

## **Evaluation of student teachers' beliefs about Science Teaching**

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### **Abstract:**

The aim of research is to investigate Science student teachers' beliefs about teaching and learning of science before the method course. The sample consisted of 20 Science student teachers from two teacher training institutions of WBUTTAP. The -draw -a -science- teacher -test check list (DASTT-C) instrument was used for data collection. It measures student's illustration as a science teacher at work place. Analysis of data revealed that most of the student teachers before the method course beliefs on teacher centred elements of teaching. Less no of student teachers beliefs on student centred elements of teaching before the method course.

**Key Words:** Student Teachers' Beliefs, Science teaching, Teacher centred Elements, Student centred Elements.

### **Introduction**

In today's world memorization of facts and information is not the most important skill. What is needed is an understanding of how to get and make sense of information. Many countries devise their education system in the light of constructivist prospective not a description of teaching and learning. In constructivist prospective, students are encouraged to ask their own questions carry out their own experience, make their own analogies and come to their own conclusion by teachers.(Caprio1994,Staver1998,Yilmaz& Huyuguzed Cavas2006).

In recent years, research evidence about students learning of science has increasingly influenced educational reforms. The aim was to more strongly promote students active and constructivist learning environment in the science classroom. Such Reforms oriented themselves towards applicable knowledge learned within student's relevant contexts and achieving the objectives of. Scientific literacy for all students (e.g Valanides&Angeli 2002) Research data on Teachers learning and professional development has shown that educational reform will only succeed if teachers believe their knowledge attitudes seriously. (Clark and Peterson, 1987). Researchers unanimously agreed that each science teacher has personal beliefs about teaching and learning science which influence all of his /her respective teaching strategies and behaviours (Hewson & Kerby, 1993). The character and fields where such beliefs come into play are very broad and multidimensional. For example Koballa, Grabber, Coleman and Kemp (2002) concluded that belief influences all interactions between teachers and pupils. They also found that teacher's beliefs about teaching and learning always include aspects of beliefs exclusive to their chosen discipline.

Beliefs influence people's actions. This is why teachers' beliefs about teaching and learning are crucial for establishing proper actions in classroom

situations. These beliefs start to influence teachers' behaviour yearly in teacher education programs and learners pre-existing knowledge also interact during uptake and processing of new knowledge. Fischer(2000) supported this position by evaluating the influence of student teachers believe on their practical action in the classroom by asking trainees to document their initial teaching experience in school internships thus the processing knowledge about student teachers beliefs is a very valuable source of information for better understanding and improving teacher training and professional development(Pajares,1992).

Pajares, (1992) we view beliefs as an inclusive construct which covers any mental disposition a teacher and a student teacher holds and which affects his/her behaviour in the classroom. These beliefs can stem from personal experience, knowledge, social background and many others different sources.

### **Review of related literature:**

Hulya,H,Hakan.T,Jon,E.P,Pinar,H,C,(2000) Conducted a study on evaluation of pre-service teachers images of science teaching in Turkey. The main purpose of this study is to investigate elementary pre-service teachers' image of science teaching, analyse the gender differences in image of science teaching. Draw-a-science-teacher- Text checklist (DASTT-C) used for data collection. 213 free service elementary teachers from different Western universities participated in this study. The result of the study shows that the perspective of science teaching style is 20% student centred, 41% teachers centred, 39% between student centred and teacher centred.

Margareta, W. (2000) conducted a study on student teachers' beliefs. This paper reports the results from the first part of the study focusing mainly on the beliefs that student teachers have about the teaching and learning of science. The finding of the study challenges teacher education to develop science teaching and learning as a more democratic, moral

and cultural enterprise. This has an impact on thinking about how and what students learn in science classes.

Boz, Y.& Uzuntiryaki,E.(2006). In the study of semi-structured interviews was conducted with 12 prospective teachers. The analysis of the interview revealed that most of the perspective teachers held intermediate about chemistry teaching. Most exhibited inconsistency in their beliefs about teaching chemistry. The findings indicate the significance of identifying perspective teachers believe for the design of teacher education programs.

Aguirre, J.M., Haggerty,S.M., & Linder,C,L.(1990).In this study the conceptions of the nature of science, teaching and learning were identified through a questionnaire at the beginning of the training programme for secondary school level student teachers. Five district conceptions where identified for the nature of science, two for teaching and three for learning. The paper view that science teacher educators should consider the repertoire of conceptions bought by student-teachers during the training programme

#### **Objectives:**

- 1) To find out the beliefs of student teachers about teaching and learning of science.
- 2) To find out the beliefs of student teachers about teaching style

#### **Research methodology:**

##### **Sample :**

This study examines sample consisting of 20 B.Ed science student teachers from two teacher training institutes of West Bengal University of teacher training administration and planning. The sample is composed of 20 science students. All the students attending this study were in the B.Ed second semester (2020-2022) batch.

#### **Tools and Techniques:**

In this study, the DASTT-C was used as the primary data collection instrument. On the first page students were instructed to draw a picture of yourself as a science teacher at work. On the second page students were instructed to write a brief explanation of these drawings and given answers for the questions what is the teacher doing and what are

Table:1  
 The number and percentage of student teachers who responded positively to the teacher elements of the DASTT-C before intensive.

the students doing regarding their drawings. The DASTT-C consist of three sections,

a: Teacher elements, it includes teacher's activity(Demonstrating, Lecturing, visual aids, etc.) And the Teacher's position.

b :student elements, it includes activity of students ( passively receiving information, responding to the teacher,etc) and students' position( seated within the classroom).

c: environment elements, it includes the elements typically found inside classroom such as desks arranged in rows, symbols of teaching (e.g chalkboards) and science equipment etc.DASST-C also includes student shortly describing their drawings and indicating what the teachers and students are doing which help the researcher for scoring the drawing.

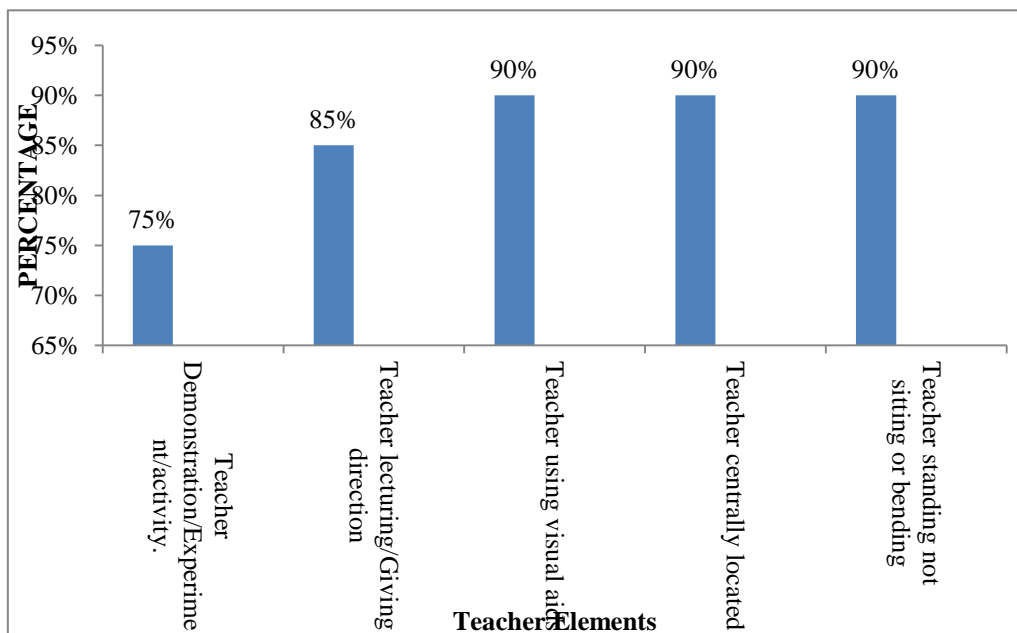
#### **Data Collection:**

The instrument, the draw-A-science Teacher check list (DASTT-C) was used for collection of data from B.Ed second semester student teachers. The instrument represents stereotypical aspects of teaching and classroom images. If this element appear in the drawing scores are simply marked in the checklist. Each section sub scores as well as an overall check list score were added. Checklist score ranges from 0 to 13.From this score, student teachers were placed from student centred (0) to more teacher centred (13) as indicated by DASTT-C measure. Thus students illustration were organised into two distinct groups: student centred and teacher centred.

#### **Result and Discussion:**

The nature of beginning teachers' beliefs and practices before the science method course with regards to the teacher's elements. Several drawings illustrated that the teachers demonstrating an experiment or activities. Some students illustrated the teacher lecturing next to the chalk board or giving directions. Many students drawing illustrated teachers using visual aids like chalkboard and chart while presenting the materials. Most of the students drawing indicated the teacher centrally, located as head of the class. As for the Teacher's postures several students illustrated the teacher standing, not sitting or bending.(see table-1)

Teacher Elements	Test number	%
Teacher Demonstration/Experiment/activity.	15	75%
Teacher lecturing/Giving direction	17	85%
Teacher using visual aids	18	90%
Teacher centrally located	18	90%
Teacher standing not sitting or bending	18	90%

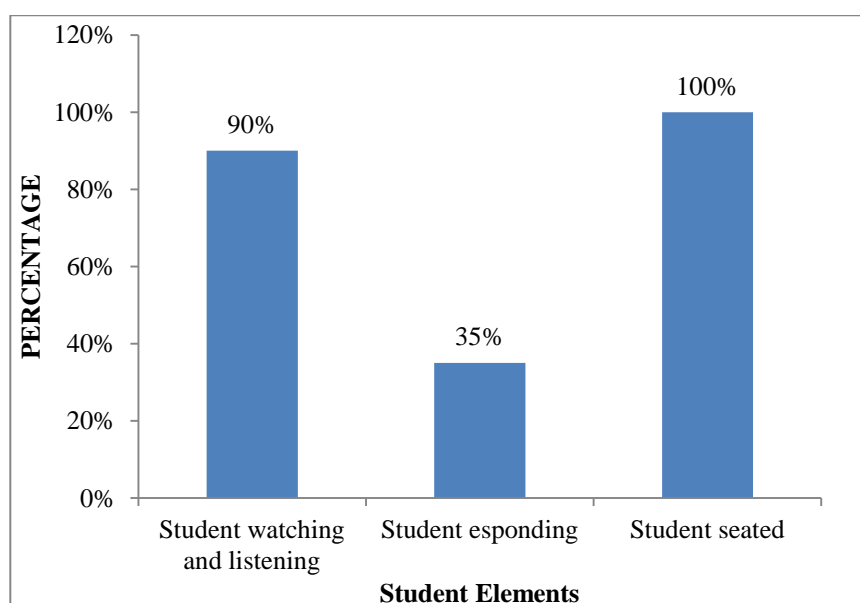


Regarding student elements the number of students drawing illustrated the students listening and watching to their teacher. Likewise, very few

students are drawing illustrated students responding. Most of the students drawing illustrated students seated. (See table-2)

The number and percentage of student teachers who responded positively to the student elements of the DASTT before intensive.

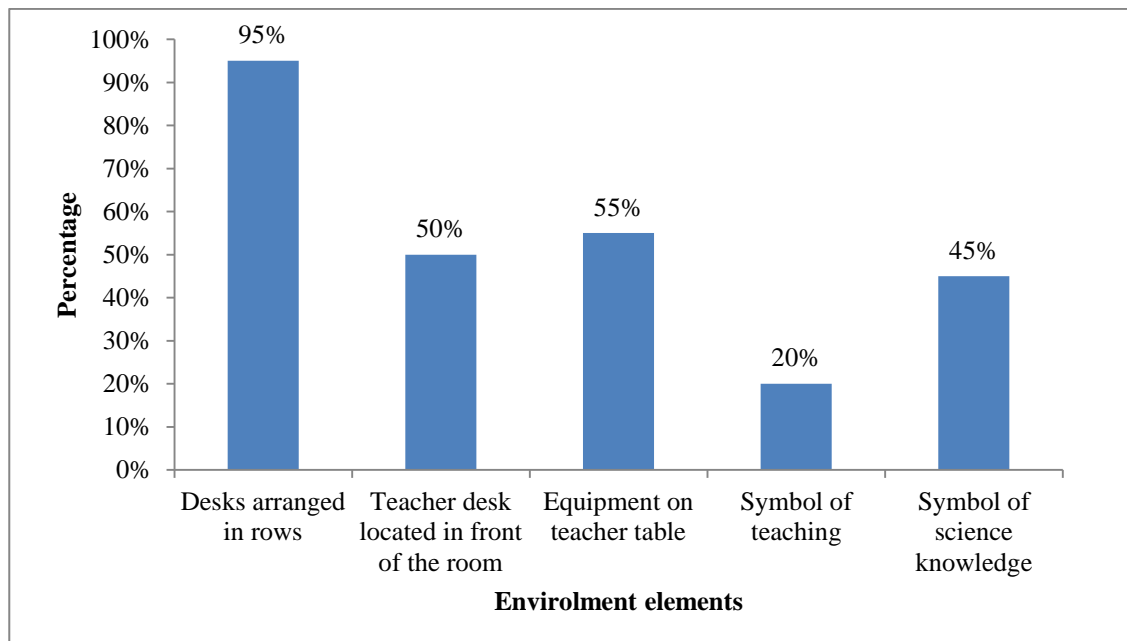
Student Elements	Test number	Percentage %
Student watching and listening	18	90%
Student responding	7	35%
Student seated	20	100%



As for the environment elements related to classroom organisation, most of the drawing illustrated the desks are arranged in rows. This revealed that number of instructional strategies that require cooperative group activities cannot be carried out in a classroom with desks placed in rows. With reference to the teachers table, half of the drawing is located in front of the classroom. More Table: 3

The number and percentage of student teachers who responded positively to the environment elements of the DASTT-C before intensive.

Environment Elements	Test numbers	Percentage
Desks arranged in rows	19	95%
Teacher desk located in front of the room	10	50 %
Equipment on teacher table	11	55%
Symbol of teaching (Chalkboard, bulletin board)	18	20%
Symbol of science knowledge	9	45%



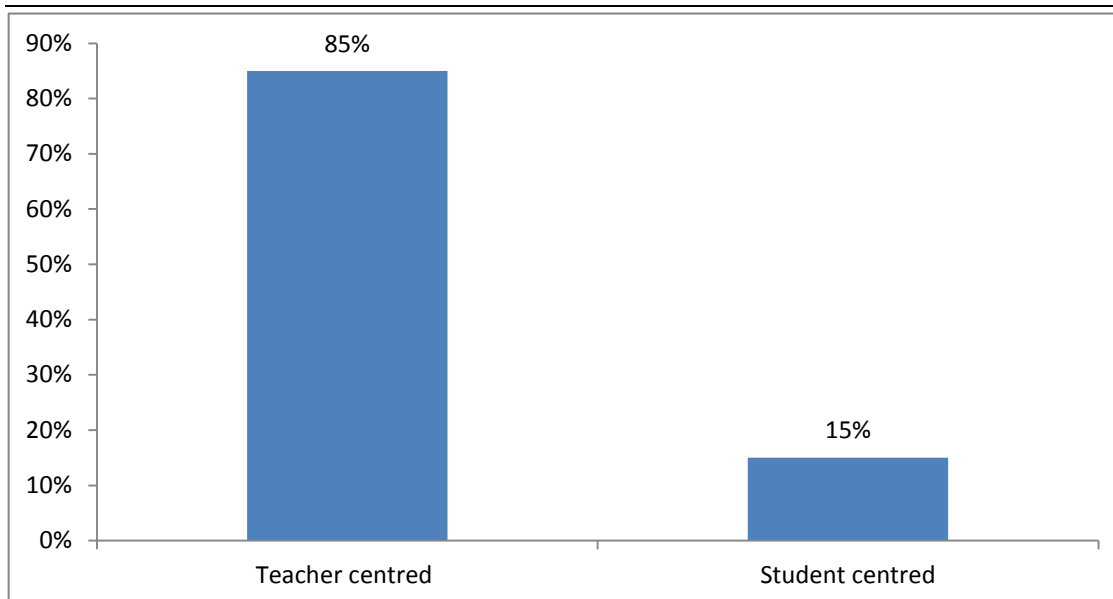
Based on their illustrations, Students were organised into two fairly distinct groups, teacher-centred and student –centred based on their overall checklist scores. Students who scored from (0-6) points were rated student centred and those who Table: 4

The number and percentage of student teachers who were rated student centred and teacher centred before intensive.

Teacher centred		Student centred	
No of students	%	No. Of students	%
17	85	3	15

than half of the teachers drawing showed the equipment on Teachers' desk. As for the presence of symbols of teaching in the classroom nearly all drawing included teaching symbols as chalkboard and bulletin board. Regarding the presence of science symbols such as wall charts and lap instruments, less than half of the student teacher included in their drawing.(see table-3)

scored from (7-13) points were rated teacher-centred, the number of student teachers who were rated as teacher centred students was found to be 85%and those who were rated student- centred were15%.(seeTable-4)



### Conclusion:

The result of the study noted that student teachers drawing yielded many significant natures of their beliefs about teaching and learning of science. The DASS-C instrument used as a tool in assisting student teachers believes before the method course. Most of the student teachers believe the teachers centre approach of teaching before the method course. During the course the student teacher had the opportunity to get introduced to different learning methodologies that challenge the previous beliefs. This indicates that who taught the method course, was able to change students theories that result from the new learning .However, beliefs can be strengthened or modified by classroom practice. Student teachers should be taught in the way they are expected to teach. Teacher education programmes should be engaging students more actively in teaching learning process that will provide opportunities for teacher's reflection. Student teachers should be trained to take the initiative to an organised hand on activities, group work and laboratory investigation in order to build classroom environment. All teachers need to consider all teaching methodologies in order to improve their beliefs and practices related to teaching. There is always demand for well prepared teachers who play an important role in facilitating excellent instruction for systematic long lasting reform

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