Construction and Standardization of an Achievement Test in English Grammar

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Abstract: **Grammar plays an important role in developing the language skills of the students because it gives an insight into the structure of language. Correct expression and systematic knowledge of the language is possible with the proper knowledge of grammar as it helps in writing correct English. So the language is considered to be a vehicle of one's thoughts and feelings and grammar is the machine by which that vehicle is set in motion. Hence, language communicates our thoughts and feelings and grammar drives language. But the reach of English language among the students is still a big problem. It is a feeling that the standard of English in our students is extremely poor barring few brilliant students that too from very popular established institutions. There may be many reasons for that but the most significant reason is that English grammar is not given due importance in classroom teaching. Ifproper steps are taken from the very beginning of schooling to improve grammatical skills, significant improvement could be madein this direction. Among such steps, achievement test in English Grammar can help the students. Therefore, in this research paper an attempt has been made to construct and standardized an achievement test in English Grammar so that it will be helpful in improving grammatical skills of students.**

Keywords: **Construction, Standardization, Achievement test**

Introduction:

Grammar which is practical analysis of the language, play an important role in developing the language skill in the students.It gives an insight into the structure of language. Correct expression and systematic knowledge of the language is not possible without the proper knowledge of grammar. If the language is considered to be a vehicle of one's thoughts and feelings then grammar is the machine by which that vehicle is set in motion. Hence knowledge of English grammar is the most important because English is the most widely spoken language of the world. It plays a vital role in producing and promoting changes and accepting new trends in the society. Majority of the standard journals and magazines are publishedin English. Achievement tests play an important role in education. It is a mechanism to measure student's knowledge and abilities and provides a snapshot of student's performance. It is the accomplishment or proficiency of performance in a given skill or body of knowledge. Therefore,it can be said that achievement implies the overall mastery ofa pupil on a particular context. An Achievement Test is a test of knowledge or proficiency based on something learned or taught. The purpose of an achievement test is to determine student's knowledge in a particular subject area. It helps in evaluating the effectiveness of teaching instructions. It also provides the feedback to the students as well as to the teachers. The achievement test has the focus on the realizationof objectives of teaching and learning.

Method of Construction and Standardization of an Achievement Test

Achievement test was constructed on the basis of the objectives of teaching such as knowledge, understanding, application and skill in English Grammar at the secondary stage. Before constructing the achievement test, investigators first reviewed the various tests already available for testing in the field of English Grammar. After reviewing them, need was felt to develop an achievement test based on the latest syllabi recommended by Board of School Education, Haryana (BSEH) for English Grammar at VII level. To achieve the said purpose, various tests were consulted, discussions held with English teachers, teaching both at school and college level. It was felt that lack of suitable test to evaluate achievement in English Grammar. Various tests made by Board of School Education Haryana (BSEH) were read, discussion with English teachers and assistant professors in English in different colleges ofeducation was done. Efforts were put to identify the important units of English Grammar at VII level. On this basis preliminary draft of the test was prepared. Items are framed asmultiple choice questions. The following steps were taken by the investigator duringconstruction and standardization of the achievement test in English Grammar:

➢   **Objective of the Study**
To construct and validate the achievement test in mathematics for grade VII students
➢   **Methodology Adopted**
In construction and standardization of English Grammar achievement test following steps were taken by the researcher
- Planning of the test
- Preparation of the test
- Administration of the test
- Item Analysis
- Final draft
- Establishing Reliability and Validity

➢   **1. Planning of the test**

In the construction of an achievement test planning of the test is preliminary and very important step. During the proper planning of an achievement test the investigator kept several aspect in mind such as to whom, what, when and how to measure. The designing and blue print of the test is also included in this step. Keeping in view the above mentioned facts investigator was taken following decision such as: objective of the test, content of the test, nature of the test, scoring, procedure, number of items, types of items, length of test, weightage of objectives, weightage to questions, allotment of time and marking procedure. In this test investigator opted English Grammer subject of VII grade under BSEH for the preparation of the test. In this achievement test, investigator had decided to prepare multiple choice questions. After this a blue print was prepared, keeping in view the content areas and objectives of learning as per bloom taxonomy of educational objectives.

1.1 Objectives of the test

In the present study, investigator defined the objectives of the achievement test in behavioural terms focusing on knowledge, understanding, application and skill from five units of mathematics textbook of grade VII prescribed by BSEH. Objectives defined by Bloom's Taxonomy are shown in the following Table -1:

Table-1 Distribution of weightage to objectives from bloom's taxonomy

Objectives	Weightage	Action Word
Knowledge	30	Define, Recognize, Names, State, Write, Examine
Understanding	33	Identify, Explain, Indicate, Demonstrate, Convert
Application	65	Choose, Change, Find
Skill	12	Select, Separate, Replace, Integrate, Combine
Total	140	

1.2 Content of the test

Another important phase in construction of an achievement test is content analysis. It covered the seven units of English Grammar syllabus prescribed by Board of School Education Haryana of standard VIII. The weightage of items in predescribe areas is shown in the Table-2 below:

Table-2 Distribution of weightage to content/ topics

Unit	Content	Weightage
1.	Article	20
2.	Adjective	22
3.	Verb	27
4.	Conjunction	20
5.	Preposition	26
6.	Voice	15
7.	Comprehension	10
Total		140

1.3 Size and type of test

The number of items in the test refers as the size of the test. It is very difficult to prepared items at first attempt; therefore more items are prepared in the initial draft than the desired items in the final draft. The initial draft of this achievement test contains 140 multiple choice questions.

1.4 Preparation of Blue Print

Blue print is another very important phase of planning of test which provides a proper path for writing items for preliminary draft. Here the investigator put various types of questions in blue print and distribute the questions according to their cognitive level. Blueprint consist 140 multiple choice questions which are shown in the Table-3 below:

Table-3 Blueprint of the Achievement Test (First Draft) - Objective wise Distribution

Content & Objective	Knowledge	Total	Understanding	Total	Application	total	Skill	total
Article	1,2	2	3,4	2	5-14, 18-20	13	15-17	3
Adjective	22,23,28-30	5	21,24,25	3	31-40	10	26,27	2
Verb	41,42,45,46,49,50	6	43,44	2	51-65	15	47,48	2
Conjunction	66	1	67-73	7	76-85	10	74,75,135	3
Preposition	86-90, 106,107	7	110, 140	2	91-105,136,139	17	108-109,	2
Voice	116-120	5	111-115, 121-125	10	-	-	-	-
Comprehension	133, 134, 137, 138	4	126-132,	7	-	-	-	-
Total		30		33		65		12

➢ **2. Preparation of the test**

After planning the next step is preparation of an achievement test. This stage is full of hard work and intelligence in mathematics achievement test. It includes three steps:

- Items writing
- Checking by experts
- Items editing

At the initial stage, preliminary draft was prepared corresponding to seven units (Article, Adjective, Verb,Conjunction, Preposition, Voice and Comprehension) ofEnglish Grammar of VIII class. This draft consists 140 items covering the major objectives of teaching; knowledge, understanding, application and skills in English at the secondary stage. The items are of multiple choice i.e. each items have two or three options in which only one option is correct. Here students were expected to answer the questions by selected the right option from among two or three listed responses. All the items were evaluated by the experts like Dr. SatishKumar, Mr. Umed Singh, Varuna Rani as well as by the investigator in order to remove vagueness, ambiguous terms, repetition and language difficulty in the format of test items. 8 items (4, 27, 31, 60, 137,138,139 and 140) were deleted and few items were modified as per suggestions received from the experts. In this way, there were 132 items in the preliminary draft of achievement test

➢ **3. Administration of the test**

This step is also an important step. In the process, mainly three type of try out are taken such as

- Individual try out
- First try- out
- Final try –out

After finalizing the test items the investigator skip the individual try out step due to time shortage and followed the first try out:

3.1 First try out

The test items were administered on the 20 students of VII class of Shiva Siksha Sadan School of Sonepat, for 1st tryout (Preliminary try out). This attempt was made to check ambiguous statement as well as language difficulty occurring in the construction of the test. All the students were given different answer sheet on which students mark their responses, after giving the required instruction about the test. There was no time limit but time taken by every student was noted down. Out of 132 items 17 items were found to be confusing by the students. Therefore out of 132 items 17 items (9, 21 22, 34, 41, 45, 53, 62, 67, 78, 83, 93, 101, 108, 121, 130 and 135) were removed from the draft. Thus, the final draft of the achievement test is consisting 115 items keeping in view the content and difficulty level.

Table 4: Objective wise distribution of items of the preliminary draft

Unit	Knowledge	Understanding	Application	Skill	Total
Article	2	2	12	2	18
Adjective	5	3	7	2	17
Verb	6	2	9	2	19
Conjunction	2	7	5	2	15
Preposition	5	2	12	2	21
Voice	5	10	-	-	15
Comprehension	2	8	-	-	10
Total	27	33	45	10	115

3.2 Final try- out

The test was administered on 70 students, who have appearing in class VII for final try out by given them the separate answer sheet. The answer sheet of each student were collected and scored with the help of scoring key which was already prepared by the investigator. In the scoring key, correct response has been awarded one mark and incorrect has been awarded zero.

4. Item Analysis

After scoring items analysis of the test was done. The item analysis is a measure or says a statistical technique which is used for selecting and rejecting the items of a test on the basis of their difficulty value and discriminative value. Thus the process of determining the relative difficulty value (DV) and discriminating power (DP) of the test item is known as item analysis. Following steps are included in this technique:

4.1. Arranging all scoring sheet in descending order

In this step first of all 70 answer sheets were arranged in descending order.

4.2 Difficulty Value (DV)

Item difficulty is the percentage of students that correctly answered the items. The range is from 0% to 100%, the higher the value, easier is the item. If p value above 0.90 items are easy and below 0.20 indicate difficult items and should be reviewed for possible confusing language. Optimum difficulty level is 0.50 for maximum discrimination between high and low achievers. Difficulty value of item provides information whether test was too easy or too difficult. The formula for calculating difficulty value was:

$$DV = \frac{RU+RL}{NU+NL}$$

Where, DV=Difficulty value
RU=the number of students in the upper group who respond correctly
RL=the number of students in the lower group who respond correctly
NU=the total number of students in the upper group
NL=the total number of students in the lower group
The difficulty indices were analysed using the Henning (1987) guidelines shown in Table- 5

Table- 5 Henning's Guidelines(Difficulty Value)

High Difficulty	Medium	Low (easy)
≤ 0.33	0.34-0.66	≥ 0.67

4.3 Discriminating Power (DP)

In item analysis the difficulty value is the percentage of students that correctly answered the items by adopting kelley's (1939) method, A good item should discriminate between those who score high (top 27% cases) on the test and who score low on the test (bottom 27% cases). The difficulty value was determined by the following formula:

DV= (RU+RL)/N
DP= (RU-RL)/(N/2)

Where

RU= Number of correct responses in upper group.
    RL= Number of correct responses in lower group.
     N= Size of sample in upper and lower groups

Now the DV and DP are found on the basis of above formula and item analysis is given in the following Table-6

Table 6: Distribution of difficulty value (D.V.) of items of First draft of achievement test

Level of difficulty	Items	Total
High (≤.33)	8,12,42,54,57,59,61,62,63,84,85,93,94,99,109,110, 115	17
Medium (.34-.66)	1,2,3,4,5,6,7,9,11,13,15,17,18,19,20,21,22,25,26, 27,28,29,30,31,32,33,36,37,38,39,40,41,43,44,46, 47,49,50,51,52,53,55,56,58,60,64,66,67,68,69,70,71,72,73,74,75,76,77,78, 81,82.83,86,87,88, 90,91,92,95,96,97,98,101,103,105,106,107,108, 111,112	80
Low (≥0.67)	10,14,16,23,24,34,35,45,48,65,79,80,89,100,102, 104,111,112	18
Total		115

Table-7 DP of items of the Achievement Test

Discriminating Powers	Items	Frequency	Remarks
0.40 and above	1,2,3,5,6,7,9,11,13,15,17,18,19,20,21,22,25,26, 27,28,29,30,31,32,36,37,38,39,40,41,43,44,46, 47,49,50,51,52,53,55,56,58,60,64,66,67,68,69, 70,71,72,73,74,75,76,77,78,81,82.83,86,87,88, 90,91,92,95,96,97,98,101,103,105,106,107,108, 113,114	78	Very GoodItems
Between 0.30-0.39	4,33	2	Reasonably Good Items
Between0.20-0.29	8,12,14,42,48,54,57,59,62,65,79,80,89	13	Need Improvement
<0.19	10,16,23,24,34,35,45,61,63,84,85,93,94,99, 100,102,104,109,110,111,112,115	22	Very Poor Items

Table -7 revealed that out of 115 items only 80 items were considered very good and no revision required for these items because DP of these items ranging from 0.40 to 0.90. So these items were selected for the final draft; 13 items with DP ranging from 0.30 to 0.39 were good and needed little revision and only 22 items which had DP 0.19 and below were rejected.

➢ **5. Final Draft of Achievement Test**

On the basis of item analysis final draft was prepared. The investigator after selecting items for final draft rearranged them in accordance with the principle laid down by expert. The final draft of achievement test consists of 80 items. The description of items for final draft given below in Table

Table-7 Blueprint of the Achievement Test (Final Draft) - Objective wise Distribution

Cognitive levels of objectives	Serial Number of items retained

Knowledge Level	1,2,20,21,26,27,28,36,37,40,41,44,55,70,72,73,86,87,96,97,98,113,114
Understanding Level	3,4,19,22,38,39,56,58,60,71,90,91,92,95,101,103,105,106,107,108
Application Level	5,6,7,9,11,15,17,18,29,30,31,32,33,46,47,49,50,51,52,53,66,67,68,69,74,75,76,77,78,81,82,83
Skill Level	13,25,43,6488
	Total

Table -8 Distribution of discriminating power and difficulty values of items of final draft of Achievement Test

Difficulty value → Discrimination Power	Moderate (0.34-0.66)	Remarks	Total
0.40 and above ↓	1,2,3,5,6,7,9,11,13,15,17,18,19,20,21,22,25,26,27,28,29,30,31,32,36,37,38,39,40,41,43,44,,46,47,49,50,51,52,53,55,56,58,60,64,66,67,68,69,70,71,72,73,74,75,76,77,78,81,82,83,86,87,88,90,91,92,95,96,97,98,101,103,105,106,107,108,113,114	Very Good	78
Between 0.30-0.39	4,33	Reasonably Good	2
Total			80

➢ 6. Standardization of Achievement Test

For final draft 80 questions were selected of Achievement Test. Achievement test was further standardized by experimental validation of the test that included establishing validation and reliability.

6.1 Reliability

Reliability is one of important measure instrument of any test. Reliability refers to degree of consistency of test scores obtained by individual when re-examined with test on different sets of equivalent items and under other examining conditions. There are different methods of reliability such as test- retest, split half, alternate forms and scorer reliability etc. In the present research paper, investigator used split half method of reliability for measuring the reliability of achievement test. In this method the scores are divided into even and odd group and then value of both the group were correlated. The reliability co-efficient of the present test was 0.83. This shows that achievement test has high reliability.

6.2 Validity

Validity refers to the attainment of purpose for which the test is prepared. There are various methods of estimating validity such as face validity, content validity, construct validity, predictive validity and concurrent validity. The investigator opted for content validity. In the present test, the content validity is concerned with the relevance of the contents of the items, individually and as a whole. In which expert judgment was taken into consideration. To estimate content validity of an achievement test, test was given to six Mathematics teachers to compare test items with the content and objectives of content. Out of the six experts, four experts have solved the test so the scoring key could be verified. The experts agreed with the investigator with the distribution of content and objective of the content as well as with the scoring procedure. In this way content validity of the achievement test was established.

Conclusion:

The study was carried out to construct and standardized a reliable and valid achievement test in Mathematics. The test was standardized on the sample of 70 students studying in Shiva Shiksha Sadan Sr. Sec. School, Sonepat, district of Haryana. Theoretical and empirical literature related to the study was reviewed. The reliability of the test was determined through Split half method of reliability which was 0.83 and content validity of the test was estimated. Hence, the constructed achievement test in English Grammar has a high reliability and validity. The test can be used by the teachers to assess student's achievement in English Grammar when they have covered the content areas of VII class.

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