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## The effects of modern methods on the stability of achievement in physics of yefren- Libya primary school

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### Abstract

The purpose of this study was to determine effects of Problem Based Learning (PBL) on the academic achievements stability in Physics of Yefren – Libya primary school (seven class) by a physics test designed by the researcher, This study used the descriptive analytical method after data collection by questionnaire and evaluation test on the occasion of this type of approach to such research studies, Results showed a statistically significant difference between the mean scores of the two sets of study in the stability of the achievement test dimensional, and that was the difference for the experimental group which studied students of physics in a way of problem based learning (PBL)

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Key words: Problem Based Learning, Academic Achievements Stability, Primary School

### Introduction

Problem-Based Learning (PBL) was developed in North America almost thirty years ago to prepare medical students for the realities of clinical practice (Barrows, 1996). In this approach, the role of the teacher is to guide and facilitate learning (Barrows, 2002; Torp & Sage, 2002). It has been supported in the literature that PBL positively influence on creative thinking, problem solving,

academic achievement, attitude, scientific process. For instance, Tavukcu (2006) and Bayrak (2007) investigated the effects of PBL on academic achievements, scientific process skills and attitudes towards lesson of students through a pretest-posttest control group design, and reported that the PBL group had higher scores in academic achievement, attitude towards lesson and scientific process skill measures in comparison to the control group. Similar a positive influence on academic achievement was reported by Tasoglu & Bakaç (2009) in a study which aimed to determine the effects of problem based learning (PBL) and traditional teaching methods (TTM) on students' academic achievements. In a similar study Selçuk and Çaliskan (2010) compared the effects of problem-based learning (PBL) and traditional methods on student teachers' satisfaction with an introductory physics course results indicate that the (PBL) group was more satisfied than the TTM group. There are many studies indicate that there is an improvement in academic achievement of students when applying the PBL method (Polanco et al, 2004; Tandogan, 2006; Oskay, 2007; Tarhan, Ayar, Öztürk & Acar, 2008).

All of the above study are important and have produced useful results but it will be of particular interest if PBL is investigated in the context of sustainability as well. This study is also important in the context of Libyan schools where no considerable research is available in the area. Therefore the aim of this study is to investigate the effects of (PBL) on the stability of academic achievements in physics of Yefren – Libya primary school (seven class)

## Method

In this research, the post test control group design was implemented to investigate the effects of PBL and TTM on students' stability of academic achievements in physics after one academic year. The research was conducted with 57 students attending 8<sup>th</sup> class of primary school as experimental group and 73 student attending of 9<sup>th</sup> class of primary school as control group of "Alnaser School" in yefren libya on 2009-2010 academic years. The Students assigned to the experiment group they was study the physics by PBL on 2008\ 2009 academic year at 7<sup>th</sup> class of primary school. The student assigned to the control group they was study the physics by TTM on 2008\ 2009 academic year at 8<sup>th</sup> class of primary school

**Table 1. The Distribution of Participants with Respect to Groups**

Method	No of student	Group
PBL	50	8 <sup>th</sup> class (1)
TTM	73	9 <sup>th</sup> class (2)

The test which consisted of 20 multiple-choice and 12 open-ended items was developed to identify students' knowledge about "Measure the temperature and time and the rate" unit for the 7<sup>th</sup> class student of the primary school and "transmission of heat" unit for the 8<sup>th</sup> class student of the primary school. For validity measures the test was shown to the experts including practicing teachers and teachers trainer for expert opinion and necessary amendments were made in the items.

**Results and Discussion**

For the first hypothesis under investigation which is stated below

"There is no statistically significant difference between the average scores in the student of eighth grade of primary education, who studied physics in a way to solve problems, and the average degree of their colleagues from the ninth grade who have studied physics in the usual way, in the achievement test is due to the way of teaching."

For analysis of this hypothesis, the sample members used in the achievement test, was to find the arithmetic average of the scores of the students each of the two groups of study from the table (2) that the average scores of the students in the control group for the achievement test (60.64), and the average scores of the students in the experimental group achievement test (71.44), from the Fig (1) and (2) the scores of the student in the Experimental group which from 85-100 are 14% but in the control group are 1.36% , and the scores of the student in the Experimental group which from 75-84 are 36% but in the control group are 12.3%.Which means that the achievement test was for the benefit of students of the experimental group

**Table 2. Analysis of Experimental and Control Group**

Group	mode	min	average
(1)	78	75	71.44
(2)	55	41	60.64

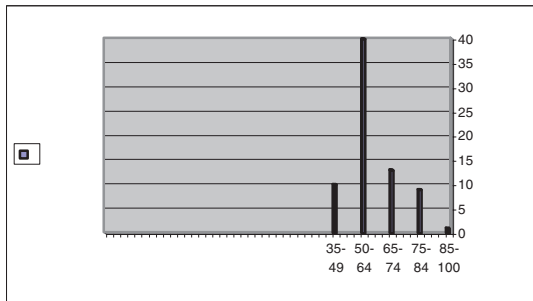


Fig (1)

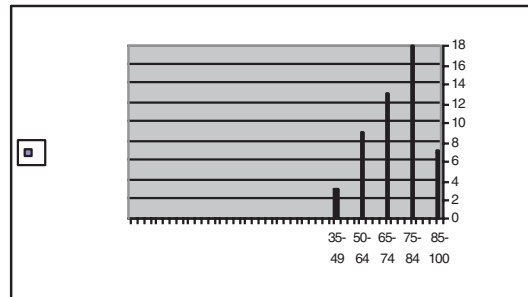


Fig (2) scores of the student ( PBL group )

scores of the student ( TTM group)

**Conclusion and Recommendation**

The analysis shows that there is a statistically significant difference between the mean scores of the two groups of the students. sets of study in the stability achievement test, and that was the difference for the experimental group which studied students of physics in a way PBL and thus the teaching of physics in a way to PBL more effective than the TTM way has attributed this result to the teaching of physics in a way to PBL to make the students of the experimental group at the center of the educational process, learning, and provided him with a learning environment learning.

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