

Problems Faced by Science Teachers in the Implementation of Constructivist Approach of Teaching

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Abstract

The purpose of this study was to find out the major problems faced by secondary school teachers in the implementation of constructivist approach of teaching science. To find out the problems faced by teachers' descriptive survey method is used. Questionnaire is prepared to collect data from secondary school teachers. The data collected using questionnaire is analyzed. The major factors that are responsible for the difficulty in teaching includes large class size, insufficient basic science knowledge of students, less time duration to conduct activities in the classroom and non-availability of teaching learning materials. To promote the activities and the constructivist approach in the classroom the teachers should compulsorily participate in in-service training programs and should attend professional development courses and both teachers and students should update their skills and also update their knowledge by reading.

Keywords: *Problems Faced by Teachers, Teaching Science, Constructivist Approach*

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Introduction

Education is the most powerful instrument for growth and prosperity of a nation, and quality education is a prime factor for the up-liftment of any society. Teachers need to be careful about the teaching experiences they are going to provide to their students. Teachers must know the most current research practices that can be used effectively to match particular subject teaching. Constructivist approach of teaching is considered as one of the effective approach in teaching science, but a teacher has to face many difficulties and problems such as large class size, Students unwillingness to learn cooperatively, Scarcity of allotted time to carry out active learning, over burden of work, rigid curriculum, lack of infrastructure, no appropriate teaching aids and apparatus, no proper leadership in schools and many more challenges. The problems that a science teacher come across in implementing the constructivist approach of teaching need to be discussed and brought down to identify and overcome them for better teaching of science in schools.

The study revealed that “the secondary school science curriculum is designed towards making every-body to become a specialist in the science professions later in life, but at the end of the day, many students are increasingly being withdrawn from science” (Akpan, 1996). Interestingly, one study reveals that “the number of science and engineering graduates is falling, just as demand for scientific advances and technological innovation is increasing, moreover many students tend to switch to other subjects that are more interesting and less demanding because a white coated, hard-working and poorly paid scientist in a laboratory is not a role model for many of today’s young people” (OECD, 2006). Moreover, in this study entitled: “Factors affecting teacher’s use of information and

communications technology it is suggested that successful implementation of ICT needs to address three interlocking frameworks for change: the teacher, the school and policy makers” (Shazia Mumtaz, 2006). Moreover, in this earlier study it was revealed that “overall there was more pro-constructivist tendency among Japanese teachers of all categories as compared to Pakistani science teachers” (Nasir Mahmood, & et al. 2007). In this earlier study, the author had revealed that “the model includes two categories, the learning design elements (comprised of fundamental design elements and collaborative elements) and the learning assessment elements (self-assessment, team assessment, and facilitator’s assessment), the application of the model shown through various working examples” (Alex Koochang & et al. 2009). It was mentioned. In this earlier study that “when compared to different traditional learning settings, this approach inspires collaboration among learners in inquiry-based learning atmosphere. Knowledge shared and constructed by the learners is at central focus. Moreover, the voice of learners excluded in teacher-centered classrooms. Collaborative learning in the classroom setting empowers learners’ voices, cultivates critical thinking, and enhances learning and achievement” (Gerstein, 2013). In this earlier research project “it was demonstrates that positive changes in beliefs and behaviors relating to technology integration in science instruction among pre- service teachers are possible through explicit instruction” (Abeera P. Rehmat, & et al. 2014). In this earlier investigation in their study of “Effectiveness of Constructivist Approach in Science Learning at Elementary School Stage” it was stated that the “Constructivist learning approach has significant impact on the achievement of learners in science” (Shantanu Bhattacharjee & et al. 2014). “Extra attention should be given to employ constructivist learning model within science courses, and conducting further studies about the effect of the constructivist-Learning model on various learning outcomes” (Ahmed O. Qarareh, & et al. 2016). Evidently, in this earlier study it was recommended that “Constructivist 7E-model strategy should be used in science teaching for the development of student’s higher achievement in science at secondary level” (Samaresh Adak, 2017).

Research gives evidence that Constructivist approach is the best approach for teaching science. Implementing a constructivist approach of teaching is a difficult task for many teachers, they faces many problems. There is no research which highlights the problems of teachers in using constructivist approach. The present research fills this gap by focusing on the problems faced by secondary school teachers in implementing constructivist approach of teaching science.

Rationale for the study

The basic idea behind this research is to find out the problems faced by secondary school science teachers in implementing constructivist approach of teaching and to provide guidelines and support to the teachers to use constructivist approach of teaching, so that the students feel easy as constructivist approach of teaching is based on experiential learning by providing a variety of learning experiences by constructing the knowledge of students.

Objective of the study

The objective is

To find out the problems faced by secondary school teachers in implementing constructivist approach of teaching science.

Limitations:

The study is limited to the teachers of Hyderabad. The study is confined to Science teachers in the schools of Hyderabad of Telangana state in India.

Methodology

Descriptive survey method is used in the present study. Population for this study is the secondary school teachers of Hyderabad. Purposive sampling technique is used to select the sample for this research and the sample for this research is 40 secondary school teachers of Telangana State in Hyderabad. A closed ended questionnaire

consisting of 40 items based on different parameters was prepared as a tool for this study. The validity and the reliability of the tool is also done.

The different parameters defining the problems of teachers are:

- Teacher's Difficulty in understanding the concepts of constructivist approach.
- Problems faced by teachers due to lack of previous knowledge of students in science.
- Problems faced due to Scarcity of learning resources, laboratory and pedagogical materials, text books.
- Problems faced due to Curriculum materials, as text books are not prepared in the way they can facilitate constructivist approach.
- Problems faced due to Teacher pedagogical preference of lecture method.
- Problems faced due to large class size.
- Problems faced due to Students unwillingness to learn cooperatively.
- Problems faced due to Scarcity of allotted time to carry out active learning.

Analysis and Interpretation of Data

Table-1: Table Exhibiting Teacher's Difficulty in understanding the concepts of constructivist approach.

Teacher's Difficulty in understanding the concepts of constructivist approach	Respondents	Percentage
Teachers with Low problems	15	37.5%
Teachers with Moderate problems	16	40%
Teachers with High problems	09	22.5%

Table 1 shows that 40% of teachers have a moderate difficulty in understanding the concepts of constructivist approach due to lack of mastery of the subject knowledge and skill of constructivist approach of teaching, and 37.5% of teachers have low or minimum problems whereas 22.5% teachers faces high problem in understanding the concepts of constructivist approach due to lack of mastery of the subject knowledge and skill of constructivist approach of teaching.

Table-2: Table showing Problems faced by teachers due to lack of previous knowledge of students in science.

lack of previous knowledge of students	Respondents	Percentage
Low problems	12	30%
Moderate problems	11	27.5%
High problems	17	42.5%

Table 2 shows that 30% of teachers faces low problems due to lack of previous knowledge of students in science. Whereas 27.5% teachers faces moderate problems and 42.5% teachers faces very high problem due to lack of previous knowledge of students in science.

Table-3: Problems faced due to Scarcity of learning resources, laboratory and pedagogical materials and text books.

Problems faced due to Scarcity of learning resources	Respondents	Percentage
Low problems	07	17.5%
Moderate problems	10	25%
High problems	23	57.5%

Table 3 shows that 17.5% of teachers faces low problems due to Scarcity of learning resources, laboratory and pedagogical materials and text books in science. Whereas 25% teachers faces moderate problems and 57.5%

teachers faces very high problem due to Scarcity of learning resources, laboratory and pedagogical materials and text books in science.

Table-4: Problems faced due to large class size.

Problems faced due to large class size.	Respondents	Percentage
Teachers with Low problems	13	32.5%
Teachers with Moderate problems	12	30%
Teachers with High problems	15	37.5

Table 4 shows that 37.5% of teachers have a high problem due to large class size and 32.5% of teachers have low or minimum problems whereas 30% teachers faces moderate problem due to large class size.

Table-5: Problems faced due to Curriculum materials as text books are not prepared in the way they can facilitate constructivist approach.

Problems faced due to Curriculum materials	Respondents	Percentage
Teachers with Low problems	12	30%
Teachers with Moderate problems	09	22.5%
Teachers with High problems	09	22.5%

Table 5 shows that 30% of teachers faces low problems due to Curriculum materials as text books are not prepared in the way they can facilitate constructivist approach in science. Whereas 22.5% teachers faces moderate problems and 22.5% teachers faces very high problem due to Curriculum materials as text books are not prepared in the way they can facilitate constructivist approach in science.

Table-6: Problems faced due to Teacher pedagogical preference of lecture method.

Teacher pedagogical preference of lecture method	Respondents	Percentage
Teachers with Low problems	07	17.5%
Teachers with Moderate problems	10	25%
Teachers with High problems	23	57.5%

Table 6 shows that 17.5% of teachers faces low problems due to Teacher pedagogical preference of lecture method in science. Whereas 25% teachers faces moderate problems and 57.5% teachers faces very high problem due to Teacher pedagogical preference of lecture method in science.

Table-7: Problems faced due to Students unwillingness to learn cooperatively.

Students unwillingness to learn cooperatively	Respondents	Percentage
Teachers with Low problems	15	37.5%
Teachers with Moderate problems	12	30%
Teachers with High problems	13	32.5%

Table 7 shows that 37.5% of teachers faces low problems due to Students unwillingness to learn cooperatively in science. Whereas 30% teachers faces moderate problems and 32.5% teachers faces very high problem due to Students unwillingness to learn cooperatively in science.

Table-8: Problems faced due to Scarcity of allotted time to carry out active learning.

Scarcity of allotted time. to carry out active learning.	Respondents	Percentage
Teachers with Low problems	08	20%
Teachers with Moderate problems	12	30%
Teachers with High problems	20	50%

Table 8 shows that 20% of teacher's faces low problems due to Scarcity of allotted time to carry out active learning in science. Whereas 30% teachers faces moderate problems and 50% teachers faces very high problem due to Scarcity of allotted time to carry out active learning in science.

Conclusion

It is concluded that considering the present status of science in schools that there is a need to reform our teaching and learning practices as per the recommendations of NCF 2005. Teachers should attend special training programs to enhance their skills of preparation of teaching aids and use of technology. Teachers should develop their content knowledge and should attend in-service programmes to develop professionally and to update themselves with the recent trends in pedagogy. Teachers should plan the lessons according to student's ability and content as planning a lesson is the soul of all preparation. Teachers must be trained to mould classroom environment according to the content and able to utilize the community resources. Teachers should learn to motivate the students and must possess the knowledge of psychology and should make use of their personal experiences. Teachers should learn the skills to correlate the topic and subject with daily life examples. Teachers should give individual attention to the students as needed according to the constructivist approach.

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