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The Effect of Different Methods of Cooperative Learning Model on Academic Achievement in Physics*

Nilüfer OKUR AKÇAY[1], Kemal DOYMUŞ[2]

[1] Assist.Prof.Dr., Ağrı İbrahim Çeçen University, Education Faculty, Ağrı-TURKEY
[2] Prof.Dr., Atatürk University, Kazım Karabekir Education Faculty, Erzurum-TURKEY

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ABSTRACT

The aim of this study is to determine the effect of group investigation, learning together and reading-writing-presenting methods on students' academic achievements in teaching of the first year university students attending the classes in which the units of force and motion taught within the general physics course. The sample of this study consists of 121 undergraduates pre-service science teachers during the 2011-2012 academic years in Ağrı İbrahim Çeçen University. As the data collection instruments, Graphic Test (GT), Academic Achievement Test (AAT) and Module Tests (Module A, Module B, Module C, Module D and Module E) were used. This study was carried out in four different groups. One of these groups was Group Investigation Group (GIG), the second group was Learning Together Group (LTG), the third group was Reading-Writing-Presenting Group (RWPG) and the other one was Control Group (CG) in which teacher-centered instruction was applied. The data obtained on instruments were evaluated by using ANOVA and descriptive statistics. The results of this study indicate that teaching of force and motion subjects in RWPG was more effective than the other groups.

Keywords: Group Investigation, Learning Together, Reading-Writing-Presenting, Force and Motion, Physics.

INTRODUCTION

In our country, as a result of the educational reforms of our education system is the main purpose to gain students using their skills for access to information rather than transferring information directly in recent years. Science lessons are very important to get also these skills for students (Aksoy, 2011; Şimşek, 2011). An educational environment should be concreted to students in science classes that scientific thinking to become a way of life, encourage them to work in the basic sciences, develop positive attitudes towards science courses, with the aim

* This study was prepared from doctoral thesis.

Corresponding author e-mail:nilokur-7@hotmail.com

to increase the knowledge and skills that students are active, recite far and research-based learning (Çepni, 2007; Hançer et al. 2003).

Science courses are to provide students can do and learn by experience, development of thinking skills, be researchers and inquisitive individuals. It is a body of verbal knowledge and not based on rote lessons (Bozkurt and Olgun, 2005; Kaptan and Korkmaz 2001; Lind, 2005). Especially, science lessons occur lots of abstract concepts so in teaching of science it's preference that by doing and living applications, so that students don't passive in their own learning effectively (Yiğit and Akdeniz, 2003). Therefore, when teaching science lessons in the classroom, the selection appropriate teaching methods and techniques should be taken of care. Especially, student-centered education is taken to forefront and emphasized on new methods and techniques and students have been made to understand issues at the highest level. In contrast to teacher-centered teaching methods, student-centered teaching methods regard the students as active learner. Previous research stated that student-centered teaching methods are more effective than traditional teaching methods (Çelik et.al. 2005; Doymuş et.al. 2004; Gök et.al. 2009). Therefore, active learning methods in the teaching-learning environment are emphasized in recent years. With this method, the students not just come to be filled with the knowledge, experience acquired through the use of the information, manufacturer, inventor, constructive thinking, critical, creative, be innovative person is aimed to train as individuals. This method is cooperative learning model that is an important take part in today's education (Doolittle, 1997; Stamovlasis et al. 2006).

Cooperative learning is a learning method that students assigned to small groups in the classroom as well as other environments and in which they help to learn with together, students achieve more and increase self-confidence of individuals, develop communication skills and the students participate actively in this method (Bilgin, 2006; Doymuş, 2007; Eilks, 2005; Emmer and Gerwels, 2002; Gillies and Ashman, 2000; Gillies, 2006; Hennessy and Evans, 2006; Lin, 2006; Prince, 2004; Thurston et al. 2010). It has been concluded that many science researches related to cooperative learning method is more effective on students' achievements (Atasoy et al. 2007; Eke, 2010; Kıncal et al. 2007; Yıldırım, 2011). In this research, the group investigation, learning together and reading-writing-presentation techniques that are the part of cooperative learning model are mentioned.

Group Investigation (GI) technique was developed by Sharan and Sharan in 1989. In this technique firstly the class is divided into several groups that study in a different phase of general issue. After that, study of issue is divided into working sections among the members of the groups. It's provided to students that pair up the information, arrangement, analyzes, planning and integrate the data with the students in other groups. In this process, teacher must be the leader of the class and ensure that students need to the explanations (Knight and Bohlmeyer, 1990). This technique is suitable in the science lessons because of encourage the students to learn and attract them in scientific research (Sherman, 1994).

Learning Together (LT) technique was developed by Johnson and Johnson in 1989 (Johnson et al. 1998). In this technique, firstly the aims are indicated and occur the groups for these aims. Students study with together on subjects or work sheets in 2 or 6 members of groups. Group members decide how they study and what to do in accordance with group subjects and assignment with altogether. Ultimately, they put out a joint study. Students are rewarded according to achievements in the group and individual studies (Açıkgöz, 2011; Johnson et al. 1994).

In Reading-Writing-Presenting (RWP) technique, firstly taking into account the physical condition of the class where the course is processed, the number of students, students' academic achievements and students are divided into heterogeneous groups that consist of 2-6 members in class. This technique provides to students work individually and with groups from different sources, to create a positive interdependence, the configuration of

the new information on the available information, to increase the social and psychological skills. In addition, it's aimed to develop students' reading, writing and presenting skills (Akçay et al. 2012).

Physics is one of the science lessons and it is a discipline that based on qualitative and quantitative measurements for understanding the natural phenomena around us. Students have difficulty in learning physics because physics is composed more abstract concepts (Candan et al. 2006; Demirci and Uyanık, 2009; Özsevgeç, 2006). Force and motion is one of the topics of physics that constitutes the basic concepts related to many issues in physics. So, it is very important to be able to better understand the subsequent issues in terms of the students also, they must comprehend force and motion subject. Research in physics education, traditional education has failed in the teaching of physics and physics teaching students to be more effective, they should actively participate in the learning outcome has revealed (Açışlı et al. 2011; Crouch and Mazur, 2001; Gupta, 2004). Many studies were conducted by researchers about physics subjects especially force and motion to understand much better (Beichner, 1990, 1994, 1996; Candan et al. 2006; Palmer, 1994; Thornton and Sokoloff, 1998).

It's clear that new methods and techniques are needed to provide a much better understanding the subject of force and motion. Students can not configure information to put new ones on their own, they have to do with the limited remaining memorization that given by the teacher in teacher-centered teaching. In addition, teacher-centered teaching is can not be sufficiently effective because of based on the inductive process, bring teachers into the forefront not students (Doğruluk, 2010; Genç, 2008; Günaydın, 2010; Tolmie et al. 2010). Students are more likely to learn information that is interested and thought it is important for them. So the teaching-learning process in the classroom should be planned as to attract students' attention and should be given roles to students could be active in this process. For that purpose, the methods and techniques must be used that provide students to active in lesson and put them in the central. One of these methods is cooperative learning that is an important take part in today's education. It has been concluded that many science researches related to cooperative learning in physics education method is more effective on students' achievements (Acar and Tarhan, 2007; Atasoy et.al. 2007; Çalışkan et al. 2005; Çopur, 2008; Fong and Kwen, 2007; Singh, 2005; Şengören and Kavcar, 2007; Tanel, 2006; Tanel and Kavcar, 2007).

The purpose of this study is to investigate the effect of Group Investigation, Learning Together, Reading-Writing-Presenting techniques and teacher-centered teaching methods on students' understanding of force and motion in undergraduate physics course.

METHODOLOGY

In analyzing the effects of teaching materials or teaching methods in different schools and classrooms, it is more convenient to use the quasi-experimental research design. A quasi-experimental design in which participants are not randomly assigned to the groups, instead, there are naturally occurring groups or groups to which participants are assigned for reasons other than randomizing the sample was used in this study. The study utilized "a pre-test/post-test non-equivalent comparison group design" (McMillan and Schumacher, 2010).

a) Sample

The sample of this study consisted a total of 121 undergraduates pre-service science teachers from four different groups enrolled in the general physics course for the 2011–2012 academic years in Ağrı İbrahim Çeçen University. One of treatment groups was Group Investigation Group (GIG) (n=34), the second group was Learning Together Group (LTG) (n=28), the third was Reading-Writing-Presenting Group (RWPG) (n=37) and the last group was Control Group (CG) (n=22). Pre-service science teachers were admitted to these group

after the pre-test of Academic Achievement Test results. Neither age nor gender differed significantly among the groups. Ages ranged from 18 to 24 years. Volunteers were given background information regarding the study prior to consent. During the training period, the researchers delivered instruction for the treatment groups.

b) Instruments

In this research, to measure students' success the Academic Achievement Test (AAT), students' understanding and interpret of kinematics graphs the Graphic Test (GT) and students' success for each unit the Module Tests (MT: Mod A, Mod B, Mod C, Mod D and Mod E) were used.

The AAT consists of 25 multiple-choice questions and each question worth is four points. The researchers created this test. The questions in the test were related to the concept of force and Newton's laws, types of force, motion, and the concept of variables, including issues of motion in one dimension and two dimensions of "Force and Motion". This test was given to students who were not involved in the study but had previously taken the course in which the "Force and Motion" topics mentioned above had been taught. With respect to reliability, AAT was administered to a group of 42 students who had taken the General Physic course the year before. The KR20 was used to determine the reliability of AAT and the reliability coefficient was found (α= 0.68). Moreover, to check the validity of the AAT developed the opinions of 5 physics lecturers on the subject were taken into consideration. Researchers pointed out that the gains achieved with AAT related to the subjects of "Force and Motion" had been high in terms of the measurement.

The GT consists of 25 multiple-choice questions and each question worth is four points. The GT was designed to assess the reading and understanding of graphics used in physics. The GT was created by Beichner (1994) and the researcher translated it from English to Turkish with added questions appropriate the GT. The questions in the test were related to the reading, drawing, and understanding of graphics in physics courses. The validity of the test was checked by an expert and two other physics teachers. With respect to reliability, the GT was administered to a group of 42 students who were not involved in the study but had previously taken the course in which the general physics courses mentioned above had been taught. The KR20 was used for determining the reliability of GT, which was found to be α= 0.76.

The MT was composed of four multiple-choice questions and one open-ended question. Multiple-choice questions were piloted with undergraduates from two classes of college physics. Item analyses were performed for each question and confusing or vague questions were rewritten before the test was used in the study. The open-ended questions were evaluated according to quality analysis. The MT was applied after the each lesson per week.

c) Procedure

In the treatment groups, this study was conducted over a five-week period during which the "Force and Motion" unit was taught as part of the regular curriculum in the general physics course.

The Group Investigation Implemented

The GIG students were randomly divided into two parts (Part I, n=17 students + Part II, n=17) students. The students in these parts were divided into five sub-groups as shown in Figure 1. In this instance, groups contained three and four students. The GIG was employed five weeks to teaching the force and motion unit. The main features of the modified group investigation are presented in three phases for each module as given in below (Oh and Shin,

2005), namely 1) in-class discussion, 2) out-of-class investigation, and 3) in-class presentation.

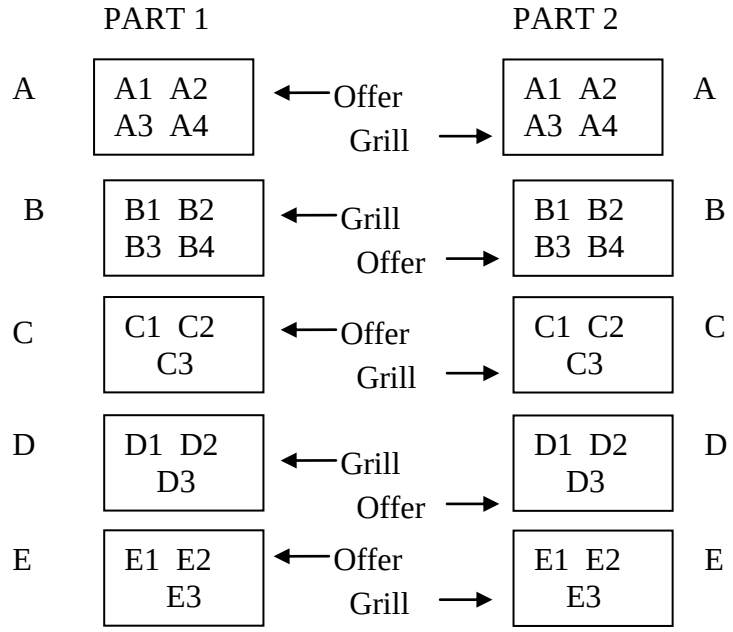

Figure 1. *Forming of Grill and Offer Groups From Parts I and II*

In-class discussion; 'students are organized into research groups', 'students get together in their groups for discussion', 'each group sets an inquiry topic within a given unit and makes a plan for investigation', 'during the discussion, group members use their science books to identify their own problems, questions, or issues and select a topic to study', and 'the teacher participates in the group discussion and the teacher's roles include encouraging students to select authentic topics that can be addressed in multiple ways'.

In out-of-class investigation; 'each student group carries out its investigation', 'the teacher helps students with their investigations', 'the teacher's roles include presenting sources of information, providing instruments for experiments, and assisting students with difficulties', and 'each research group prepares an in-class presentation'.

In-class presentation (Week II); group A in part 1 was the presentation (offer) group while group A in part 2 was the inquiry (grill) group. While group A in part 1 presented the topics of Module A, group A in part 2 questioned the group about their presentation and determined their weaknesses. Other students in the classroom also participated in the discussion. Week III: group B in part 2 was the offer group while group B in part 1 was the grill group. While group B in part 2 presented the topics of Module B, group B in part 1 questioned the group about their presentation and determined their weaknesses. Other students in the classroom also took part in the discussion. The other grill and offer groups given in Table 1 were organized in the same way as week II and week III.

Table 1. *Allocation to Weeks and Groups of Modules*

Weeks	Grill groups	Offer groups	Modules (Present topics)
II	Part I A	Part II A	Module A (The concept of force and Newton's laws)
III	Part II B	Part I B	Module B (Varieties of force)
IV	Part I C	Part II C	Module C (The concept of motion and variables)
V	Part II D	Part I D	Module D (One dimensional motion)
VI	Part I E	Part II E	Module E (motion in two dimensions)

The Learning Together Implemented

As shown in Figure 2, the cooperative class was divided into six heterogeneous groups: two groups consist of four students and four groups consist of five students. Before the beginning of the instruction, the teacher gave information about learning objectives, the instruction process and rules for working in a cooperative group, group member roles, and assessment strategies (Doymuş and Şimşek, 2007). Students in the groups were encouraged to decide who would be the leader. Later, the heads of the groups were determined by the group members. The subject of related states of matter was presented to the group members by the group heads. Each group studied their subject out of and in class. All activities were completed by students under the guidance of the teacher. While students were discussing in their small groups, the teacher visited all the groups and asked guiding questions to lead students in appropriate directions. All the cooperative groups prepared their own reports after the activities were completed. Each group was given 40 minutes to present their work in the classroom and 10 minutes for discussion with the class. During this discussion, the group answered questions from the class. All groups completed their topics in five weeks (Doymuş et al. 2009).

A1 A2 A3 A4 A5	B1 B2 B3 B4 B5	C1 C2 C3 C4 C5	D1 D2 D3 D4 D5	E1 E2 E3 E4	F1 F2 F3 F4

Figure 2. *The Groups in the Learning Together of Cooperative Class*

The Reading-Writing-Presenting Implemented

The RWPG students were randomly divided into seven sub-groups as shown in Figure 3. In this instance, five groups contained five students and two groups contained six students.

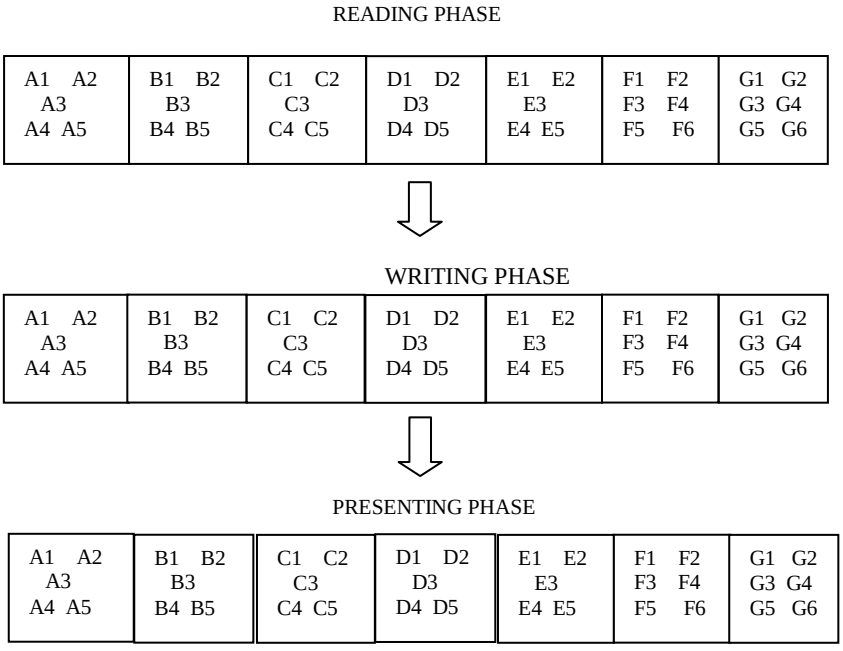

Figure 3. *The Groups in the Reading-Writing-Presenting of Cooperative Class*

The reading writing presenting technique was carried out five weeks to teaching the "Force and Motion" unit. The main features of the modified Reading-writing-presenting are presented in three phases for each groups in given Figure 3, namely 1) in-class reading, 2) in-class writing, and 3) in-class presentation.

In class reading: all the groups in the classroom read the topics for 30+30 minutes from the course books or other resources that are included in the module for the week.

In class writing: groups, without accessing resources, wrote their understanding about what they read for 50 minutes. Writing was done by group pairs. After finishing writings, the notes written by the groups evaluated by the author. Groups whose outcomes evaluated as not good enough sent back to groups for reading stage.

In class presentation: groups finished reading and writing stages made presentations about the subject for 20 minutes. After presentation an argument discussed in the classroom.

Implementation of Teacher-Centered Teaching Method

In the control group, the subjects were taught by using the teaching-centered method. The researcher planned the presentation activities of the subjects that would be taught during the lesson in a report not by a classical teaching presentation but by giving assignments to students on the subjects of "Force and Motion" and by providing internet addresses and workbooks for constructing the information to be presented to them. In the traditional learning method, generally the teacher wrote the concepts on the board and then explained them; students listened and took notes as the teacher lectured on the content. In this process, student's performances were observed and the studies were directed according to the feedback obtained from them. The researcher taught "Force and Motion" topics to the treatment groups four hours per week for five weeks. Measurement tools were applied to the treatment groups at the end of the study.

FINDINGS

In order to determine the differences among the four treatment groups, a one-way analysis of variance (ANOVA) calculation were made by using scores on the AAT, GT and MT. One-way ANOVA of data obtained from AAT, GT, and MT in the treatment groups are enclosed in Table 2, 3 and 4 respectively.

Table 2. *One-Way ANOVA among Treatment Groups for Score on AAT*

Instruments		SD	DF	MS	F	P
AAT	Between Groups	112.91	3	37.64	0.39	0.75
pre-test	Within Groups	11192.60	117	95.66		
	Total	11305.52	120			
AAT	Between Groups	8986.66	3	2995.55	64.81	0.00
post-test	Within Groups	5407.78	117	46.22		
	Total	14394.44	120			

As seen at Table 2, it was determined that according to the scores of the pre-test of AAT, there was no difference between GIG, LTG, RWPG and CG [$F(3,117)=0.39$; $p>.05$]. This finding supports the assumption that the groups should be considered equivalent. However, according to the scores of post test, there was significant difference between GIG, LTG, RWPG and CG [$F(3,117)=64.81$; $p<.05$]. Tukey test was used to determine which group differences. According to this analysis result, RWPG was more successful than GIG, LTG and CG; GIG was more successful than LTG and CG; and LTG was more successful than CG ($X_{RWPG} = 75.14$; $X_{GIG} = 68.59$; $X_{LTG} = 61.57$; $X_{CG} = 50.73$).

To determine the level of students' understanding about force and motion graphics, the GT was used. The one-way ANOVA of data obtained from GT is below in Table 3.

Table 3. *One-Way ANOVA among Treatment Groups for Score on GT*

Instruments		SD	DF	MS	F	P
GT Pre-test	Between Groups	611.86	3	203.95	1.77	0.15
	Within Groups	13474.74	117	115.16		
	Total	14086.61	120			
GT post-test	Between Groups	9214.19	3	3071.39	42.03	0.00
	Within Groups	8548.98	117	73.06		
	Total	17763.17	120			

As seen at Table 3, it was determined that according to the scores of the pre-test of GT, there was no difference between GIG, LTG, RWPG and CG [F(3,117)=1.77; p>.05]. The results of this analysis show that the levels of success in the all groups are closer to each other at the beginning. However, according to the scores of post test, there was significant difference between GIG, LTG, RWPG and CG [F(3,117)=42.03; p<.05]. Tukey test was used to determine which group differences. According to this analysis result, RWPG was more successful than GIG, LTG and CG; GIG was more successful than LTG and CG; and LTG was more successful than CG (X_{RWPG} = 77.3; X_{GIG} = 71.18; X_{LTG} = 64.43; X_{CG} = 52.45).

Module tests were prepared for each sub-heading of force and motion subjects and these were Module A (the concept of force and Newton's laws), Module B (varieties of force), the Module C (the concept of motion and variables), Module D (one dimensional motion) and Module E (motion in two dimensions). The one-way ANOVA of data obtained from MT is in the Table 4.

Table 4. *One-Way ANOVA among Treatment Groups for Score on MT (MA, MB, MC, MD, ME)*

Instruments		SD	DF	MS	F	P
Module A	Between Groups	12280.96	3	4093.65	42.70	0.00
	Within Groups	11216.54	117	95.86		
	Total	23497.50	120			
Module B	Between Groups	21352.82	3	7117.60	64.86	0.00
	Within Groups	12839.22	117	109.73		
	Total	34192.05	120			
Module C	Between Groups	11816.77	3	3938.92	18.36	0.00
	Within Groups	25092.54	117	214.46		
	Total	36909.32	120			
Module D	Between Groups	20264.57	3	6754.85	35.36	0.00
	Within Groups	22347.47	117	191.00		
	Total	42612.05	120			
Module E	Between Groups	10155.77	3	3385.25	20.97	0.00
	Within Groups	18883.36	117	161.39		
	Total	29039.14	120			

As seen at Table 4, according to the scores of Module A test, there was significant difference between GIG, LTG, RWPG and CG [F(3,117)=42.70; p<.05]. Multiple comparison of Tukey test was used to determine which group differences. According to this analysis result, RWPG was more successful than GIG, LTG and CG; GIG was more successful than LTG and CG; and LTG was more successful than CG (X_{RWPG} = 73.89; X_{GIG} = 65.68; X_{LTG} = 56.29; X_{CG} = 45.91). For Module B, there was also significant difference between GIG, LTG, RWPG and CG [F(3,117)=64.86; p<.05]. Tukey test was used to determine which group differences. According to this analysis result, RWPG was more successful than GIG, LTG and CG; GIG was more successful than LTG and CG; and LTG was more successful than CG (X_{RWPG} = 73.92; X_{GIG} = 67.15; X_{LTG} = 54.25; X_{CG} = 37.05). For Module C, there was also significant difference between GIG, LTG, RWPG and CG [F(3,117)=18.36; p<.05]. Tukey

test was used to determine which group differences. According to this analysis result, RWPG was more successful than GIG, LTG and CG; there was no difference between GIG and LTG and both of them was more successful than CG (X_{RWPG} = 67.54; X_{GIG} = 57; X_{LTG} = 53.93; X_{CG} = 38.5). For Module D, there was also significant difference between GIG, LTG, RWPG and CG [F(3,117)=35.36; p<.05]. According to this analysis result, RWPG was more successful than GIG, LTG and CG; GIG was more successful than LTG and CG; and LTG was more successful than CG (X_{RWPG} = 77.89; X_{GIG} = 68.32; X_{LTG} = 57.04; X_{CG} = 41.5). For Module E, there was also significant difference between GIG, LTG, RWPG and CG [F(3,117)=20.97; p<.05]. According to this analysis result, RWPG was more successful than GIG, LTG and CG; there was no difference between GIG and LTG and both of them was more successful than CG (X_{RWPG} = 71.22; X_{GIG} = 61.91; X_{LTG} = 59; X_{CG} = 44.27).

DISCUSSION and CONCLUSIONS

In this part, it's focused on the results of group investigation, learning together and reading-writing-presenting techniques of cooperative learning model on pre-service science teachers' academic achievements of force and motion subjects in general physics lesson.

When Table 2 is investigated, there is no difference between the all groups for AAT. The findings in other studies indicate similar features to these findings (Akçay and Doymuş, 2012; Çopur, 2008; Tanel, 2007; Taşdemir et al. 2005; Ünsal and Moğol, 2004). According to the scores of post test, there is significant difference between GIG, LTG, RWPG and CG and this difference is found to be in favor of RWPG. Students become more successful in the Reading-Writing-Presenting process related to read together, to write together and to make presentation together. Also, students have to pass through three stages for learning the subject by way of this method. To be passed each of these stages successfully is the biggest factor in the rise of their academic achievement. In other studies that applied this method showed that contribute to the persistence of success also (Akçay et al. 2012; Aksoy and Doymuş, 2011; Aksoy, 2013; Aksoy and Gürbüz, 2013).

As seen at Table 3 that there is no difference between the all groups for pre-test of GT. Students are thought to be at the same level of graphics on force and motion subjects (Bektaşlı, 2006). But there is significant difference between GIG, LTG, RWPG and CG for the post-test of GT this difference is found to be in favor of RWPG. It was determined that many students have difficulties in especially interpreting the graphs during the study. It is indicated from Demirci and Uyanık's (2009) study that before kinematics subject are given to students, give issues related to graphing and interpreting may increase the success of kinematic subjects. In particularly, when teachers use traditional method in science lesson this leads to students don't love science lesson.

At Table 4, there is significant difference between groups related to Module Tests. According to the Module A test results, about the concept of force and Newton's laws the most successful groups that were found to be RWPG. The RWP method was more successful than the others because of the stages of the writing process allows students to have a better understanding of the issues was said. In particularly, in RWPG students were more successful than the other groups to explain and resolved the open-ended question in the MTA. It's been identified that the lowest success group of students enrolled in teacher-centered teaching methods. According to the Module B test results, about the kinds of force the most successful groups that were found to be RWPG. In particularly, in RWPG students were more successful than the other groups to explain and resolved the open-ended question in the MTB. These groups have a better understanding of the friction force, gravitational force, the weight and the mass concepts. According to the Module C test results, about the concept of movement and

their variables the most successful groups that were found to be RWPG. In particularly, in RWPG students were more successful than the other groups in the MTC because the students helped each of the members of the group, shared information among themselves and transferred skills and their own efforts to acquire the knowledge easily. According to the Module D test results, about the concept of motion in one dimension, the most successful groups that were found to be RWPG. According to the Module E test results, about the concept of motion in two dimensions the cooperative groups were successful. The results of the MTE, cooperative groups resolved the questions related to the projectile motion, horizontal motion and uniform circular motion better than the control group. The students working in cooperatively successful in physics have shown that groups' members bring different sources to find different questions and explain the solutions of the question to their group members, on to discuss about the problems.

Reading-Writing-Presenting, Learning Together and Group Investigation methods of Cooperative learning model is more effective for enhancing the academic achievement than teacher-centered teaching method is the result of the study also compatible with the other studies in this field (Aksoy et al. 2008; Çalışkan et al. 2005; Dörtlemez, 2010; Fong and Kwen, 2007; İnce et al. 2007; Şengören, 2006; Şimşek et al. 2009; Taşdemir, 2004; Zahara and Anowar, 2010). So, researches which related to physics showed that teacher-centered method isn't enough for teaching physics subjects to the students so that students learn physics superficially (McDermott and Redish 1999). Implementation of active learning instead of teacher-centered instruction provides to students attract actively in lessons and learning on their own and provides to permanent learning. The main purpose of the implementation of these techniques is to provide responsibilities to students, students' own learning and interaction with each other. Listening and learning something from their age group is fun and interesting for students and also motivated them to this sort of learning activities (Doymuş et al. 2007). Thus, students share their subjects with other students in different groups, correct their deficiencies all together and learn about different things. According to the results of this research, the following recommendations can be given:

1. Before starting the application, students with questions about these methods should be explained and methods should be thoroughly understood.

2. The physical status of the class for application should be considered to appropriate.

3. Due to different steps in each method, the time adjustment should be made well to the methods and students must be notified before the start of application.

4. Particularly Reading-Writing-Presentation of the method is new to gain literature the implementation of this method in other studies could be done in other lessons.

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