



# Paradigm Shift in Education: Learning through Social Constructivism Secondary School Classroom Experiences

**Dr Zahid Ullah, Dr Nosheen Saba, Dr Muhammad Abouzar, Dr Sumera Imran, Nida, Muhammad Ismail khan, Yasir Faheem, Dr. Adnan Ahmad,**  
Department of Education: Abdul Wali Khan University Mardan Pakistan,  
Institute of Business Studies and Leadership (IBL) AWKUM, Corresponding  
Author: Dr Zahid Ullah, E mail: zahidullah0333@gmail.com

This paper intends to explore the experiences of secondary school teachers and their preferences towards social constructivist approaches. Social constructivism is contemporary pedagogy in smart classroom. Multiple-case study research design was employed where respondents were examined using multiple data collection methods. Fifteen public secondary school teachers were selected using purposive sampling technique to develop a more in-depth understanding of the phenomena experienced. Collected data were analyzed using thematic analysis techniques. Findings of this research manifested that student's social interaction transform higher order thinking skills. Teachers believed that social constructivism is an active information sharing strategy where students frequently engaged in classroom learning. Respondents proclaim they facilitate students to utilize their existing knowledge and experience to construct new understanding. Social constructivists believe on the existence of multiple realities and that there are multiple ways of solving a problem. Classroom teaching learning is a joint venture of both the students and teacher hence students have to construct their own knowledge followed by teacher facilitation. Constructivist conception is significant in the sense that there is probability of multiple interpretations about a concept and multiple responses to a problem are source of higher order thinking, Meta cognition and creativity in learners.



**Key words:** *Social Constructivism, Higher order thinking, Proximity control, Milieu, Cooperative learning*

## INTRODUCTION

### Background of the study

Education is the reconstruction of knowledge by the learners followed by teacher facilitation (Mills, R., Tomas, L., & Lewthwaite, B. 2019). There are two moods through which teachers convey their knowledge to students. One way is the transmission of knowledge (positivism) by the teacher and students are the sole knowledge receiver (Yinger, R., & Hendricks-Lee, M. 2012). Some time students learn their knowledge by using their own mind, peer tutoring and construct their own knowledge (constructivism) using previous knowledge and teacher job is just to facilitate and monitor students learning (Stigmar, M. 2016). In constructivism students discover and unravel new information, differentiate learned new knowledge with previous, and revise rules regulations when their learned information does not longer apply. This constructivist conception of learning renders the learner as an active agent in the process of knowledge acquisition (Bada, S. O., & Olusegun, S. (2015). According to the proponents of Constructivist conceptions of learning i.e. John Dewey (1929) Bruner (1961) Vygotsky (1962) and Piaget (1980) students learning outcomes needs to be based on the knowledge construction process and students learning is not a quick phenomenon, but a slow and gradual process where students grasp new information based on previous knowledge (Tobias, S., & Duffy, T. M. 2009).

Social Constructivism theory is learner oriented where students construct their own knowledge (Loyens, S. 2007). Contrary to this the positivist and traditional teaching learning strategy is based on mimetic approach where teacher teach a specific subject and students watch as a passive spectators (Byram, M., Gribkova, B., & Starkey, H. 2002). Constructivism provides an environment for students so that they freely engage in their classroom activities and by doing so students enjoy Meta cognition and problem solving traits. Constructivism renders the students to gain new knowledge based on previous experiences. This theory adds new information to existing body of knowledge. Constructivism allows students to act and participate actively in classroom. Learning is not just to memorize content but in fact learning takes place when students explain a concept, do criticize their teachers and peer with authentic reasoning (Brophy, J. 2004). In positivist and traditional teaching conception teacher is the whole authority and students are parroting the teacher knowledge (Akerson, V. L., Buzzelli, C. A., & Donnelly, L. A. 2008). Now days in this contemporary era classroom in no more regarded to be a place where teacher transfer some sort of knowledge into empty vessels passive learners (Fox, R. 2001). Contrary to the positivist the in constructivist approach, the learners actively participate in construction of learning process. The teacher job is to facilitate who and collaborate students to develop and grasp their



new understanding of the concept, and thereby learning in constructivist classroom ensure higher order thinking, Meta cognition and analytical skills (Mascolo, M. F. 2009).

According to Llewellyn, D. (2005) “in positivist classroom curriculum is presented part to whole through inductive approach with focus on basic skills, Hence students are considered as blank slates onto which information is transmitted by the teacher, similarly teaching learning process in this classroom works on read and repeat manner (Llewellyn, D. (2005)”. In constructivist pedagogy the curriculum is presented whole to parts with emphasis on higher order thinking skills reasoning, thinking, and critical skills (Zohar, A. 1999). “In constructivist classroom, teaching is generally carried out in interactive manner and the goal is to develop the learning behavior based on individual differences in order to establish smart environment for students and hence in this classroom students enjoy learning environment with their own well, likewise the ideas of students are preferred and carefully considered so assessments in constructivist classroom is embedded with instruction”. In constructivist classroom teachers highly value the Students thinking and questioning (Miri, B., David, B. C., & Uri, Z. 2007).

## **RESEARCH QUESTIONS**

1. What are teacher’s perceptions about social constructivist and traditional learning?
2. Why teachers embrace and prefer social constructivist conception over traditional practices?

## **RESEARCH METHODOLOGY**

### **Research design**

Multiple-case study methodology was employed where respondents were examined using multiple data collection methods. Fifteen public secondary school teachers were selected in public secondary schools of District Mardan using purposive sampling technique to develop a more in-depth understanding of the phenomena experienced. Thematic analysis was utilized as data analysis tool.

## **QUALITATIVE ANALYSIS OF TEACHER’S INTERVIEW**

Fifteen secondary-level chemistry teachers were interviewed to obtain detailed insight into the implications of constructivist classroom practices. Interviews were conducted for constructivist and traditional classroom practices. Semi structured interview was employed to make the responses more strengthened; the semi-structured interview design allows the researcher to perceive the thinking of teachers that is difficult to be measured through questionnaire (Patton, M. Q. (2002). Based on analysis themes emerged upon thematic data analysis and these themes were then used as framework for organizing the data.



## **ANALYSIS OF TEACHERS EXPERIENCES ABOUT CONSTRUCTIVIST AND TRADITIONAL CHEMISTRY CLASSROOM**

Chemistry curriculum of elementary and secondary education Khyber Pakhtunkhwa is based on SLOs (Student Learning Outcomes). The content areas of Chemistry subject addressed in our schools do offer a solid foundation; while there arouse disputes over what gets troublesome is the way how chemistry teachers teach.

Teacher's experiences revealed that the major criticism is against curriculum content knowledge versus pedagogical knowledge and its failure with regard to student learning outcomes. As a subject, chemistry content anticipate problem solving, critical and analytical thinking, use of heuristics, problem solving, reasoning, making connections and scientific methods. The inculcation of scientific processes in students constitutes the difference between practically doing scientific concepts and memorizing and swallowing chemistry content, between scientific thinking and memorizing formulas.

A senior teacher expressed their experience of classroom teaching that a teacher is not certain. Sometime teacher adopt positivist and other time a constructivist. Teacher is a facilitator and a mentor. Teacher helps the learner. One of renowned chemistry teacher stated that "The facilitator has to create proper environment in the class so that the students are motivated, challenged and think deeply to arrive at their own conclusion". Another teacher expressed his beliefs and experiences about the use of teaching approaches i.e. positivist or constructivist as a facilitator, he has to support the students to be effective thinkers. "The facilitator (teacher) and the learners, both learn from each other. Students need to be encouraged to arrive at their own pace and then compare it with that of the teacher as well as with that of their peer". Similarly by using proximity control, teachers have to observe every student and assess their individual progress. Teacher should encourage students to pose questions to create effective learning environment. Using his own experience teacher proclaims that I intervene if any 'conflict' arises or if the process of learning is going astray. As a constructivist chemistry teacher I mostly establish a "friendly learning milieu" and am always successful to the students reasoning and Meta cognition. Teachers need to demonstrate collaborative classroom environment and try to make connection between the theoretical content knowledge and the daily real life activities. Classroom is joint venture of both teachers and students and being a chemistry teacher we can create constructivist learning environment.

One teacher proclaimed that for me inside chemistry classroom it's not appropriate to use direct instructions. Learning should take place by John Dewey learning i.e. the use of active learning engagement by doing and stimulating fresh new ideas. The respondent replied the use of teaching in pre planned and well organized classroom milieu so that students learn how to learn new



knowledge. Teachers have to facilitate learners to think about their own previous knowledge and to integrate new experience.

**Student centered chemistry classroom will be achieved by following the following themes:**

### **Integration of personal knowledge with content knowledge**

Most of the teachers were in agreement that we integrate content knowledge with our own personal knowledge and experience. Text books have only words, it's the teacher responsibility of how to mould and shape the content knowledge and make learning a fun and transform knowledge into students daily lives. Based on a teacher statement "In constructivist classroom the teacher presents a concept to the learners and guides them to explore the topic through laboratory experimentation and the learners are encouraged to construct and pose question and teacher helps them to answer the question constructed by them through scaffolding".

### **Teacher appreciation and facilitation of individual differences**

All the teachers agree that all students are different according to their capabilities and way of grasping new knowledge. Classroom is the amalgam of weak, mediocre and intelligent students. Teachers need to teach according individual needs of the students. One teacher elaborates that all students are unique and special and every student has the right to learn. A chemistry teacher claimed that "All learners are different to each other in their way of thinking and so the need arises to look at a problem from multiple perspectives and provide the opportunities to learners to experiment and discuss their alternative ways of thinking, hence teachers also need to encourage students are to work in groups and all the groups can share their opinions on the topic with each other". One experienced teacher expressed that I mostly use think, pair Share teaching strategy and engage all the students and doing so always I found myself successful. In this teaching strategy all students participate and all students share their knowledge and experience about the concept and finally all students clear their minds about the concept.

### **Provision of social and emotional learning**

According to respondent's opinions the affective domains i.e. social as well emotional features of learning should be transformed to the individual learners. Sometime learners are very intelligent and smart but they lack self esteem and reluctant to express their feelings or raise questions. "Five aspects of social and emotional learning which could be covered in the teaching are as follows, self awareness, managing feelings, motivation, empathy and social skills". These aspects will allow students the freedom of expression. Teachers should encourage them to frame their own questions on the problem at hand and ask freely.



### **Use multiple modes of constructivist approaches**

Teachers demonstrate that every concept needs to be tackled with scientific methods. Teachers should use multiple media to comprehend the topic through multiple dimensions. Every teacher needs to plan various resources and pedagogical approaches that help to effectively conduct the activity. Chemistry needs to embrace following supporting media resources in order to satisfy the learning domains i.e. Affective, Cognitive and psychomotor.

Individual and group assignment: Think, Pair, Share: Group discussions/Group activities: Project based learning: Blended learning: Integration of theoretical knowledge with laboratory work

### **IMPLICATION OF CONSTRUCTIVISM THEORY ON CHEMISTRY CLASSROOM TEACHING**

The analysis of teacher's experiences deduced solid reasons for using constructivist theory: Students learn best once engaged in cooperative classroom rather passively receiving information. Learning is a social process of interacting with peer because it is embedded within a social context as students and teachers work together to build knowledge.

Chemistry teachers need to frame a more conducive teaching learning environment for their learners. This learning theory always strengthens the vitality and the student teacher interaction in classroom activities. Teacher's needs to focus on Students cooperative learning keeping in mind the individual students knowledge and experiences through interactive actions, individual and group assignment. Individual differences is the beauty and charm of the classroom as every student has some sort of valuable information and sharing of information will help students to improve their cognitive ability.

In traditional teacher centered classroom the element of cooperation among student-teacher as well student-student is very negligible. Vygotsky Constructivism allows the learners to actively collaborate and solve educational problems through social interaction. The process of constructing knowledge, student's needs to cooperate as well communicate with peer. In cooperative learning students can elaborate their views, can criticize ones opinions instead of solely depending on teacher and receiving knowledge passively. Cooperative learning cultivate the spirit of problem-solving features.

The process of educating a student is mutual goal of both the student and teacher, if students stuck in a complicated concept, teacher will facilitate using extrinsic teaching style. Grabbing learning is a shared activity and imbibes experience of students with their peer and teacher. Teaching with by cooperative way is a reflection of constructivist teaching approach. In this learning theory all the learners will actively participate and utilize hands on experience. Based on Vygotsky social constructivism theory of learning knowledge acquisition is the product of social interaction.



Knowledge acquisition is an active social process. Students scarcely develop their own understanding alone; they can do it through mutual collaboration and through peer interactions. Based on constructivist learning theory, teacher needs to establish a collaborative and students self based problem solving classroom environment, where learners will be allowed to develop their own understanding followed by teacher just as a facilitator.

## **CONCLUSIONS**

Based on analysis of the study the constructivist teachers need to facilitate, supports and guides students for cooperative learning. Constructivist theory of learning postulate that learners needs to make sense of all information they perceive, construct their own meaning from information. In constructivist conception, learning concerns in adjusting student cognition to accommodate new experiences. Constructivist theory, learning deals in making connections between information. In constructivism, Instruction needs to be mould around more complex problems, not those problems with clear and correct answers. Student self interest and effort in learning are more important than the transfer of textbook content by the teacher. Students Sense making, critical thinking are most significant. In teaching chemistry experimentation will replaces rote learning. Student's motivation to learn should be intrinsic rather than extrinsic. Student's assessment and evaluation be for development, rather than being stamped as "wrong". In constructivist learning Discovery and guided discovery learning are effective and influential. True learning is always acquired through collaborative and cooperative procedure. Higher orders thinking i.e. Meta cognition, critical, analytical and problem solving skills are the main parameters that shape Classrooms, multidimensional with so many different activities taking place concurrently.



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