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Primary 6th Grade Students' Attitudes Towards the Social Studies Lesson Aided with Geographic Information Systems (GIS): Karabük Case

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Abstract: In this research the effect of using geographic information systems (GIS) towards the students' attitudes in social studies course was studied. pretest-posttest controll group design was used in the study. Traditional teaching methods were used in the controll group and GIS based teaching was used in the experimental group. The survey was conducted over two groups (6th grade students) at Safran Primary School in 2010-2011 academic year in Karabük Province, Turkey. "Resources of Our Country" theme was studies with GIS aided materials in the experimental group and teacher centered approach (verbal technique, question and answer) in the controll group. Social studies attitude scale developed by Akengin and Demir was administered to establish students' attitudes. In the analysis of data, SPSS 15.0 programme was used. Research data was analysed with "one way variance (ANOVA)" and "two factors ANOVA (repeated measures) test at a confidence level of 0.05. In the result of the research it was seen that there has been a significant variation in experimental group students (GIS aided teaching)' attitudes towards the lesson in learning and hence favoured the use of GIS technology after the experimental process.

Key words: Geographic information systems · Social studies education · Attitude · Teaching method

INTRODUCTION

Much research in recent years has focused on identifying the key factors that promote academic success among students whose demographic characteristics and school circumstances place them at high risk of failure. In large part, this research has addressed the characteristics of individual students and school settings that are optimal for success. Literature largely supports the positive role that students' attitudes and behavior play in improved academic achievement [1].

Attitude is the learned tendency forcing the individual exhibit particular behaviours against some particular people, objects or conditions [2]. It seems difficult to form teaching experiences and provide desired behaviour changes in an atmosphere where students' attitudes are ignored. According to Ülgen [3], the attitude of a student is important for the teacher in two aspects. One of them is to provide the students improve positive attitudes towards the lesson/subject. The second is to alter the negative attitudes to positive. Researches show that there is arelation between students' perceptual features and academical success. One of the major indicators of the students' perceptual features is their atttitudes [4]. Literature largely supports the positive role that students' attitudes and behavior play in improved academic achievement [1].

Students' attitudes towards a lesson is so significant in their learning. As Newmann [5] states behaviours (such as persistence, effort, attention) and attitudes such as motivation, positive learning values, enthusiasm, interest, pride in success) are the two constituents of engagement. He points out that students with high motivation and a positive attitude, learn more, retain more and enjoy the learning activities more than the less motivated students. Dowson and McInerney (2001); Hancock and Betts (2002); Lumsden (1994) [6,7,8] also point out the direct link between students' attitudes and achievement in reading and mathematics.

One of the factors affecting students' success in a lesson is they have their good study attitudes and habits or not [9, 10].

It is abviously seen in the attitude studies that taking the students in the center of the lesson, providing active involvement, giving students' thoughts importance and providing a teaching and learning atmophere where

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knowledge becomes meaningful by unifying it with life support students in developing positive attitude towards the lessons [11-14]. In order to get desired success in geography courses, students' developing positive attitude activites towards the lesson should not be ignored. In their study, Demirkaya and Arıbaş [15] concluded the reasons of negative attitudes of students at Social sciences education department as teachers' attitudes and performances during the lessons, lack of using technological tools and devices. They also stated that students' attitudes towards geography lesson did not show significant difference according to gender.

The Purpose of the Research: The purpose of the research is to analyze the students' attitudes towards geography themes in social studies lesson. Finding out of students' attitudes towards GIS technology in social studies lesson in order to address conceptual problems in the Geography curriculum that relate to perception of students on using GIS applications would be helpful in the planning and organization of the course.

In providing students' attainment in social knowledge lessons knowing students' attitudes may be an important tool. It is known that the if issues related to social sciences are accepted as difficult, boring, a pile of ambiguous and abstract pieces of information, students show a very low desire to the lesson. Former researches show that students with positive attitudes towards geography lessons increase their success [16-22]. Hence, primary school students' attitudes towards social studies lesson were evaluated and some suggestions were given to build up some positive attitudes in this research.

Following sub problems were considered in the research:

- Is there a significant difference between the experiment group (GIS was used during the lesson) and controll group (traditional methods were used during the process in terms of pre-test attitude scores?
- Whether the students' social studies lesson attitude scale scores differentiate according to the groups (experiment-controll groups), measures (pre test-post test) and their common effect or not.

MATERIALS AND METHODS

In this section, the research design, the universe and sampling of the study, data gathering phase and the analysis of the data was studied.

Research Design: Research was carried out at a primary school in Karabük in the first term of 2010-2011 academic year. In this study pretest-posttest control group design in the experimental method was used. The obtained data of pretest-posttest was analyzed by "one way variance analysis (ANOVA)" and for repeated measures over one factor, "two factors ANOVA (repeated measures) test" were used.

Research Group: 40 students from two classes at Safran Primary School in Karabük Province, Turkey participated in the research. With the permission of school administration the studies were implemented in two different classes at 6th grades. One of the classes was chosen as the experimental group and the other as controll group. 20 students in both classes joined the research.

Data Gathering Tool: In the application phase of the study the theme of the study was determined as "Resources of Our Country". This theme was chosen as the measuring object of the research. "Social studies attitude scale" developed by Akengin and Demir [23] was used. Akengin and Demir found the reliability coefficient as, 093. Cronbach Alpha Consistency coefficients are: 0.901 (1st aspect), 0.839 (2nd aspect), 0.762 (3rd aspect), 0.720 (4^{th} aspect). According to these results, the social studies attitude scale can be said to be a reliable measuring tool. There are 26 statements of attitude in the scale. Students were expected to reflect their opinions according to the items in the scale. For the lykert type statements "I completely agree (5)", " I agree (4)", "I have no idea (3)", "I disagree (2)", "I completely disagree (1)" points were given. Taking the statistical analysis into consideration the positive statements starting from "I completely agree" 5.4.3.2.1; and the negative statements starting from "I completely disagree" 1.2.3.4.5 points evaluated and processed with SPSS 15.0 programme.

Experimental Processes: During the experimental processes, following phases were implemented in the reasearch.

- Experimental and controll groups were chosen randomly.
- In the selection of experimental and controll group students, the number of students was taken into consideration but previous years' success levels and individual differences were ignored.

- Before the beginning the teaching of the lesson a pretest was applied to the experimental and controll groups to determine whether there is a difference in the students' attitudes towards social studies lesson or not.
- The GIS applications and related activites were introduced to the experimental group students and some information about the process was given.
- "Resources of our country" theme was taught to the controll group by the teacher as the school teacher's plan with traditional methods and techniques (teacher centered, question and answer method).
- In the experimental group, GIS activities were applied about the same theme by the researcher.
- Experimental group consisted of 20 students.
- The school teacher was viewed and the teaching process of the lesson in the controll group was followed by the researcher. The theme was studied at the same period in diferent classes (multi sessions).
- After the teaching process, both experimental and controll groups were applied aa attitude scale as a post test.

Data Analysis: The data gathered through quantitative studies in the research was collected in two phases. Experimental and controll groups were applied pre and post tests. In the analysis of data one way variance analysis (ANOVA) and for repeated measures over one factor, two factors ANOVA (repeated measures) test were used. In the Statistical evaluations SPSS 15,0 programme as used. Whether the data is significant or not was tested ($p<05$).

Findings and Discussion

- The first sub problem of the research was expressed as "Is there a significant difference between the experiment group and controll group in terms of pre-test attitude scores? In order to find out an answer to this question, the pre test scores of the experiment and controll groups were analyzed and the findings related to the problem was given in Table 1.
- In the analysis of the second sub problem of the research whether experiment and controll group students' social studies attitude scale scores vary according to groups, (experiment-controll) measures (pre test- post test) and their common effects or not were examined. The results of analysis were given in Table 1.

Table 1: Pretest-Posttest, Average score and Standard Deviation Values that Students Took from Social Sciences Attitude Scale

	Pretest			Posttest		
Group	N	$\bar{x}$	S	N	$\bar{x}$	S
Experiment	20	96,6000	4,30911	20	122,6500	4,56848
Controll	20	99,1500	6,39305	20	100,2000	11,10050
Total	40	97,8750	5,53399	40	111,4250	14,12197

Table 2: ANOVA Results of Social Sciences Attitude Scale Pretest-Posttest Attainment Scores

Source of the Variance	KT	sd	KO	F	p
Inter-groups	5138,2	39	2060,159		
Groups (E/C)	1980,050	1	1980,050	23,825	,000
Deviation	3158,150	38	83,109		
In-groups	7506				
Measures (Pretest-Posttest)	3672,050	1	3672,050	196,823	,000
Group Measure	3125,000	1	3125,000	167,501	,000
Deviation	708,950	38	18,657		
Total	12644,2	77			

As seen in Table 1, social studies attitude scale average score of experimental group students that (GIS) based teaching was applied before the experiment is fter the experiment it turned to studies attitude scale average score of controll group students that teacher centered programme (verbal technique, question and answer) was applied before the experiment is ed to the experiment. In the light of these score it can be said that there has been an increase in both the experimental group students where GIS based teaching and controll group students that teacher centered programme (verbal technique, question and answer) [24] was applied. Two-way variant analysis results of the changes whether they indicate significant differences or not after the experiment according to the level before the experiment in the social studies attitude scores of the students that were applied two different experimental implemetations were given in Table 2.

When Table 2 examined, the findings in accordance with the hypothesis that were stated above can be explained in the following ways:

- There is significant difference between the experimental and the controll group before and after the experiment total attitude scale scores [$F_{(1-38)}$= 23,825; $p< 0.05$]. This finding indicates that the students at experiment and controll group students' social studies attitude scores vary without discriminating measures (before and after the experiment).

- There is significant difference between pretest-posttest average attitude scores about the *social studies attitude scale*[$F_{(1-38)}$= 196,823; p< 0.05]. This finding can be inferred as students social studies attitude scores changed in accordance with the teaching method without discriminating the groups.
- According to the analysis in Table 2, social studies course attitude scores of experiment and controll group students where two different teaching models were applied indicated significant difference from before and after the experiment, in other words, in different application groups (experimental and controll groups) common effects of repeated measures factors have significant differences over social studies attitude levels [$F_{(1-39)}$= 167,501; p< 0.05]. This finding indicates that In providing students' attitude scores towards social studies course GIS aided teaching and teacher centered teaching (verbal technique, question and answer) have different effects. It also means that experiment and controll group students' attitudes towards social studies course vary according to the applications. It can be said that the reason of this variation in students towards social studies course is caused by GIS based teaching which is a student centered application. It is observed that GIS based teaching that the attitude scores towards social studies course increased after the application is more efficient in building attitude towards social studies course than teacher centered teaching methods.

RESULTS AND DISCUSSION

Students' attitudes regarding the use and effectiveness of GIS based applications in social studies courses were examined and evaluated in the study. According to the study results experiment and controll group students' attitudes towards social studies course changed at different rates. It can be said that this difference was based on the different teaching methods (verbal technique, question and answer, GIS based teaching).It was seen that the use of GIS applications in the experiment group raised the attitude level of the students more than the controll group students through the process. Students had a positive attitude towards GIS in Social studies course. It could therefore be concluded that research students favoured the integration of GIS applications in to the Social Studies course for the purpose of assisting learners to learn difficult topics in an effort to elevate educational standards.

After the pretest application, whether there is significant difference or not between the experiment group and controll group students was examined through ANOVA analysis. According to the results of the analysis it was seen that both of the groups had similar average attitude scores towards the lesson (experiment group 96,600, controll group reliance with this data it is possible to say that experiment and controll group students' attitudes towards social studies course are almost equal.

When the experiment and controll group students' post test attitude scores was examined it was seen that they indicate variation. There is significant difference between pretest and posttest scores of the experiment group students. This may indicate that GIS based teaching help students build attitude towards social studies lessons. On the other hand, the students' attitudes towards social studies lesson did not show significant difference in the controll group where traditional methods were used during the process.

This conclusions are parallel to some researches [25-30]. In his study Al-Kemali [31] stated that high school social studies students had positive attitudes towards using GIS technology. He also stated that there were no significant differences towards using GIS technology according to gender variable. In their research over primary third grade students Demirkaya and Arıbaş [16] concluded that third grade students have positive attitudes towards geography in social studies lesson but the negative aspects of the lesson are the lack of using technological devices in the lesson. In her study Aladağ [24] carried over primary 7th grade students concluded that GIS based lessons have positivie contributions on students' attitudes towards social studies lessons. Based on the findings in the research the following suggestions were considered:

In this study, GIS based social studies course was implemented to determine the efficiency of GIS in students' attitudes towards the lesson. Since GIS program is a means of technology, other technological devices can also be used beside it. GIS is advised in the new geography curriuculum (2005) at secondary level, it should also be offered and integrated with the primary curriculum. Social studies teachers should be informed and educated about GIS programme and applications and its integration with the lessons. This can carried out by seminars and courses through GIS applications for the teachers. Also sufficient importance should be given to GIS programme at undergraduate programmes in social studies education departments.

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