Chapter 1

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India is a global leader in information and communication technology and in other cutting-edge domains, such as space. The Digital India Campaign is helping to transform the entire nation into a digitally empowered society and knowledge economy. While education will play a critical role in this transformation, technology itself will play an important role in the improvement of educational processes and outcomes; thus, the relationship between technology and education at all levels is bi-directional. (NEP-2020)

As from earlier to now-a-days, human life is changing rapidly. Ancient period to modern time humans evolved in the continuous process of learning, from the basic need i.e., make a shelter to protect ourselves, making food to satisfy hunger and making cloth to save the human body from the climate condition.

Information and communication technology (ICT) significantly alters our daily life. In the past, for example, one often relied on the postman to communicate with people in remote areas. Now-a-days, one can simply use an e-mail service, which is far cheaper and faster. Another significant impact occurs in the learning process. One was used to learning with physical books and attending on-site classes to learn things. Now, one can just simply read softcopy books (which are accessible through the Internet) and learn remotely through educational tools. The significant impact of ICT draws a lot of attention in both industry and academia. From the industry perspective, the impact of ICT is argued to affect output growth in the economy and skill demand. In academia, on the other hand, ICT is argued to provide learning alternatives (such as self-learning through educational tools or distance learning), even though those alternatives are only beneficial when academia is adaptive to it. Considering the crucial role ICT plays in human life, it starts to be taught to school students.

Information, Communication, and Technologies (ICT) always influence all aspects of life. The use of ICT has an important role in work places, business, entertainment,

moreover in education. It is a certain thing which is needed to support the teaching and learning process. ICT can also create a student-cantered learning setting to be more active and creative. Besides, ICT can also develop the quality, accessibility, and learning motivation in education. Therefore, the main purpose of this study is to develop students' awareness of ICT integration to achieve successful learning.

1.2 Need and Significance of the study

Constructivism as a learning theory posits that experience and knowledge is built and constructed by the learner on the basis of a mental activity. Students are proven to be lively species looking for definitions and meaning. This theory increases the learner's rational and theoretical development. The essential idea of constructivism learning principle is the part that knowledge or interaction with the connecting surrounding performs in learner training. Social constructivism inspires students to reach at their description of what is true, subjective at their upbringing beliefs or rooted general view. Past growth and sign methods, like semantic, logic and reasoning, and calculative systems are embedded within a student as a participant of a specific culture and beliefs, and all of these are assimilated all through the life of the student. This focuses on the aim of nature of the student's public connection with information and communication technological (ICT) tools, instructional materials and also with the experienced associates of the public. Some scholastic technologists which use most types of constructivist standpoint likewise rely on collaborative learning. Presently, on the part of education, constructivism has occupied a dominant lead role on which the aim of investigators has deviated into finding how experience is constructed. Looking at the development of ICT learning tools, constructivist learning theories have been studied and reviewed as instructors try to include ICT even though trying to harmonize constructivist centred education. Now-a-days, digital populations go across to virtual worlds in which the ICT tools are starting to be accepted as an instrument in learning. The vast amount of information that ICT supplies on a daily basis has allowed students new ways to explore education compared to ordinary instructional tools. ICT is mostly presumed to be a platform and catalyst of trending educational change. Instructional technology arranges a learner through assisting them to gather an insightful comprehension and familiarity of learning resources, ways for investigating via research study, principles, design, assessment, and utilization. Instructional technology targets successful patterns to encourage learning by adopting technologies

and imparting the usefulness of technological tools on learners and institutions. As ICT tools turn out to be obvious, learning became the centre of all kinds of teaching processes. It is common today that technology welcomes learners as they take a walk into modern classrooms which are donated with ICT tools like LCD projectors, computer software programs, interactive whiteboards, etc.

Regrettably, the presence of ICT tools does not necessarily mean its effectiveness. Educational technological tools are most times seen as a booster for modification, alteration in teaching patterns, modification in integration processes and in retrieval of information or data. Most learners generally support the use of technology in classrooms in which they investigate the learner's perception in relation to ICT educational tools. They discovered that learners' perception on the ICT tools has been useful and inspiring to the education process. Furthermore, various learners in the study perceived ICT tools as an essential part of their learning process.

Learners are said to be the central focus at the thought of establishing an institution for learning, and these contemporary students are almost skilled at the usage of certain ICT tools even before the entrance of certain colleges or institutions. It is therefore very necessary to make ready those basic ICT tools which should be adopted by such learners on the entrance of such colleges or institutions. For this reason, it will be a problem if these students' awareness, attitudes, thoughts, skills, motivational factors and their ease of use is not determined at the initial stage before establishing a school, employing an instructor, building a curriculum, preparing an instructional material or course objectives and further evaluating of the entire teaching and learning processes. ICT importance is very glaring from the educational approach. ICT adoption in classroom settings provides numerous usefulness since it builds a quality learning environment. ICT has effects on learning through ensuring numerous types of interactions. The conventional classroom setting migrated from an instructor-centred to a student-centred one, and the learner turned from being a listener to being a collaborator. Moreover, ICT educational tools engage learners to higher level cognitive tasks. This is done via problem solving techniques and real-world projects. It is posited that the recent information insurgency and growing effect of ICT have remodelled the approaches of education and research in some institutions.

1.3 Statement of the Problem

New ICT tools generate excitement and fun and also worries and concerns. Since a huge value of time, money and effort is put into these ICT tools, it therefore should display educational value for learners, so as to justify its cost and worth. ICT as a term has been largely investigated on. Nevertheless, since it is largely used, it has not been broadly studied. The statement of the problem is- A study of awareness among 8th class students about the use of ICT tools to enhance the understanding of science

1.4 Operational Definitions of Key Terms

1. ICT Tools- The word, information and communication technology (ICT) tools are defined as the forms of technology that are used to transmit, store, create, share or exchange information (UNESCO, 2006). Information and Communication Technology tools that help to teach science with Instructive, Communicative, Organizational, Programming, Recreational, Creative, Expansive, Expressive, Evaluative, Informative features. Animation, e-Dictionary, Blog, Audio, Video, Subject-Specific Software, social media...etc. are the ICT Tools used in the present study.
2. Awareness- It is defined as the quality or state of being aware: knowledge and understanding that something is happening or exists. It is the state of being conscious of something. More specifically, it is the ability to directly know and perceive, to feel, or to be cognizant of events. Awareness for the present study can be defined as a state wherein a learner is aware of some information regarding ICT tools to enhance their understanding of science.
3. Science- A branch of knowledge or study dealing with a body of facts or truths systematically arranged and showing the operation of general laws (Oxford Dictionary). Systematic knowledge of the physical or material world gained through observation and experimentation.

1.5 Objectives of the study

1. To study awareness among 8th class students about the use of ICT tools to enhance the understanding of science.
2. To compare the awareness towards ICT of government and central government student in the subject of science.

3. To compare the awareness towards ICT of government and private student in the subject of science.
4. To compare the awareness towards ICT of central government and private student in the subject of science.

1.6 Research Questions

- Are 8th class students aware about the use of ICT tools to enhance their understanding of science?
- Is there any significant difference between government and central government student related to the awareness towards ICT among 8^{th} class students in science subject?
- Is there any significant difference between government and private student related to the awareness towards ICT among 8^{th} class students in science subject?
- Is there any significant difference between central government and private student related to the awareness towards ICT among 8^{th} class students in science subject?

1.7 Variables of the study

Use of ICT Tools are the independent variables in this study. Understanding of science is the dependent variable in this study.

1.8 Hypotheses

- $^{1}H_0$: There is no significant difference between government and central government student related to the awareness towards ICT among 8^{th} class students in science subject.
- $^{2}H_0$: There is no significant difference between government and private student related to the awareness towards ICT among 8^{th} class students in science subject.
- $^{2}H_0$: There is no significant difference between central government and private student related to the awareness towards ICT among 8^{th} class students in science subject.

1.9 Delimitations of the study

Following are the delimitations of the study.

- The investigation will be limited to Eighth standard students only.
- The investigation will be limited to Upper-Primary Schools in Bhopal district only.
- The experiment will be carried out only to implement ICT Tools to learn the science concept only.
- The schools in this study follow the syllabus framed by NCERT only.