

## 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. If proper steps are taken from the very beginning of schooling to improve grammatical skills, significant improvement could be made in 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:** achievement test, construction, standardization

### 1. 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 published in 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 of a 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 realization of objectives of teaching and learning.

#### 1.1 Method of Constructing and Standardization of Achievement Test

This test was constructed on the basis of the objectives of

teaching; knowledge, understanding and application 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 IX 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 of education was done. Efforts were put to identify the important units of English Grammar at IX level. On this basis preliminary draft of the test was prepared. Items are framed as multiple choice questions.

The following steps were taken by the investigator during construction and standardization of the achievement test in English Grammar:

- Planning the test
- Preparation of the test
- Administration of the Test
- Item analysis
- Standardization of test :
  - Reliability
  - Validity

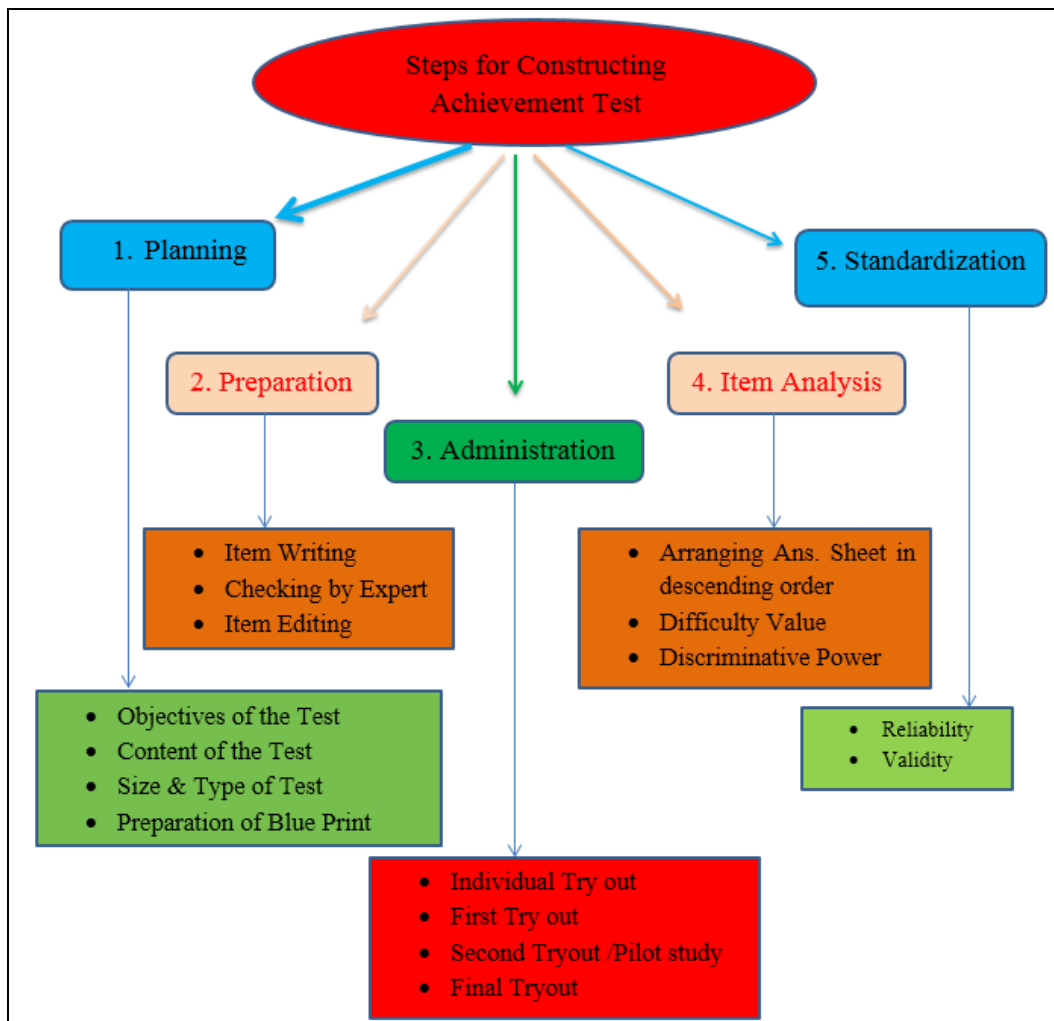


Fig 1

**2. Planning of the Test**

Planning of a test is a first and very important step in the construction of an achievement test. An achievement test needs very careful planning. For proper planning of the test, the investigator kept following aspects in mind such as: in which subject, level, to whom, what, when and how to measure. In this context, following decisions were taken by the investigator such as: objectives, content, scoring process, number and type of items, length of test, weightage to the objectives, and content, allotment of time and marking process of the achievement test. In this test investigator opted English subject for 9<sup>th</sup> class students. In this achievement test, investigator had decided to prepare multiple choice questions

(MCQs). After this a blueprint was prepared keeping in view the content area and objectives of learning as per Blooms taxonomy of educational objectives.

**2.1 Objectives of the test**

Objectives in this achievement test were defined in behavioural terms focusing on knowledge, understanding, application and skill, from all the units of English Grammar of IX class prescribed by the Board of School Education Haryana (BSEH). Objectives defined by Bloom’s Taxonomy and important action verb are taken by the investigator which are shown in the following table:

**Table 1:** Distribution of Weightage to objectives & action words from bloom’s Taxonomy

Objectives	Weightage	Action words
Knowledge	28	Define, Recognize, Names, State, Write, Examine
Understanding	33	Identify, Explain, Indicate, Demonstrate, Convert
Application	63	Choose, Change, Find
Skill	11	Select, Separate, Replace, Integrate, Combine
Total	135	

**2.2 Content of the test**

Content analysis is another important activity in construction of an achievement test. It covered most important seven units

of English Grammar syllabus prescribed by Board of School Education Haryana of standard IX which are shown in the following table:

**Table 2:** Distribution of weightage to content

Unit	Content	Weightage
1.	Article	20
2.	Adjective	20
3.	Verb	25
4.	Conjunction	20
5.	Preposition	25
6.	Voice	15
7.	Comprehension	10
Total		135

### 2.3 Size and Type of test

The size of the test refers to number of items in the test. It is difficult to prepare good items at first attempt, therefore more items are prepared than the desired items in the final draft. If

the investigator has developed the skill of items construction then 50% more items have to be prepared, but for the fresher double number items should be prepared. On the other hand, Reliability of the test depends on the size of test. Therefore, first version of this achievement test is included 135 items in multiple choice types.

### 2.4 Preparation of blue print

Blueprint is the last level of the planning of the test which acts as a guide for writing items for preliminary draft. Here test constructor put various types of questions in blueprint and allots them marks depending on the time. The investigator writes down his decisions in the form of a blueprint. Blueprint consist 135 multiple choice questions which are shown in the following table.

**Table 3:** Blueprint for the first draft of achievement test

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	2
Preposition	86-90, 106,107	7	110	2	91-105	15	108-109	2
Voice	116-120	5	111-115, 121-125	10	-	-	-	-
Comprehension	133, 134	2	126-132, 135	8	-	-	-	-
Total		28		34		63		11

### 3. Preparation of the test

The task of preparation of an achievement test in English Grammar is full of hard work and intelligence. It includes three steps:

- Item-Writing
- Checking by expert
- Item-Editing

At the initial stage preliminary draft was prepared corresponding to seven units (Article, Adjective, Verb, Conjunction, Preposition, Voice and Comprehension) of English Grammar of IX class. This draft consists 135 items covering the major objectives of teaching; knowledge, understanding and application in English at the secondary stage. Items having similar units were grouped at one place; Items were multiple types i.e. every item is fed with four options in which only one option was the appropriate answer. Here the students were expected to answer the questions by selected the right option from among the four listed responses. All the items were evaluated by the experts like Dr. Puspender Kumar Aggarwal, Shree Bhagwan Singh, Kiran Rani as well as by the investigator in order to remove vagueness, ambiguous terms and language difficulty in the format of test items. 5 items (8, 38, 55, 109, 124) were deleted and few items were modified as per suggestions received from the experts. In this way preliminary draft with 130 items was made.

### 4. Administration of the test

#### 4.1 Individual try out

After finalizing, the test items were administered on 5 students for individual try-out.

#### 4.2 First tryout

After individual tryout, the test items were administered on the 40 students of X class of Ranjit Public School of Chirya, Bhiwani, for 1<sup>st</sup> tryout (Preliminary try out). This attempt was made to check the difficulty level as well as any language problem occurring in the construction of the test. These all students were having difference in the achievement in English. All the students were given separate answer sheet on which they were supposed to mark the right answer, after giving the required instructions about the test. There was no time limit and time taken by every student was noted down. Out of 130, 15 items were found to be confusing/difficulty by the students. Therefore out of 130 items 15 items (13, 14, 37, 39, 40, 53, 57, 60, 61, 76, 77, 79, 81, 87, 93) were removed from the draft. Thus, the first draft of the achievement test is consisting 115 items keeping in view the nature of content as well as 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	1	7	5	2	15
Preposition	5	2	12	2	21
Voice	5	10	-	-	15
Comprehension	2	8	-	-	10
Total	26	34	45	10	115

#### 4.3 Final tryout

The test was administered to 100 students of IX class who had

just passed IX class exams for final tryout. The answer sheets were collected from all the students. The answer sheets were scored with the help of scoring key which was already prepared by the investigator. Correct answer has been awarded one mark and incorrect has been awarded zero.

**5. Item Analysis**

Item analysis is 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. It was done to obtain best items of the test. This technique includes following steps:

**5.1 Arranging answer sheet in descending order**

All the 100 answer sheets were arranged in descending order

**5.2 Difficulty Value**

Item difficulty is the percentage of students that correctly answered the item, also referred to as the P value. The range is from 0% to 100%, the higher the value, the easier the item. P values above 0.90 are very easy items and might be a concept not worth testing. P-values below 0.20 indicate difficult items and should be reviewed for possible confusing language or the contents needs re-instruction. Optimum difficulty level is 0.50 for maximum discrimination between high and low achievers. Generally, items of moderate difficulty are to be preferred to

those which are much easier or much harder. The formula for calculating difficulty value was:

$$dv = \frac{R_U + R_L}{N_U + N_L}$$

Where,

- $Dv$  = Difficulty value
- $R_U$  = the number of students in the upper group who responded correctly
- $R_L$  = the number of students in the lower group who responded correctly
- $N_U$  = the number of students in the upper group
- $N_L$  = the Number of students in the lower group

The difficulty indices were analyzed using the Henning (1987) guidelines as shown in the following table:

**Table 5:** Henning’s Guidelines (Difficulty Value)

High Difficult	Medium	Low(Easy)
≤0.33	0.34-0.66	≥0.67

Based on the Henning’s Guidelines in the above table, the 115 test items categorized in 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

**5.3 Discrimination Power**

Discrimination Power of an item may be defined as the extent to which success and failure on that item indicates the possession of the trait or achievement being measured (Marshall and Hales, 1972). The internal consistency discrimination index of each item was found by applying following formula:

$$Dp = \frac{N_U - N_L}{N / 2}$$

Where,

- $Dp$  = Discrimination power
- $N_U$  = Number of students of higher group answering the item correctly
- $N_L$  = Number of students of lower group answering the item correctly

$N$  = Total number of students  
Ebel’s (1979) criteria and guidelines for categorizing discriminating indices is a widely quoted set of guidelines and, therefore, were used in this analysis.

**Table 7:** Ebel’s Guidelines (1979) (Discriminating power)

Discriminating powers	Description
0.40 and above	The item is functioning quite satisfactorily
Between 0.30-0.39	Little or no revision is required
Between 0.20-0.29	The item is marginal and needs revision
≤.0.19	The item should be eliminated or completely revised

Based on the Ebel’s guidelines in the above table the 115 test items categorized as in Table 8

**Table 8:** Distribution of discriminating powers (D.P.) of Items of first draft of 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 Good Items
Between 0.30-0.39	4,33	2	Reasonably Good Items
Between 0.20-0.29	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
Total		115	

**Table 9:** Item Analysis Chart (Final Tryout)

Level of Difficulty Discriminating Index ↓	High difficult (≤.33) →	Moderate (.34-.66)	Low (≥0.67)	Total
.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
Between 0.30-0.39		4,33		2
Between 0.20-0.29	8,12,42,54,57,59,62		14,48,65,79,80,89	13
≤0.19	61,63,84,85, 93,94,99,109,110,115		10,16,23,24,34,35,45,10 0,102,104,111,112	22
Total	17	80	18	115

**Final Draft of Achievement Test**

Final drafting is prepared on the basis of item analysis. The investigator, after selecting items for final test, re-arranged

them in accordance with the principal laid down by experts. The final draft of achievement test consists of 80 items.

**Table 10:** Distribution of discriminating power and Difficulty values of items of final draft of Achievement test

Level of Difficulty Discriminating Index ↓	Moderate (.34-.66)	Remarks	Total
.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 Items	78
Between 0.30-0.39	4,33	Reasonably Good	2
Total			80

**Table 11:** Number of items retained in the final draft of Achievement test at different cognitive levels

Cognitive levels of objectives	Serial Number of items retained	Total
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	23
Understanding Level	3,4,19,22,38,39,56,58,60,71,90,91,92,95,101,103,105,106,107,108	20
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	32
Skill Level	13,25,43,64,88	5
	Total	80

**6. Standardization of Achievement Test**

Eighty (80) items constituted the final form of the Achievement Test. The Achievement Test was further

standardized by experimental validation of the test that included establishing reliability and validity.

### 6.1 Reliability of the test

Reliability is one of the important characteristics of any test and measuring instrument. Reliability refers to consistency of scores obtained by same individual when re-examined with test on different sets of equivalent items or under other variable examining condition. In the present research paper, the reliability of the test was measured by test-retest method. The test was administered to a group of students and was re-administered to the same group of students after fifteen days and two sets of scores were correlated. The reliability coefficient of the present test was 0.85. This shows that achievement test has high reliability.

### 6.2 Validity of the test

Validity refers to the attainment of purpose for which the test is prepared. There are different methods of estimating validity such as face validity, content validity, construct validity, predictive validity and concurrent validity. The investigator opted for content validity. 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 four English teacher and four experts to compare test items with the content and objectives of content. Out of the eight 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 scheme. In this way content validity of the achievement test was established.

### 7. Conclusions

The study was carried out to construct and produce a reliable and valid Achievement Test in English Grammar. The test was standardized on the sample of 100 students studying in Government Girl Senior Secondary Schools, Government Sr. Sec. School and Ranjit Public School of, Chirya, Charkha Dadri district of Haryana. Two research questions which centred on validity and reliability were drawn to guide the study. Theoretical and empirical literature related to the study was reviewed. The reliability of the test was determined through Test-Retest method of reliability which was 0.82 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 IX class.

### 8. References

1. Bhagat, Pooja, Baliya JN. Construction and Validation of Achievement Test in Science. International Journal of Science and Research (IJSR). 2016, 5(6).
2. Ebel RL. *Essentials of Educational Measurement* (3<sup>rd</sup> Edition). Englewood Cliffs, NJ: Prentice Hall, 1979.
3. Good CV. *Dictionary of Education*. New York: McGraw Hill Book Company Inc, 1959.
4. Henning G. *A Guide to Language Testing- Development, Evaluation, Research*. London: Newbury House Publisher, 1987.
5. Jayanthi J. Development and Validation of an Achievement Test in Mathematics. International Journal of Mathematics and Statistics Invention (IJMSI). 2014, 2(4).
6. Kumar N. Construction and Standardization of an Achievement Test in English Grammar. International Journal of Current Research and Modern Education ((IJCRME)). 2016, 1(2).
7. Niwas R, Kuor S. Effectiveness of Deductive and Inductive Method in Teaching English Grammar at Elementary Level. International Journal of Advanced Research. 2016, 4(7).
8. Sharma HL, Poonam. Constructivist Approach for Teaching English: Making sense of Paradigm shift from the Traditional Approach. International Journal of Science and Research (IJSR). 2016; 5(10):788-792.
9. Sharma HL, Poonam. Constructivist Approach for Teaching English: Making sense of Paradigm shift from the Traditional Approach. International Journal of Science and Research (IJSR). 2016; 5(10):788-792.
10. Sharma HL. *Innovative Inputs in ICT*, Amit Prakashan: Jalandhar city, 2014.
11. Sharma HL, Devi Sharmila. Construction of an Achievement Test for the students of VIII class in the Subject of Mathematics. International journal of scientific research (IJSR). 2013, 2(7).
12. Sharma HL, Pooja. Enhancing Students interest in English language via Multimedia Presentation. International Journal of Applied Research. 2016; 2(1):275-281.
13. Sharma HL, Rani, Kiran. Tracing the Conceptual Framework of Multimedia-based Instructional Package for Enhancing English Language Skills. International Journal of Science and Research (IJSR). 2016, 5(2).
14. Sharma HL, Sharma, Leena. Effect of Constructivist Approach on Academic Achievement of Seventh Grade Learner in Mathematics. International Journal of Scientific Research (IJSR). 2013, 2(10).
15. Sharma, Manu, Gurmit S. Construction and Standardization of Achievement Test in Economics. International Journal of Science and Research (IJSR). 2015; 4(12).
16. Webster's Dictionary of Education. Spring Field, Massachusetts: G and C Merriain Co. publishers, 1989.