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The Effect of Cooperative and Individual Learning on Academic Achievement in Information Technology Fundamental

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Abstract: As the world grows to become more complex, many concepts have changed. For example, one can refer to the change in the concepts of instruction and learning. This change has been posted by Behaviorism to Constructivism in the last decade and has been emphasized globally to improve the process of teaching and learning. This study compared the effect of cooperative learning and individual learning in the academic achievement in Information Technology (IT) fundamentals. These basis include Basic Concept of Information Technology, Using the Computer and Managing Files, Information and Communication, Word Processing, Spreadsheets, Presentation and Database. The main goal of this study is to explore the evaluation and comparative aspects of these two methods. The research method used in this study is Quasi-Experimental. A group of forty high school students has been chosen as respondents. They were divided into two groups, one group of Cooperative Learning and the other of Individual Learning and were taught three out of seven IT skills. These skills were Word, Excel and Power Point; taught for a period of two months. The study was conducted in a public school using a pre-test/post-test design. The results of the study have shown that the group taught using Cooperative Learning did better in academic achievement of IT fundamentals than the Individual Learning group.

Key words: Information Technology Fundamental · Cooperative Learning · Individual Learning · Achievement

INTRODUCTION

In this age of information, computers have become a great part by playing a big role in everyone's life. One has to learn about computers and to learn with computers. One of the methods of learning computers, especially computer fundamental in this information age is through cooperative learning.

Cooperative learning is defined as "the instructional use of small group so that student's work together to maximize their own learning" [1,2]. This method allows students to work together to share goals and to use knowledge and skills. Cooperative learning encourages students to discuss and disagree with each other in which this action helps to improve students' achievement. According to Johnson and Johnson [3], cooperative learning is an old idea. Two early European educational philosophers, Joseph Lancaster and Andrew Bell, understood the merits of cooperative learning. By understanding the enormous benefits associated with this method of learning, in the late 1700s, Lancaster implemented the cooperative learning method in his private schools. In the early 1800s, he took this teaching method to the United States. He opened his first Lancastrian School in New York City in 1806 where he constantly used cooperative groups as a teaching strategy [3]. In the early 1900s, cooperative learning was implemented by John Dewey, Kurt Lewin, Jean Piaget and Lev Vygotsky. A timeline of the history of cooperative learning is provided by Johnson, Johnson [3].

Cooperative learning is a powerful educational approach for helping all students attain content standards and develop the interpersonal skills needed for succeeding in a multicultural world [4]. Thus, there are too many good reasons for teachers to use cooperative learning in their classroom setting. One of the most

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important goals of any teachers is the academic success of the student. Success in the academic area involves the total development of the student. This development involves mental development as well as social and academic development. Therefore, it should follow that any method of teaching that helps students achieve these fundamentals will be recognized.

International Computer Driving License as Computer and IT Fundamental: In the late 1980s, the Finnish Computer Society set up a focus group to examine computer literacy in Finland. This focus group developed the concept of testing on individual's competence in using computers in much the same way as competence at driving motor cars was tested. This resulted in the establishment of the International Computer Driving License (ICDL), or is also known as IT fundamental in Finland in 1994. This task was to explore the feasibility of adopting the Computer Driving License (CDL) as a pan-European qualification. Between 1995 and 1996; the European Computer Driving License (ECDL) was translated into 10 different languages and piloted in 10 countries [5].

The ECDL/ICDL is now available in 140 countries and translated into 36 languages around the world. To date, over 30 million tests taken through a network of 20,000 test centers worldwide. Test centers and courseware providers provide training and testing services and training materials and are under Licence to the relevant computer society which in turn, licensed by the ECDL-F. Each country accepts the certification of the other countries. For the purpose of this study, the license is utilized as part of the data collection strategy.

Prospects and Challenges in Cooperative Learning: Cooperative learning is a special teaching strategy that students with different ability can use in their educational activities to improve their understanding of a subject. According researches students learn better when they are associated with each other in a classroom or other educational environments [6]. Like other teaching and learning strategies Cooperative Learning (CL) have advantages and disadvantages which some of them include:

According to Joan Garfield [7], "one way for teachers to incorporate active learning in their classes is to structure opportunities for students to learn together in small groups". In another study, Johnson and Johnson (2007) acknowledged that there is persuasive evidence that cooperative learning teams achieve at higher levels of thought than students who work quietly as individuals. Gokhale [8] states, "Proponents of collaborative learning claim that active exchanges of ideas within small groups not only increase interest among participants, but also promote critical thinking" (p. 22)

Also there are advantages of the use cooperative learning in IT based environment which Research has shown some of them and those advantages which include. Computers can isolate students -- think of the stereotype of the computer nerd, locked alone in a room all day staring at a computer screen, whereas cooperative learning brings a social element to information technology-based learning. As computers offer a variety of engaging, multi-media ways for obtaining large amounts of information help students to work together, find and share knowledge. Cooperative learning helps students learn with computers.

Although there are many positive aspects of cooperative learning, there are also negative components that we point some of them: The successful application of the cooperative learning method in the classroom depends on the teacher's understanding and familiarity with that learning strategy. A teacher must also be able to determine the learning style that is best suited for the particular task. In using cooperative learning with students working collaboratively, the teacher must be aware of focus group size, functions, norms, skills and roles [2].

Another disadvantage of cooperative learning is the fact that using cooperative learning can cut the atmosphere within the classroom among children. For example, by allowing children to form their own groups, children will tend to form groups with friends. Therefore, the teacher should keep in mind that it is probably best not to let students select their own groups the first time. This is important subject that teacher must be focus on making sure that the students keep the groups heterogeneous. Stahl [9] states, "Teachers should organize three-, four-, or five-member groups so that students are as heterogeneous as possible, first according to academic abilities and then on the basis of ethnic backgrounds, race and gender"(p 4).

Academic Achievement and Cooperative Learning: Research on cooperative learning suggests that the use of cooperative learning may be associated with gains on the following variables:

- Achievement
- Liking for school
- Inter-ethnic relations
- Thinking skills
- Self-esteem.
- Enjoyment

In this research we use achievement variable in information technology based environment. "Student achievement and cooperative learning go hand in hand" [4]. Cooperative learning as one of teaching and learning strategies allows students to become successful among peers, classmates and also themselves. Andrew Dahley states: Students who work individually must compete against their peers to gain praise or other forms of rewards and reinforcements. In this type of competition many individuals attempt to accomplish a goal with only a few winners. The success of these individuals can mean failures for others. There are more winners in a cooperative team because all members reap from the success of an achievement [10]. The previous statement is one of the major benefits of cooperative learning. In a cooperative learning team, every member of team is trying for the achievement of the group. Every member of team is shear in Success and happiness evenly. The results of every participant effort in the cooperative learning environment belong to every other student in that group. Progress occurs albeit with reasonable ease and satisfaction. The task is accomplished and the students are successful. The classroom then becomes transformed into a place of positive and active interaction. After nearly fifty years of research and scores of studies, there is a strong agreement among research that cooperative learning methods can and usually do have positive effects on student achievement [4]. Finally, it can be concluded that student academic achievement can be impacted by using cooperative learning in the classroom. "Studies on cooperative learning indicate a strong impact on student achievement as well as increased motivation and improved social interactions with adults and peers [11].

Research Methodology: The purpose of this study was to understand the effect of cooperative learning strategy on IT fundamental (ICDL) achievement. According to the main purpose in the objective of the study was : "To investigate and compare effect of cooperative learning strategy and individual learning on word Excel and Power point academic achievement of secondary students." A sample of 40 students from a secondary school participated in this study. They are divided in two groups as Individual and Cooperative randomly. This quantitative study used a pretest-posttest and quasi-experimental design to determine the impact of a select group of cooperative learning structures on the IT fundamental achievement of secondary students. The two groups participated in the study were comparison (Traditional/Individual Lecture) group and a treatment (Cooperative Learning) group. Group 1 represents the subjects in the treatment group. Group 2, the comparison group, did not participate in the cooperative learning structures or any other cooperative learning structures. O1 represents the pretest O2 represents posttest, X represents treatment known as cooperative learning structures. Trained teachers were taught these concepts of IT fundamental (Word, Excel and Powerpoint) for 2 months to both the comparison group and the treatment Group. The instrument used for conducting the data of this study was the standard test of ICDL for Iranian secondary schools. This multiple test used as pre and post test before and after treatment. For right answer, the score given was 1 and to false answer was given 0. For reliability of test, SPSS and Cronbach's Alpha were used and Cronbach's Alpha for the ICDL test was 0.87.

RESULT

Descriptive statistics (Tables 2 and 3), were used to summarize the characteristics of the data such as response frequencies, means, variance and standard deviations. The data analysis results are presented in textual and tabular forms.

Tables 1 and 2 show the descriptive statistics in every item and every group. With comparative between to table just I can tell that the number of posttest is increased, but we cannot conclude how much did these numbers increase and we need statistics to show the amount of increase. According to the main hypothesis of this study and the result of pretest test from t-test tables:

As table 3 shows, the result of pre test have shown that the knowledge of student in there item (Word, Excel and Power point) with 95% don't have statistical significant and they are be in the same level of IT knowledge t=. 022, 1.16 and 0.39, $p>0.05$.

In the Word item (Table 4), after taking the pre and post tests and by comparison, the level of significant is $p=0.03$. This result has shown the first treatment which has been done under the researcher has positive effect on cooperative group and also cooperative group was better than the individual group in learning of word item: $t=2.28$, $p<0.05$.

Table 1 : Descriptive analysis of pretest

Frequency	*Mean*	*Variance*	Std D		
Word Item	Individual Group	20	9.3	3.8	1.9
	Cooperative Group	20	10.5	3.6	1.9
Excel Item	Individual Group	20	8.6	6.7	2.6
	Cooperative Group	20	10.9	3.6	1.8
Power Point Item	Individual Group	20	9.4	5.4	2.3
	Cooperative Group	20	10.8	2.2	1.5

Table 2: Descriptive analysis of Posttest

		Frequency	*Mean*	*Variance*	Std D
Word Item	Individual Group	20	9.3	3.8	1.9
	Cooperative Group	20	10.5	3.6	1.9
Excel Item	Individual Group	20	8.6	6.7	2.6
	Cooperative Group	20	10.9	3.6	1.8
Power Point Item	Individual Group	20	9.4	5.4	2.3
	Cooperative Group	20	10.8	2.2	1.5

Table 3: t-test of pretest

Pretest		*t*	Sig
Word	Group 1 and Group 2	0.22	0.82
Excel		1.16	0.62
Power point		0.39	0.69

Table 4: t-test of Word post test

Word post test	Mean	Std Division	t	df	Sig
Groups(1 and 2)	1.25	2.44	2.28	39	0.03
Result		Reject H0			

Table 5: t-test of Excel post test

Excel post test	Mean	Std Division	t	df	Sig
Groups(1 and 2)	2.25	2.61	3.85	39	0.01
Result		Reject H0			

Table 6: t-test of PowerPoint post-test

Powerpoint post test	Mean	Std Division	t	Df	Sing
Groups(1 and 2)	1.4	3.2	1.95	39	0.04
Result		Reject H0			

In the Excel item (Table 5), after taking the post test and comparing them with one another, the level of significant is $p=0.01$ and that this result has shown that the first treatment which has been done under the researcher, had positive effect on cooperative group and also the cooperative group were better than individual group in learning of Excel item because $t=3.85$ and $p<0.05$ effect on cooperative group.

In Power point item (Table 6), after take per and post test and comparison them level of significant be $p=0.04$ that this result have shown the first the treatment have done under researcher had positive and also cooperative group were better than individual group in power point item, because $t=1.95$ and $p<0.05$.

CONCLUSION

The research conducted in this study indicates that cooperative learning is an effective way to improve student's achievement in IT fundamental. This sentiment was mirrored in a research conducted by Myers who wrote "Research findings indicate positive outcomes associated with cooperative learning" [6]. Based on the findings in this study, it is apparent that cooperative learning is a much needed teaching strategy for student's achievement. Students are learning through active participation in the classroom. According to the literature, cooperative learning affects all areas of student's learning. From teacher's accountability and mandated

federal laws to student's motivation and anxiety, cooperative learning plays a crucial role in a learner's educational achievement. Teachers with more teaching experience, teachers with students who are perceived to be higher-ability students, teachers with more cooperative learning experience specifically and teachers with more cooperative learning training have more positive views regarding the value and effectiveness of cooperative learning in the classroom.

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