CHAPTER-V
SUMMARY OF FINDINGS AND CONCLUSION

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CHAPTER-V
SUMMARY OF FINDINGS AND CONCLUSION

5.1 INTRODUCTION

This chapter deals with summary of findings, implications, suggestions for further research and conclusion of the study are also discussed.

5.2 NEED AND SIGNIFICANCE OF THE STUDY

Scientific Knowledge remains the mother of invention to make a nation compete with world countries by the development of scientific attitude among the high school students. It is generally identified that the teachers at high school level may lack in spirit of developing perceptual skills and scientific attitude. It is also known that there has been inadequate science apparatus which suit to the content designed at high school level.

The teachers at high school level are familiar in traditional method of teaching science rather than not familiar in modern technological approach in teaching science through smart classrooms. In addition that lack of science apparatus in high school level. In this above requirement the administrator felt that to fulfill the requirement of science apparatus and given the trainee to the teachers to utilizing the smart classroom with specific manner. It is further identified that the learners of high school are taken to science laboratory a week before the practical exam and they are permitted to meet out the requirement of practical exam. Most of the science teachers preferred to use chalk and talk method to teach science content. This study took effort to develop perceptual skills to make a great
effect on enhancing learning achievement in science at high school. Therefore, the investigator made an attempt of the study titled, “Developing perception skills to enhance students’ achievement in science at high school level”.

5.3 SCOPE OF THE STUDY

There is a wider scope to develop the perceptual skills at high school students on enhancing student’s achievement in science subject. In this view the investigator has identified listed scope for developing perceptual skills through selected lesson plan prepared by the investigator which serves to enhance the perceptual skills among students in understanding the science concept in a easiest way. In addition to that there is a possibility for developing perceptual skills with classification of various skills through some kind of activities like demonstration explanation of difficult concepts, and practical exposure of science experiments which is greatly involving in the development of perceptual skills at high school level students to understand the science concepts with his/her own ability. In this aspect there is a possibility for the teachers to develop the perceptual skills by motivating the students to do the experiment by using their own experience gained by the practical exposure obtained from the classroom settings.

The present study mainly focuses on how far the perceptual skills enable the high school education to enhance their learning achievements in science with the following scope. Perceptual skills have many forms such as Listening, Auditory, Haptic visual, olfactory skills etc., which play a vital role in learning science. Teaching science through perceptual skills make students involve more in subject settings. The importance of perceptual skills together with suitable lesson plan has a significant positive effect on higher school student’s achievement in science. The
perceptual skills have its influence indirectly through involving the children in Experimentation, Exploration, Symposium; workshop debate etc., Hence, there is a scope for the investigator to make an attempt developing the perceptual skills in high school level.

**5.4 OBJECTIVES OF THE STUDY**

1. To find out the initial level of perceptual skills among students at high school level

2. To identify the difficulties in learning science by using perceptual skills and select skills which are need to be strengthened.

3. To prepare lesson plans incorporating the selected perceptual skills.

4. To teach the lessons with proper stress on Auditory, Visual skills, Kinesthetic, Haptic, Listening and Olfactory skills.

5. To find out the students’ academic achievement in science through pre, post test and retention test and find out the difference if any

6. To find out the students’ academic achievement in science through pre - post test, retention test and find out the difference if any.

7. To find out the significant difference if any between pre test and post test of students achievement in science with relation to certain demographic variables.

8. To find out the difference, if any between pre test and post test based on the perceptual skills, viz. Visual, Auditory, Kinesthetic, Haptic, Olfactory and Listening.
5.5 HYPOTHESES OF THE STUDY

Major Hypotheses

1. The level of learning by using perceptual skills in science at high school level is moderate.

2. There is no significant difference between the achievement test mean scores of their pre test and post test.

3. There is no significant difference between the pre test and post test mean scores of selected perceptual skills such as visual, auditory, kinesthetic, haptic and listening skills among students at high school level.

4. There is no significant difference between the mean scores of their retention test and post test for the perceptual skills.

Specific Hypotheses

5. There is no significant difference between the mean score of male and female in their pre test.

6. There is no significant difference between the mean scores of male and female in their post test.

7. There is no significant difference between the mean scores of joint family and single family in their pre test.

8. There is no significant difference between the mean scores joint family and single family in their post test.

9. There is no significant difference between the mean scores of parents educational qualification of below 10th standard and above 10th standard of their pre test.
10. There is no significant difference between the mean scores of parents educational qualification of below 10\textsuperscript{th} standard and above 10\textsuperscript{th} standard of their post test. There is no significant difference between the mean scores of their pre test with respect to the parent occupation.

11. There is no significant difference between the mean scores of their post test with respect to the parent occupation.

12. There is no significant difference between the mean scores of their pre test with respect to the parent annual income.

13. There is no significant difference between the mean scores of their post test with respect to the parent annual income.

14. There is no relationship between the pre test and post test of experimental group with respect of achievement in Science.

15. Effect size of experimental group of pretest and post test of perpetual skills among the high school students.

5.6 RESEARCH METHOD

The investigator has administered experimental method with single group design to assess the effectiveness of perceptual skills and academic achievement of students in science at high school level.

5.7 SAMPLE

The present study constituted (37) Thirty Seven students who were studying in Subramanian Chettiar Gurugulam Residential Hr. Sec. School, Amaravathipudur. 24 male and 13 female students were considered in the sample.
5.8 DATA ANALYSIS

The statistical techniques used in data analysis are

- Arithmetic Mean.
- Standard Deviation.
- The ‘t’ test.
- Correlation
- Effect size

5.9 FINDINGS OF THE STUDY

1. The level of percentage in pre test of 37.77% and post test 62.22%. The level of perceptual skills in learning achievement in science in Post test is higher than the Pre test.

2. The pretest mean score is found to be 45.45 and post test mean score 75.10 for the achievement test. It is concluded that there is significant difference between the mean value scores of the group students in their pre test and post test for overall performance of selected perceptual skills.

3. The pretest mean score is found to be 15.05 and post test mean score 25.21 in usages of visual skills.

  The pretest mean score is found to be 21.29 and post test mean score 0.16 for the Listening skills. It is concluded that there is significant difference between the pre test and post test mean scores of the students usage of selected visual, auditory, kinesthetic, haptic, olfactory and listening skills.
4. The post test mean score is found to be 74.97 and retention test mean score 75.91 for the experimental group. It is concluded that there is significant difference between the experimental group post test and retention test scores.

5. It is found that there is significant difference between the experimental group in post test scores in respect of gender, annual income of parents.

6. It is found that there is no significant difference between the experimental group in pre test scores in respect of gender, type of family, educational qualification, occupation and annual income of parents.

7. It is found that there is no significant difference between the experimental group in post test scores in respect of type of family, parent educational qualification and parental occupation.

8. There is no significant difference between the experimental group in pre and post test scores in respect of gender, type of family, parent educational qualification, parental occupation, annual income of parents.

9. The relationship between pre test and post test of experimental group is in positive correlation.

10. The effect size of pre and post test mean achievement scores of the experimental group and the degree of the effect size is large.

5.10 DISCUSSION

The findings of the present study are discussed from the evidence that were observed from the previous research studies. The present study reveals that the developed perceptual skills is effective for enhancing achievement and understanding the science concept among the high school students.
The current is in accordance with the study conducted by Bruno, Parameswaran & Beena, (2006). This indicates that our perception is not constant. Perceptions are usually changing, biased, coloured, or distorted by our unique set of experiences K. Sathian (1998). These behavioural observations is far from being understood, perceptual learning effects appear to depend on plasticity of neuronal populations within sensory areas of the cerebral cortex. Jean R. Harber (1979) found that Perceptual Skills Necessary for Success in Reading

This study is related to the study conducted on visual skills by Çayir, Aybala (2017). It has been found that instructional level first grade students had better scores in reading speed, reading comprehension, and reading errors. Paek, Seungoh; Hoffman, Daniel L.; Black, John B. (2016) The results show that changes in the sensory experience at the time of learning have a "bottom up" impact on learners' ability to process new content. McKenna, et al., (2006) Visual perception is the process of receiving, organising and interpreting visual information. Kenneth A. Kavale and Steven R. Forness (2000) Findings were interpreted through the binomial effect size display, which indicates the increase in predictive accuracy rather than the percent of variance explained.

The present study is related with the study conducted on kinesthetic skills by Whitworth, Brooke A.; Chiu, Jennifer L.; Bell, Randy L. (2014). This research, described the approach to inquiry used and an explanation of kinesthetic investigations in general. Stephen C. Larsen and Floyd G. Hudson (1973) The results of the 2 studies lend support to the motor theory of speech perception, which posits that accurate interpretation of speech involves not only an adequate auditory system but also feedback from the speaker's own articulatory movements.
The study is similar to the studies by Dhemba Ishmae (2015) Research findings revealed that children with CB depend on the multisensory approach in developing O&M skills Burhan Akpınar (2005) The research described in this study was carried out to determine the effects of olfactory stimuli (provided by natural essence oils of lemon) on achievement in English of fourth grade pupils in a school

The current findings is related to the studies by Cigerći, Fatih Mehmet; Gultekin, Mehmet (2017) A significant difference was found between the post-test listening comprehension scores for the experimental and control groups Acat, M.Bahaddin; Demiral, Hilmi; Kaya, Mehmet Fähit (2016) , it was observed that the students used the web based system which are more attentive and motivated.

By the findings of the study it is related to the study conducted by Rani, K.V.(2015) The findings of the study revealed that, perceptual styles of learning were greater for Female and Tamil medium students than that of their counterparts Muhammad Shabbir Ali & Muhammad Naeem Mohsin (2013) The results of the study indicated that test anxiety was significantly negative with total achievement scores of all the four science subjects. Dayal and Indira (2013) The result of the study showed that scientific attitude depended upon different factors viz. psychological, social and biographical. Saravanakumar and Mohan (2007) The result of the study revealed that gradual increase in the dependent variable namely, student’s achievement in science from initial assessment to final assessment indicates the influence of the independent variables viz, metacognitive orientation and attention activation strategies.
In overall discussion of the findings of the previous research studies indicates that the present study has more close relationship between the selected variables of perceptual skills and achievement of science. In this consideration present study result, proved that perceptual skills has great influence in developing science understanding and enhancing achievement in science subject at school level syllabus.

5.11 RECOMMENDATIONS OF THE STUDY

This study will give valuable recommendations to the student’s teachers and the board of education.

The investigator found that from the study students will be involved more in practical works and it is recommended that they should follow the instructions that were given to them by the teachers. There should be improvement in their learning as they may have more interest when they themselves do and learn from it students need to resolve all the doubts that they have in their minds within school premises itself because it will help them to remember it for a longer time when their doubts are resolved through these visual methods of teaching students should have maximum utilization and involvement on these methods of teaching. The students should express their interest and involvement in their learning which will in turn help the teachers to teach more with interest.

Teachers should have more awareness on the modern method of teaching with the use of perceptual skills with this method of teaching there will be betterment for the students and it is the easiest way.
The teachers should involve the use of this technology for their students to improve their academic standards which may even help them to become smarter and dynamic. The teachers should assign individual projects to the students frequently for their betterment in learning. It is recommended that the teachers should give practical exposures with these visual methods for the students to survive in this competitive world. If this method of teaching is incorporated in their classes, then it will help in improving their problem solving ability.

It is recommended that the board of education should provide with more number of virtual classrooms to the schools which can help the growth of the future generations of society. There will be development in the practical knowledge of the students and improves their IQ level as we. The board of education should have periodical training session to the teachers who are involved in this method of teaching. This is recommend because most of the teacher have fear to learn with this new technology and when the teacher are evaluated frequently, they will provide a good outcome which future develop the students in a right way.

It is also recommended that the board of education need to a lot as much fund that might be required for the implementation of smart classroom in the schools and it will be more effective for the students, teachers and for the schools.

5.12 IMPLICATIONS OF THE STUDY

The present study focuses on the development of perceptual skills in science learning. The perceptual skills developed by the investigator for the enhancement of science among the learners which in turn develop their academic achievements. The results of this study have established that perceptual skills, learning strategy,
treatment in teaching and learning science is more effective than the traditional lecture method. So these skills are more viable to apply in teaching of science in every classroom:

This perceptual skill improve the intensity of learning among the students, they would observe, listen and respond with good interest. This approach widens the searching character of the learners and provides the ability to search anything from various sources. The students would have a mastery of the content what they have learnt, because they relate the known with the unknown. They never forget anything easily and they are capable of identifying the final truth and facts of everything. The students are accepting the information only after the clear and proper investigation. This approach facilitates the students to enrich their engaging, exploring, explaining, expanding, evaluating and experimenting abilities. This approach provides the learners to assimilate new knowledge to the old and modify the old to the new. The students can perform well in their academic activities.

The teachers are giving more exposures and good guidance to the students. The influence of these skills helps the teacher in time management in their classroom. This enables the teacher to enthuse the students to learn the subject with proper understanding and make them to behave properly with others. Teachers induce activities in the laboratory.

The teachers are satisfied with their performance in the class and getting high achievement rate of the students by these skills. The teachers' activities attract students' attention. The teachers have acquired knowledge to assign duties to the students according to their interest, need, aptitude and their individual difference.
In order to create interest in science among students, the teacher frequently should give orientation regarding the importance of science to the high school level students. In this aspect this study has offered suitable tips to develop students perceptual skills in learning science, teacher may conduct group discussion seminars, workshops, symposiums and other things related to skills. Besides the above, teachers may be free minded to inculcate the perceptual skills through the prepared lesson plans. This study expresses that the science knowledge can be developed only through perceptual skills.

5.13 SUGGESTIONS FOR FURTHER RESEARCH

It is recommended that the following suggestion can be taken for further research:

- The present investigation may be carried out to find the perceptual skills on student’s achievement in science. So it is suggested that the study may be extended to physics, chemistry and biology at higher secondary level.
- This study was conducted only with 37 students. This study may be attempted to large sample size.
- The same investigation may be undertaken as a comparative study of government and government aided schools.
- A study may be carried out in other art subjects also.
- The similar study may be extended separately to each perceptual skill in science subject.
- The same investigation may be undertaken with all levels of students.
- The similar study may be extended to other districts schools in Tamil Nadu.
A study may be done taking teacher trainees as population.

5.14 CONCLUSION

The present study has shown the importance of the perceptual skills to enhance the students’ achievement in science at high school level. In high school level, most of the students lack in their spirit to learn science and even the science teachers also give more importance to theory than practical. Science education helps the students to be aware of the environment and also make them adapt to the prevailing environment. Perceptual skills will promote the students for their achievement in science and leads them to a higher level in academics.

In order to develop perceptual skills the investigator has introduced new strategies so that the students may avoid the chalk and talk traditional method of learning science. In this aspect, it is the duty of teacher to focus more on modern methods of teaching related to development of perceptual skills in science learning. The present study has brought out clearly the role of perceptual skills in the learning achievement of science. The teacher motivates the students towards the learning of science.

Teachers may adopt a new style to boost the self confidence of children and direct them to perform well in science class. This study reveals that the students are much influenced by science learning through their perceptual skills. The science teacher may motivate the students towards science as joyful subject. This study concluded that teaching all science subjects through perceptual skills may enhance the learning achievement in Science.
The present study further concluded that suitable lesson plans cope up with perceptual skills for science learning and enable the students to be active in Exploration, Experimentation, project, seminar, symposium, debate and discussion. This makes the students achieve their scientific goals in future.