



CHAPTER - V

**FINDINGS, DISCUSSIONS,
SUMMARY
AND
IMPLICATIONS**

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5.0.0 INTRODUCTION

The objectives, hypotheses, rationale and delimitations of the present investigation are presented in chapter I. The review of related literatures along with the sum-up of those is given in chapter II. The methodology, design, sample, tools and the statistical techniques used for the analysis of the data are presented in chapter III. The results and their interpretations related to the objectives are presented in chapter IV. The present chapter deals with the findings, discussions summary and implications of the study. These are presented below under separate headings.

5.1.0 FINDINGS

Following findings were emerged from the analysis of the data.

- The material developed for the alternative techniques of assessment was found to be effective in terms of the students' achievement in Science.
- The alternative technique of assessment was found to be effective in terms of the students' participation in the classroom.

- There is a significant difference in mean achievement score of the students taught through the ICT-based alternative techniques of assessment and the students taught through the traditional method.
- There was significant relationship between the achievement in Science and intelligence.
- There was significant relationship between the achievement in Science and personality.
- There is no significant effect of gender on achievement in Science.
- There is a significant effect of intelligence on the students' achievement in Science.
- There is no significant interactional effect of gender and intelligence on the students' achievement in Science.
- There is a significant effect of personality on the students' achievement in Science.
- There is no significant interactional effect of gender and personality on the students' achievement in Science.

The discussions pertaining to the each of these, above mentioned, findings are presented, below, under separate captions.

5.2.0 EFFECTIVENESS OF ALTERNATIVE TECHNIQUES OF ASSESSMENT

The effectiveness of the Alternative Techniques of Assessment was studied in terms of the students' achievement in Science, their reactions towards the material developed and their participation in the classroom. The discussions related to the each of these components of measures of effectiveness are presented, below, under separate headings.

5.2.1 Effectiveness of the Alternative Techniques of Assessment in terms of the Students' Achievement in Science

The material developed for the alternative techniques of evaluation was effective in terms of the students' achievement in Science. This finding is supported by earlier studies conducted by Paul (1985), Barbara (1986), Henry (1986), Eric (1987), Calvin (1988), Moore (1988), Prabhakar and Sansanwal (1989), Bhardwaj (1990), Jeyamani (1991), Mahapatra (1991), Reddy and Ramalu (1999), Shah and Agrawal(1999), Sanansanwal and Dahiya (2006), Senapaty (2009), Chiniwar (2013), Rathnabai and Vishwanathappa (2013), Vishwanathan (2013), Stephen, Sowmya and Senthikumar, (2014). This may be attributed to the change in the pattern of teaching as well as the changing pattern of assessment techniques. The assessment is an integral part of the teaching. It creates fear among the learners when asked in for the questions. But, in this study assessment was done through using the alternative techniques. The learners were not known that they were assessed. Because, they were engaged in different activities, like concept mapping, preparation of rubrics, and preparation of e-portfolios and were engaged in checking their peers' activities. As a part of the CCE, these were done to form their learning behaviours, which were actually the learning outcomes.

Further, as they worked through the computers in the laboratory, they were exposed to the internet. They worked in the group. They worked in different soft-wares/packages for the construction of concept map and different types of rubrics. They experimented themselves. Therefore, they enjoyed the learning.

These might be the causes for the effectiveness of the material.

5.2.2 Effectiveness of the Alternative Techniques of Assessment in terms of the Students' Participation in the Classroom

The material was effective in terms of the students' participation in the classroom. The students were actively participated in the learning activities. They worked in the group as well as individually. These opportunities are, generally, not provided in the traditional class room practices. The students were free to work in the computer under the guidance of the teacher. They never felt any pressure in the class. They experimented on different activities. This kind of activeness is, generally, not found in the traditional method of teaching. Activeness is one of the criteria of learning.

5.3.0 COMPARISON OF ACHIEVEMENT IN SCIENCE OF THE STUDENTS OF EXPERIMENTAL AND CONTROL GROUP

There is a significant difference in mean achievement score of the students taught through the ICT- based alternative techniques and the students taught through the traditional method. This finding is supported by the studies conducted by Paul (1985), Barbara (1986), Henry (1986), Eric (1987), Calvin (1988), Moore (1988), Prabhakar and Sansanwal (1989), Bhardwaj (1990), Jeyamani (1991), Mahapatra (1991), Reddy and Ramalu (1999), Shah and Agrawal(1999), Sanansanwal and Dahiya (2006), Senapaty (2009), Chiniwar (2013), Rathnabai and Vishwanathappa (2013), Vishwanathan (2013), Stephen, Sowmya and Senthikumar, (2014). In their studies, they found that computer assisted instruction was found to be effective in terms students' achievement in different subjects.

5.4.0 RELATIONSHIP BETWEEN THE INTELLIGENCE AND ACHIEVEMENT IN SCIENCE

There was significant relationship between the achievement in Science and intelligence. The finding of this study is corroborated by the earlier studies of Paul (1985), Barbara (1986), Moore (1988), Prabhakar and Sansanwal (1989), Bhardwaj (1990), Mahapatra (1991), Reddy and Ramalu (1999), Shah and Agrawal (1999), Arya (1999), Jaiswal (2014). In their studies, they found a significant positive correlation between the intelligence and the achievement.

5.5.0 RELATIONSHIP BETWEEN THE PERSONALITY AND ACHIEVEMENT IN SCIENCE

There was significant relationship between the achievement in Science and personality. This finding is supported by the studies conducted by Mahapatra (1991). In contrast, Shah and Agrawal (1999), Arya (1999) and, Jaiswal (2014) concluded that there is no significant relationship between the personality and the achievement.

5.6.0 EFFECT OF GENDER, INTELLIGENCE AND THEIR INTERACTION ON THE STUDENTS' ACHIEVEMENT IN SCIENCE

The discussions related to the effect of gender, intelligence and their interaction are presented, below, under the caption 5.6.1, 5.6.2 and 5.6.3, respectively.

5.6.1 Effect of Gender on the Students' Achievement in Science

There is no significant effect of gender on achievement in Science. It shows that achievement is independent of the gender. It is not influenced by gender of the learner. This finding is supported by Mahapatra (1991). Arya (1999), Ojha (2000), Rathnabai and Vishwanathappa (2013) and Jaiswal (2014). Achievement depends upon many factors such as, intelligence, study habit, creativity,

mental development, attitude towards learning, interest and motivation of the learner, etc. Irrespective of the gender, i.e., boys and girls, the students achieved the scores.

5.6.2 Effect of Intelligence on the Students' Achievement in Science

There is a significant effect of intelligence on the students' achievement in Science. It signifies that achievement is dependent upon the intelligence of the students. The finding of this study is corroborated by the findings of the earlier studies (Paul, 1985); Barbara, 1986; Moore, 1988; Prabhakar and Sansanwal, 1989; Bhardwaj, 1990; Mahapatra, 1991; Reddy and Ramalu, 1999; Shah and Agrawal, 1999; Arya, 1999 and Jaiswal, 2014).

5.6.3 Interactional Effect of Gender and Intelligence on the Students' Achievement in Science

There is no significant interactional effect of gender and intelligence on the students' achievement in Science. The finding shows that there is a positive and significant correlation between the intelligence and achievement of the learner. But, the gender of the student did not influence the achievement. It was found that there was no interactional effect of gender and intelligence on the learners' achievement.

5.7.0 EFFECT OF GENDER, PERSONALITY AND THEIR INTERACTION ON THE STUDENTS' ACHIEVEMENT IN SCIENCE

The discussions related to the effect of gender, personality and their interaction are presented, below, under the caption 5.7.1, 5.7.2 and 5.7.3, respectively.

5.7.1 Effect of Gender on the Students' Achievement in Science

The discussions related to the effect of gender on the students' achievement in Science is presented in the caption 5.6.1.

5.7.2 Effect of Personality on the Students' Achievement in Science

There is a significant effect of personality on the students' achievement in Science.

5.7.3 Interactional Effect of Gender and Personality on the Students' Achievement in Science

There is no significant interactional effect of gender and personality on the students' achievement in Science. The finding indicates that gender did not have any effect on the achievement of the learners. So far as influence of personality on the achievement is concerned, it has contrasting findings. Mahapatra (1991) concluded that personality had an significant impact upon the achievement. But, Shah and Agrawal(1999), Arya (1999) and Jaiswal (2014) concluded that there is no significant e of personality on achievement. But in this study no interactional effect of gender and personality on the Students' Achievement was found.

5.8.0 SUMMARY

Continuous and Comprehensive Evaluation is the need of the hour. In today's educational parlance, different assessment techniques are in vogue. But in the present study, alternative techniques of assessment, such as, rubrics, portfolio, peer evaluation, self-evaluation, etc. were used. Assessment is now regarded as a learning technique. The concept of assessment has been changed from assessment of learning to assessment for learning and assessment as learning. Constructivism has brought a sea change in the learning process. Especially, the 5-E model of teaching has popularised concept process approach to learning.

ICT has opened the new dimensions of the teaching learning process. It facilitates the learning. Therefore, it was thought that that CCE can be introduced in the real classroom situation along with the teaching learning process as it is regarded as an integral part of the learning process. Therefore, instead of paper pencil test, computer based alternative techniques of assessment may be used for the CCE as well as for the teaching-learning. Thus, the present research was undertaken to study the effectiveness of the ICT-based material for assessment.

5.8.1 STATEMENT OF THE PROBLEM

The problem may be worded as follows:

“EFFECTIVENESS OF ALTERNATIVE TECHNIQUES OF ASSESSMENT FOR TEACHING SCIENCE TO CLASS: VII STUDENTS OF CBSE”

5.8.2 OBJECTIVES OF THE STUDY

1. To study the effectiveness of the material developed for the alternative techniques of evaluation in terms of:
 - a. The students' achievement in Science, and
 - b. Students participation in the classroom.
2. To compare the achievement in Science of the students of experimental and control group.
3. To study the relationship between the intelligence and achievement in Science
4. To study the relationship between the personality and achievement in Science
5. To study the effect of gender, intelligence and their interaction on the students' achievement in Science

6. To study the effect of gender, personality and their interaction on the students' achievement in Science

5.8.3 HYPOTHESIS OF THE STUDY

Following hypotheses were formulated for the study:

3. There is no significant difference in mean achievement score of the students taught through the ICT-based alternative techniques and the students taught through the traditional method.
4. There is no significant relationship between intelligence and achievement in Science.
3. There is no significant relationship between personality and achievement in Science.
4. There is no significant effect of gender on the students' achievement in Science.
5. There is no significant effect of intelligence on the students' achievement in Science.
6. There is no significant interactional effect of gender and intelligence on the students' achievement in Science.
7. There is no significant effect of personality on the students' achievement in Science.
8. There is no significant interactional effect of personality on the students' achievement in Science

5.8.4 VARIABLES

Following variables were studied

- Personality - Independent
- Intelligence - Independent
- Gender - Independent

- Treatment -- Independent
- Achievement - Dependent

5.8.5 Methodology

Experimental method was employed for the study. Pre-test post-test control group design was employed. DMS, Bhopal was selected, randomly. Seventy students of class VI comprised the sample. Two sections of the class, i.e., A and B, were randomly assigned to the treatment. In A section, the lessons were dealt with the traditional method and the assessment was done through the traditional techniques of assessment where as in B section lessons were dealt through the constructivist approach of %E model and the assessment was done through the ICT-based alternative techniques of evaluation/ assessment. Treatment of ten days was given to both the groups. Both the groups were measured the variables like achievement, intelligence and personality with the help of the appropriate tools, such as Achievement test (developed by the investigator), Intelligence test (Ojha and Ray Chaudhari, 1971) and Personality Test (Pandey, 1999).

Data were analysed with the help of the statistical technique mean, SD, Range, Variance and ANOVA.

5.8.6 Findings

Following findings were emerged from the analysis of the data.

- The alternative techniques of assessment was effective in terms of the students' achievement in Science.
- The alternative technique of assessment was effective in terms of the students' participation in the classroom.

- There is a significant difference in mean achievement score of the students taught through the ICT-based alternative techniques and the students taught through the traditional method.
- There was significant relationship between the achievement in Science and intelligence.
- There was significant relationship between the achievement in Science and personality.
- There is no significant effect of gender on achievement in Science.
- There is a significant effect of intelligence on the students' achievement in Science.
- There is no significant interactional effect of gender and intelligence on the students' achievement in Science.
- There is a significant effect of personality on the students' achievement in Science.
- There is no significant interactional effect of gender and personality on the students' achievement in Science.

5.9.0 EDUCATIONAL IMPLICATIONS

- Alternative techniques of assessment is not only effective for collecting baseline information, but for giving students a realistic picture of their true skill levels.
- Evaluation as viewed as an integral part of the development or change process and involves 'reflection-action'. Subjectivity is recognised and appreciated.

- There is a focus on dialogue, enquiry rather than measurement, and a tendency to use less formal methods like unstructured interviews and participant observation.
- It is approached as an 'empowering process' rather than control by an external body. There is a recognition that different individuals and groups will have different perceptions. Negotiation and consensus is valued concerning the process of evaluation, and the conclusions reached, and recommendations made.
- The evaluator takes on the role of facilitator, rather than being an objective and neutral outsider. Such evaluation may well be undertaken by 'insiders' – people directly involved in the project or programme.
- Longitudinal summative assessment of practical skills is the truest measure of learning.
- Libraries should implement appropriate performance, affective, behavioural measures to provide a complete and accurate assessment of learners' information literacy skills and attitudes.

5.10.0 SUGGESTIONS FOR FURTHER RESEARCH

In the light of the present study, the present problem can be undertaken from various other angles. Some of the suggested areas where investigations can be undertaken are listed below:

- Studies of the similar nature can be undertaken on institution run by different management and different classes and subjects.

- Further studies can be conducted by using other variables also.
- The study can be conducted on a large sample.
- The study can be carried out by taking data from urban as well as rural area also.
- The study can be undertaken in the other districts, since it is confined to Bhopal only.
- The present study cannot be called final or comprehensive. More work can be done on different sample of different groups.

5.11.0 DELIMITATIONS OF THE STUDY

The study will be conducted under the following constraints:

1. The school was affiliated to CBSE.
2. NCERT published Science book was used in the school.
3. Only, one topic/unit was taught.
4. Only, 10 days treatment was given.