Programme based on Advanced Information Communication Technology Tools on Achievement of Technological Skills

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Education 4.0 sheds lights on the bright sides of its potential such as Technological innovations, IT infrastructure, teaching, learning and research. Information Communication Technology uses a combination of text, graphics, sound and video in enhancing the learning process. An attempt is being made to develop the program based on advanced information communication technology tools and find its effectiveness on the achievement in Technological skills of 11th Standard students. Multi-method research was adopted, by using survey method, researcher identifies the Technological skills of 11th Standard students with help of researcher made Questionnaire for students. In survey research 350 students selected as a sample, sample selected as purposive sample method, Test of Technical skills researcher made Questionnaire used as tool of data collection. Program based on advanced information communication technology tools developed by Researcher. Developed advanced information communication technology tools program implemented on 100 students of 11th standard. Researcher used equivalent pretest-posttest control group design for Experiment. Researcher developed program based on advanced information communication technology tools for development of Technological skills of 11th Standard students. So researcher developed Program based on advanced information communication t*echnology tools were* increased the Achievement of technological skills of students of 11th standard.

Key Words: Advanced Information Communication Technology tools, Technological skills.

INTRODUCTION

Computer-assisted instruction is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. Industry 4.0 has posed a significant challenge to the educational landscape in the Philippines and worldwide. According to World Economic Forum Asian Development Bank (2017, p.7) that 4IR "is building on the digital technologies of 2 the 3rd IR, and powered by a wide range of breakthroughs in the digital realm (such as artificial intelligence), physical realm (new materials), as well as the biological realm (bio-engineering)". With the shift in the world of learning brought about by the 4th IR, Education 4.0 - a model of education for the future emerges, affording educators potentially far-reaching challenges (Fisk, 2017). It is an era of creating innovative knowledge that becomes obsolete the next day, and new knowledge emerges (Puncreobutr, 2016). Pangandaman et al. (2019) purport that Industry 4.0 necessitates that the educational system supports a globalized learning environment and experiences that are "automatized, networked, virtualized, and flexible." Schools should prepare students for the future of work. Students should be capable and ethical in the utilization of these new technological tools. They should also be critical, creative, self-directed, reflective, and decent citizens and leaders. This scenario calls for higher learning institutions to keep abreast of these latest trends and come up with new and responsive ways to enhance teaching and learning. Education 1.0 was teaching through lectures, memorization, Education 2.0 introduced the usage of technology, and the internet, Education 3.0 was on knowledge production; while an innovative-production is needed for Education 4.0 (Siltharm, 2017). With the demands of Education 4.0, are higher education institutions in the Philippines ready? The study of Pangandaman et al. (2019) described the current state of Philippine higher education in addressing Education 4.0. They have concluded that educational facilities, technological advancements, and research are important features of a tertiary institution in becoming an education 4.0 ready. Education 4.0 sheds light on the bright side of its potential such as technological innovations, IT infrastructure, teaching and learning (pedagogical), and research engagement.

Education 4.0 is a model applying advances of information technology to update the efficiency of training and education, making the teaching and learning activities take place anytime and anywhere. More specially, it helps change the thinking and approach to higher education model. In the Education 4.0, universities are not only the places where the research and training are preformed but they are also centre for creative innovation, practical problem solving and society value addition (Harkins, 2008).

So the use of some ICT tools in their teaching learning process then their lessons will be more effective. Teacher will engage the students in the class for a long time. Hence, the researcher made a program based on advanced information communication technology tools to develop technological skills of students of 11th Standard.

REVIEW OF RELATED LITERATURE

Mundhe (2003) on *'Developing a Self-Study Package in Computer Education for Slow Learners'* the objectives such as; to develop self-study instructional package consisting of video program and printed material in the form of modules in Marathi and to test the effectiveness of the develop package by trying out on slow learners. It is found that Use of self-study package developed by the researcher for computer education to slow learner was found effective.

Baviskar C.R. (2007) conducted research *on Development of Text-Based Computer Multimedia Software Package for School Students.* The multimedia package was developed to enhance the academic achievement of school students in science. It is found that the use of computer multimedia software in instruction is effective & enhance the students' performance in science.

Adav, (2007) conducted research on *Finding the Effect of Computer Assisted Instructor (CAI) of Program for Standard (VI),* purpose was to execute a program by using computer device in Science subject and to find out effectiveness of CAI. The method of study was experimental. The tools of data collection were achievement test and data analysis was t test. It was found that students understand the concept through CAI and students actively participated in that program.

Funde (2008) conducted research on s*tudy the Effectiveness of Computer Aided Instruction Program for Teaching Tense in English Language* had focused on the purposes such as to develop a computer aided instruction program for teaching tense in English language for grade student and its effectiveness. It was found that the development computer aided instruction program in tense was found effective for teaching tense in English language as the posttest scores was found significantly more than the pretest scores. It brought about significant improvement in the performance of students.

Sharma P (December 2019) conducted research on *Digital revolution on Education 4.0 technology*. The main objectives of the study the digital revolution on 4.0 education technology. It was found that creative

education 4.0 ends innovations by focusing on improvement of technological skills to make learning purposeful, smart, portable global and virtual..

STATEMENT OF THE PROBLEM:

To develop the program on advanced information communication technology tools and find its effectiveness on the achievement in Technological skills of 11th Standard students.

DEFINITION OF KEY TERMS:

✓ **Effectiveness**

Conceptual Definition:

"Producing result that is wanted or invented, producing a successful result." (Hornby, 2000).

Operational Definition:

Effectiveness means a significant difference in the scores of Achievement Test (Post-test) of students of the Control and Experimental Group in Technological skills of 11th standard students after implementation of the Program on advanced ICT tools.

✓ **Program:**

Operational Definition:

In the present research programme refers to the training to be given to the students of 11th standard using various ICT tools for teaching learning process that included Google docs, Slides, Jamboard, Google site, Quizziz, Kahoot, C-map tool, Learning apps – Match the pairs.

Technological Skills

In this study **Technological Skills** refers to the skills of like video making, mixing, editing, creation of online quizzes, infograph, concept map, developed as a result of the programme based on advanced information communication technology tools.

OBJECTIVE OF THE STUDY:-

1. To assess the existing status regarding the Technological skills of students of 11th standard.

2. To develop programme based on advanced information communication technology tools for 11th standard students.

3. To find out the effectiveness of programme based on advanced information communication technology tools on achievement in Technological skills of students of 11th standard.

HYPOTHESIS:-

H_1: There is a significant difference between the mean scores of achievement in Technological skills of Experimental and Control Group on the post test.

NULL HYPOTHESIS

H_{01}: There is no significant difference between the mean scores of achievement in Technological skills of Experimental and Control Group on the post test.

ASSUMPTION

1. Teacher educators have gained the knowledge of digital resources for teaching and learning as they are also given capacity buildings through seminars and conferences related to technological literacy.(Alda R., Boholano H. and Dayagbil F. ,2020)

2. Creative Education 4.0 is based on innovation by focusing on improving education and skills to make future learning more personal, super, smart, portable, global and virtual. (Sharma,P.2019,December)

SCOPE, LIMITATION AND DELIMITATION

SCOPE: -

1. The research is conducted in Maharashtra State which is related to *11th* standard students

2. The study focusses on understanding the use of certain ICT tools based on Education 4.0 technology

LIMITATION:

1. The attitude, interest and fatigue of Teacher and students are beyond the control of researcher.
2. The Teacher and students who were present at the time of data collection are included in the study.

DELIMITATIONS

1. This survey is delimited to students of Pune district of Khed tehasil.
2. Only two schools from Pune district are included in the Experiment.
3. This experiment is delimited to the 11th standard students only.
4. The research study includes only Marathi Medium School.
5. This study is delimited to the use of 8 advanced ICT tools.

PLAN AND PROCEDURE OF STUDY:-

The present study is based on Applied Research and Multi method was used. In survey research 350 students selected as a sample, sample selected as purposive sample method, Test of Technical skills researcher made Questionnaire used as tool of data collection. Program based on advanced information communication technology tools developed by Researcher. Developed advanced information communication technology tools program implemented on 100 students of 11th standard. Researcher used equivalent pretest-posttest control group design for Experiment.

DATA ANALYSIS:-

In the present study survey study data analyzed using mean after normality test were conducting using SPSS program. For the experimental study descriptive and inferential analysis used. Mean, median and Standard deviation calculated. T-test' used to determine the difference between experimental group and control group of posttest scores in achievement of Technical skills.

HYPOTHESIS TESTING:-

H_{01}: There is no significant difference between the mean scores of achievement in Technological skills of Experimental and Control Group on the post test.

Table No: 01

Paired T test for posttest of Experimental and control group of Achievement

Group	N	Mean	S.D.	df value	Paired T-value	Effect size
Control	50	26.50	4.81			
Experimental	50	32.30	6.30	49	7.04	0.67

Observations:

The result of the experiment shows the t value of posttest of Experimental group and Control Group is 7.04 which is significant at 0.5 level. Also the calculated size effect is 0.67 (Moderate Effect) indicates that the program was effective. It reflects that there were a significant difference between the achievement of students of Experimental and Control Group after the implementation of Program based on advanced ICT tools.

Hence the Null Hypothesis is rejected and therefore the Research Hypothesis is accepted i.e. 'There is a difference between the mean scores of students of Experimental and Control Group on the post test.

MAJOR FINDINGS:

From objective: 1

1. Most of the students of the 11th standard were low Technological skills.
2. Maximum Teacher not used the advanced ICT tools at the time of teaching learning process.

From objective: 2

Researcher made program based on advanced Information Communication Technology tools were useful and positive responses given by the students

From objective: 3

1. The achievement of Technological skills of Experimental Group was increased than the achievement of Control Group because of the implemented Program of based on advanced Information Communication Technology tools for students of the 11th standard.

DISCUSSION ON FINDINGS:

The present research study was conducted by using the Multi Research Methods such as; Survey Method, Product Development Method and Experimental Method. The survey Method was conducted to assess the existing condition regarding the technological skills of students. The findings regarding the Survey reflected that technological skills of students was low.so program based on advanced information communication technology tools made by researcher.

The objective number three of the present research study was to find out the effectiveness of the program based on advanced information communication technology tools on achievement of technological skills of students. For fulfill this objective Experimental Method was followed. This objective was assessed by conducting Test of Technological skills of Achievement by researcher. The test was administered on Experimental and Control Group. The finding indicates that the Test of achievement of Experimental Group was increased than Control Group because of the implemented Program based on advanced ICT tools for students of the 11th standard. The developed Program was effective. Similar finding regarding the effect of Program were found in the research of Adav, (2007) found that students understand the concept through Computer based Learning and students actively participated in that program and Sahoo, (2010) found that Computer Assisted Learning program was effective on school performance in term of students' enrolment, attendance, achievement and teacher performance at elementary level in the elected district of Orissa. Sharma P (December 2019) conducted research on *Digital revolution on Education 4.0 technology*. The main objectives of the study the digital revolution on 4.0 education technology. It was found that creative education 4.0 ends innovations by focusing on improvement of technological skills to make learning purposeful, smart, portable global and virtual.

CONCLUSION:

Program based on advanced information communication technology tools were increased the Achievement of technological skills of students of 11th standard.

CONTRIBUTION OF THE STUDY TO THE FIELD OF EDUCATION:-

The present study is helpful to the Teacher -

- To understand the theoretical and practical aspects of the advanced information communication technology tools.
- To acquaint with various advanced information communication technology tools.
- To plan their teaching by including Various Technological skills.

The present study is helpful to the students -

1. To get improve the students Technological skills.
2. To learn the things with group or peers with motive.
3. To do self-study by using various ICT tools.

The present study is helpful to the Researchers -

- To acquaint with research methodological aspects of the present study.
- To studying similar problem but in other subject.
- To select research design, development of tools, development of product & data analysis

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