

## **Attitude of Student-Teachers' Heterogeneous Group towards Learning Statistics through Innovative Teaching Methods Like Student Centered Approach**

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### **Abstract**

This study was undertaken in Shri Shivaji College of Education, Amravati, teacher education institution by an assistant professor of mathematics method working with students on a teacher training course. Teacher-educator of statistics are often faced with the task of teaching their subject to heterogeneous groups of students. At the University Sant Gadge Baba Amravati Teacher educator have faced with groups of students who are all studying in bachelor of education but have very different academic and social backgrounds. This study examined the phenomenon of attitude of student-teachers towards learning statistics and its relationship with statistical performance in education college through various effective teaching methods. The study was conducted in Shri Shivaji college of education, teacher training college of Amravati where 96 student-teacher participated. The researchers made use of causal-comparative research design. Stratified, random and purposive sampling techniques were used to get the sample for the study. To teach statistics problems successfully to such heterogeneous groups investigator have developed various teaching and learning strategies to enhance student experience of the course and used student centered approach. These strategies encompass curriculum design and student support and include interventions using blended learning, study groups, reflective learning journals and the management of statistics anxiety. The investigation is trial to answer following questions: (i) What are the emerging difficulties of individual students or groups of heterogeneous students? (ii) Are there any visible reasons for them? (iii) Are these difficulties or learning problems addressed in the literature? (iv) Is the change of treatment possible? (v) What are the alternatives? (vi) Is there any hidden theory which might be changed? (vii) If the change in treatment is applied, what is the impact on students' learning? Does it help? and (viii) How to record that change?

**KEYWORDS:** Heterogeneous group, statistics, innovative teaching-methods, student-centered approach.

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### **INTRODUCTION:**

In the 21st century, an important goal of education is to develop individuals with a high level of mathematical proficiency which then supports future participation in employment and citizenship. Mathematical knowledge is fundamental to the understanding and development of science and technology as well as being applicable to many areas in the social sciences. It is vitally important for all countries in this highly competitive global economic environment, yet there are continued difficulties in developing a successful

education system which supports all pupils to reach their mathematical potential. This study examined the phenomenon of attitude of student –teachers towards learning statistics and its relationship with statistical performance in education college through various effective teaching methods. The success of any educational system depends on good teachers. We cannot replace the teachers with any other type of instructional material. It has been well said that teachers are the best educational system. So, in an educational system, teacher is the basic factor for its success. A teacher is more than what is commonly talked about. His duties of profession have many other dimensions (Deen, 2000) .The effective learning depends upon quality of teaching which requires individuals who are academically able and who care about the well being of children and youth. (Highland Council Education, Culture and Sport Service, 2007)

When investigator teach statistics to B.Ed. students at college of education Investigator have faced with groups of students who include some who have not been in a classroom for 20 years, others who have entered university straight from school. Some of our students have previously studied statistics and research methods whilst others have not completed a basic mathematics course. In addition, some students are keen to study in training colleges but arrive with little idea that statistics are so central to the B.Ed. curriculum.

#### HETEROGENEOUS GROUPS

One of the key issues when dealing with teaching heterogeneous groups is to decide whether or not to treat diversity as a burden or resource. Investigator knows that students differ widely in their attitudes, beliefs and previous knowledge. One strategy is to manage this diversity by grouping together students who share similar characteristics and providing material suitable for their particular knowledge base. For investigation investigator could split students into “advanced” and “remedial” seminar groups for statistics and its methods.

Pedagogically, student, or learner, centred approaches to teaching have emerged from changing understandings of the nature of learning and, in particular, from the body of learning theory known as constructivism. In the broadest terms, constructivist learning is based on an understanding that learners construct knowledge for themselves (Hein, 1991; Krause et al, 2003). As Maypole and Davies (2001) have observed, constructivist theories encompass a disparate array of philosophical, psychological and epistemological orientations. One of the key distinctions within this broad theoretical ‘camp’ is that between cognitive and social constructivism. Cognitive constructivism is based on Piaget’s model, which emphasizes the interaction between the individual and their environment in constructing meaningful knowledge, whereas social constructivism – attributed to the work of Vygotsky – emphasises the importance of student learning through interaction with the teacher and other students (Jadallah, 2000; Maypole & Davies, 2001). In so far as the changes to teaching practice discussed in this paper subscribe to constructivist approaches to learning and teaching, they adhere to the social constructivist orientation. Hence, the emphasis in the teaching practices reflected on here is on building the social context for learning, and on facilitating student learning through

small group activity and encouragement of high levels of peer to peer, and learner to teacher interaction.

While constructivism encompasses a broad array of understandings of learning theory and practice, the common thread running through this body of theory is the value placed on student-centred learning (Maypole & Davies, 2001). The principal implication of constructivist understandings for the way in which knowledge is produced is that students are the key initiators and architects of their own learning and knowledge-making, rather than passive 'vessels' who receive the transmission of knowledge from 'expert' teachers. Student-centred learning (and teaching) has itself been variously defined as a process by which students are given greater autonomy and control over the choice of subject matter, the pace of learning, and the learning methods used (Gibbs, 1992), a mechanism for higher education reform, by which students have individual control over higher order thinking skills. (West, 1998), explains a broad approach to teaching that ultimately holds the student responsible for their own educational advances. (Nanney, no date) concerned with learner-centred teaching as an exercise in changing teaching practice.

Specifically, Weimer identifies learner-centred teaching as encompassing five changes to practice:

- shifting the balance of classroom power from teacher to student;
- designing content as a means to building knowledge rather than a 'knowledge end' in itself;
- positioning the teacher as facilitator and contributor, rather than director and source of knowledge;
- shifting responsibility for learning from teacher to learner; and
- promoting learning through effective assessment teachers had majored or minored in mathematics scored significantly higher in only 20 percent of the cases. teaching with common activities and periods of individual work followed by whole-class (group) discussion.

## **ATTITUDE**

Attitudes are learned predispositions toward aspects of our environment. They may be positively or negatively directed towards certain people, issues or institutions. An attitude may involve a prejudice, in which we prejudice an issue without giving evidence.

### **Research question of the study**

The first question: What is the attitude of heterogeneous students' towards use of various learning resources?

The second question: Is there a statistical significance differences at the level of ( .05) in the attitude of students' towards use of learner-centred teaching due to gender?

The third question: Is there a statistical significance differences at the level of ( .05) in the students' attitude towards use of learner-centred teaching strategy as learning resources due to the own learning ideology ?

The fourth question: Is there a statistical significance differences at the level of ( .05) in the students' attitude towards use learner-centred teaching strategy as learning resource due to heterogeneous grouping ?

**OBJECTIVES OF THE STUDY**

1. To find out whether there is any significant difference between the mean scores of attitude towards

Use of learner-centred teaching of the following sub samples:

- a) Male and Female college students
- b) Educational qualification
- c) On their grouping similar and heterogeneous

**METHOD OF STUDY**

The present study deals with students' attitude towards use of learner-centred teaching strategy (LCTS) as learning resource for statistics in education so investigator adopted the survey method which was found suitable to gather the essential and relevant data.

**SAMPLE**

Sample is selected from Shri Shivaji College of Education, Amravati. Students enrolled in academic session 2013-14.

**CONSTRUCTION OF THE TOOL:**

LCTS Attitude Scale for Teacher (ALCTS) was constructed and standardized by the investigator. The investigator has selected the questionnaire form and the tool had 30 items. Each item was in the form of Likert type. The options were strongly agree (SA), Agree (A), Undecided (UD), Disagree (DA) and Strongly Disagree (SDA). The scoring of the items were 5, 4, 3, 2, 1 for positive items 1,2,3,4,5 for negative items.

**STATISTICAL PROCEDURES USED :**

Statistical procedures serve the fundamental purpose of the description and inferential analysis.

The following statistical procedures were used.

- 1. Mean and Standard deviation
- 2. t-test

**TABLE INDICATING % ANALYSIS OF STUDENTS of HETEROGENEOUS GROUP**

NO.STUDENTS	STRONGLY AGREE WITH LCTS	STRONGLY DIS AGREE WITH LCTS	UNDECIDED WITH LCTS
96	87%	3%	10%

From above table it indicates that all student-teachers' of heterogeneous group had most positive attitude towards learning statistics through innovative teaching methods like student centered approach. Most of student had favorable attitude towards learning statistics through innovative teaching methods like student centered approach. 87% of them was strongly agree with student centered learning approach. Thus the study indicates that to acquire students attention towards statistics and to remember various formulae of statistics student centered approach provide more convenient learning experiences. In this approach students get adequate and effective learning experiences and takes care of students need, age, mental and maturity level, and psychological principles of learning and students learn through practical experiences and learn

progressively. Students take part in learning process very actively and take active participation which provide them much better learning experiences.

**Table showing mean, SD and calculated t -value of Attitude Of Student-Teachers' Heterogeneous Group Towards Learning Statistics Through Innovative Teaching Method Like Student Centered learning Approach**

variables	subdivision	No. of students	Mean	S.D.	t-value	Significance
gender	male	23	68.66	8.12	3.24	S
	female	73	74.89	7.68		
Age group	Below 30 yrs.	80	76.87	7.86	0.79	NS
	Above 30 yrs.	16	74.98	8.86		
Faculty	arts	58	73.93	6.89	3.82	S
	science	38	79.90	7.90		
Educational qualification	UG	56	74.98	6.57	0.62	NS
	PG	40	75.87	7.12		

Since the calculated ' t ' value is higher than table value for 95degrees of freedom with respect of

Gender . Hence the null hypotheses are rejected in those sub variables. There is significant different between Male and female teachers. Therefore it is concluded that female teachers have positive attitude than the Male teachers. There is no significant different between age group of heterogeneous students . Therefore it is concluded that learning is independent of age group. Since the calculated ' t ' value is higher than table value for 95degrees of freedom with respect of

Faculty. Hence the null hypotheses are rejected in those sub variables. There is significant different between attitude of student teachers of various faculties. Therefore it is concluded that science faculty teachers have positive attitude than arts faculty teachers

**CONCLUSION :**

The knowledge acquired by this method is more solid and durable. this method presents statistics as practical subject ,it helps in developing the habits of discovery and self study and observation and logical power amongst group. Student center learning shifts the

focus from the teacher to the students and from delivery of subject content by teacher to active engagement with the material by the students. Through appropriate inputs from the teacher, students learn and practice how to apprehend knowledge and use them meaningfully. Student center learning approach works best at academic level. Graham Gibbs, in a large study, identified the university courses which produced the highest quality learning (deep learning) and the highest achievement. Researchers then visited these courses to discover how they were taught. The courses were found to use student centered learning, on tasks that the students found interesting, with plenty of student interaction.

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