

DEVELOPING PROBLEM SOLVING CAPABILITES IN ENGLISH LITERATURE THROUGH PROBLEM BASED LEARNING METHOD

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ABSTRACT

Problem Based Learning environment differs from traditional classroom environment and focuses to enable the learners to develop critical thinking skills. The use of Problem Based Learning Method is growing fast due to its effectiveness in fostering problem solving capabilities, particularly among college students. This paper investigates the impact of Problem based learning method (PBLM) and Traditional lecture method on problem solving capabilities of XII grade students in the learning of literature in Pakistan. An experiment was conducted on 67 students, 34 for control group and 33 for experimental group, of Federal Government Postgraduate College H-8 Islamabad. Pre-test and post-test design was used to compare students' problem solving capabilities. Grade-XII English book was selected for lessons to be taught by PBLM and traditional lecture method. The pre-test and post-test was administered according to the paper pattern of Federal Board of Intermediate and Secondary Education Islamabad. The collected data was analyzed statistically. The results showed that there was a significant difference between the mean scores of experimental group and that of the control group with reference to problem solving capabilities. The result also showed that Problem based learning method was more effective in developing problem solving capabilities of the students and helpful for teaching and learning literature. It was recommended that PBLM may be adopted for literature teaching at XII grade level.

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KEYWORDS

Problem solving capabilities, Literature Learning, Problem-Based Learning, Higher order skills.

Introduction

Twenty first century is looked upon as the age of global changes and challenges in every sphere of life, particularly in the arena educational system of a country. The emerging paradigms of telecommunication and digital technology are broadly influencing upon the teaching learning process all over the world. The rapidly changing present world demands people to be multi-tasked, equipped with the skills of collaboration and flexibility, and have the ability to process information. Problem solving, goal setting, and creative thinking are considered specific skills required for the twenty first century workforce. For Jeffrey and Woods (2003, p.122) education needs to foster creativity that is to encourage flexibility, innovation and, "positive identities." Similarly Albrecht (2002) regards training of human brain for better creative products as the need of the time. The situation justifies the need for education to be reconstructed, theory to be redesigned, and strategies to be reconsidered. In this regard Feden and Vogel (2003, p.16) are of the opinion that "we have a new set of lenses through which we can view teaching and learning. They are provided by cognitive psychology." Thus teachers need to update their knowledge of cognitive psychology and receive necessary training in cognitive teaching methods. They need to re-orient their teacher- centered classrooms to student- centered and give students their legitimate autonomy. Students need to be engaged in practical projects, active manipulation of material, processing information, asking questions, making queries, solving open-ended problems, and generating their responses rather than giving right answers. Problem solving is a complex and important cognitive skill and involves many complex neurological events. Ashman and Conway (1997) consider it as an "embodiment of cognitive theory" and "cognitive education" for them "involves learning how to solve problems".

Problem based learning is training for real life problem solving. In this instructional strategy students find an ill-defined problem or situation having partial information and unsolicited questions. The situation, presented to the students, requires problem solving the way we locate it in life, defining and describing issues, generating hypothesis, scanning and searching for the data, improvement of the hypothesis with the help of data collected, controlling and directing experiential experiments, development of a solution that best suit the conditions of the problem and finally evaluating the solutions to find out the expected reasons that will help in the improvement of the conditions.

Hawkins (2004) stated that problem based learning is an instructional strategy in which real-world problems are constructed in such a way that learners are required to acquire knowledge and skill and work together to address the challenges arising from the problem. According to Hawkins (2004), in PBIS the learner engages himself in the following learning tasks:

- 1- Identification of related information and issues of the problem.
- 2- Formulation of ideas about the concepts related to the problem presented.
- 3- Identification of knowledge and information needed for the problem.
- 4- Development of the additional concepts and information about the different aspects of the problem.
- 5- Formulation of new-fangled learning needs related to the problem.

In PBIS learning environment, problem drives the learning i.e. learning begins with a problem to be solved, and the problem is presented in such a way that students need to acquire new knowledge before they can reach at the solution of the problem. In this instructional strategy students firstly construe the problem, and then congregate new information, then identify possible solutions, and then evaluate options and lastly present conclusions.

In Pakistani colleges, it is observed that the teaching/learning situation of literature has not significantly changed. Majority of the teachers are committed to traditional methods of teaching literature. The traditional methods of teaching require teachers of literature to impart a vast amount of information to students who are expected to accumulate the imparted information and reproduce accurately in examination. There is hardly any research and effort to apply cognitive teaching strategies and techniques to teach literature in order to develop students' thinking and other cognitive processes such as perception, memory, retrieval and transference. As a result, though students successfully get a degree at the end of the courses, they remain unable to process and manipulate information, synthesize and evaluate ideas, make connection between classroom learning and the practical world outside, or generate personal and innovative ideas.

Several studies on problem-based learning method have proved that the students showed better performance in problem based learning settings. Albanese, M., & Mitchell (1993) investigated the overall effects of problem-based instruction. The question guiding this meta-analysis was "What does literature tell us about outcomes and implementation issues related to problem-based instruction". Similarly, Edens, K.M. (2000) in their study "Introducing problem-based learning

into a traditional lecture course" assess student satisfaction in a course that used a combined problem-based learning and lecture format.

Breton (1996) conducted a study which analyzed two different teaching methods in an accounting theory class. Two classes of students, one traditional and one PBL were compared to determine differences in knowledge acquisition and aptitude for problem solving. The present study was conducted in Pakistani context where the culture of PBL is not common in schools and colleges.

Purpose of Study

The purpose of this study was to investigate the effects of the Problem based learning method in term of developing problem solving capabilities among grade XII college students in English text-book.

Research Questions

The following research questions were designed:

- i) Is there any significant difference between the mean scores regarding problem solving capabilities among students who got and did not get the Problem based method of teaching according to their pre test and post test results.
- ii) Is there any significant difference between the mean scores on problem solving capabilities among High achievers who got and did not get the problem based method of teaching according to their pre test and post test results.
- iii) Is there any significant difference between the mean scores on problem solving capabilities among Low achievers who got and did not get the problem based method of teaching according to their pre test and post test results.

Methodology

The sample of this study consisted of 67 male students of grade XII of Govt. Federal Government Postgraduate College, Islamabad, Pakistan. The students were between the age of 17 to 19 and have completed their English text-book. Sample students were divided into two groups i.e. control group and experimental group. Control group comprised of 34 students and Experimental group of 33 on non-equivalent basis. The class sections were allotted randomly to control and experimental groups. To measure the achievement level of students on the performance of problem solving capabilities, two different types of tests were developed and administered after validation. For this purpose twelve lesson plans of English text book were selected. The students of experimental

group were involved in different activities and problems. After collecting the data, the responses were scored; means and t-values were calculated for determining the significance. A quasi-experimental research design (Pretest-Posttest Non-equivalent Group Design) was employed to measure differences in test scores. In this design, subjects were randomly assigned to experimental and control groups.

On this pre-testing the students were divided into two groups' i.e. experimental groups and control groups. The experimental group was taught through problem based learning method while the control group was taught through traditional method. Their level of achievement in PBL after grouping was measured as usually measured in the pre-testing. The test for problem solving capabilities was conceptual in nature. These scores were used as post-test scores. Twelve lessons were taught in the pre-testing and similarly 12 lessons were taught in the post testing. But these lessons were different from the pre-test.

The split half method (odd-even) was used to test the reliability of post-test scores obtained by the students who formed the sample of the study. The coefficient of reliability was determined through the use of Spearman Brown Prophecy formula estimating reliability from the comparable values of the post-test. It was found to be .79.

Analysis of Data

The data collected through tests about problem solving capabilities which were conceptual in nature, were statistically analyzed. A pretest and posttest on English textbook was constructed and administered. The analysis and presentation of data are given below:

Hypothesis # 1

There is no significant difference between the mean scores of control group and experimental group on pre-test on problem solving capabilities.

Table 1
CALCULATION OF t-TEST

Group	N	\bar{X}	SD	t-value
Control	34	9.59	6.106	0.008
Experimental	33	9.58	6.515	

$P > .05; df = 65$

Referring to Table 1, "t" with $df = 65$ and $\alpha = .05$ we found that the tabulated value of $t = 2.000$ is greater than the calculated value of $t = 0.008$.

Conclusion: The null hypothesis is therefore up held. It is concluded that there is no significant difference between the mean scores of control group and experimental group on pre-test regarding problem solving capabilities.

Hypothesis #2

There is no significant difference between the mean score of high achievers of control group and experimental group on pre-test on problem solving capabilities.

Table 2
CALCULATION OF t-TEST

Group	N	\bar{X}	SD	t-value
Control	11	16.64	4.249	0.490
Experimental	11	17.45	3.560	

$P > .05; df = 20$

Referring to Table 2, "t" with $df = 20$ and $\alpha = .05$ we found that the tabulated value of $t = 2.086$ is greater than the calculated value of $t = 0.490$.

Conclusion: The null hypothesis is therefore up held. It is concluded that there is no significant difference between the mean scores of high achievers of control group and experimental group on pre-test regarding problem solving capabilities.

Hypothesis # 3

There is no significant difference between the mean scores of low achievers of control group and experimental group on pre-test on problem solving capabilities.

Table 3
CALCULATION OF t-TEST

Group	N	\bar{X}	SD	t-value
Control	11	3.27	2.149	0.337
Experimental	11	3.00	1.612	

$P > .05; df = 20$

Referring to Table 3, "t" with $df = 20$ and $\alpha = .05$ we found that the tabulated value of $t = 2.086$ is greater than the calculated value of $t = 0.337$

Conclusion: The null hypothesis is therefore upheld. It is concluded that there is no significant difference between the mean scores of low achievers of control group and experimental group on pre-test in term of problem solving capabilities.

Hypothesis # 4

There is no significant difference between the mean score of the control group and experimental group on post-test on problem solving capabilities.

Table 4
CALCULATION OF t-TEST

Group	N	\bar{X}	SD	t-value
Control	34	10.26	5.869	8.850
Experimental	33	24.18	6.971	

$P < .05; df = 65$

Referring to table 4, "t" with $df = 65$ and $\alpha = .05$ we found that the tabulated value of $t = 2.000$ is smaller than the calculated value of $t = 8.850$.

Conclusion: The null hypothesis is therefore rejected. It is concluded that there is a significant difference between the mean scores of control group and experimental group on post-test regarding problem solving capabilities.

Hypothesis # 5

There is no significant difference between the mean score of high achievers of control group and experimental group on post-test about problem solving capabilities.

Table 5
CALCULATION OF t-TEST

Group	N	\bar{X}	SD	t-value
Control	11	17.18	3.842	7.907
Experimental	11	32.45	5.126	

$P < .05; df = 20$

Referring to table 5, "t" with $df = 20$ and $\alpha = .05$ we found that the tabulated value of $t = 2.086$ is smaller than the calculated value of $t = 7.907$

Conclusion: The null hypothesis is therefore rejected. It is concluded that there is a significant difference between the mean scores of high achievers of control group and experimental group on post-test about problem solving capabilities.

Hypothesis # 6

There is no significant difference between the mean scores of low achievers of control group and experimental group on post-test about problem solving capabilities.

Table 6
CALCULATION OF t-TEST

Group	N	\bar{X}	SD	t-value
Control	11	4.36	1.963	15.551
Experimental	11	17.91	2.119	

$P < .05; df = 20$

Referring to table 6, "t" with $df = 20$ and $\alpha = .05$ we found that the tabulated value of $t = 2.086$ is smaller than the calculated value of $t = 15.551$.

Conclusion: The null hypothesis is therefore rejected. It is concluded that there is a significant difference between the mean scores of low achievers of control group and experimental group on post-test in term of problem solving capabilities.

Results and Discussion

The experimental study was conducted to examine the level of development of problem solving capabilities between two groups through traditional method and problem based learning method. Results in pretest indicated that there was no significant difference between the test scores on problem solving capabilities of the control group and the experimental group. It does make clear that the traditional teaching method is prevalent and modern techniques of teaching literature are not applied. When compared with the results in posttest, it is clear that the students perform better when taught through PBLM and it helps students develop the abilities of analysis, synthesis and evaluation as the items of test on problem solving capabilities were based on these higher order thinking skills. Both the high achievers and low achievers of experimental group showed

significant difference in the mean scores on posttest that signifies the effectiveness of PBLM in comparison with traditional method. It also makes clear that the existing methods of teaching literature are not based on modern cognitive approach like problem solving skill and it also shows that teachers are not trained to teach literature through modern instructional techniques. So the students of experimental group showed significant better performance when compared with control group on scores of posttest.

Recommendations:

1. Problem based learning methodology may be used for fostering problem solving capabilities.
2. Conceptual learning may be improved through Problem solving instructional strategy.
3. Teachers may use PBL for developing higher order thinking skills.
4. Teachers might be trained in the field of cognitive psychology and pedagogy.

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