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To Study the Effectiveness of Information and Communication Technology (ICT) on Problem Solving Abilities of Students of Science of Senior Secondary Classes

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Our country always has been a major seat of learning for centuries and education has ever been looked on Indian culture as a holistic effort. The NEP (1986) was a landmark in our education system, based on a depth review of the Indian educational system. With advent, rapid expansion and use of information and communication technology in every sphere of life. To work with ICT in science teaching is also helpful up to secondary level as it helps to create a concrete focus on teaching with holistic cognitive behaviour in the teaching-learning process. Present study has investigated the impact of ICT on learning science and problem-solving ability on the achievement of students. Result shows there is no significant difference in problem solving abilities of students of science of senior secondary classes of CBSE or UP Board. There is no significant difference in the problem-solving abilities of students (Boys and Girls) of senior secondary classes of CBSE and UP Board. But there is significant difference in problem solving abilities of students of senior secondary classes teaching through traditional teaching and teaching with ICT. Therefore, ICT has major impact on learning and Research shows effectiveness of ICT in teaching-learning process of education system.

Keywords: NEP (National Education Policy), ICT (Information & Communication technology), CBSE (Central Board of Secondary Education), U.P. Board (Uttar-pradesh Board), Secondary classes, Achievement ability, Problem Solving Ability, Effectiveness Interdisciplinary, Traditional Teaching.

Our country has been always a major seat of learning for centuries and Education has even been looked at Indian culture, as a holistic effort. After Independence, our country witnessed phenomenal educational development both in qualitative and quantitative terms. The NEP (1986) was an landmark of our education system after the Program of Action (POA) makes educational structure comprehensive and differential. Technology has considered the important factor for rapid growth and development of students Computer assisted Instructional, Educational technologies. Information and communication technology etc. have become popular in education system. ICT in education having accessibility and attractiveness by using different types of tools. The effect of ICT tools in educational domain transformed to increase gains for students to enhance their cognitive abilities, analytical attitude and scientific temperament.

Science and technology considered an important factor for rapid growth and development in modern era of education system. Present era is called the age of information and technology which computed with informative platform like internet, chrome, Wikipedia, yahoo etc. Today research shows that the use of computer and internet makes the classroom more interactive and communicative with intelligent friend of teacher and learner.

In 1964-66, Indian education commission under the chairmanship of Dr. D.S Kothari gave the recommendation of science teaching and learning.

- Science and mathematics should be taught as a compulsory subject for all students as an integral part of general education during first ten years of schooling.
- Science should be modernized, stressing on the investigatory approach and with understanding the basic principles. Laboratory work will be need considerable Improved.

UNESCO consider information technology as “Scientific, Technological and Engineering disciplines and Management techniques used in information handling and processing their application. Computer and its

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interaction with man and machines, associated social, economic and cultural matters." New Avenue information as E-Learning, E-journal, Mobile have been used as a part of information and communication technology. It is used in every corner of educational level including such areas:

- Teaching
- Diagnostic and Remedial teaching
- Evaluation
- Psychological testing
- Development of Reasoning and Thinking
- Development of Instructional material

Chan L: "The fundamental to next generation school have 1:1 learning experience that is every student will equipped with laptops, I pad, tablet or other computerized devices."

Heeks R: "ICT is one of the key skills needed to access and enrich learning of all kind of education. It will be communicated with the world in which next generation growing up. It will play vital role of education, whatever they do called ICT literate."

Bingham has Classified the scientific attitude has attributes that is critical thinking, open-mindedness, search for truth, spirit for query, confidence etc. which are essential for solving the problem scientifically. ICT in science teaching become helpful at secondary level to create a content focus on teaching to holistic, connotative behaviour teaching. High quality instructional and modules material will be available through Internet and be available to every individual to access the knowledge.

Statement of the Problem:

"To study the effectiveness of Information and Communication Technology (ICT) on problem solving abilities of students of science of senior secondary classes."

Objectives of Study:

1. To study the impact of ICT on problem solving abilities of students of senior secondary classes.
2. To study the effectiveness of ICT on problem-solving abilities of students of senior secondary classes.

Hypothesis of Study:

1. There is no significant difference on problem-solving abilities of students of senior secondary classes affiliated to U.P. Board and CBSE Board.
2. There is no significant difference on problem solving abilities of students of senior secondary classes learning through traditional method and learning through ICT.

Present research work is focus on problem-solving abilities of science of secondary school students learning through by traditional teaching and by ICT. It will be an implication for educational researchers to frame the policies and plans. Research work interdisciplinary in nature as it attempts to combine human behaviour with information technology. The procedure adopted to conduct the study of Problem-Solving ability showing difference between CBSE and U.P. Board students of Science Stream It will be show the difference among boys and girls regarding problem-solving abilities of CBSE and U.P. Board. Further it will show the difference CBSE and U.P Board should regarding problem-solving abilities by using traditional method of teaching and by ICT. Experimental method has been adopted for solving educational problems who are studying local as well as international aspect of education.

Controlled Group:

- ✓ Students of secondary classes of U.P. and CBSE Board.
- ✓ Traditional method of teaching
- ✓

Uncont Group:

- ✓ Teaching through ICT

The current research work deals with achievement ability of students of science of secondary school. It will deal with students of 11^{th} and 12^{th} of science of U.P. and CBSE Board in Dhampur of district Bijnor.

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Independent Variable:

- ✓ Achievement ability
  Survey method is used for data collection which is more fast, cheap, easy and most flexible.

Self-made Standardized Tool:

- ✓ Achievement ability test (11th and 12th class)

Test is prepared with the textbook of 11th and 12th U.P. Board and CBSE Board. 11th physics achievement test related to content. Work, energy and power, Heat and energy and Electro waves and 12th Physics achievement test related to Optics (Reflection and Refraction of light), Electromagnetic waves and Atom theory. The questionnaire is related to objective of knowledge, understanding, application and skill.

Reliability coefficient r=0.89 for achievement ability. Mean, S.D, T- values are used to analysis the data. The chi-square test is based on the statistic that measure the divergence of the observed data from the values to be expected under null hypothesis of no association. The obtained value from the analysis of achievement of ability was coded as data in access field Statistical Package for Social Science (SPSS) to perform statistical analysis.

1.1 Showing difference between CBSE and U.P. Board regarding problem solving ability

GROUP (Board)	VARIABLE	TOTAL No.	MEAN	S.D	df	t-value	Level of signification
CBSE	Problem Solving Ability	100	30.95	4.23	198	1.49	No Sign.
U.P.		100	30.05	4.26			

1.2 Showing difference between CBSE and U.P. Board student (Boys and Girls) regarding problem solving ability

GROUP (Board)	VARIABLE	TOTAL No.	MEAN	S.D	df	t-value	Level of signification
Boys	Problem Solving Ability	100	33.23	4.02	198	0.79	No Sign.
Girls		100	30.6	4.14			

1.3 Showing difference between CBSE and U.P. Board students regarding problem solving ability using ICT and traditional method of teaching

GROUP (Board)	VARIABLE	TOTAL No.	MEAN	S.D	df	t-value	Level of signification
ICT	Problem Solving Ability	100	32.27	3.71	198	8.81	Sign.
Traditional		100	28.86	3.56			

Group used ICT has higher level of significance than the group used traditional method of teaching.

RESULT:

- There is no significant difference in the problem-solving abilities of students of science of senior secondary classes of CBSE and U.P Board.
- There is no significant difference in the problem-solving abilities of students (Boys & Girls) of senior secondary classes of CBSE and U.P Board.
- There is significant difference in the problem solving abilities of students of senior secondary classes teaching through traditional and ICT.

Conclusion

Present research work analysis shows the effectiveness of ICT on problem solving abilities of students of science senior of secondary classes. For the conclusion of effectiveness ICT learning material is more effective than traditional teaching. The enhancement of achievement by using ICT was found significant. Which shows by using ICT than the group used traditional method of teaching. Thus, the technology has demonstrated great impact on the learning and achievement of students.

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