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ROLE OF CONSTRUCTIVISM IN LEARNING

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ABSTRACT

Education is a confluence of social, economic, political, technological and cultural dimensions thus fruitful learning can't be achieved in isolation. Knowledge is not merely passing information to students but to construct and reconstruct learning on the basis of previous experiences of an individual. To connect and cumulate experiences, technology like web conferencing, community radio, portals etc. can be used effectively to enhance learning. However, to integrate these first teacher educators must be prepared. Present paper analyzes the correlation among constructivism, learning and provides some recommendations for effectual integration.

Keywords: Education, web-conferencing, constructivism.

INTRODUCTION

Education is collegium of rapidly changing technology, moral learning and child development for creating equitable, just and democratic societies. Our Founding Father and Mother have strong desire to provide quality education to all children of India. Thus the dream converted into historic Right Based Approach in the form of Right to Education Act, 2009 (implemented on April 1, 2010). Where elementary education between the age group 6-14 years is free and compulsory for every child and treated as the right of child to take education in desired school irrespective of caste, creed and gender. Efforts are converted to plan of action to approach Millennium Development Goal 2 "To Achieve Universal Primary Education", however, quality is cause of concern. The recent report (Annual Status of Education Report, 2014) show that proportion of children in government schools who can even recognize numbers up to 100 correctly has dropped from 70% to near 50% over the last four years. These downward trends are also reflected in Std 5 where a child would be expected to be able to at least read a Std 2 text and solve a division sum. However, when student promoted to higher level these inadequate experience of learning widen the groove of disparity in terms of quality. For the period 2000-2010,

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India ranked 11th in output, 17th in citations received, and 34th in citations per paper (among nations publishing 50,000 or more papers during the period) across the science and social sciences fields surveyed in *Essential Science Indicators*.

The above discussion clearly depicts that even after spending 4.7% of GDP on education India's education system is not coming par with challenges of globalization. The pedagogy of learning is generally accomplished through attention to the complicated, idiosyncratic, often paradoxical, and difficult to measure nature and believes on stimulus-response-reinforcement principle of learning. It makes learning more complicated and not understandable for most of the learners. Thus the vision of education to develop capacity in the individual to liberate thoughts in democratic environment that consequently generate new ways of awareness about cultural beliefs and assumptions through a thoughtful transformation is hampered. Dewey also emphasised that education is that which make children participants of the democracy. To develop these competencies, constructivism is emerged as true approach which accentuate that learning is a social advancement that involve language, real world situations and interaction and collaboration among learners.

Constructivist approach: Constructivism has many versions, underpinned by different assumptions,

namely: trivial constructivism, radical constructivism, cultural constructivism, social constructivism etc. Killen (2000: xviii) notes that originally, constructivism was used to describe a theory of learning. Recently it has been associated.

Cognitive Constructivism is not a unique theoretical framework, pedagogical approach, or epistemology, but a general, metaphorical assumption about the nature of cognition that virtually all cognitive educational researchers accept. Cognitive Constructivism has significant potential to build conceptual bridge between information processing and radical constructivism. Cognitive Constructivism can be better understood with the help of Phillips's multidimensional framework. According to it there are three dimensions:

1. "Individual psychology" versus "Public discipline" (p.7) continuum is oriented towards understanding the individual learner.
2. Second is related to the first and differentiate among theorist according to whether they view knowledge construction as a socially situated or an individual process, a dimension related to debate in the cognitive science and educational research communities (e.g. J.R. Anderson, Reder, & Simon, 1996; Vera & Simon, 1993). Cobb and Yackel (1994 a) argued that cognitive processes and sociocultural one are mutually implicative and cannot be studied in isolation.
3. The third dimension differentiate constructivist in terms of the degree to which they can, in essence, be characterised as true constructivist theorist. The area of this scale encompassing information-processing and radical constructivist views, and including many hybrid views in between, identifies the range of viewpoints within mainstream cognitive constructivism.

Learning is pedagogy. Millar (1989) has argued that particular views of learning do not necessarily entail specific pedagogical practices.

Constructivist approach originally developed by Piaget focused on characterising cognitive growth of children, specially their growth in conceptual understanding. The constructivist perspective typically stands for mentalist a commitment to the belief that mental structures exist, that such structures shaped the ways individuals see the world, and that people build those structures through interactions with the world around them. Learning and innovation are contextual and is further impacted by

social interaction. Constructivism is a leading theory in science education. Knowledge has external reality and an individual has a capacity to get to know it. The choice of learning strategies relates to discovery, experiential, collaborate, project-based, tasked-based, etc. In this connection Vygotsky (1978) wrote: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals." Thus the scientific knowledge is socially constructed and involves both individual and social process. Doolittle and Camp (1999) observed that technical education is still in the influence of the behaviourism but steadily moving towards the conceptual, problem solving based curricula and marching towards cognitive constructivism. The primary tenet of constructivism is that learners actively construct their own knowledge based on their own experiences. They explained that constructivism is not a unitary theoretical position, but can be thought of as a continuum. They contend that on this continuum, technology education is most closely aligned with cognitive constructivism. That is, knowledge (learning) is the result of accurately internalizing and reconstructing some external reality.

Social Constructivism stresses the social context, culture and collaborative side of learning, is another kind of constructivism (O'Donnell and King, 1999; McMahan, 1997; Sivan, 1986; Terwel, 1999). Social constructivists often make use of Vygotsky's ideas to explain teach (Palmer, 2005). Vygotsky mostly focused on the effects of social interaction, language and culture on the learning process (Fosnot, 2005; Jonassen et al., 1995; Vrasidas, 2000; Woo and Reeves, 2007). According to Vygotsky (1978), the source of metacognitive processes is related to the culture. To him, a child's learning potential develops only if s/he is with the "other knowledgeable individuals". When we are with others, we can succeed much more than when we are alone. Achievements of human beings are substantially resulted from this kind of "cooperative" act (Liang and Gabel, 2005). In social constructivist educational theory, classroom is a learned society. According to social constructivists, learning occurs by means of peer interaction (collaboration), student

ownership of the curriculum and educational experiences that are authentic to the students (Azzarito and Ennis, 2003).

Advances in cognitive science, learning, and human development provide new perspectives for the design, administration, and use of assessments of academic achievement. To accomplish such a goal, assessment practices must be based on contemporary understandings and appropriate standards regarding the acquisition of proficiency and expertise in specific academic content domains. Assessment could then have a significant positive influence on what is learned in classrooms and on how knowledge and competence are demonstrated in various contexts of educational consequence, ranging from the classroom to state and national assessments of educational attainment.

The Constructivist Classroom: Constructivist classroom must provide variety of activities to challenge students to accept individual differences, increase their readiness to learn, discover new ideas, and construct their own knowledge. Jonnavithula and Kinshuk (2005) observe that schools are still organised in a traditional ways. Teaching is perceived as the teacher and text books are the only reliable source of information, students themselves are passive learners. Research by Dollard and Christensen (1996:1) indicates that in the management of classroom constructivist philosophy plays a crucial role. Henning’s (1995:128) research on classroom (from the view of social constructivism) suggests that methodology and classroom management have not been researched rigorously. Constructivist believe that human reality is in a sense “created” by interpretation and dialogic process (discursive practices) through which people- bound and influenced as they are by the context of their lives- form and modify meanings (Jordaan & Jordaan, 1998:60). Constructivism is not just a theory of learning; it is a theory of knowledge

(Confrey, 1998:106). Thus in classroom environment that freedom and liberty should be provided to students that they can make their own opinion and database and can experiment on that database to construct their own knowledge. In MacMahon’s (1997:3) view, learner do not transfer knowledge from the external world into their memories, rather, they create interpretations of the world based upon their past experiences and their interactions in the world. However, in traditional leaning environment only text books and information and interaction with teachers are considered as authenticated source of learning. Only conventional methods like lecture, demonstration, and experiments in labs etc. counted as relevant source of learning. New methods and pedagogy should be adopted for every stage of learning. In an elementary classroom, concrete learning experiences, such as drawing, drama, model building and field trips that involve hands-on opportunities to see, hear, touch, taste, and smell are essential. These early activities and the use of tangible manipulative and visual aids serve as building blocks for more sophisticated tasks, such as reading comprehension. Knowledge is not a passive mere flow of information from one individual to another; rather it is reconstruction of knowledge by learning and unlearning of concepts and critical analysis of learning with the pedagogy having freedom of liberal thinking.

METHODOLOGY

For establishing the relationship between constructivism and science learning various technological advancements are used. For conduct of present study Constructivist Learning Environment Survey (CLES) developed by Taylor, Fraser & White, 1994 was used. CLES helps the teachers to get feedback for their constructivist classroom. Johnson and McClure (2004) revised the CLES.

Table 1. Scales and scale description for the CLES.

Sr.	Scales	Scale Description
1	Personal Relevance	Extent to which teachers relate science to students out of school experiences
2	Student Negotiation	Extent to which opportunities exist for students to explain and justify to other students their newly developing ideas
3	Shared Control	Extent to which students are invited to share with the teacher control of the learning environment, including the articulation of their own learning goals, design and management of their learning activities and determining and applying assessment criteria.

Continue...

Critical Voice	Extent to which a social climate has been established in which students feel that it is legitimate and beneficial to question the teacher's pedagogical plans and methods to express concerns about any impediments to their learning.
Uncertainty	Extent to which opportunities are provided for students to experience scientific knowledge as arising from theory dependent inquiry, involving human experience and values, evolving and non-foundational, and culturally and socially determined.

Source: Tekkaya, Cakiro, 2009: 72.

Analysis and Discussion: Observations were made in two schools of adopted villages of Central University of Haryana. When the researcher observe the science class of 8th and 9th for present study then found that students were rarely given opportunity to express themselves (student negotiations). Few opportunities were provided to students to connect what they are learning to outside world (personal relevance). Teacher never asks students to help in planning of content (shared control). In 9th class only environment was somewhat congenial for students where they can ask question freely and feel safe while questioning the teacher (critical voice).

On the basis of analysis following recommendations can be given for the constructive science classroom.

RECOMMENDATIONS

- Innovations are contextual and depend upon learning environment, prior experiences, prejudices, views and past learning thus conducive environment with the help of web conferencing commence new discoveries.
- Democratic values and liberated thoughts must be respected and valued for generating knowledge. Amertya Sen in his Capability Approach theory highlighted that every child should get opportunity to develop maximum capabilities.
- The role of the teacher is only to facilitate, motivate and to guide the learner because most of the learning is taken up by learner's own experiences consequently cooperation, team building and exposure to the environment can work as catalyst for new learning.
- When the learner develops the skill to monitor own learning with the assistance of web conferencing then it work as motivator for the learner as well as crucial feature for successful process of knowledge construction and involvement into the labour market.
- Social inequity which is the monster to engulf peace

of the society can be addressed with the web conferencing especially in remote area where mobility of the girls are generally restricted.

CONCLUSION

In classrooms, the role of the teacher needs to change from the traditional role of prescription to that of orchestrator of learning which necessitates the designing of ICT integrated classrooms promoting constructivist skills and Web conferencing can be effective tool. Learning should be focused on human-centred, socio-technical systems (people in interaction with personal technology) that are based on a sound understanding of how people think, learn, perceive, work and interact. The rift of Social disparity and human capital can be addressed with constructive classroom where with the help of scaffolding students will develop the ability of reflection. This will increase their capabilities to develop critical voice and shared vision, which in turn not only help in their academic output as well help them in developing leadership abilities and will enhance socio-emotional learning.

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