Construction and Standardization of a Non-Verbal Creativity Test for the Students for Primary School

Abstract
The 21st century is considered as knowledge and technology. In 21st century, creativity of the learners play an important role for the development of the learner. One of the aims of education is ‘to develop the hidden abilities’. Creativity is also a hidden ability which requires to be developed among the students. Human child is born with certain hidden potentials with unique power of reasoning, intellect and creative power. Man has been endowed with a spark of creativity. Therefore the task of education is to cultivate the creative potential of the students. The present study deals with creativity test. In this study an attempt has been made to develop and standardize Non-Verbal Creativity test and establish its norms so that it will help to measure the general non-verbal creativity of the student.

Key words: Non verbal, Creativity, Construction, Standardization.

Introduction
Society has undergone radical changes enabling man from one place to another in place of bullock cart leaving behind the 'old stone age'. In the whole process of mutation creativity has played a vital role. It is the power of the human mind to create new contents and also a hidden ability which requires to develop among the students. Besides, the present study deals with the non-verbal creativity. The creativity can be effectively measured through non-verbal test because it is language free and more effectively used among the students of primary school.

Objectives of the Study
1. To construct the Non-Verbal Creativity Test for the students studying in classes V to VII.
2. To study the Non-Verbal Creativity of the students studying in classes V to VII with reference to sex, area and standard.
3. To establish the reliability and validity of the Non-Verbal Creativity Test.
4. To establish the norms of Non-Verbal Creativity Test for the students of V to VII.

Variables of the study
Sex as Boys and Girls, Area as Urban and Rural and Standard of V, VI and VII were independent variables while achievement of Non-verbal Creativity was dependent variable.

Field and Method of the Study
The field of study also touches Educational Psychology. The reliability, validity and norms were established to standardize the creativity test therefore the normative survey method of research was used for the present study.

Type of the Study
The present study was applied type, Besides, it was qualitative type too.

Population and Sample of the Study
Population of the present study was all the students studying in standard V, VI and VII of Gujarati medium primary schools of North Gujarat (four districts Mehsana, Sabarkantha, Banaskantha and Patan) during the year 2009-10. Total 1680 students were selected as the sample from 18 schools using Stratified Random Sampling and Purposive Sampling Technique.
Construction of the Tool
The Non-Verbal Creativity Test was constructed through the following steps.

9.1 To Construct the Operational Definition
The test is meant to identify creative talent of the students of primary school. The necessary operational definition is done by the following points for constructing the present test.

9.1.1 The Characteristics of the Non-Verbal Creativity
The following are the characteristics of the non-verbal creativity.
1. They like to draw the different things based on their previous knowledge.
2. Drawing is unique and spontaneous process.
3. They generally like to draw the natural elements.

9.1.2 Selection of Components of the Test
In the preparation of the Non-Verbal Creativity Test, originality and elaboration components were selected.

9.2 Preparation of the Items
Before writing the items, the researcher had studied the books of standard 5, 6 and 7, different books of psychology, different drawing books, different standardized creativity tests and other standard tests, websites related to creativity, Newspapers like; Gujarat Samachar, Sandesh, Divya Bhaskar, Times Of India etc. to collect the information related to creativity test.

9.3 Editing of the Items and Construction of the Pre-Pilot Test
The collected 38 items were arranged randomly in to three activities. There were 6 items for activity I, 10 items for activity II and 22 items for activity III. Thus, the primary form of Non-Verbal Creativity Test was prepared in proper format.

9.4 Experts’ Opinions
After revising, the test, it was sent to the experienced experts of the field. The experts were asked to check and make necessary suggestions to improve the test.

9.5 The Pre-Pilot of the Test
The pre-pilot testing was administered in Ash Primary School, Vijapur, Dt.-Mehsana. The test containing 38 items was applied on 27 students of standard V to VII. (10 students from standard V, 9 students from standard VI, 8 students from standard VII). The students were asked to draw the pictures in three parts of the test. They were also asked to give proper title to the drawn pictures.

9.6 The Construction of the Pilot Testing
Based on the preparation of the items, pre pilot testing and expert’s opinions, necessary changes were made in the test. Thus, from 38 items of the pre-pilot testing, some items were removed and some geometric figures were formulated according to the suggestions of the experts and 3 new examples were added for more guidance. Thus, total 40 items were put randomly in the three activities. There were 12 items in the activity-I, 13 items in the activity-II, and 15 items in the activity-III for the preparing of the Non-Verbal Creativity Test.

9.7 Administration of the Pilot Testing and Scoring of the Test
After preparing the test, pilot testing was done on 400 students of standard V, VI and VII in five schools through Stratified Random Sampling Technique. Thus, filled test from selected samples were collected and scoring were done. Both figures and titles were scored according to the two components of creativity. They were Elaboration and Originality.

9.8 Item Analysis
After scoring the pilot testing, the item analysis was done. For the item analysis Facility Value (FV) and Facility Index (FI) were calculated for each item.

9.9 The Selection of the Items and Construction of the Final Form of the Test
The item having the difficulty value of 0.50 and above and the of 0.50 and above were selected for the final form of the test. The rest were removed. At last 11 items were randomly arranged to prepare the final form of the test. Finally, there were 3 items for activity I, 3 items for activity II and 5 items for activity III.
9.10 Reliability and Validity of the Test

In the present study, the reliability of the test was found through Test-Retest Method, Split-Half Method and Rational Equivalence Method. While validity of the test was found through Content Validity, Concurrent Validity, Validity through Rating and Judgments and Factorial Validity.

Table No. 1
Reliability and validity of the non-verbal creativity test

<table>
<thead>
<tr>
<th>No.</th>
<th>Type</th>
<th>Sample</th>
<th>Correlation Coefficient</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test-retest Reliability</td>
<td>210</td>
<td>0.87</td>
<td>0.0168</td>
</tr>
<tr>
<td>2</td>
<td>Rational Equivalence Reliability</td>
<td>210</td>
<td>0.88</td>
<td>0.0156</td>
</tr>
<tr>
<td>3</td>
<td>Concurrent Validity with the Non-verbal Creative Thinking prepared by Baqer Mehdi</td>
<td>210</td>
<td>0.17</td>
<td>0.0670</td>
</tr>
<tr>
<td>4</td>
<td>Concurrent Validity with the Non-Verbal test score and the marks of exam</td>
<td>210</td>
<td>0.43</td>
<td>0.0562</td>
</tr>
<tr>
<td>5</td>
<td>Validity through Rating and Judgments</td>
<td>90</td>
<td>0.71</td>
<td>0.0523</td>
</tr>
</tbody>
</table>

The factorial validity indicates that 73% items of the test measures the creativity and 27% items of the test measures the other factors along with creativity. Thus, most of the items of the test measures creativity, therefore it can be said that the test is valid.

9.11 Norms of the Test

The analysis of the scores was done according to the area, sex and standard. The hypotheses, which were not accepted in reference to the variables, norms, were established.

9.12 Manual of the Test

The manual for the test of the Non-Verbal Creativity was prepared.

10.0 Data Collection and Analysis of Data

10.1 Data Collection

In the present study, the researcher had collected the data during September to January 2009-10. The researcher himself administrated the test of creative thinking. Students had drawn the pictures with title in the Non-Verbal Creativity Test and the test of creative thinking.

10.2 Analysis of Data

The frequency distribution of boys, girls, rural and urban area of standard V, VI and VII were prepared. Then for each frequency distribution’s mean, median, standard deviation and other statistical measures were found out through statistical formula. Hypotheses were tested with the help of t-test. The reliability and validity of the Non-Verbal Creativity Test were found through correlation coefficient. To establish different norms according to variables, central tendency, variability norms and percentile norms were found out.

11.0 Findings of the Study

1. The Reliability coefficient obtained through test-retest method was 0.87.
2. The Reliability coefficient obtained through Rational Equivalence using Kuder–Richardson formula was 0.88. Thus, the reliability of the Non-Verbal Creativity Test was high.
3. The correlation coefficient between the score of the present test and the score of Non-verbal Test of Creative Thinking prepared by Dr. Baqer Mehdi was 0.17. So it was below average.
4. The correlation coefficient between the score of the present test and the score of the second semester test’s marks with the T score was 0.43. So it was average.
5. The correlation coefficient between the score of the present test and the grade given by the class teachers was 0.71. Thus, the validity of the test through rating and judgments was high.
6. In the present study to compare between groups the central tendency and to know the level of the creativity in the students T score norms were established.
On the basis of hypotheses testing and from the interpretation of it, following are the results of the study.

1. The effect of sex difference between the boys and the girls is seen on the Non-Verbal Creativity Test for standard VI. The mean of the boys is higher than the girls.
2. The effect of area has been seen on the Non-Verbal Creativity Test for standard V. The mean of the urban students is higher than the rural students.
3. The effect of area has been seen on the Non-Verbal Creativity Test for standard VI. The mean of the urban students is higher than the rural students.
4. The effect of area has been seen on the Non-Verbal Creativity Test for standard VII. The mean of the urban students is higher than the rural students.
5. The effect of standard difference between the boys and the girls has not been seen for V and standard VI.
6. The students of standard VII are more creative than the students of standard VI.
7. The students of standard VII are more creative than the students of standard

14.0 Conclusion
The present time is considered as competitive era. The priority is given to the Excellence. Creativity is a strong aspect of education which is very useful for excellence and all round development of the students. It is the first attempt to construct and standardize the Non-Verbal Creativity Test for the primary school students of North Gujarat in regional language. The norms of the test are delimited to the North Gujarat still it can be useful for the students of other areas of Gujarat. The attempt of a researcher will be valid, if the present test is useful for the educational and occupational guidance of the primary school students.

Bibliography