ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

# Study The Effectiveness Of Instructional Module On The Attitude Of M.Ed. Students Towards Introductory Statistics

**Dr. Preeti Sangwan**
Assistant professor (Teaching of Mathematics)
Rao Lal Singh College of Education, Sidhrawali (Gurugram), Haryana, INDIA

**Abstract:**

This paper is a part of research work which was attempted to study the effectiveness of instructional module on the achievement of M.Ed students in introductory statistics of education. Along with studying the effect of instructional module on achievements of M.Ed students, their attitude was also assessed before starting the experiment and after completing the experiment. This paper presents the results of attitude scale administered on 20 M.Ed students i.e. on experimental group & control group. Findings of this study reveals that 45% students have highly positive attitude, have 0% students have highly negative attitude and 5% have neither neutral attitude towards statistics. In students, 35% have moderately positive attitude, about 15% have moderately negative towards statistics after providing the instructional program while About 10% students have highly positive attitude, have 5% students have highly negative attitude and 25% have neither neutral attitude towards statistics. In students, 20% have moderately positive attitude, about 40% have moderately negative towards statistics before the instructional program.

**Key Words:** Attitude towards Statistics, Attitude, Introductory Statistics

## Introduction:

Introductory statistics is very important subject which is used in almost in all social sciences and pure sciences researches for analyzing the results. Most of the students have developed negative attitude towards this subjects by considering it difficult to understand. In M.A. (Education), M.Ed, M.Phil, Ph.D also students have to study introductory statistics as an integral part of the course. This subject requires teaching strategies that could help the teacher perform his task more efficiently, and provide each student sufficient time to maximize learning at the same time. One such technique is to individualize instruction where individual differences of students in their capacities to learn are taken into account. Individualized instruction develops

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

critical thinking. Students are encouraged to question, criticize and argue their point of view. It also develops one's self-concept by recognizing the desirability of individual differences. The basis for this approach is the fact that every student is unique with his own potentials, abilities, interests, and needs. Thus, no two students can learn statistical concepts at the same rate in the same manner.

A module is a new teaching strategy for arranging learning experiences in education and it has been receiving much attention. The strategy of learning modules has become a part of all level of teaching. A learning module is a self-learning package dealing with one specific subject matter unit. It can be used in any setting convenient to the learner and may be completed at the learner's own pace. It may be used individually or in small groups. It is structured in such a way that learner can identify the objectives he/she wants to achieve, select the appropriate material, follow a learning sequence by selecting from a variety of methods of presentation, and evaluate his/her own achievements. In module learning teachers becomes a facilitator of learning rather than the traditional dispenser of knowledge. Sufficient theory and practice are available for the application of modular teaching in our classrooms.

Student's attitude and perception on statistics courses require substantial attention because both items give impacts on the teaching and learning process of the subject. Their attitude will also influence their statistical thinking outside of the classroom or in applications for other courses. It also encourages students to take this course at a higher level (Gal. Et al. 1997). In addition, a study on the student's attitude towards the statistics subject is important to encourage student to understand the statistics concept, to improve their skill in statistics and to appreciate the knowledge in their daily lives. Statistics is a knowledge component that could solve problems in various fields and researches. A negative attitude towards this course will be an obstacle in learning the course effectively (Fullerton & Umphrey 2001). Therefore, this study was carried out to identify the attitude of M.Ed students towards introductory statistics subject. Among the questions in the study are:

**Methodology:**

Quasi-experimental design was followed to study effectiveness of instructional module on attitude of students. The sample for the final study was selected from Seth Tek Chand College of Education Ratan Dera, Kurukshetra. For experiment, sample consisted 20 M.Ed. students of

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

this institute, To measure the attitude of the students towards introductory statistics "Attitude Towards Statistics" was developed by the investigator. Attitude towards Statistics developed by investigator was employed to test the attitude of the students towards introductory statistics. This scale has been developed for the use with M.ED. students of the age range from 23 to 53 years. The preliminary form of the attitude scale towards statistics had 31 items. After carrying out the item analysis based upon Kelly technique (1939), only 18 items were retained and reviewing 13 were dropped. After collecting the filled test papers, scoring has been done for favorable & unfavorable statements. For the favorable statements, the strongly disagree to strongly agree was marked weightage as scores 1,2,3,4,5 respectively & unfavorable statements, the weightage was done in reverse order i.e. strongly disagree statement was given weightage 5, disagree statement was given weightage 4, neutral statement was marked as 3, agree statement was marked as 2 & strongly agree statement was given weightage as 1.

**Results of the study:**

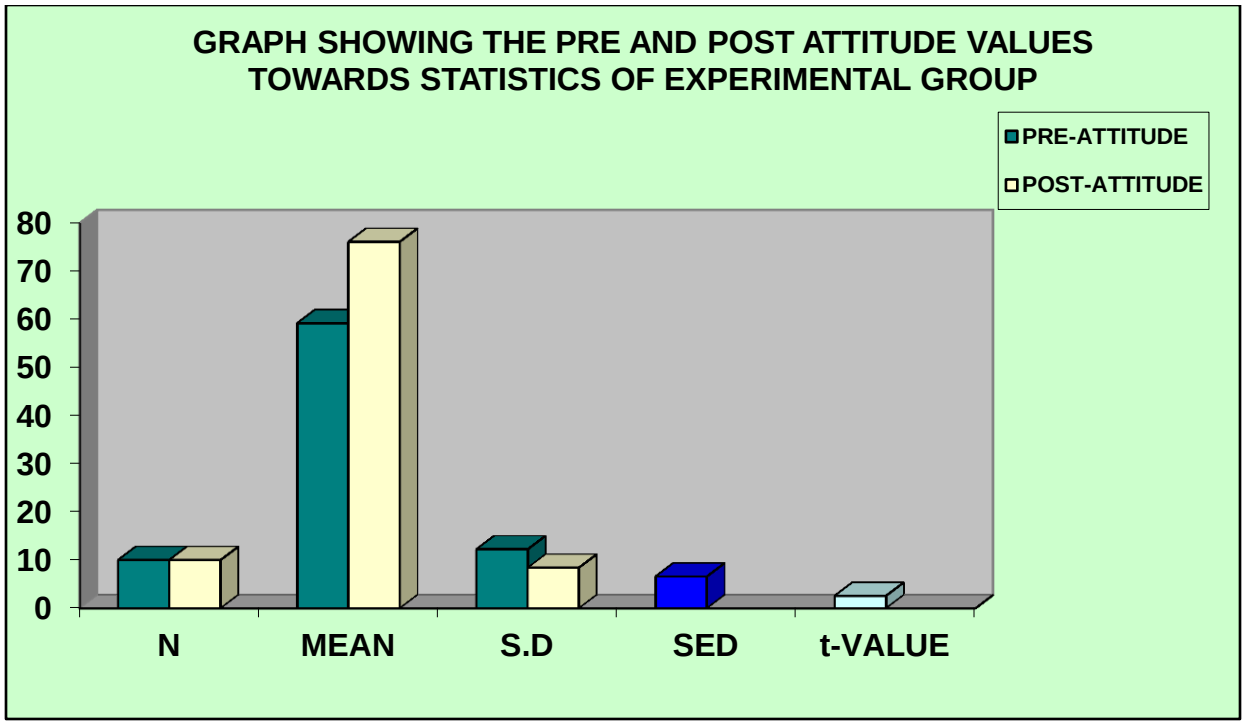
**a. Study of the Pre and Post Attitude Towards Statistics of Experimental Group**

For studying the attitude of experimental group students, all the 10 students of this group were administered an attitude scale consisting of 18 questions disclosing the worth of statistics, as pre-test before starting the instructional phase and the same scale was administered as a post-test after completing the instructions. The mean, S.D. and 't'-values of attitude scores are presented in the Table 1.

| ***EXPERIMENTAL GROUP*** | ***N*** | ***MEAN*** | ***S.D*** | ***SED*** | ***t-VALUE*** | ***SIG*** |
|---|---|---|---|---|---|---|
| **PRE-ATTITUDE** | 10 | 59.2 | 12.23 | 6.58 | 2.568 | 0.05 LEVEL |
| **POST-ATTITUDE** | 10 | 76.1 | 8.41 | | | |

**Table 1**

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019




**Graphical Representation 1**

Table 1 reveals that mean and S.D. scores of the pre-attitude of the experimental group towards statistics was 59.2 & 12.23 and for the post-attitude of this group was 76.1 & 8.41 respectively. The 't'-value of the two group scores' was 2.568, which is significant at 0.01 level. This shows that there is a significant difference between pre and post attitude of experimental group towards statistics. It means attitude of the students of experimental group differs towards statistics before starting the instructional phase and after completing the instructions through modular approach.

**b. Study of the Pre and Post Attitude Towards Statistics of Control Group**

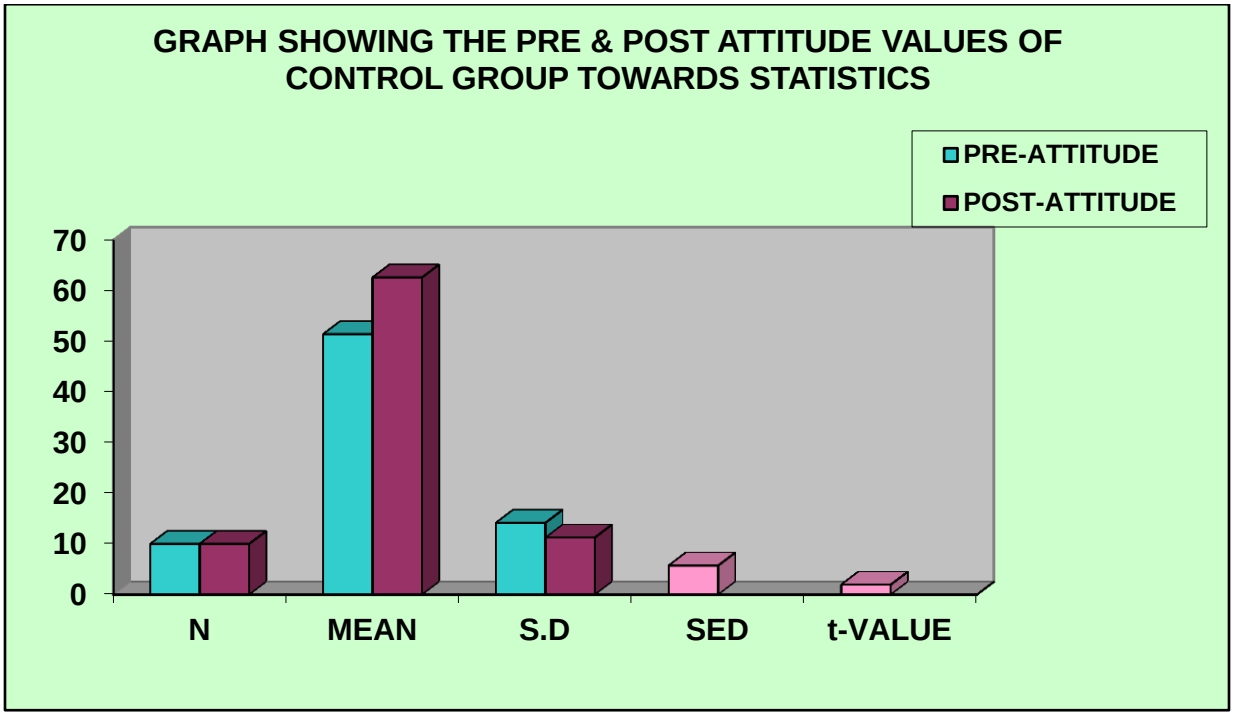
For studying the attitude of control group students, all the 10 students of this group were administered an attitude scale consisting of 18 questions disclosing the worth of statistics, as pre-test before starting the instructional phase and the same scale was administered as a post-test after completing the instructions. The mean, S.D. and 't'-values of attitude scores are presented in the table 2

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

| *CONTROL GROUP* | *N* | *MEAN* | *S.D* | *SED* | *t-VALUE* | *SIG* |
|---|---|---|---|---|---|---|
| **PRE-ATTITUDE** | 10 | 51.4 | 14.17 | 5.72 | 1.958 | NOT SIG |
| **POST-ATTITUDE** | 10 | 62.6 | 11.26 | | | |

**Table 2**

The table 2 reveals that mean and S.D. scores of the pre-attitude of the control group towards statistics was 51.4 & 14.17 and for the post-attitude of this group was 62.6 & 11.26 respectively. The 't'-value of the two group scores' was 1.958, which is insignificant value. This shows that there is not a significant difference between pre and post attitude of control group towards statistics. It means attitude of the students of control group don't differ towards statistics before starting the instructional phase and after completing the instructions through conventional approach.




**Graphical Representation 2**

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

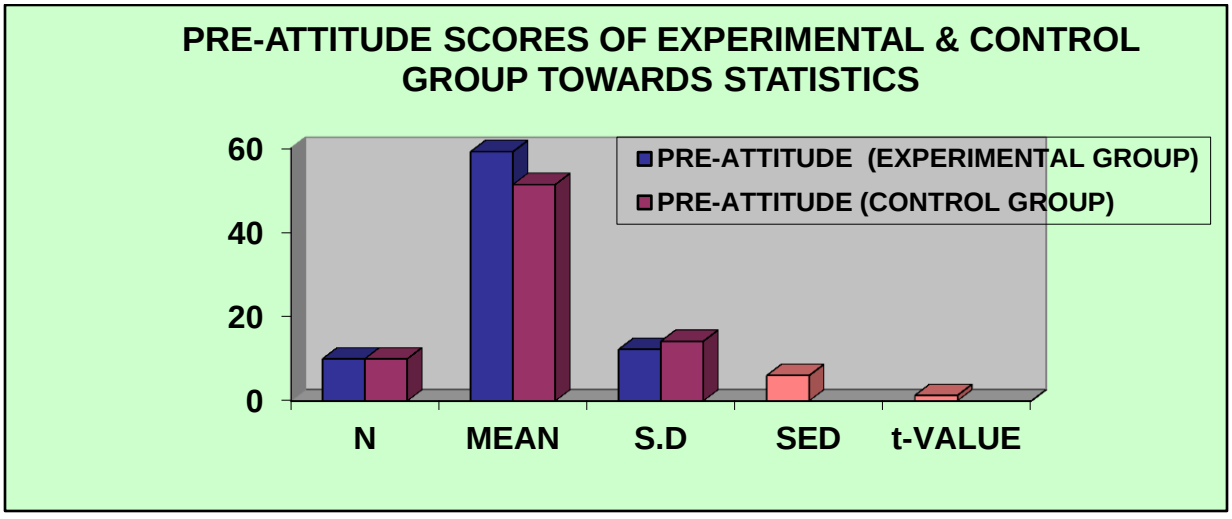
**c. Study of the Pre Attitude Towards Statistics of The Two Different Groups**

For studying significance of the attitude of the learners of two different groups having two different approaches of teaching, towards introductory statistics, pre-test scores were taken in to consideration. The mean, S.D. and 't'-values of attitude scores on the basis of pre-test scores for experimental & control group are presented in the table

| *WHOLE SAMPLE* | *N* | *MEAN* | *S.D* | *SED* | *t-VALUE* | *SIG* |
|---|---|---|---|---|---|---|
| **PRE-ATTITUDE (Experimental Group)** | 10 | 59.2 | 12.23 | 6.02 | 1.29 | NOT SIG |
| **PRE-ATTITUDE (Control Group)** | 10 | 51.4 | 14.17 | | | |

**Table 3**

Table 3 reveals that mean and S.D. scores of the pre-attitude of the experimental group towards statistics was 59.2 & 12.23 and for the control group, pre-attitude scores in terms of mean & S.D. was 51.4 & 14.17 respectively. The 't'-value of the two group scores' was 1.29, which is not significant at any level. This shows that there is not significant difference between pre-attitude of experimental group and control group towards statistics .It means, there was no change in the attitude of the students of experimental group and control group towards statistics before starting the instructional phase.




**Graphical Representation 3**

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

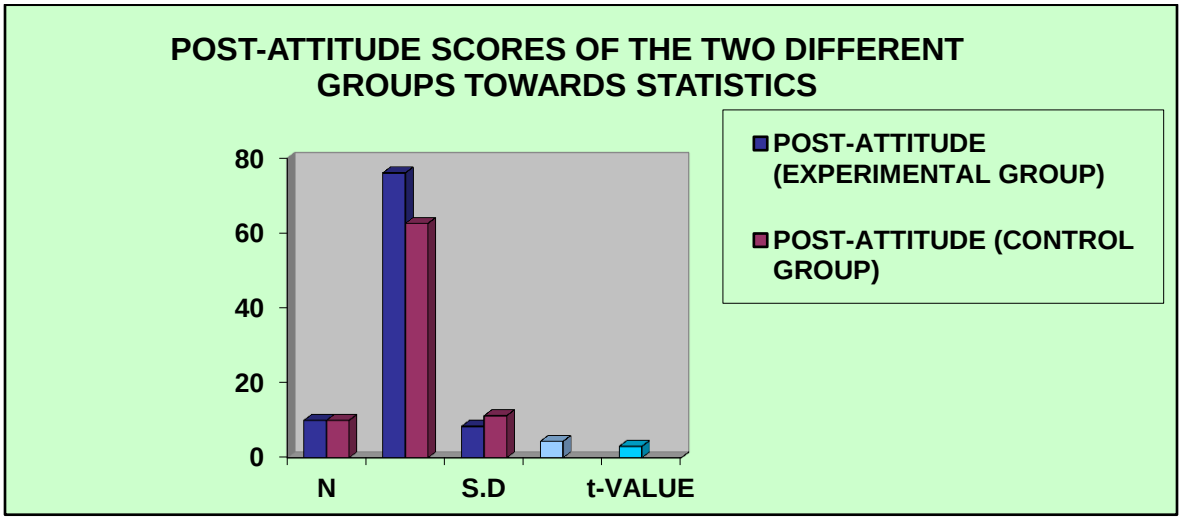
**d. Study of the Post Attitude Towards Statistics of the Two Different Groups**

For studying the significance of the post-attitude of experimental group & control group towards introductory statistics , all the 10 students of each group were administered an attitude scale consisting of 18 questions disclosing the worth of statistics, as post-test after completing the instructions by two different approaches. The mean, S.D. and 't'-values of post-attitude scores for the two different groups are presented in the table as

| *WHOLE SAMPLE* | *N* | *MEAN* | *S.D* | *SED* | *t-VALUE* | *SIG* |
|---|---|---|---|---|---|---|
| **POST-ATTITUDE** ***(Experimental Group)*** | 10 | 76.1 | 8.41 | 4.4 | 3.06 | Significant at 0.01 LEVEL |
| **POST-ATTITUDE (Control Group)** | 10 | 62.6 | 11.26 | | | |

**Table 4**

Table 4 reveals that mean and S.D. scores of the post-attitude scale towards statistics for experimental group was 76.1 & 8.41 and for the control group, post-attitude scores in terms of mean & S.D. was 62.6 & 11.26 respectively. The 't'-value of the two group scores' was 3.06, which is significant at 0.01 level of significance. This shows that there is a significant difference between post-attitude of experimental group and control group towards statistics. It means that change was seen in the attitude of the students of experimental group and control group towards statistics after completing the instructional phase through two different approaches of teaching.



ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

**Graphical Representation 4**

**e. Categories of Students of Two Different Groups according to The Likert Scale of Attitude Towards Statistics**

In the scale, attitude towards statistics, there is 18items.highest score which an individual can get is equal to 18x5 i.e. 90. The lowest score which an individual can get is 18x1 i.e. 18. Attitude score of an individual having uncertain view i.e. neutral response is 18x3 i.e. 54. Categories of learners according to attitude towards statistics are given as

| CATEGORY | ATTITUDE | ATTITUDE SCORE |
|---|---|---|
| **1** | HIGHLY POSITIVE | 73-90 |
| **2** | MODERATELY POSITIVE | 55-72 |
| **3** | NEUTRAL | 54 |
| **4** | MODERATELY NEGATIVE | 36-53 |
| **5** | HIGHLY NEGATIVE | 18-35 |

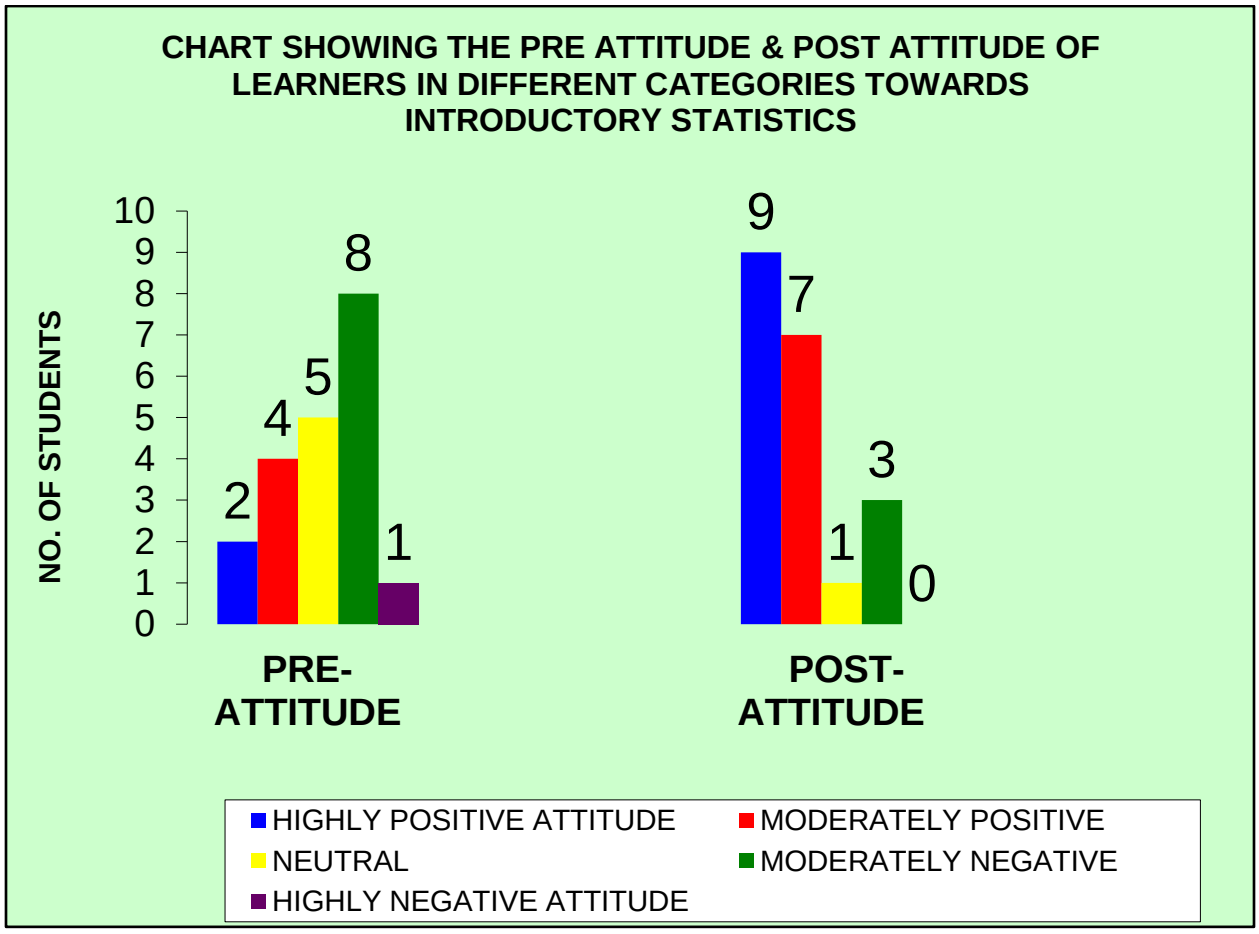
**Table 5**

From the table 5, it is clear that students having attitude scores more than 54, have positive attitude towards statistics while those getting scores less than 54 have negative attitude towards statistics. Learners having attitude scores 18 to 35 have highly negative attitude towards statistics, those who have scored from 36-53 have moderately negative attitude towards statistics. Similarly, students getting attitude scores 55-72 have moderately positive attitude towards statistics and having scores 72-90 have highly positive attitude towards statistics.

About 45% students have highly positive attitude, have 0% students have highly negative attitude and 5% have neither neutral attitude towards statistics. In students, 35% have moderately positive attitude, about 15% have moderately negative towards statistics after providing the instructional program while About 10% students have highly positive attitude, have 5% students have highly negative attitude and 25% have neither neutral attitude towards

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

statistics. In students, 20% have moderately positive attitude, about 40% have moderately negative towards statistics before the instructional program.




**Graphical Representation 5**

**Conclusion:**

The students having scores 73 to 90 come in highly positive attitude category. 10 % students have highly positive attitude towards statistics before starting the instructional phase through different approaches and after the instructions were over 45% students were found to have highly positive attitude towards statistics. The students having scores 55 to 72 come in moderately positive category. 20% students have moderately positive attitude towards statistics and after the instructions were over, it was found out that 35% students have moderately positive attitude towards statistics. The students who have scored 54 come in neither positive nor negative attitude category. Such students have neither positive nor negative attitude towards statistics. 25 % students have neutral attitude towards statistics before starting the instructional

ISSN: 0971-1260
Vol-22-Issue-3-July-September-2019

phase and after the instructions were over 5% students have neutral attitude towards statistics. The students having scores 36 to 53 come in moderately negative attitude category. 40 % students have moderately negative attitude towards statistics before starting the instructional phase and after the instructions were over 15% students have moderately negative attitude towards statistics. The students having scores 18 to 35 come in highly negative attitude category. 5 % students have highly negative attitude towards statistics before starting the instructional phase through different approaches and after the instructions were over 0% students have highly negative attitude towards statistics.

**References:**

1. Bude, L., Van De Wiel, M. W., Imbos, T., Candel, M. J. J. M., Broers, N. J., & Berger, M. P. F. (2007). Students' Achievements in a Statistics Course in Relation to Motivational Aspects and Study Behaviour. *Statistic Education Journal*, **6**(1), 5–21.
2. Emmioglu, E., & Capa-Aydin, Y. (2012). Attitudes and Achievement in Statistics: A Meta-Analysis Study. *Statistic Education Research Journal*, **11**(2), 95–102.
3. Escalera-chávez, M. E., García-santillán, A., & Venegas-martínez, F. (2014). Confirmatory Factorial Analysis to Validity a Theoretical Model to Measure Attitude toward Statistic, **5**(1), 569–578.
4. Estrada, A., & Batanero, C. D. (2008). Explaining teachers' attitudes towards statistics. In *Challenges fot Teaching and Teacher Education* (pp. 1–8).
5. Hilton, S. C., Schau, C., & Olsen, J. A. (2004). Survey of Attitudes toward Statistics: Factor Structure Invariance by Gender and by Administration Time. *Structural Equation Modeling*, **11**(1), 92–109.