

Effectiveness of Interactive Software on the Conceptual Learning in the Subject of Geometric Optic

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Abstract. *In this research, the results of teaching "Geometric Optic" with the aid of interactive software on the conceptual understanding and academic achievement of students is analyzed. The statistical society of this research is the whole male senior high school student in Dolat Abad (city of Iran). The number of this study population is 726. Due to the existing academic and research limitations we chose 120 available cases which are divided to four thirty-person groups. This research will be done in "Solomon four group method" with two test groups and two control groups. The two test groups experience learning with interactive soft ware and the two control groups get the traditional training. One of the test groups and one of the control groups take a pre-test. We saw that the groups were almost homogeneous. Data analysis of this research was done by SPSS software and ANOVA. We used the dependant T-test to compare results of the pre and post test. We found which the effectiveness of teaching Optics with the aid of interactive soft ware on academic achievement and conceptual understanding of students is more than the common traditional methods.*

Keywords. Interactive soft ware, Traditional teaching, Conceptual learning, Academic achievement.

1. Introduction

Everyone knows about wonderful role of education in Human's life and there is no a doubt about its necessity. Because the correct education in learning science can lead to happiness, having a happy and idealistic life. It causes that the man uses his capacity in different situation. Studies show that the deep comprehension of phenomena will have effect on learning of science [1]. Different phenomenon s and meaningful experiments can be achieved through both real

laboratories and experiments in abstract environment such as laboratories based on computer simulation [2, 3, and 4]. Here, we decide to study the effects of teaching by interactive soft ware on science learning.

2. Method

This study is in fact a quasi-experimental study which will be carried out based on SALAMON method with two experiment groups and two control groups. In two experimental groups, interactive software is used while one of groups take pretest but the other does not. The two control groups will be taught traditionally. This study is done on four classes of the junior high school in Dolat Aabad (a city of Iran).

3. Participants

The Statistical society at this study is all mate student of a junior high school of Dolat Aabad who is studying physics and laboratory in 2008 – 2009. The population of this research is 726, according to Dolat Aabad department of education.

4. Instruments

In this work, the time of teaching was one mount and half (including 8 sessions) for each class. Multiple –choice questions are used (for both per-test & past-test) to analyze students Conceptual Understanding and Academic Achievement.

The goal of the research is to check the amount of students learning in Geometric Optic. In order to determine the validity of the tests. We consider:

- 1 – Difficulty coefficient
- 2 – Denotation coefficient
- 3 - Rpbi coefficient
- 4 - KR-20 coefficient
- 5 - Fergosen coefficient

of tests. As we see Cronbach's Alpha coefficient is 0.702 which is standard.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.722	.702	30

5. Procedure

In this study Salomon method is used that four groups are selected, two experimental groups and two control groups. It is important to mention that one of experimental group and one of control group are taken pre-test and all groups past-test. In this research, the first sample is taught by interactive software, taken the pre-test and is called the first experimental group. The second sample is taught by interactive soft ware but is not taken the per-test and is called the second experimental group.

The other two groups are taught traditionally taken the per-test and called the first control group. Finally the fourth sample is taught traditionally and only taken past-test.

The data obtained through the tests are analyzed by means of T-test. By studying the results, we found effects of instruction by using interactive soft ware on students learning.

6. Conclusion

The results show that the effect of teaching optic by means of interactive software on junior high school students' conceptual learning in comparison with the traditional method is more. On the other hand, since the time of teaching in each class was a little, we don't find any different in Academic achievement of groups.

7. References

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Statistics					
		control1	control2	expriment1	expriment2
N	Valid	20	20	20	20
	Missing	0	0	0	0
Mean		12.85	12.75	9.80	9.50
Median		13.00	13.00	10.00	9.50
Mode		5	8(a)	10(a)	7(a)
Std. Deviation		5.412	3.796	4.742	3.332
Variance		29.292	14.408	22.484	11.105
Skewness		.080	-.004	.135	.251
Std. Error of Skewness		.512	.512	.512	.512
Kurtosis		-.985	-.248	.406	-.046
Std. Error of Kurtosis		.992	.992	.992	.992
Range		17	15	20	13
Minimum		5	6	1	4
Maximum		22	21	21	17
Percentiles	25	8.25	8.50	6.25	7.00
	50	13.00	13.00	10.00	9.50
	75	17.00	15.00	13.00	11.75



