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Are We Ready for Constructivist Classroom? A Field Experience

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ABSTRACT *Constructivism envisages that learning is an active and constructive process. The role of the learner is shifted from passive listener to an active information constructor. A student has to create his/her on subjective representations of objective reality by linking it with the early experiences. The science subjects offer innumerable possibilities of learning through constructivist approach. It was observed that the teachers were not adequately trained on constructivist approach and still followed lecture method. They did not emphasis on discussion, experimentation, raise open-ended problems and also were unable to use students' ideas for more effective science learning. The study stresses on the need for orienting teachers for implementing constructivism in the classroom to make it learner-centered with lots of group discussions, explorations and problem solving.*

Constructivism considers learning as an active meaning-making process to solve meaningful problems. It uses learner's previous knowledge and reorganises prior conceptual schemes to understand new information. Constructivism stresses the importance of observation and scientific study. It envisages that the students can construct their own understanding and knowledge of the surroundings through experiencing things and reflecting on the experiences. In the constructivist classroom, the teachers are the leader of the democratic learning group and the collaboration of the students is essential for the construction of the knowledge. Each student should be engaged in a cognitive task by using experiments, real-world problem solving, etc. to create more knowledge.

Scheer, Noweskie and Meinel (2012) argues that in the 21st century, there is a need to equip students with meta competences that goes beyond cognitive knowledge. Hence, the education, should not be considered as a process of transferring knowledge but as a process to develop individual potentials with the help of constructivist learning.

Bachtold (2008) argues that in personal constructivism stressed by Piaget the children construct knowledge when they interact with their material environment. But in the case of social constructivism, Vygotsky give importance to the teacher and claims that students can understand and master new models only if they are introduced to the scientific culture by their teacher.

In general, constructivism played a significant role in improving the teaching- learning process in the science classroom. Karakas (2012) establishes that because of constructivist learning theory perspective the science educators shifted emphasis from teaching the history of science in science classrooms to sequencing in instruction in science lessons and also the ensured better teacher preparation programmes.

National Curriculum Framework, 2005 redefined the school curriculum by giving paradigm shift from behaviourist approach to learning to constructivist approach. Pandey (2007) pointed out that this approach shifted the role of teacher from transmitter of knowledge to facilitator of knowledge. As part of NCERT's new initiative of field visit to schools located in rural and semi- urban areas by the faculty for three months to teach students for first-hand experiences, to analyse the effectiveness of textbooks and other textual materials prepared by the council, to experience the difficulties faced by the teachers in transacting the syllabi prepared on the basis of NCF-2005 and to revise the curriculum/syllabi on the basis of experience gained during field visits, the researcher visited Government Secondary School Jhalamand, Jodhpur, Rajasthan. During the field visit the researcher took science classes, observed classrooms and conducted field researches. The case study was conducted in class IX and X students of the school.

The present study on constructivism was also conducted during the time with the objectives to analyse the constructivist culture in the science classroom and to study the methods, techniques used by the teachers in the constructivist classroom and management and organisational strategies used by the teachers in a constructivist classroom. An observation schedule was used to observe the classroom and semi structured interviews were also conducted with the teachers and students.

Analysis and Interpretation of Data

The Government Secondary School Jhalamand, Jodhpur, Rajasthan was situated 25 Km away from the main city Jodhpur. The students belonging to poor socio-economic background were studying in the school. Most of the students did not get quality primary education. They did know the basic symbols of elements of periodic table and also had not conducted science experiments in the science laboratory. It was also noticed that the teachers were not interested in using the science models equipments kept in the science laboratory. The classrooms were overcrowded and the teacher pupil ratio was also not appropriate.

The researcher did not find any place for the constructivist culture in the science classroom in which the learners are given the freedom to think, to question, to reflect, and to interact with ideas, objects, and others. It was also observed that the science classrooms were teacher centered rather than learner centered. The teachers were inactive in the classrooms and did not act as facilitators to help the

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students construct knowledge through experiments, observation and critical thinking. The teachers adopted lecture method for teaching science subjects. Rarely the teachers involved students in some kind of group works.

Presenting big idea first and then all parts that support the big idea were not followed by the teachers. They simply taught the texts as it is given in the books. The students were passive listeners and they did not create meaning and context by exploring new ideas and experiences, generating hypotheses, problem solving.

The students opined that they are not getting opportunities for hands on activities. There is no proper laboratory facility available in the school. For the name sake of laboratory a small room with limited number of chemicals and glassware is available. There are no infrastructural facilities for conducting science experiments for students and teachers. All students did not get opportunities to enter the room. Very limited number of students gets chance to enter the room to help teachers. There was no lab assistant.

A student said "*teachers come to the class and starts reading the chapter, then they assign home works, which we do copying from the guide books. We do not discuss, we do not get chance for group works*" When asked whether they connect content given in the text to their experiences and whether teachers check their previous knowledge, students responded negatively. One of them said, "*teacher reads from the textbook and we repeat the same. There is no discussion or demonstration*". The curriculum stresses on relating the concepts to outside life, but the teachers seldom practice it, which results in lack of curriculum relevance to students' lives. The students need to realize the relevance of the content they learn in their daily activities. This will help in enriching their interest in learning (Raveendran, 2014).

The teachers are mostly interested in covering the syllabus on time and ask the students to mug up the facts and concepts. They do not stress on the learning process. The school library also is not functioning well. The students do not get books, journals, etc. for learning. They depend mostly on the guide books available in the market.

The students did not get chance for self evaluation of their learning activities. They simply memorize the facts and concepts from the guide. The teachers come to the class without proper preparation .Classroom observation results show that the teachers had not planned nor prepared anything prior to the taking of class. They came to the classroom picked out the textbook, asked the students where they had stopped last day and continued reading At times, students were reading the textbooks with teacher explaining some points.

The classrooms were mostly teacher dominated and the students got limited chance to talk with the teachers while teaching. The students did not play any role in the classroom process. The teachers gave chance to intelligent students to speak in the classroom but not average and below average students. No activities are performed by the students in the classroom.

Students' response during the focus group discussion revealed that they were not satisfied in the teaching-learning process. They felt disinterested and wanted to have more activities in the classroom. They were not aware of the constructivist practices but welcomed the idea of have group discussions, debates, demonstrations and experiments. A student said, 'How do we know about the reactions without actually doing experiments. If we had done experiments it would be easier to remember things. Now we just mug up".

Teachers were merely teaching for the examinations and they were not interested in doing any activities. For them they were loss of time. A teacher said "*We are always busy in works like preparing attendance sheets, distributing scholarships, mid- day meal and other official works. We do not get time to design group works for children. In a single classroom we have to teach more than 50 students. How can we conduct group works and provide individual attention to students and at the same time complete syllabus*?" The teachers pointed that it is impossible to adopt innovative teaching methods in the classrooms. They added that normally they use lecture method in the classroom and also use the blackboard effectively for the teaching. There is no learning facility like smart boards, projectors, science lab, etc.

A teacher said "we can't stress on learning process as suggested by constructivist theory we are only concerned about teaching the facts and concepts. There was no availability of additional materials like reference books; teacher's manual, etc. for designing the class in an interesting way for effective learning. The teachers when asked about their method of teaching said "we are well experienced in teaching for so many years. So we do not need much preparation. The students get opportunities to talk in the classroom when we ask for clarification or explaining their views and life experiences related to the teaching content". The opinions of the teachers conclude that the teacher decides everything related to the learning activities and the students do not have much role to play in the teaching-learning process.

Conclusions and Suggestions

The study findings show that the school is not in a position to adapt for constructivist classroom in which learning occurs as learners are actively involved in the process of knowledge construction. The school follows teacher-centered pedagogy and there is no scope for fostering critical thinking and motivated and independent learners. It is also visible that the teachers followed textbook based approach in teaching that seems obstructions to constructivist approach of teaching-learning processes.

Teachers are not adequately trained for implementing constructivist approach in the classrooms. So they felt it as a method which will lead to wastage of time. They did not give importance to discovery, experimentation, open-ended problems and also unable to use students' ideas for more effective science learning.

The system followed in the school did not encourage learners actively involved in the learning process where the environment is democratic; the activities are interactive and student-centered. The school should be equipped to make the teachers facilitators of the process of learning.

It may be desirable to orient teachers on constructivist approach to make the classroom learner-centered with lots of group discussions, explorations and problem solving. The curriculum, syllabus and classroom activities should be designed in such a way that the students get chance to solve problems and the teachers plan and guide the activities.

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We have to provide all the facilities and the opportunities to interact with their peer group. Hands-on activities are essential for developing science process skills. Our science labs should be equipped with all the facilities where the students can learn and experiment activities.

Emphasis should be given to remove the barriers to the constructivism like the ignorance of teacher about the approach, traditional outlook and psychological impediments etc. This can ensure effective implementation of the curriculum based on the constructivist approach. There is no room for constructivism in the present system of classroom where the teacher- pupil ratio is very high, where teachers lack freedom and where the examinations are knowledge based. Implementation of the constructivism in the classrooms has to be accompanied with a set of systemic reforms and examination reforms. Teachers should be given opportunities to learn the constructivist practices during their pre and in-service training programmes.

The teaching-learning process needs to orient towards knowledge construction, not reproduction. For this, teacher must be equipped with creative prudence and imagination and more importantly willingness to change. Without ensuring these our classrooms will remain the same, teachers 'teaching to test' and learners 'learning for test', constructivism remaining in papers.

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