



A Comparative Study of the Mathematical Achievement Based on Action Oriented Competencies for the Students of Grade V and VI

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Abstract:

The objectives of the present study were (i) To compare the achievement level of the students of Grade V and VI on a Competency based and Action oriented test in Mathematics.(ii) To study effect of Gender on the achievement level of the students of Grade V and VI (iii) To study effect of Area on the achievement level of the students of Grade V and VI. The population of the study was the students of Grade V and VI of Gujarat state. The sample for the study was selected by using purposive random sampling method. The present study was conducted on 240 students (Grade V: 120 students; Grade VI: 120 students) of twenty districts of Gujarat state. To collect the data for the present investigation the investigator used self constructed and standardized Competency based and an Action oriented test for the students of Grade V and VI in mathematics. After the analysis the researcher has found that there is significant effect of gender and area on the achievement level of the students of Grade V and VI.

Keywords: *Achievement, Action oriented test, Competency, Education, Mathematics*

1. Introduction

Education is the only field where a child spends his important years of his life, the formative years, and a maximum portion of his life. Many psychologists and experts from interdisciplinary sciences opine that education does affect the pupil's personal, social, emotional and psychological development. These years play a vital role in the child's overall development and his field of socialization.

Comparative research, simply put, is the act of comparing two or more things with a view to discovering something about one or all of the things being compared. This technique often utilizes multiple disciplines in one study. When it comes to method, the majority agreement is that there is no methodology peculiar to comparative research. The multidisciplinary approach is good for the flexibility it offers, yet comparative programs do have a case to answer against the call that their research lacks a "seamless whole".

Comparison is one of the conscious human activities; we necessarily and quite often compare in order to make choices and to judge where we stand in relation to others and to our own past (Alexander2000).

National Policy on Education (NPE)-1986 recommended the conduct of periodical achievement surveys at all stages of school education. It emphasized the need for laying down the Minimum Levels of learning (MLL) for each stage of Primary School Education. This was visualized, so that the MLLs could serve as effective guidelines for organizing teaching-learning experiences and evaluating pupil's achievement.

Keeping in mind the approach of Minimum Levels of Learning (MLL) Gujarat have also adopted the basic concept of Activity- based and Joyful learning approach given by Shri Gijubhai Badheka. Gujarat have prepared, Activity based, Joyful learning and Competency-based textbooks up to grade VII. Activity based and Joyful learning approaches were the main significance of the new textbooks. This approach leads to individual achievement and performance. So along with the written and oral competencies, Action oriented competencies have been introduced for all subjects and all Grades. So new method of Pupil Evaluation should be introduced for especially Action Based Competencies. Because of this type of evaluation, a teacher can evaluate their student's individual concept clarification, Diagnosis and remedial teaching.

As the Action oriented, Joyful learning, Competency based approach were applied to grade V to VII, the investigator selected the students of grade V and VI of the Gujarat state to study their achievement level.. From the need and selection of the study, the research problem undertaken by the investigator was selected. "A Comparative Study of the Mathematical Achievement based on Action-oriented Competencies for the students of Grade V and VI."

2. Objectives of the Study

The objectives of the present study were

1. To compare Mathematical Achievement based on Action-oriented Competencies for the students of Grade V and VI.
2. To study the effect of gender on achievement level of students of Grade V and VI.
3. To study the effect of Area on achievement level of students of Grade V and VI.

3. Hypotheses of the study

Ho₁ There would be no significant effect of gender on the Action oriented mathematical Achievement for the students of Grade V and VI.

Ho₂ There would be no significant effect of area on the Action oriented mathematical Achievement for the students of Grade V and VI.

4. Importance of the Study

One can know how to measure the achievement of Action-oriented competencies by this type of test. This study also provides the comparison between the achievement of Grade V and VI students. Teacher would be know the variety of items to measure the Action-oriented competencies for grade V and VI mathematics.

This study will also helpful to compare the achievement levels of the students of rural and urban area schools as well as the difference between the achievement levels of boys and girls.

5. Variables of the Study

Variables of the present study were Gender and Area which both are considered as Independent variables.

6. Operational Definitions of the terms

1. Mathematical: Matters consult to the subject maths. Topics of maths subject.
2. Competency-based Tests: The MLLs curriculum in the form of statement emphasizes competencies instead of content. It rightly makes a teacher aware that his success will be judged by the extent to which competencies are acquired by most of his pupils. The aim of MLLs programme is to help pupils in achieving at least minimum essential competencies. It will be necessary to test them on a specific competency at a time and again to find out whether they have acquired or not. Since the test has reference to competencies, it will be proper to call competency- based tests. The test items should be based on one competency at a time.
3. Action-oriented test: A test or a set of items in which a student is required to do some Action. It is neither Activity based nor Performance based.

7. Delimitations of the Study

The study has been delimited to the to the government primary schools with Gujarati medium. The present study is regarding action oriented achievement in Mathematics of students studying in grade V and VI.

8. Population and Sample of the Study

The population of the study was the students of grade V and VI of Gujarat state. The sample for the study was selected by using purposive random sampling technique from 20 schools of Gujarat state. The test to be used was an individual test so that three boys and three girls were selected from by systematic Randomised Technique from each school and each grade selected in the sample. Hence, the size of the sample was 240 (Boys:120;Grade V-60;Grade VI-60, Girls :120;Grade V-60;Grade VI-60). The same sample has been also distributed Area wise. i.e. Rural area(180 students; Grade V-90; Grade VI-90) and Urban area (60 students; Grade V-30;Grade VI-30) has been selected for the present study.

9. Research Method

In the present investigation survey method was applied.

10. Tool

Tool of the study were an individual tests of grade V which includes five Action-oriented competencies with twenty items. The tests for grade VI incorporate nine Action-oriented competencies with fourteen items. The structure of the test is like: the students must give answer with the help of Mathematical instruments in the test paper only. The researcher has provided a mathematical kit, to each student of every school covered in the sample, which includes instruments like: (1) Abacus (2) Scale (3) Protractor (4) Compass (5) Set-squares (6) Graph papers. This structure of the test represents each competency number along with the respective items belonging to that competency.

11. Data Collection

The test was administered personally to each student by investigator. Also each test was checked and given marks according to the score key. The data was tabulated in the required form and analyzed accordingly.

12. Data Analysis

The sample of 240 students of grade V and VI (Each grade 120 students) of Gujarat State were studied on Competency-based and an Action-oriented test for Mathematics. The tabulation and statistical calculations were made for analysis and interpretations of data. The t-test was employed for to test the H_{0s} . The analysis and interpretation of the data have been presented under the following heads:

12.1 Effect of Gender on Mathematical Achievement on Action Oriented Competencies

To achieve first objective and to test the H_{01} , related data were classified and Mean, SD, SE_D and t-values were computed and they are presented in table 1.

Table 1
Mean, S.D. and t- value of the Grade V and VI Students

Grade		Group	N	Mean	S.D.	SE_D	t-value	Level of significance
V	H_{01}	Boys	60	18.4	6.0	1.78	4.2	**
VI		Girls	60	25.9	9.1			
V	H_{01}	Girls	60	19.2	4.5	1.46	13.25	**
VI		Boys	60	26.4	8.7			

From the above table, it is evident that the obtained t-value had not reached the 0.01/0.05 level of significance. Hence, this has rejected H_{01} which was stated as “There would be no significant effect of gender on the Action oriented mathematical Achievement of the students of Grade V and VI.

12.2 Effect of Area Mathematical Achievement on Action Oriented Competencies

To achieve second objective and to test the H_{02} , related data were classified and Mean, SD, SE_D and t-values were computed and they are presented in table 2.

Table 2
Mean, S.D. and t- value of the Grade V and VI Students

Grade		Group	N	Mean	S.D.	SE_D	t-value	Level of significance
V	H_{02}	Urban	30	18.7	5.3	1.86	16.05	**
VI		Rural	90	26.1	8.7			
V	H_{02}	Rural	90	18.8	5.5	3.34	2.16	Significant at 0.05 level
VI		Urban	30	26.0	9.1			

From the above table, it is evident that the obtained t-value had not reached the 0.01/0.05 level of significance. Hence, this has rejected the H_{02} which was stated as “There would be no significant effect of area on the Action oriented mathematical Achievement. For the achievement of grade V Rural and Grade VI Urban the difference was significant at 0.05 level.

13. Findings

1. No significant effect of Gender was found between the Mathematical Achievement based on Action oriented competencies for grade V and VI students.
2. No significant effect of Area was found between the Mathematical Achievement based on Action oriented competencies for grade V Urban students and Grade VI Rural students.
3. There was a significant difference between Mathematical Achievement based on Action oriented competencies for grade V Rural students and Grade VI Urban students at 0.05 level.

14. Implications of the Study

The study has thrown light on the achievement of various competencies. It shows that there was a significant effect of Gender between Mathematical Achievement based on Action oriented competencies for grade V and Grade VI Urban students. Also it was clear that there was a significant that there was a significant difference between Mathematical Achievement based on Action oriented competencies for grade V Rural students and Grade VI Urban students at 0.05 level and it has been in favor of Urban area students.

15. Conclusion

From the above results it can be concluded that significant difference was found between the achievement level of Boys and Girls and achievement of Urban area students and Rural area students of Grade V and VI.

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