CHAPTER - I

INTRODUCTION

E-content has become a valuable and powerful tool of education in this contemporary education system; it is the newest method of instruction that can be used to create an information rich society where everyone, irrespective of caste, religion, race, region, gender etc., are empowered to create, receive, share and utilize information and knowledge for their economic, social, cultural and political upliftment and development. The use of e-content has transformed teaching in several ways. In the process of e-learning, structured and validated e-content serves as an effective virtual teacher. Mainly in science subjects like chemistry e-content are required to show basic concepts in the fundamental classes like class IX.

Now-a-days e-content is becoming very modern due to its flexibility of time, place and pace of learning. E- contents include all reasonable contents created and delivered through various electronic media. ICT innovations have opened new doors in every profession and section of society across the globe. The advent of electronic mail, personal computers (PCs), the Internet and their application to education has yielded amazing results. The health of every country's economy, whether existing or emerging, depends heavily on the amount and quality of education it offers to its workers (Jhurree, 2005). Puentedura's (2014) SAMR model, redefinition refers to when technology allows for the creation of previously inconceivable tasks. E-learning is a new method of teaching and learning. It gives guidance which is provided electronic media, including Internet, Intranets, Extranets, Satellite Broadcasts, Audio / Video Tapes, Interactive TV, and CD-ROMs (Govindaswamy 2002). Effectiveness of e-learning depends on how learning is done, that is, underlying the real worth of e-learning and pedagogy lies in the ability to apply its attributes to Enable the right people to attain the best skills and experience at the right time. It is understood that e-learning has the power to transform performance, knowledge and landscaping skills (Gunasekaran et al., 20). E-Learning provides access to appropriate and valuable information for everyone, at any time, any place. The whole world is moving speedily towards digitization and that we are speculated to learn new things using new advance technologies. In the present pandemic situation, e-content and ICT based learning plays a great role to provide knowledge & engage them in study. In the online teaching

process use of e-content makes the students as well as the teachers active in teaching-learning process which affects the achievement of students.

1.1.0 BACKGROUND OF THE STUDY

Technology has significant effect on the Education system for many years. The teacher and learner must gain access to technology for improving learning outcomes. ICT aims at transferring the old traditional paradigm of learning to the new paradigm of learning. E-learning has an important role in the enhancement and development of students' critical thinking. The trend of using e-learning as learning and teaching tool is now rapidly expanding into education. e-learning in India, is still at minimal level. Developing and validating e-content on chemistry is a novel experience. It would add electronic resources to the chemistry subject. It would create a new dimension in the field of chemistry teaching and learning. It is a progressive step towards making digital presentation of chemistry subject. This prompted the researcher to undertake a study on the effectiveness of e-content on teaching chemistry.

1.1.1 Educational Technology

Educational Technology can be conceived as a science of techniques and methods by which educational goals can be realized. It is not primarily concerned with the task of prescribing the goals. Although it helps in specifying the goals and translating them into behavioural terms, it is not one particular method of achieving educational goals like that of Montessori or strategy of developing self-instructional material, propounded by B.F. Skinner. It is on the other hand a science, on the basis of which various strategies and tactics could be designed for the realization of specified goals of education.

Some of the recognized definitions of educational technology given are as follows:

1. Educational Technology is a systematic way of designing, implementing and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication and

employing a combination of human and non-human resources to bring about more effective instruction.

2. Educational Technology is the development, application and evaluation of systems, techniques and aids to improve the process of human learning.

3. Educational Technology is the application of scientific knowledge about learning and the conditions of learning to improve the effectiveness and efficiency of teaching and training. In the absence of scientifically established principles, educational technology implements techniques of empirical testing to improve learning situations.

A review of the definitions of educational technology reveals the following characteristics

1. It is the application of scientific knowledge to education.

2. It involves input, output and process aspects of education.

3. It lays stress on the development of methods and techniques for effective learning.

4. It stresses the organization of learning situations for the effective realization of the goals of education.

5. It emphasizes the designing and measuring instruments for testing learning outcomes.

6. It facilitates learning by controlling the environment media and methods.

The rate of growth of knowledge is so rapid that within a period of ten years the knowledge is doubled. The impact of this explosion of knowledge is seen in the explosion of expectation among students at different levels. In addition, the explosion of population challenges the world and its people in several ways. The present age is meant for the survival of the fittest and it is an age of competition. So, there is an immense need to have quantitative as well as qualitative educational explosion. To meet the triple expositions of population, knowledge and expectations, it is essential to develop the capacity to adapt to and manage change. Educational technology provides the remedy by introducing modern trends in the realm of education.

1.1.2 Information and Communication Technology

The emergence of this new global economy has serious implications for the nature and purpose of educational institutions. As the access to information continues to grow rapidly, schools cannot be contented with the limited knowledge to be transmitted in a fixed period of time. They have to become compatible to the ever-expanding knowledge and also be equipped with the technology to deal with this knowledge. Information and communication technologies (ICTs) which include radio and television, as well as newer digital technologies such as computers and the internet have been proven as potentially powerful tools for educational change and reform. When used appropriately, different ICTs can help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality.

1.1.3 E-Learning

E-learning is the use of technology to enable people to learn anytime and anywhere. e-learning can include training, the delivery of just-in-time information and guidance from experts. Having the potential to improve the quality of learning; improve access to education and training; reduce the cost of education; and improve the cost effectiveness of education, e-learning has become integral part of society.

1.1.4 E-Content

An innovative application of computer in the teaching and learning process is e-content. This may be intranet based which includes text, video, audio, animation and visual environments. e-content is the advancement of technology to design, deliver, select, administer and extend learning. e-content is digital information delivered over network based electronic devices, i.e., symbols that can be utilized and interpreted by human actors during communication processes, which allow them to share visions and influence each other's knowledge, attitudes or behaviours.

1.1.5 E-Content Development

Information technology and the internet are the major drivers of research, innovation, growth and social change. The growth in internet has brought changes in all walks of life including the education. E-content includes all kinds

of content created and delivered through various electronic media from old media such as print and radio to the increasingly sophisticated electronic tools with combination of sounds, images and text. e-content requires huge amounts of creativity both at information level as well as at technology level

1.1.6 Chemistry

The word chemistry is probably derived from the Egyptian word 'Kemia' meaning black land of the Nile. Chemistry is a branch of science which concerns itself with the composition, properties, constitution and mutual interaction of different kinds of matter. The three main branches of chemistry are Organic chemistry, Inorganic chemistry and Physical chemistry.

1.1.7 Need for Teaching Chemistry

Chemistry, or the central science as it is sometimes called, bridges other natural sciences together. Although chemistry plays a vital role in the world of science, students and teachers in higher secondary education alike have always found difficulty with this particular subject. As students in higher secondary education lose interest in studying chemistry, it is crucial that researchers should create innovative technology to increase it. One of the major goals for chemistry teachers is to develop more current methods to teach higher secondary students the necessary concepts in chemistry. The new and improved technological advances have been created to ease the fear of the students and the possible misconceptions they may have about chemistry before even entering the classroom. The new technology in the classroom is also helping students to comprehend and retain more information as they complete the chemistry courses. Comprehending the basic concepts of chemistry is important for students in higher secondary education. Chemistry provides a path for students to excel and create new waves of technology.

Technology has helped chemistry to become more understandable and relatable in higher secondary schools' classrooms. Teachers are able to relate chemistry to students in a manner that is informative, interesting, and understandable. Students' negative attitudes and preconceived ideas have subsided when it comes to taking chemistry classes with the help of these aids.

the new paradigm of learning. E-learning has an important role in the enhancement and development of students' critical thinking. The trend of using e-learning as learning and teaching tool is now rapidly expanding into

education. E-learning in India, is still at minimal level. Developing and validating e-content on chemistry is a novel experience. It would add electronic resources to the chemistry subject. It would create a new dimension in the field of chemistry teaching and learning. It is a progressive step towards making digital presentation of chemistry subject. This prompted the researcher to undertake a study on the effectiveness of e-content on teaching chemistry.

In class IX the basic chemistry is taught to the students & since it is an important branch of science to know the different properties of compounds in day-to-day life, the students must be studied it with that much care and interest. So, the responsibility is upon the teachers to make them understand. The pandemic situation has been continuing since one & half years there is little possibility of face-to-face transaction of knowledge. E -content that is electronic content using pictures, sound, video, audio through internet plays great role in teaching learning process of chemistry & irrespective of caste, class, religion & gender it acts as a virtual teacher for all students.

This topic has been chosen since the researcher found few studies in the selected topic in Hatadihi area of Kendujhar district & this topic is so relevant for the ongoing situation.

1.3.0 STATEMENT OF THE PROBLEM

The problem of the present study has been stated as:

"Effectiveness of e-content for teaching chemistry to class IX students in terms of achievement"

1.4.0 OPERATIONAL DEFINITIONS OF THE KEY TERMS

For the present study the key terms can be defined as:

E-content

E-content includes all kinds of content created and delivered through various electronic media. E-electronic content is developed using ppt, pictures, videos, sound, animation effects with the help of internet. It can be used by wide variety learners with diverse needs, different backgrounds and previous experience and skill levels.

Chemistry

It is the branch of science that deals with the properties, composition and structure of elements and compounds, how they can change and the energy that is released or absorbed when they change.

Class IX Students

The students of age between 14 to 15 in a formal education system that is secondary school.

Achievement

Achievement means knowledge attained or skills developed in school subjects, usually determined by test score or by marks assigned by teacher or both" (Dictionary of Education 2003). The present study refers to the scores obtained by students on an achievement test in Chemistry.

1.5.0 OBJECTIVES OF THE STUDY

1. To study the effect of Treatment, Gender and their interaction on Achievement in Chemistry of students taught through the e-content and the students taught through the Traditional Method of teaching by taking their pre-test scores of Achievements in Chemistry as covariate.

2. To study the effect of Treatment, Gender and their interaction on Achievement in Chemistry of students taught through the e-content and the students taught through the Traditional Method of teaching by taking their pre-test scores of Achievements in Chemistry as covariate.

1.6.0 HYPOTHESES

H_01: There is no significant effect of Treatment on Achievement in Chemistry when their pre-test scores of Achievements in Chemistry were taken as covariate.

H_02: There is no significant effect of Gender on Achievement in Chemistry when their pre-test scores of Achievements in Chemistry were taken as covariate.

H₀3: There is no significant interaction of Treatment and Gender on Achievement in Chemistry of students taught through the e-content and the students taught through the Traditional Method of teaching when their pre-test scores of Achievements in Chemistry were taken as covariate.

1.7.0 DELIMITATIONS OF THE STUDY

Keeping into consideration objectives and suitability of the research, present study has been delimited to following:

1. Sample of the study will be confined to the secondary schools of Hatadihi area of Kendujhar district of Odisha.

2. The study will be restricted to only these variables i.e., e-content and achievement.

3. Only 40 students of IX grade will be considered for the study.

4. The study will be delimited to the subject Chemistry only.

5. The study will be delimited to only experimental method.

6. The study is delimited to the Achievement test scale for chemistry only.