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Effectiveness of E-Content in Sociology Based On Merrill's First Principles of Instruction on Enhancing Problem Solving Skills among Higher Secondary School Students

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Abstract

Globally, the education system is facing increasing pressure to make use of the new information and communication technology to familiarizing learners with the knowledge, information, and skill they require in this digital era. To develop a knowledge driven economy, it is vital to integrate ICT at all levels of education. In this scenario E-content is considered as a very effective tool of education. The basic aim of education is to build up critical thinkers and problem solvers. Enhancing Problem Solving Skills aids the students to become better thinkers which will help them to be successful at learning and also equip them for life, thereby helping them to understand their own caliber and to contribute to the development of their nation in particular and the world at general. Through the use of ICT – based instruction students can develop higher-order cognitive skills. Thus the present study intends to evaluate the Effectiveness of E- Content in Sociology on enhancing Problem Solving Skills among Higher Secondary School students The Merrill's First Principles of Instruction was used to design the instructional modules. A sample of 120 students were used, 60 each in experimental and control group by following Pre-test - Post-test Non- Equivalent Group Design. The study states that there is a significant difference in the mean scores of experimental group compared with the control group in enhancing the Problem Solving Skills in Sociology among higher secondary school students. The findings of the study unveils that the developed E-Content in Sociology proved to

re- equip the studying strategy and in enhancing the Problem Solving Skills among Higher Secondary School students.

Keywords: E-content, Merrill's first principles of instruction, higher secondary school students, problem solving skills

Introduction

Problem Solving is a vital component that all students should acquire in every discipline. Students can effectively address the problem by possessing strong Problem Solving Skills. Are our students truly capable of thinking creatively and find solution to a problem? Or are they simply repeating information, reusing concepts, and being passive consumers of knowledge? These are just a few of the questions that fill every educators mind regarding students ability to solve problem and think critically. The education system is frequently criticized for the inadequate thinking abilities of upcoming learners, in addition to the limited exposure and opportunities for students to utilize Problem Solving Skills during class.

UNESCO highlighted that the significance of problem solving has been demonstrated since the era of Socrates. Scientific endeavors also demand problem solving, making it quite surprising to encounter even a single graduate student who can showcase this skill. The lack of Problem Solving Skills in the outcomes of education has emerged as a national problem that needs urgent resolution. Sociology shows different levels of consensus that developing Problem Solving Skills is a valuable goal for studying Sociology. However, a significant problem persists. What actions can an instructor take to promote problem solving skill? And how can we determine if students have truly developed Problem Solving Skills?

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Need and Significance of the Study

Educators provide insufficient explanations on the topic, causing students to crave for more knowledge. They do not receive adequate training while in service to utilize the computer in the classroom. The aforementioned factors prompted the investigator to develop 2 units based on Sociological concepts as E-Content modules in LMS for the study of Sociology at the higher secondary level. The investigator developed E-Content in Sociology using two units from the XI standard Sociology textbook and assessed the impact of the E-Content on improving Problem Solving Skills among higher secondary school students studying Sociology

Objectives of the Study

1. To determine the effectiveness of E- Content in Sociology on enhancing Problem Solving Skills among Higher Secondary School students for the Experimental and Control group.
2. To find out the difference between mean Pre-test and Post-test scores on Problem Solving Skills of the Experimental and Control group control group among Higher Secondary School students

Hypotheses of the Study

1. There is no significant difference between Pre-test and Post-test mean scores on Problem Solving Skills of the control group.
2. There is no significant difference between Pre-test and Post-test mean scores on Problem Solving Skills of the experimental group.

Method adopted

Quasi Experimental research method following Pre-test- Post-test Non- Equivalent Group Design was used for the study. The sample selected for the study consisted of 120 students of XI standard. The samples were divided into two groups of 60 students each. For both the groups i.e. traditional method of instruction and E- Content based method of instruction students were selected from the same school. The investigator prepared and standardised a tool namely Problem Solving Skill Test (PSST) which was used to collect the data from the students.

Analysis and Interpretations

Hypothesis 1: There is no significant difference between pre-test and post-test mean scores on Problem Solving Skills of the control group.

Table 1

Comparison of Pre-test and Post-test Score of Higher Secondary School students in Control Group on Problem Solving Skill

Test	N	Mean	SD	Paired sample correlation	t value	Level of significance
Pre-test		6.050	3.1105			
	60			0.76	21.14	$p < .01$
Post-test		11.650	2.8033			

Table 1 shows that the t-value obtained is 21.14, which is significant at.01 level. Therefore there exists significant difference between the scores in the Pre-test and Post-test. The mean value obtained for Pre-test is 6.05 and that of Post-test is 11.65. The data reveals that the present method of teaching Sociology at higher secondary schools was effective in

terms of enhancing Problem Solving Skill of students. It may be noted that participants in experimental group showed a better performance as compared to that of their counterparts in the control group.

Hypothesis 2: There is no significant difference between Pre-test and Post-test mean scores on Problem Solving Skills of the experimental group.

Table 2

Comparison of Pre-test and Post-test Score of Higher Secondary School Students in Experimental Groups on Problem Solving Skill

Test	N	Mean	SD	Paired sample correlation	t value	Level of significance
Pre-test	60	6.85	3.52	0.86	32.49	$p < .01$
Post-test		15.76	4.25			

Table 2 shows that the t-value obtained is 32.49, and is significant at .01 level. Therefore there exists significant difference between the scores in the Pre-test and Post-test. The mean value obtained for Pre-test is 6.85 and that of Post-test is 15.76. Therefore the data indicated that the e- content in Sociology based on Merrill's First Principles of Instruction was effective in terms of enhancing the Problem Solving Skill of Experimental Group.

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Table 3

Summary of Test of Significance of Difference between the Post-test Scores of Problem Solving Skills of Students at Higher Secondary Level for Experimental and Control Groups

Group	N	Mean	S.D.	t	Level of Significance
Experimental	60	15.76	4.25	6.25	P<.01
Control	60	11.65	2.80		

The obtained t ($t = 6.25$, $p < .01$) is significant at .01 level of significance. It implied that there exists significant difference in the mean scores of Post-test scores of Problem Solving Skills among higher secondary School students for experimental and control groups

Determining Genuineness of Difference in Performance of Experimental and Control Groups with regard to Problem Solving Skill

By mere comparison of Post-test scores, it cannot be concluded that the experimental group differed significantly from the control group due to experimental factor. So the investigator analyzed the scores using the technique of Analysis of covariance (ANCOVA) for comparison in which the prior abilities are statistically controlled.

Table 4

Analysis of covariance of Post-test scores based on Problem Solving Skill with Pre-test scores based on Problem Solving Skill as covariate

Source of Variation	Type II sum of squares	df	Mean square	F-value	Significance
PSS Pre-test	1033.001	1	1033.001	242.021	*P*<.01
GROUP	342.611	1	342.611	80.270	
Error	499.382	117	4.268		
Total	24591.000	120			
Corrected Total	2040.792	119			

a. R Squared = .612 (Adjusted R Squared = .610)

After correcting the Post-test Scores for difference in Pre-test t Scores, F statistics is applied to the Post-test Scores. The value of the ANCOVA (F ratio= 80.27) is significant at .01 level. This significant F-ratio for the adjusted Post-test scores showed that the two final mean scores of the experimental and control groups differed significantly after they had been adjusted for difference in the Pre-test scores.

Comparison of the adjusted means of Experimental and Control groups for Post-test scores based on Problem Solving Skill with Pre-test scores based on Problem Solving Skill as covariate

The adjusted means for the Post-test scores of the participants in the experimental and control groups were computed and the results are given in Table ….

Table 5

Adjusted mean scores of Post-test scores based on Problem Solving Skill with Pre-test scores based on Problem Solving Skill as covariate

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Experimental	15.41	0.26	14.88	15.94
Control	12.00	0.26	11.47	12.53

It was also found from the Table 5 that adjusted mean score for the experimental group (mean = 15.41) was higher than that of the control group (mean = 12.00), indicating that the enhancement of Problem Solving Skill of the Experimental group was better than

that of the Control group. Thus, it can be concluded that the e content in Sociology based on Merrill's First Principles of Instruction was more effective than the present method of instruction in enhancing the Problem Solving Skill of Higher Secondary school students.

Findings of the Study

- There is no significant difference between Pre-test and Post-test mean scores on Problem Solving Skills of the control group.
- There is a significant difference between Pre-test and Post-test mean scores on Problem Solving Skills of the experimental group.

Educational Implications

- The use of E-Content for learning Sociology enhances the problem solving skill of higher secondary students.
- Learning Sociology through E-Content improves the conceptual clarity of students at the Higher Secondary classes
- E-content helps the students to learn by themselves and according to their choice of interest and at their own pace.

Delimitation of the Study

- The sample for experimentations was selected from only class XI.
- The E-Content prepared for studying Sociology is established on the state board syllabus recommended under NCERT in Kerala.

Conclusion

The present study was conducted to find out the effectiveness of an E-Content in Sociology in enhancing Problem Solving Skills among Higher Secondary School students. Though content preparation plays a very important role in e-learning, it is not an easy process. It requires indepth knowledge about the subject area, skill in developing the necessary objectives that make up quality and a higher degree of creativity in organising, structuring, and sequencing the topics to make a complete picture. Undoubtedly it can be predicted that E- Content enriches the e-learning in a number of ways. It is believed that people can retain 20% of what they hear. 50% of what they hear and see. And exactly, 100% of what they hear, see and do. This is what E-Contents are assured to do and what E-Contents are intended for. The investigator believes that this study will encourage decision-makers, and education professionals to give serious thought to the intrinsic value of technology and skills. The investigator hopes that this study will trigger further research into the measurable impact of E-Content on enhancing the other higher order thinking skills in students.

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