A Study of the Mathematical Achievement Based on Action Oriented Competencies for the Students of Grade VII

KOMAL VYAS
Assistant Professor,
District Institute of Education and Training
Ahmedabad, Gujarat (India)

Abstract:
The objectives of the present study were (i) To study the achievement level of the students of grade VII 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 VII.(iii) To study effect of Area on the achievement level of the students of Grade VII. The population of the study was the students of grade VII of Gujarat state. The sample for the study was selected by using purposive random sampling method. The present study was conducted on 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 VII in mathematics. After the analysis the researcher has found that there is no significant effect of gender and area on the achievement level of the students of grade VII except on competency no 4.7.11(4.7.11The Pupil Knows about cheque and different types of cheques.) and 6.7.5 (6.7.5Draws a line parallel to a given line through a point outside it by using set square.) respectively.

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

1. Introduction

The Education is intended to develop basic learning skills, reading, writing, Arithmetic and life skills, necessary for the children to survive and improve the quality of life. Primary education in particular has remained a serious concern of the nation since independence. A large number of programs and schemes have been initiated both by the Union and State governments to achieve the goal of the universalization of elementary education (UEE). Such a requirement warrants the conduct of periodical achievement surveys at different stages of school education in order to initiate remedial measures to improve the quality of learning. 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. This approach was applied to grade V to VII which 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.

State level research study known as Gujarat Achievement at Primary (GAP) from I to V had been conducted by GCERT (Gujarat Council of Educational Research and Training). All the subjects from grade 3 to 7 had been standardized to know the Achievement level of the students. But all the above said studies incorporate written competencies only. No study has been conducted related to Action oriented competencies so far. So the investigator selected the students of grade VII of the Gujarat state to study their achievement level for Action-oriented competencies. From the need and selection of the study, the research problem undertaken by the investigator was selected. "A Study of the Mathematical Achievement based on Action oriented Competencies for the students of Grade VII.

2. Objectives of the Study
The objectives of the present study were
1. To study the achievement level of the students in a Competency based and an Action oriented test in Mathematics.
2. To study the effect of gender on achievement level of students of grade VII.
3. To study the effect of Area on achievement level of students of grade VII.

3. Hypotheses of the Study
Ho_1 There would be no significant effect of gender on the Action oriented mathematical Achievement (Competency wise as well as overall).

Ho_2 There would be no significant effect of Area on the Action oriented mathematical Achievement (Competency wise as well as overall).

4. Importance of the Study
As Activity-based, Competency-based and Joyful learning approach is a new intervention and it has become necessary to study the effect of such approach. The present study will be helpful to get an idea about the achievement level of Grade VII students in mathematics.

The study will also become helpful to teachers in understanding the concept of Action-oriented and Competency-based evaluation. In an indirect way the teacher will also get an idea about the construction of Action-oriented and Competency-based test items. Thus this study will provide remarkable support to the teacher to get some idea of putting Action-oriented and Competency-based evaluation in operation.

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 achievements levels of boys and girls.

It will also be helpful to get an idea about the Action-oriented competencies which are felt difficult by the students of Grade VII so that teachers can identify them and proper remedial measures can be developed for the difficult competencies. Because of this type of evaluation, a

Prof. Komal Vyas / International Journal for Research in Education

Vol. 2, Issue:3, March 2013

(IJRE) ISSN:2320-091X

teacher can evaluate their student's individual concept clarification, Diagnosis and remedial teaching.

5. Variables of the Study

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

6. Operational Definitions of the Terms

6.1 Competency-based test

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.

6.2 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 government primary schools with Gujarati medium. The present study is regarding Action oriented achievement in Mathematics of students studying in grade VII.

8. Population and Sample of the study

The population of the study was the students of grade VII 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 by systematic Randomized Technique from each school selected in the sample. Hence, the size of the sample was 120 (Boys: 60, Girls: 60). The same sample has been also distributed Area wise i.e. rural area (90 students) and urban area (30 students)

9. Research Method

In the present investigation survey method was applied.

10. Tool

Tool of the study was an individual test which includes only three Action-oriented competencies with twelve 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) Scale (2) Protractor (3) Compass (4) Set-squares (5) Specimen Cheques. 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 120 students of grade VII 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 Ho_s. 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 Ho_1, related data were classified and Mean, SD, SE_D and t-values were computed and they are presented in table 12.1.

Table 12.1
Mean, S.D. and t- value of the Grade VII student's

Group Competency No.	Boys			Girls			SE_D	t-value	Remarks
	N	X	S.D.	N	X	S.D.			
4.7.11 (16 Marks)	60	11.0 (68.8)*	3.6	60	9.7 (60.6)	3.3	0.64	2.03	Significant at 0.01 level
6.7.5 (09 Marks)	60	4.4 (48.9)	3.3	60	5.2 (57.8)	3.2	0.59	1.36	NS
6.7.10 (15 Marks)	60	10.9 (72.7)	5.6	60	10.3 (68.7)	5.5	1.24	0.42	NS
Overall (40 marks)	60	27.0 (67.5)	8.5	60	26.3 (65.8)	8.4	2.29	0.49	NS

*Digits in bracket show percentage of the corresponding competency.

From the above table, it is evident that the obtained t-value had not reached the 0.01/0.05 level of significance except on the competency no. 4.7.11. Hence, this has accepted the **Ho_1** which was stated as "There would be no significant effect of gender on the Action oriented mathematical Achievement (Competency wise as well as overall)." For competency no.4.7.11 it was not accepted. There was a significant difference at 0.01 level.

12.2 Effect of Area on Mathematical Achievement on Action oriented Competencies

To achieve second objective and to test the Ho_2, related data were classified and Mean, SD, SE_D and t-values were computed and they are presented in table 12.2

Prof. Komal Vyas / International Journal for Research in Education

Vol. 2, Issue:3, March 2013

(IJRE) ISSN:2320-091X

Table 12.2
Mean, S.D. and t- value of the Grade VII Student's

Group	Rural Area			Urban Area			SE$_D$	t-value	Remarks
Competency No.	N	X	S.D.	N	X	S.D.			
4.7.11 (16 Marks)	90	10.0 (62.5)*	3.2	30	11.3 (70.7)	4.2	0.88	1.51	NS
6.7.5 (09 Marks)	90	4.1 (45.6)	3.2	30	6.8 (75.6)	2.4	0.54	5.06	**
6.7.10 (15 Marks)	90	10.9 (72.7)	5.3	30	9.7 (64.7)	6.2	1.85	0.67	NS
Overall (40 Marks)	90	24.6 (61.5)	9.41	30	26.0 (65)	11.27	2.27	0.31	NS

*Digits in bracket shows percentage of the corresponding competency

From the above table, it is evident that the obtained t-value had not reached the 0.01/0.05 level of significance except on the competency no. 6.7.5. Hence, this has accepted the **Ho$_1$** which was stated as "There would be no significant effect of gender on the Action oriented mathematical Achievement (Competency wise as well as overall)." For competency no.6.7.5 it was not accepted. There was a significant difference at 0.01/0.05 level.

13. Findings
1. No significant effect of Gender was found between the Mathematical Achievement based on Action oriented competencies for grade VII student's competency wise as well as overall. On competency no. 4.7.11 there was a significant difference at 0.01 level.
2. No significant effect of Area was found between the Mathematical Achievement based on Action oriented competencies for grade VII student's competency wise as well as overall. On competency no.6.7.5 there was a significant difference at 0.05 level.

14. Implications of the Findings
The study has thrown light on the achievement of various competencies. It shows that there was a significant difference between the achievement of boys and girls and it has been in favor of boys; on the competency no.4.7.11. Also it was clear that there was a significant difference between the achievement of rural area students and urban area students and it has been in rural area students; on the competency no.6.7.5. So we can say that a teacher can made remedial work for 4.7.11 for girls of Grade VII and also emphasizes on 6.7.5 for urban area students of Grade VII.

15. Conclusion
From the above results it can be concluded that no significant difference was found between the achievement level of Boys and Girls except on competency no.4.7.11. The Pupil knows about cheque and different types of cheques.) at 0.01 level. No significant difference was found between the Urban area students and Rural area students except on competency no.6.7.5 (6.7.5Draws a line parallel to a given line through a point outside it by using set square.)

References

1. Aggrawal, J.G. (1966). Educational Research An Introduction, (New Delhi: Arya Book Department)
2. Best, J.W. (1989). Research in Education, (New Delhi: Prentice Hall of India Pvt. Ltd.)
3. Desai, H.G., (1974). Style Manual for Dissertation and Thesis, (Rajkot : Saurashtra University
4. Garrett, H.E.(1973). Statistics in Psychology and Education (Indian Edition) (Bombay : Vakils, Feffer and simons)
5. Kothari, R.G. (1995).Report of the Project on Minimum Levels of Learning based Approach to improve instructions in Mathematics for Class I and II in Baroda City, Unpublished Report, (M.S. University, CASE, Baroda, M.H.R.D., National Policy on Education, New Delhi, MHRD)
6. Rajput, J.S. (1994). A paper outline Competency based learning in schools, (New Delhi, NCTE, Govt. of India)
7. Sidhu, K.S. (1985). Methodology of Research in Education, (New Delhi: Sterling Publishers Pvt. Ltd.)