution of constructivism. Piaget believed that humans learn through the construction of one logical structure after another. He also concluded that the logic of children and their modes of thinking are initially entirely different from those of adults. The implications of this theory and how he applied them have shaped the foundation for constructivist education. Dewey called for education to be grounded in real experience. He wrote, "If you have doubts about how learning happens, engage in sustained inquiry: study, ponder, consider alternative possibilities and arrive at your belief grounded in evidence." Inquiry is a key part of constructivist learning.

Among the educators, philosophers, psychologists, and sociologists who have added new perspectives to constructivist learning theory and practice are Lev Vygotsky, Jerome Bruner, and David Ausubel. Vygotsky introduced the social aspect of learning into constructivism. He defined the "zone of proximal learning," according to which students solve problems beyond their actual developmental level (but within their level of potential development) under adult guidance or in collaboration with more capable peers. Bruner initiated curriculum change based on the notion that learning is an active, social process in which students construct new ideas or concepts based on their current knowledge. Seymour Papert's groundbreaking work in using computers to teach children has led to the widespread use of computer and information technology in constructivist environments. Modern educators who have studied, written about, and practiced constructivist approaches to education include John D. Bransford, Ernst von Glasersfeld , Eleanor Duckworth , George Forman , Roger Schank , Jacqueline Grennon Brooks , and Martin G. Brooks .

Constructivists' learning believes in following basic principles -

- Knowledge construction is emphasized over knowledge reproduction.
- Authentic tasks are emphasized in meaningful context.
- Emphasis on real world settings or case-based learning.
- Learning environments must provide multiple representations of reality.
- Thoughtful reflection on experience is encouraged.
- Context- and content- dependent knowledge construction.

- Collaboration and social negotiation among learners.
- Integration and activation of prior knowledge
- Discovery learning in collaborative mode.

Constructivist theory's (J. Bruner) main theme is that learning is a process in which the learner is able to build on present and previous information. The student is able to take information, create ideas and make choices by utilizing a thought process. The trainer should encourage the student to develop the skills to find out principles on their own. There should be on-going dialog between the student and the trainer. The trainer is responsible for making sure the information is in a format the student can comprehend. The key is to assure the course builds on what has already been learned.

Constructivists think that learners build knowledge actively through the interactions with environmental stimuli. In other words, learning focuses on the learners' questions and exposure. Assessment should avoid standardized tests and grades such as achievement tests designed with multiple choices to test subject-specific knowledge. Assessment appears in the learning process, so students play an important role in examining their own progress.

Strength of Constructivist learning –

- Active involvement- through active involvement children learn more and enjoy the very process of learning.
- Thinking and understanding- it concentrates on learning how to think and understand.
- Ownership of learning- since learning is based on learner’s questions and explorations they learn to bear the ownership of new knowledge. This in tern gives opportunity of recognition in intellectual forums.
- Democratic learning- develops the skill of defending and dissenting.
- How to question and apply in real world context.
- Social and communication skills- in the process of collaborative learning the learners learn the competence of arguing and defending in the process of evolving consensus.

Criticism of constructivist learning-

- It works well with children of privileged class, having outstanding teachers and committed parents. Disadvantaged ones are the looser.
- Collaborative learning forum may give opportunity to only few dominating learners. Dissenting ideas are forced to confirm the emerging consensus.
- Rejection of evaluation through testing and external criterion may lead to poor accountability of the system towards its stakeholders.

The cognitive paradigm of constructivism has been instrumental in shifting the locus of responsibility for learning from the teacher to the learner, who is no longer seen as passive or powerless. The student is viewed as an individual who is active in constructing new knowledge and understanding, while the teacher is seen as a facilitator rather than a "dictator" of learning. Yet, despite its "democratic" nature, many contemporary philosophers and educationalists have tried to demolish or vitiate some of its principles. Constructivism is a modern version of human anatomy, in the sense that it is based on, and provides insights into, brain mechanisms, mental structures, and willingness to learn.

The constructivist learning environment demands –

- Valuing learner's quarries and interests.
- Providing varied learning materials – primary, secondary sources as well as hypothetical manipulative.
- Ensuring constant active interaction of learners.
- Knowledge is dynamic and changes with expanding experiences.
- Individuality i.e. learner controlled learning.
- Ensuring democratic and collaborative learning atmosphere.
- Negotiation and dialogue with peers and experts.
- Evaluation and assessment – process as well as product i.e. valuing what is learnt and how is learnt.

Our conventional teaching learning practices where learning is directed and controlled by the teacher, students have less autonomy to exercise, full of mechanized text book approach can hardly ensure a bit of so glamorized enthusiastic approach of teaching and learning. The best alternative is to look for ICT empowered teaching learning mode. Integrating ICT into classrooms enables teachers to shift their pedagogical approach towards a balance between teacher-centered instruction and learner-centered, collaborative problem solving and critical thinking. This can be done through projects using

- Interactive computer-based learning resources;
- Linking with networked communities of peers and experts;
- Online collaborations in and beyond the classroom;
- Online information access going beyond the textbook.

In education we are faced with the daunting task of making significant change in teaching and learning to prepare our students for the future by creating and supporting the appropriate learning environments. Not only the students, the teachers also have much to gain from the potential of advanced ICT tools and soft wares available because it provides them opportunity to interact with peers, experts and world of work. This will let them share and build together lesson ideas and example of good practices and will enable them from the world of work meaningful case studies to be explored in their classes and projects. It will also offer them, very easily, a wide range of contacts, projects, partners,

addresses, resources, pilot demonstrations and database access points along with exposures to international dimensions. Besides, interaction across networks provides an excellent platform for the permanent debate on curriculum development. Launching of mobilizing projects may take place nationally across networks and those networks can easily support the dissemination of materials, discussions and many of the research activities.

The potentials of ICT which makes it inevitable for our present teaching learning practices are:

- Constant and quick change- Both the hardware and software tools are subject to constant improvement.
- Fast and easy access- With the changes in technology learners are exposed to fast and easy access to different networks.
- Updated database- Information can constantly updated and made available to different stakeholders.
- Motivation for lifelong learning and skill updating.
- Provides more time and space to think and act creatively.
- Ensure global concern for local issues and vice versa.
- Global assessment and evaluation of ones findings ensures universal recognition.
- Space for collaborations and joint ventures for learners, teachers, experts and institutions.

Therefore in ICT empowered teaching has enormous potential to ensure constructive learning environment not only for students but for teachers and planners of education system. ICT can be used to establish and sustain effective learning environments by having its focus on:

- Real world problems.
- Scaffolding.
- Feedback, reflection and guidance.
- Local and global communities.
- Extending teacher learning.

If one believes that only the students themselves can construct their own knowledge, then the role of the educator is to provide an environment in which the learning activities support the role of the student as a learner. The environment becomes one that is learner-centered or learner-focused. The student as the learner is one who is involved in constructing their own meaning through the higher level thinking processes of analyzing, synthesizing and evaluating. Technology such as ICT can be considered integral to the process of identifying, gathering and recording students' own learning, and building the community of learners. The potential of ICT in learning environments can support dialogue, enhance interaction and help students to share and revise ideas. In other words, support a learning community. It helps in getting mastery in 'learning with technology', which include- discussion (exchanging understandings); adaptation (adapt each others' ideas); interaction (engaged in interaction) and reflection (reflect on experience).

ICT empowered teaching is no doubt a powerful agent of ensuring constrictive learning environment, it gives the players of education the responsibility of shouldering

some emergent issues such as- ensuring the learning space with advanced version of ICT hard ware and soft wares, analyzing critically what learning objectives are affected with the use of technology, teachers professional development in ICT dependent learning, how present context specific learning material in logical order, how to plan collaborative learning projects, how to enable the learners for effective presentation of findings in global platforms, how to enable the learners in powerful contributor of information database. These issues and challenges must be addressed through effective planning for teachers professional development programmes.

Reference:

Brooks, G. J. and Brooks, G. M. (1993). *In Search of Understanding: The Case for Constructivist Classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Bruner, J. (1973). *Going Beyond the Information Given*. New York: Norton.

Long, M. (2000). *The Psychology of Education*. London: RoutledgeFalmer.

Piaget, Jean. (1973). *To Understand is to Invent*. New York: Grossman. (http://curriculum.calstatela.edu/faculty/psparks/theorists/501const.htm)

Rogers, C.R. (1969). *Freedom to Learn*. Columbus, OH: Merrill.

Toffler,A.(1991), Power Shift: Knowledge, Wealth, and Violence at the edge of the 21st Century, Bantam Books.