

## Chapter V

# SUMMARY, FINDINGS AND SUGGESTIONS

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### 5.1 INTRODUCTION

The most important aim of education is to make the teaching-learning process an enjoyable and memorable one. The modern system of education encourages the development of different learning strategies so as to enhance the learning potential of the learners. A more organized and systematic form of instruction is the need of the hour to fulfil this educational aim.

The investigator realized the fact that teaching Biological Science through ICT integrated method at the secondary level would enable the student's change their attitude and practices towards attaining their goals in higher education. Also, this would help to analyse the effectiveness of ICT based instructional method in both boys and girls, hence the present investigation entitled "*Effectiveness of ICT integrated teaching in achieving learning outcomes in biological science of grade 9 students.*"

### 5.2 STATEMENT OF THE PROBLEM

Effectiveness of ICT integrated teaching in achieving learning outcomes in biological science of grade 9<sup>th</sup> students.

### 5.3 OBJECTIVES OF THE STUDY

The present study has the following objectives

1. To know the effect of ICT integrated and traditional teaching method in achieving learning outcomes of grade 9<sup>th</sup> students
2. To compare the effectiveness of ICT integrated and traditional teaching method in achieving learning outcomes in Boys of grade 9<sup>th</sup> students
3. To compare the effectiveness of ICT integrated and traditional teaching method in achieving learning outcomes in Girls of grade 9<sup>th</sup> students

4. To compare the effectiveness of ICT integrated teaching in achieving learning outcomes in Boys and Girls of grade 9<sup>th</sup> students

#### **5.4 HYPOTHESIS OF THE STUDY**

1. There will be no significant differences in the learning outcomes of students taught through ICT integration and traditional method.
2. There will be no significant difference in the learning outcomes between Boys taught through ICT integration and traditional method.
3. There will be no significant difference in the learning outcomes between Girls taught through ICT integration and traditional method.
4. There will be no significant difference in the learning outcomes between Boys and Girls taught through ICT integration strategy.

#### **5.5 METHODOLOGY**

In the present study of learning outcomes, researcher used ICT integrated teaching approach to the teaching of “Cell and Its Organisation” in science of standard nine. Students of grade nine of Government High School, Reamal, a school of Deogarh district, Odisha constituted the population for the present study.

**Table 5.1**  
Sample Schools of the Study

Name of The School	No. of Students as Sample of The Study
Govt. High School Reamal, Deogarh	80 (40 Experimental Group+ 40 Control Group)

Traditional teaching program was applied to control group students as per the regular timetable of the school. Traditional teaching program included/involved Classroom teaching, Practical/Demonstration in the Biology laboratory. The class room teaching was with teacher talk, questioning. The investigator gained an insight on the experience and opinion of biology teachers in teaching cell organelles concepts. A video was prepared explicitly relating to the concepts of cell and cellular organelles, their structure and function. Visuals from the internet which portrayed the

detailed organisation of cell video was also used. The Computer Assisted Instruction comprised of a "PowerPoint Presentation" that was a slide show on the computer interspersed with interactive sessions.

Achievement test was conducted to see the learning outcomes in science in both the section of class 9. Section A was control group students and section B was experimental in design where controlled group was taught in traditional teaching while experimental group was taught by ICT integrated teaching method. 50 marks questions including MCQs, true-false statements, fill in the blanks questions and match the pair questions. Test was given parallel to both the groups. Tests were evaluated by the researcher and marks were given to each answer paper and the data was collected. The various statistical techniques that are employed in the study are: Mean, Standard Deviation, T Test.

## **5.6 MAJOR FINDINGS**

The major findings of the study as revealed from the analysis of data are given below.

There is a significant difference between mean achievement scores of learners taught through the ICT integrated teaching and learners taught through the traditional teaching approach. As the mean difference is significant in favor of experimental group it can be concluded that ICT integrated teaching is more beneficial as compared to traditional teaching to achieve the learning outcomes.

There is a significant difference between mean achievement scores of learners taught through the ICT integrated teaching and learners taught through the traditional teaching approach. As the mean difference is significant in favor of experimental group it can be concluded that ICT integrated teaching is more beneficial as compared to traditional teaching to achieve the learning outcomes in boys.

There is a significant difference between mean achievement scores of learners taught through the ICT integrated teaching and learners taught through the traditional teaching approach. As the mean difference is

significant in favor of experimental group it can be concluded that ICT integrated teaching is more beneficial as compared to traditional teaching to achieve the learning outcomes in girls.

There is no significant difference between mean achievement scores of learners taught through the ICT integrated teaching approach between boys and girls. As the mean difference is not significant it can be concluded that ICT integrated teaching is equally beneficial for boys and girls to achieve the learning outcomes.

## **5.7 EDUCATIONAL IMPLEMENTATION**

ICT is a powerful tool in this 21st century for training and developing abilities to bring up the human talents and a suitable mechanism to create educational opportunities. Technology has the power and potential to improve many aspects of our daily lives. It is absolutely sure that technology increases engagement of the students and their learning outcomes. The development of ICT Integration in all sectors of social life has led to the development and enhancement of digital literacy. In the science and technology and that to biological science ICT literacy plays a significant role. Integration of ICT enriches education and encourages deep and valuable learning. In recent times, science has focused on the need for ICT literacy. This shift occurred when the students and other teaching staff became dependent more on the use of information and communication technology.

With the integration of ICT, varieties of learning resources and materials can be accessed by the students as well as by the teachers. It will enhance the teacher's competencies and skills that will help them to deliver a chapter in an efficient way. The students will also have the new and updated knowledge and information to compete in this present time of technology. Even in the time of immediacy, this can be very helpful with quick time response to access the information needed.

The role of teachers is very important for ICT Integration because the use of ICT in the classroom depends upon the teacher's attitudes. This study

will be helpful to understand the effectiveness of ICT on students learning outcomes in biological science at secondary level. It enables a wide range of experience so that the students can relate science to their own and other real-world experience.

## **5.8 SUGGESTIONS FOR FUTURE RESEARCH**

Following are some of the areas in which future research is suggested.

1. An action research may be undertaken among the higher education students by Implementing ICT Integrated teaching method.
2. Comparative studies could be carried out on the views of the learners, teachers and parents towards the use of technology-based teaching and Computer Assisted Instruction.
4. The effect of television channels like Discovery Channel, National Geographic, Science Direct channel in explaining various biological concepts can be studied.
5. The study may be replicated for various standards in schools and for different content areas in other subjects.
6. Effectiveness of instructional materials for different levels of education may be tested.
7. ICT-based teaching methods can be undertaken in all subjects in the primary and higher secondary levels also in different locality.
8. Studies can be done on the provision made by the government and educational authorities for providing laboratory facilities for schools in rural areas or urban areas in order to facilitate ICT based teaching.

## **5.9 CONCLUSION**

There is no doubt that the ICT has made human life easier than ever. The use of ICT in education gives value to teaching and learning, by enhancing the effectiveness of learning. We need to integrate ICT in schools and in our daily lives. We all need to increase access and bring down the cost of education to overcome the challenges of illiteracy and to overcome this challenge, ICT is the most important instrument. ICT is requirement of the school to enhance the student teacher interaction process. It will help to make students more self- sufficient and with the computer administered

programs incorporated into the education such as online quizzes or even class discussions. ICT has a major impact on teaching, learning, research and management. It covers all the major and minor aspects of education leading to the development and formation of knowledge. The presence of ICT in education permits for the new methods of learning for students and teachers. This uses the technology in most innovative form in which students and teachers get opportunity to experience the method they need to follow during their learning and teaching. This will enhance students' capabilities and potential for their growth, development and understanding of the concept during learning process.

Quality education has become a huge challenge in the field of education. ICT Integration is the key to improve the challenges of quality of education in the classroom and teaching- learning process. The availability of ICT tools provides a grand opportunity to assist teachers in teaching well and in improving the learning experiences of the students. It allows the teachers to conduct more activities and projects that include expansion, exploration, investigation and modelling and as a result ICT may enhance student's development of essential competencies, better attitudes toward learning and stimulate wider vision of the Education. In education, ICT tools are used to create, communicate, store and manage information.

The research findings could be beneficial for the students, teachers and administrators and there is a need of this kind of research in future as the ultimate goal of Integration of ICT is to make the teaching and learning environment more informative and effective.

As a whole, it was a learning experience for the researcher and as a newbie to this field of research the researcher learned a lot starting from review of literature to data analysis. So, the investigator can conclude that the Integration of ICT approach among the secondary level students is found as positive and it can be hoped that this could be beneficial for future researcher and will encourage students, teachers and administrator to use the ICT in teaching different subjects in future.