

# Impact of Programmed Learning on the Academic Achievement of Secondary School Students in English Subject

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## INTRODUCTION

In the modern scientific and technical world, education plays a vital role. The world is becoming more and more competitive. Education pulls out a person from darkness and ignorance by developing his individuality in all aspects like physical, mental, social and emotional. Education is the torch bearer in one's life. The real and ultimate aim of education is to develop an individual into a worthy citizen or a responsible human being. It is the most important instrument to fulfill an individual's obligations and carries out responsibilities efficiently and effectively. Thus, through education we can be able to actualize overrules to live our lives in satisfaction to perfect terms of taking and going some thing in society. The scholastic achievement is the most important goal of education. It encourages the students to work hard and learn more.

**Panday (1973)**, "Academic Achievement is quality and quantity of learning in a subject as assessed by the examination tasks."

Evaluation plays a pivotal role in deciding what the learners learn and what the teachers teach is concerned with Academic Achievement. Evaluation of pupils and learning should also be integrated, with both the process and product of learning. Educational Technology is a vast area for measurement and evaluation in education. It helps in achieving the teaching objective. The most important work of Education Technology was carried out during 1950, when B.F. Skinner had developed Programmed Learning.

**Edger Dale**, "Programmed Learning is a systematic, step by step, self-instructional programme and to ensure the learning of stated behavior."

**K.O. May**, "Educational Programming is the scheduling and control of student's behavior in the learning process."

## PROGRAMMED LEARNING

Programmed Learning or Programmed Instruction is one of the important innovations in the teaching learning process. Programmed Learning is highly individualized, which is a systematic instructional strategy for class-room as well as self learning. It is a carefully specified, systematically planned, empirically established, skillfully arranged and effectively controlled self-instructional technique for providing individualized instruction or learning experience to the learner. The subject matter or learning experience is logically sequenced into small segments. It is an application of the principles of behavioral sciences and technology in the field of education.

Programmed Learning emerged in the 20th century from the efforts of American Psychologists. **E.L. Thorndike** (1874-1949) was the first psychologist, whose findings bear direct relevance to programming. **B.F. Skinner** and his associates has started 'Programmed Learning' in 1943 by conditioning a pigeon. They had attempted to apply the principles of learning to education and to the use of teaching machines. Thereafter, **Sidney L. Pressey** has also designed a teaching machine for testing purpose. 'Programmed Learning' is also related with the 'Law of Effect' as explained by Thorndike.

## PROGRAMMED INSTRUCTION IN INDIA

The concept of Programmed instruction was introduced in December 1963 by organizing three days seminar on Programmed Instruction at Central Pedagogical Institute, Allahabad. In this seminar 25 educators of training colleges of the country participated. After that several seminars were organized on Programmed Instruction in the training colleges of Punjab, Gujarat, and Maharashtra.

In 1965, NCERT organized a workshop for a week to train 25 lectures of training colleges at Psychological Foundation Department. In 1966, NCERT organized a workshop on Programmed Instruction and 40 teachers of Science, Mathematics, Statistics, Geography, Family Planning and Defense persons participated. They had prepared

Programmed Instruction material in their disciplines. Most of programmed materials were designed on Science and Mathematics. This council had organized second workshop at Chandigarh.

Some enthusiastic persons working in this area formed Indian Association of Programmed Learning (IAPL) during 1966. There are more than 500 members of this organization. An annual conference is organized every year on this new aspect of IPAL and Journal of Educational Technology is published by this organization. There are several life members of this association.

Central Advanced Studies of Education (CASE) Baroda, Meerut University and Himachal Pradesh University have also introduced a course on programmed instruction at B.Ed, M.Ed. and M.Phil (Education) levels. By doing this, they are providing knowledge, skill of Programmed Instruction strategy. In these universities a number of programmed materials have been designed and evaluated on different school subjects. A number of research studies have been conducted in this area. The author has published a paper in Educational Technology Journal entitled. "A review studies on programmed instruction of Meerut University".

The concept of programmed instruction has also been introduced in family planning, industry and defense. NCERT have established a Centre of Educational Technology (CET).

### CHANGING PATTERNS OF PROGRAMMED INSTRUCTION

Year	Changes in Programme Instruction
1960	Small steps, overt response, immediate feedback of result, self-pacing and validation.
1963	Task-analysis, behavioral objectives, small steps, logical sequencing, active responding, immediate feedback, self-pacing and validation.
1966	Task-analysis, behavioral objectives, content-analysis, flow-chart, small steps, active responding, presentation as a communication, problem of validation.
1970	Systematic-analysis, task-analysis, content-analysis, behavioral objectives, starting material, appropriate teaching or instructional strategy, controlled interaction via digestible steps, appropriate stimulus, content relevant responses, modes of providing reinforcement, presentation as communication problem, appropriate instruction, validation and evaluation, installation and implementation. Manual of the programmed instruction material.

#### EXPERTS' VIEW POINTS ON PROGRAMMED LEARNING

**Smith and Moore (1962)**, "Programmed Instruction is the process of arranging the material to be learned into a series of sequential steps, usually it moves the students from familiar background into a complex and new set of concepts, principles and understanding."

**Susan Markle (1969)**, "Programmed Learning is a method of designing a reproducible sequence of instructional events to produce a measurable and consistent effect on behaviour of each and every acceptable student."

**Gulati and Gulati**, "Programmed learning, as popularly understood, is a method of giving individualized instruction, in which the student is active and proceeds at his own pace and is provided with immediate knowledge of results. The teacher is not physically present. The programmer while developing programmed material has to follow the laws of behavior and validate his strategy in terms of students learning."

**Michael J. Apter**, "Programmed instruction is a method of instruction in which the information to be taught is broken down into small units which are to be presented to the student in a carefully planned sequence. Each unit or 'frame' contains not only information but is also terminated with a question."

#### CHARACTERISTICS OF PROGRAMMED LEARNING

- **Individualized Instruction**
- **Logical Sequence of Material**
- **Interaction between the Learner and the Programme**
- **Immediate Knowledge of results**
- **Emphasis on behavior of leaner**
- **Active motivation**
- **Organized Nature of Knowledge**
- **Learner's Own Speed**
- **Constant Evaluation**

Programmed learning is a systematically planned, empirically established and effectively controlled self-instructional technique for providing individualized instruction to the learner through logically sequenced small segments of the subject matter by using the principles of operant conditioning and schedules of reinforcement.

### STYLE OF PROGRAMMING

In programmed learning, the presentation of instructional material or subject matter to the learner in a suitable form is termed as programming. Various types of programming have emerged on account of researchers and experimental studies in the field of programmed instruction. The following list gives some of the mentionable ones:-

- Linear or extrinsic programming
- Branching or intrinsic programming
- Mathematics programming
- Rule system of programming
- Computer-assisted instruction
- Learner controlled instruction

The first three styles linear, branching and mathematics represent the actual basic formats. The Rule system represents the deductive and inductive approaches in teaching. Here, a perfect rule or special example works as a stimulus for evoking the responses in terms of imperfect rule or imperfect example. In practice, this system is just the extension of linear or branching programming.

The other two styles computer-assisted instruction and learner controlled instruction are actually the ways and means of providing instructions and not the special or basic format of the programming. In programming, usually the programmer makes use of the basic formats linear, branching or mathematics for developing programmes suitable to computer or learner controlled instructions.

### LINEAR OR EXTRINSIC PROGRAMMING

The credit for propagating the linear programming style goes to **B.F. Skinner (1955)**. It is directly related with his theory of "Operant conditioning" and is based on the assumption that human behavior can be shaped or conditioned gradually, step by step, with suitable reinforcement for each desired response. Consequently, in this programming, the instructional material is sequenced into a number of meaningful small steps, called frames.

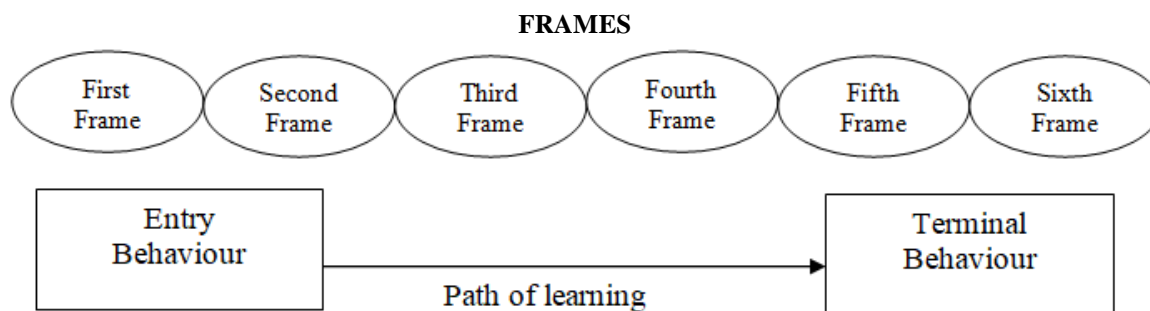


Figure 1. Arrangement of frames in linear programming

### ACADEMIC ACHIEVEMENT

Academic Achievement seems to depend on the cognitive style through which information is taken in by the learners. Academic Achievement plays a very significant role in the attainment of ideas as harmonious development of the child. It means the amount of knowledge gained by the students in the different subjects of study. It is the most important factor in the learning and in the growth and development of the pupils. Entire future of a personality stands on sound development of Academic Achievement.

### EXPERTS' VIEW POINTS ON ACADEMIC ACHIEVEMENT

**Dictionary of Education (2002)**, "Academic Achievement is a measure of knowledge gained through formal education usually indicated by test score, grade point, average and degree."

**Taneja's Dictionary of Education (2000)**, "Academic Achievement refers in school or college standardized series of educational tests."

**Kumar (2001)**, "Academic Achievement is the sum total of information gained, after completing a course of instruction in a particular grade that he has obtained on a cavemen test."

### STATEMENT

Impact of Programmed Learning on the Academic Achievement of Secondary School Students in English Subject

### RATIONALE OF THE PROBLEM

Achievement is like a glittering thing which attracts and gets the admiration of all. In academic field, it is measured in the form of marks recurred by students. It is one of the objectives of education to maximize the performance of students in their academic subjects. It is the age of competition at every step of life. Mostly parents desire that their children climb the ladder of performance to as high level as possible. Further more, every educational institution stresses upon success in educational work as imposed by academic demands. For this purpose, evaluation plays a pivotal role in deciding what the learners learn and what the teachers teach.

In tools of evaluation, examination system is also included. But, now at this time, the problem is that the examinations are periodical, which is not appropriate for the comprehensive evaluation and students still continue to struggle to escape from the faulty examination system. At this time Educational Technology comes before us as a good tool of evaluation. The most important work of Educational Technology was carried out during 1950, which was 'Programmed Learning' was developed by B.F. Skinner.

The present study has made an attempt to test the impact of programmed learning on Academic Achievement of secondary school students. It is hoped that the study will contribute some highlights towards new approach of teaching. It will also help the teachers to understand, whether the teaching methods are effective or not and helps them in bringing improvement accordingly.

### OBJECTIVES OF THE STUDY

The present study will be conducted keeping in mind the following objectives:-

- To study the Academic Achievement in English subject of government and private school students.
- To study the Academic Achievement in English subject of boys and girls of government school students.
- To study the Academic Achievement in English subject of boys and girls of private school students.

### HYPOTHESES OF THE STUDY

A hypothesis is a statement temporarily accepted as true in the light of what is, at the time, known about a phenomenon and it is employed as a basis for action in the search for new truth. It is a shrewd and intelligent guess, a supposition, tentative generalization as to the existence of some fact, condition or relationship relative to same phenomena which serve to explain already known facts in a given data of research and to guide research for new truth on the basis of empirical evidence. The hypothesis is put to test for its tenability and for determining its validity.

The following hypotheses are formulated:-

- There will be no significant difference in Academic Achievement in English subject of government and private school students.
- There will be no significant difference in Academic Achievement in English subject of boys and girls of government schools.
- There will be no significant difference, in Academic Achievement in English subject of boys and girls of public schools.

### DELIMITATIONS OF THE STUDY

- The study was delimited to school in Jalalabad (w), District Fazilka only.
- The study was conducted on 100 students of Government School and Public Schools.
- Only secondary class students will be included.
- The study was done on Linear Programming and Academic Achievement only.

### SAMPLE OF THE STUDY

The random sampling techniques was employed in the present study according to the purpose of the study. The criteria of randomization in a sample are met when every individual in the population had the same chance of being chosen for the sample and when selection of an individual or thing has its influence on the choice of another. Representative sample in the present study consisted 100 students of different schools in Jalalabad (W) District Fazilka. There are 25 students from Govt. Boys Sen. Sec. School, 25 students from Govt. Girls Sen. Sec. School, 25 students from Shivalik Sen. Sec. School and 25 students from ACME Public Sen. Sec. School Students of 9th class are taken for this purpose of the study.

### DESCRIPTION OF THE SAMPLE

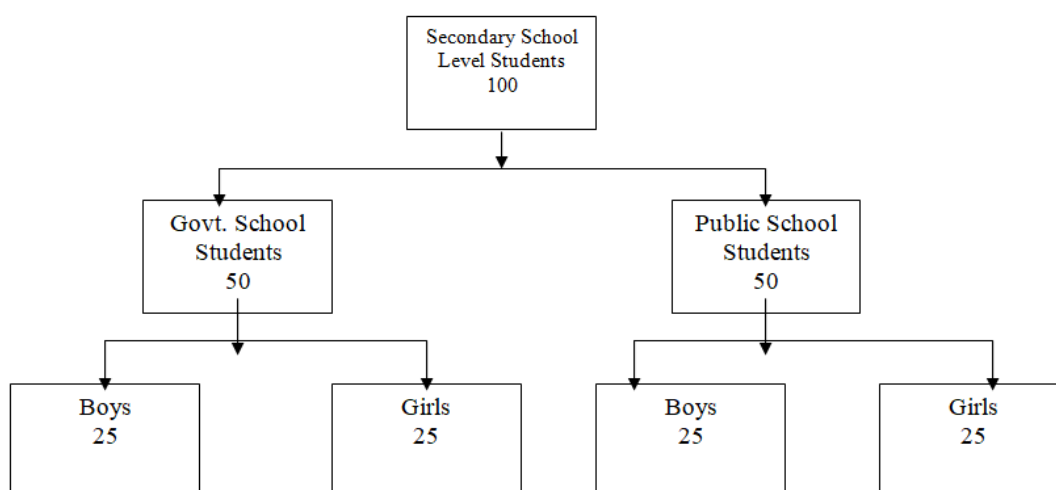
Sr. No.	Name of the School	No. of Students
1	Govt. Boys Sen. Sec. School	25

2	Govt. Girls Sen. Sec. School	25
3	Shivalik Sen. Sec. School	25
4	ACME Public Sen. Sec. School	25
<b>Total</b>		<b>100</b>

### DESIGN OF THE STUDY

The present investigation aims to study the impact of Programmed Learning on the Academic Achievement of Secondary School students in English Subject.

To carry out the above said exploration and to meet objectives of the study, the experimental method of investigation is employed in present study. The experimental research is used to determine and evaluate the adequacy and effectiveness of the educational and instructional objectives through the measurement of their outcomes. The classroom teacher used experimentation to evaluate the effectiveness of certain learning experiences, planned and organized to achievement some desired objectives. Experimental plan refers of the conceptual frame work within which the experiment is conducted. The design of the study of 100 students at secondary level is given below:-



### TOOLS USED

- Marks obtained in formative assessment of 9th class are taken from the office records of the schools, for Academic Achievement.
- Self-made Teaching, Practice and Testing frames of Linear-Programming in English Grammar by investigator.

### STATISTICAL TECHNIQUES

To show the impact of Programmed learning on the Academic of Secondary School students in English Grammar the following statistical techniques were used:-

- Mean
- Standard Deviation
- The significant of difference.
- t-ratio

#### Hypothesis No. 1

There will be no significant difference in Academic Achievement in English subject of Government and Public secondary school students.

**Table 1 t-ratio between Academic Achievement in English subject of Government and Public students.**

Sr. No.	Variable	N	Mean	$\sigma$	SE <sub>D</sub>	t-Ratio	Level of Significance
1	Government Students	50	41.62	4.18	0.77	0.85	Not Significant at 0.05 level and 0.01 level
2	Public Students	50	40.96	3.48			

### Interpretation

The mean of 50 Government and 50 private school students is 4.162 and 40.96 respectively and the standard deviation for the sample is 4.18 and 3.48 respectively. Standard error of difference between means of government and private school students is 0.77. The t-value for difference of Academic achievement in English subject of government and private school students is 0.85 which is less than the tabulated value of 2.58 at 0.01 level and 1.96 at 0.05 level of confidence. The calculated value is less than both these values and hence not significant at both levels. Hence, hypothesis "there is no significant difference in Academic Achievement in English subject of government and private school students" is retained.

### Hypothesis No. 2

There will be no significant difference in Academic Achievement in English subject of boys and girls of Government schools.

**Table 2 t-ratio between Academic Achievement in English subject of boys and girls of Government schools.**

Sr. No.	Variable	N	Mean	$\sigma$	SE <sub>D</sub>	t-Ratio	Level of Significance
1	Boys	25	40.6	3.05	1.14	1.78	Not Significant at 0.05 level and 0.01 level
2	Girls	25	42.64	4.85			

### Interpretation

The mean of 25 Government male and 25 Government female school students is 40.6 and 42.64 respectively and the standard deviation for the sample is 3.05 and 4.85 respectively. Standard error of difference between means of government male and female school students is 1.14. The t-value for difference of Academic achievement in English subject of male and female government school students is 1.78 which is less than the calculated value of 2.68 at 0.01 level and 2.01 at 0.05 level of tabulated. The calculated value is less than both these values and hence not significant at both levels. Hence, hypothesis "there is no significant difference in Academic Achievement in English subject of boys and girls of Government schools" is retained.

### Hypothesis No. 3

There will be no significant difference in Academic Achievement in English subject of boys and girls of Public schools.

**Table 3 t-ratio between Academic Achievement in English subject of boys and girls of Public schools**

Sr. No.	Variable	N	Mean	$\sigma$	SE <sub>D</sub>	t-Ratio	Level of Significance
1	Boys	25	40.24	3.38	0.95	1.73	Not Significant at 0.05 level and 0.01 level
2	Girls	25	41.88	3.44			

### Interpretation

The mean of 25 male & 25 female public school students is 40.24 and 41.88 respectively and the standard deviation for the sample is 3.33 and 3.44 respectively. Standard error of difference between means of public male and female school students is 0.95. The t-value for difference of Academic achievement in English subject of male and female public school students is 1.73 which is less than the tabulated value of 2.68 at 0.01 level and 2.01 at 0.05 level of confidence. The calculated value is less than both these values and hence not significant at both levels. Hence, hypothesis "there is no significant difference in Academic Achievement in English subject of boys and girls of public schools" is retained.

## MAJOR FINDINGS

1. There is no significant difference in Academic achievement in English subject of Government and private school students. Thus, the hypothesis that there will be no significant difference in Academic achievement in English subject of government and private school students.

2. There is no significant difference in Academic achievement in English subject of boys and girls of government schools. Thus, the hypothesis that there will be no significant difference in Academic achievement in English subject of boys and girls of government schools is accepted.
3. There is no significant difference in Academic Achievement in English subject of boys and girls of public schools. Thus, the hypothesis that there will be no significant difference in Academic Achievement in English subject of boys and girls of public schools is accepted.

### SUGGESTIONS FOR FURTHER STUDY

- In the present study only Linear Programmed Learning have been taken, it would be desirable to take, Branching Programmed Learning and Mathematics Programmed Learning.
- The present study covers only representative sample of students of only 9th class. The study may be replicated on a sample of others classes and other age levels.
- The present study covers only schools of Jalalabad (W).The study may be replicated on schools of other districts and other states.
- The present study covers the variable Academic Achievement. The study can be done on more variables Programmed Learning with respect to other variables like personality, intelligence etc.

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