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Geography Teachers' Views Towards Vocational Geographic Information Systems (GIS) Seminar

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Abstract: The purpose of this research is to put forth a total of 108 geography teachers' views towards The use and applications of Gis at a vocational seminar in Erzurum participating throughout Turkey. General survey model was used in the studyand the questionaire developed by Demirci was used as data gathering tool. In the analysis of the data descriptive statistics alongwith t test and one way variance analysis were used. According to the findings of the research 89 % of the teachers stated that they had not joined in any vocational seminar before, 94 %, did not apply Gis applications in their lessons and 70 % of them stated that they did not know GIS. Also 73 % of the geography teachers stated that they had the skill of knowing and using GIS through the seminar. A great majority of the participants found the seminar useful in terms of getting to know GIS applications, the reasons for using GIS in their lessons, necessary knowledge and skills in using GIS in their lessons but most of them also stated that there are not necessary facilities for GIS applications in their schools. Also, the participant geography teachers' views towards the vocational seminar had no meaningful difference according to "gender", "age" and "vocational experience".

Key words: GIS · Geography Teaching · Vocational education

INTRODUCTION

The main purpose of geography teaching is not to explain particular geographical events and to measure how much of them were memorized via exams by the students.

Geography teaching is more than that for individuals, society and the world in terms of its roles and aims. The aim of geography teaching for an individual can be summerized as the understanding of life with all its costituents. The students' learning of the features of our world, human systems for their needs, realizing their limitations and the width of universe, meeting their needs with sustainable sources and living in a happy and prosperous atmosphere can be possible with geography knowledge. The role of geography education is so significant in terms of society and the country. Students have the chance to learn the necessity to live together, providing social solidarity and the reasons why social development is so crucial in a society through geography education. Geograhy education also gives students the conscious of social, financial and cultural improvement of a country by getting the knowledge of individuals' and societal problems and the skills to find out solutions to the problems.

Geography education has not only purposes for individuals or societal but also some particular aims for the whole people in the world. These are related to people's responsibilities to each other that live on earth and share the same resources in the world. Geography gives students the idea that there is no another place in the universe for human beings and all the resources should be used carefully and eventually with the feeling of unity culture acquiring an attitude to struggle together for the common global problems of our world.

In order to reach the purposes of geography teaching in terms of individuals, society, country and the world as summerized above, the teachers that have sufficient knowledge, skills and necessary equipment should be conscious and have feeling of responsibility. Only through these teachers the students that know the features of their century, face the problems of the world and have the desire to solve these problems with necessary knowledge, technology and methods of their

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age, self confident, productive, ready to take the responsibility of future planning of the world and qualified with the necessary knowledge, skills and equipment can be brought up.

Providing geography teaching in accordance with the expectations in the society, will be possible with reflecting the most recent methods, audio visual aids and technology to the lessons. So geography teachers should be in a good level in geography science and have the skills to teach these skills with suitable methods and techniques using the necessary materials and technologies in their lessons. Geography teachers being suficient in their fields depend on their ability to use their knowledge and skills in their lives and their being vocationally good, necessitates their following the recent developments in geography science. In geography teachers' transferring the necessary knoledge and skills to the students in a suitable way they should choose the right methods and and techniques.

Sekin and Ünlü [1] stated the purposes of geography lessons, lesson schedules, course books, the ways of teaching and teaching based on memorizing as the problems of geograhy teaching. The answer of why GIS should be used in geography education is at this point. Because GIS is an important tool in transferring geography teachers' knowledge and skills to their students.

The Contributions of GIS in Geography Teaching: Using GIS in the lessons give the students the opportunity to grasp the lesson better and being able to improve social, mental and technical skills. Students learn the geographical themes using GIS, they load the necessary data to the computer and make relevant analysis. This kind of learning is based on doing, experiencing and being involved in the activities but not memorizing. Second and the most important function of GIS is assisting students in developing multi dimensional skills in relation with their lessons. A student using GIS can improve several skills through the study. As Demirci [2] states, some of the skills that can be improved through GIS are data gathering, data production, making a research, using data gathering tools, developing data gathering methods, working both individually and in group, verification of the data, using computer and technology, loading the data into computer, developing statistical computation skill, making observations, turning the observations into data establishing relations between data, comparing, finding the similarities and differences, making analysis, producing new data using the present data, critical thinking, developing analysis methods, improving alternative methods, finding out trustable and short ways in solving the problems, turning the data into maps, graphs and tables, commenting on maps, graphs and tables, being able to do spatial analysis, cause-result analysis, evaluating the results. GIS is being used in geography, environmental sciences, forestry, landuse, regional planning, security, health and agriculture and some other fields commonly. At university level GIS is being used as a tool in more than 100 academic fields [3]

In a study carried out by National Aeronautics and Space Administration (NASA) the market of spatial technologies in the USA is around 30 billion dollars in 2005, 20 billion of this about Remote sensing and the rest of it about services through GIS [4].

GIS lessons are being used in most of the developed countries as the USA, Canada and the European countriescurrently. The contribution of GIS to undergraduate programmes at universities had strong influences on the secondary education schools in the USA and some other developed countries [5]. Because of such advantages in the USA, Canada and England at first and then Denmark, Germany, France, Finland, Sweden and Holland began to use GIS in geography and together with sciences, chemistry, biology, maths, environmental sciences and social sciences as well in their secondary education schools [6-10]. Students' using GIS in classroom atmosphere actively will provide the them with different analysis and synthesis in geographic knowledge in accordance with constructivist teaching approach. Students' being active in the classroom will have positive influence over learning skills [11].

Method

Research Model: In this research, due to the fact that the teachers' views towards GIS were examined in a vocational seminar, survey model was used. Survey model is based on describing a present or past situation as it is. The particular research event, individual or object is tried to be described in their own conditions in the research [12].

Research Group: The research group of the study are 108 geography teachers from different parts of Turkey that participated in the vocational seminar about GIS in Erzurum. The distribution of the research teachers according to gender is given in table 1.

Table 1: Distribution of geography teachers according to gender in the research

Gender	Frequency (f)	Percentage (%)
Male	86	79.6
Female	22	20.4
Total	108	100.0

As seen in table 1, 108 teachers joined the research. 86 of the teachers are males and 22 of them are females.

Table 2: Geography teachers' personal information and vocational experience

		f (n=108)	*%*
GENDER	Male	86	79.6
	Female	22	20.4
AGE	20-25	-	-
	26-32	32	29.6
	33-40	49	45.4
	41 and over	27	25.0
SCHOOL	State school	108	100.0
	Private school	-	-
VOCATIONAL EXPERIENCE	1-4 years	-	-
	5-9 years	29	26.9
	10-14 years	33	30.6
	15 years or more	46	42.6
LAST GRADUATION DEGREE	University	84	77.8
	Master's degree	24	22.2
	Doctorate degree	-	-
THE NUMBER OF ANY VOCATIONAL SEMINARS BEFORE	Never participated	35	32.4
	1	19	17.6
	2	19	17.6
	3	7	6.5
	4	6	5.6
	5 and over	22	20.4

Data Gathering Tool: The measurement tool used in the researh was developed by Demirci [2]. The survey that was prepared in view of the experts' thoughts was used in the research composed of five parts. The personal information of the research teachers was in the first part, the second part involved school, lessons and vocational information, physical facilities at the teachers' schools were in part 3, teachers' general knowledge about GIS was in part 4 and last part contained their thoughts about the vocational seminar on GIS. The reliability study of the survey used in the research was also carried out. The KMO value of the survey, 871 and Cronbach Alpha reliability value was, 87. These values indicated that the mesaurement tool used in the research was reliable [13].

Analysis of the Data: The data gathered through the research was evaluated using "SPSS 15.0 for Windows" programme. In the analysis of the replies given in the survey by the geography teachers; frequency, percentage and arithmetic average values were used. In order to determine whether the geography teachers' thoughts towards vocational GIS education according to "gender" variable is meaningful or not *t test,* whether there is a meaningful or not*," age"* and *"vocational experience"* variable *"one way variant Analysis (ANOVA)"* was used.

Findings

Findings about Geography Teachers' Personal Information and Vocational Experience: Findings about geography teachers' personal information and vocational experience were given in table 2.

As seen in table 2, 86 of the geography teachers in the research are males, 22 of them are females. 32 of the teachers are the age group of 26-32, 49 of them 33-40 age group and 27 of them are 41 or over. All of the geography teachers in the research work at state school. 29 of the geography teachers have 5-9 years of vocational experience, 33 of them have 10-14 years and 46 of them have 15 years or over. 24 of the research teachers have master's degree. 35 geography teachers in the research have not participated in any vocational seminars before.

Findings Related to Teachers' Thoughts Towards Gis and Physical Facilities of Their Schools: The data related to the replies in the third and fourth parts (about physical facilities and GIS) of the survey that were given by the geography teachers in the research were indicated in Table 3.

As seen in Table 3, 65.7 % of the geography teachers in the research stated that they have a computer laboratory to do GIS applications, 69.4 % stated that they have a GIS software. Half of the participants stated that they do not have a classroom to use GIS programme but 66.7 % of them expressed that they have internet connections in their classes.

As seen in table 3, 88.9 % of the geography teachers participated in the research stated that they had not joined any vocational seminars on GIS, 93.5 % of them did not apply any GIS applications, 70.4% stated that they had not known GIS before the seminar. 73 % of the participants expressed that they acquired knowledge and skills in knowing and using GIS programme through this vocational seminar.

Table 3: The replies in the third and fourth parts (about physical facilities and GIS) of the survey that were given by the geography teachers in the research

		YES		NO	
NO	QUESTIONS ABOUT PHYSICAL FACILITIES	f	%	f	%
1	Is there a Computer lab in your school similar to the one used during the seminar for the Gis application?	71	65.7	37	34.3
2	Do you have a GIS software?	75	69.4	33	34.3
3	Do you have a computer in your geography class to be used for GIS applications?	52	48.1	56	51.9
4	Do you have an internet connection in your geography classroom?	36	33.3	72	66.7
5	Do you have numeric data on different themes about Turkey and the world that can be used in geography lessons?	35	32.4	73	67.6
	QUESTIONS ABOUT GIS				
6	Have you participated in a workshop, course or vocational seminar before?	12	11.1	96	88.9
7	Do you think that you were able to use GIS in your lessons before this vocational seminar?	32	29.6	76	70.4
8	Have you used a GIS software before this vocational seminar?	12	11.1	96	88.9
9	Have you studied a GIS application with your students before this vocational seminar?	7	6.5	101	93.5
10	Do you think that you were provided with sufficient knowledge, skills and materials on GIS with this vocational GIS seminar?	79	73.1	29	26.9
11	Would you like to be a member of a yahoo group to share the themes, applications, lesson materials and experience in relation with using GIS in geography lessons?	101	93.5	7	6.5

Table 4: General analysis of geography teachers' thoughts towards GIS applications through the vocational seminar

	Expressions	$\bar{x}$
1	This vocational education helped us knowing GIS better.	4.61
2	I understood the reasons of using GIS in geography lessons better along with this GIS education.	4.56
3	This seminar provided me in acquiring knowledge and skılls ın using GIS programme in geography lessons.	4.46
4	This education acquired us how to use a GIS software with its general constituents.	4.42
5	This education had me understood the importance Of GIS in terms of geography science	4.63
6	I understood that I had to give more importance to GIS after the education.	4.65
7	GIS must be used in geography lessons by all the teachers.	4.62
8	As GIS makes the geography lessons more visual it gives an active role to teachers and students in the lessons.	4.72
9	I think I have to get the benefit of GIS in my own lessons after the education.	4.68
10	I definitely want to participate in similar applied educational seminars.	4.72
11	I would like to develop projects based on GIS with my students.	4.62
12	The number and duration of applied GIS education seminars should be increased.	4.78
13	My school has sufficient physical facilities to make similar applications using GIS with my students.	3.16

Findings Related to Geography Teachers' Thoughts Towards Gis Applications Through the Vocational Seminar: The data related to geography teachers' thoughts towards GIS applications through the vocational seminar were given in Table 4 below.

As seen in table 4, aritmetic average of geography teachers' views towards the GIS education through the vocational seminar is found as 4.51. According to this a majority of the research geography teachers stated that they agree with the expressions in the survey. The highest percentage in the survey was "The number and duration of applied GIS education seminars should be increased" ($\bar{x}$ = 4.72) and the item with the lowest percentage was "My school has sufficient physical facilities to make similar applications using GIS with my students" ($\bar{x}$ = 3.16)

Table 5: T test results comparing geography teachers' views towards GIS in the vocational seminar according to "gender" variable

Gender	N	$\bar{x}$	Ss	Sd	t	P*
Females	86	58,6395	5,87700	106	-,228	,820
Males	22	58,9545	5,44651			

Table 6: The ANOVA results of the comparison of geography teachers' views towards GIS in the vocational seminar according to "age" variable.

The source of the Variance	kt	sd	ko	f	P*
Among groups	24,630	2	12,315	,366	,695
In groups	3535,889	105	33,675		
Total	3560,519	107			

Table 7: ANOVA results indicating the comparison of geography teachers' views towards GIS in the vocational seminar according to "vocational experience" variable.

The source of the Variance	kt	sd	ko	f	P*
Among groups	121,911	2	60,955	1,861	,161
In groups	3438,608	105	32,749		
Total	3560,519	107			

The Comparison of Geography Teachers' Views Towards Gis in the Vocational Seminar According to "Gender" Variable: Whether there is a meaningful difference in geography teachers' views towards GIS in the vocational seminar according to "gender" variable was determined by "independent samples t test" and the results of the analysis were given in table 5.

As seen in table 5, there has been no meaningful difference in geography teachers' views towards GIS in the vocational seminar according to "gender" variable *($t_{(106)}$ = -,228; p>0.05)*.

The Comparison of Geography Teachers' Views Towards Gis in the Vocational Seminar According to "Age" Variable: Whether there is a meaningful difference in geography teachers' views towards GIS in the vocational seminar according to "age" variable was determined by "one way variance analysis (ANOVA)" and the results of the analysis were given in table 6.

According to the "one way variance analysis (ANOVA)" results there has not been a meaningful difference statistically in geography teachers' views towards GIS in the vocational seminar according to "age" variable *[F(2,105)=,366; p>0.05]*.

The Comparison of Geography Teachers' Views Towards Gis in the Vocational Seminar According to "Vocational Experience" Variable: Whether there is a meaningful difference in geography teachers' views towards GIS in the vocational seminar according to "vocational experience" variable was determined by "one way variance analysis (ANOVA)" and the results of the analysis were given in table 7.

According to the "one way variance analysis (ANOVA)" results there has not been a meaningful difference statistically in geography teachers' views towards GIS in the vocational seminar according to "vocational experience" variable *[F(2,105)=1,861; p>0.05]*.

RESULTS AND DISCUSSION

In this research geography teachers' views towards GIS in the vocational seminar were examined. In relation with the the results of the findings at the end of the research the following results were reached.

88.9 % of the geography teachers participated in the research stated that they had not joined any vocational seminars on GIS, 93.5 % of them did not apply any GIS applications, 70.4% stated that they had not known GIS before the seminar. 73 % of the participants expressed that they acquired knowledge and skills in knowing and using GIS programme through this vocational seminar.

A majority of the geographybteachers joined the research expresed that the vocational education helped them knowing GIS better, they understood the reasons of using GIS in geography lessons better along with this GIS education, The seminar provided them in acquiring knowledge and skılls ın using GIS programme in geography lessons, This education acquired them how to use a GIS software with its general constituents, This education had them understood the importance of GIS in terms of geography science, they understood that they had to give more importance to GIS after the education, GIS must be used in geography lessons by all the teachers, As GIS makes the geography lessons more

visual it gives an active role to teachers and students in the lessons, they have to get the benefit of GIS in their lessons after the education, they want to participate in similar applied educational seminars, they would like to develop projects based on GIS with their students, The number and duration of applied GIS education seminars should be increased and some of them stated that their schools have sufficient physical facilities to make similar applications using GIS with their students.

There has not been a meaningful difference in geography teachers' views towards GIS in the vocational seminar according to "gender", "age" and "vocational experince variables according to research results.

A similar study was carried out by [14]. He stated in his study that, geography teachers emphasize the limitations of using of GIS and there has not been a meaningful difference according to gender variable in terms of GIS applications however as he stated, there had been meaningful differences in terms of vocational experince, class sizes, GIS application experiences, school types and their graduation levels.Based on the results of the study there has not been a standard GIS education for geography teachers and they should be given this education by either Ministry of National Education (MEB) or Universities.

In his study "Evaluating the Implementation and Effectiveness of GIS-Based Application in Secondary School Geography Lessons", Demirci [15] stated that the teachers were given GIS software, digital data for an application and the necessary written documents describing the application. Due to various obstacles, only two teachers at two schools out of 14 implemented the application successfully. The study revealed that the use of GIS increased the students' success on geography lessons by 38% at the first school and by 51% at the second one. The success rate of the students in this study substantiates the need for GIS to be better incorporated into the Geography curriculum in the secondary school level in developing countries.

Geographyb teachers' positive thoughts towards technology aided and student centered teaching methods and their willingness towards applications of these are so significant. At this point, geography teachers' views and thoughts should be obtaıned. This study was carried out in accordance with this idea. All the scientific studies (articles, reports, seminars, workshops, project applications, etc.) towards the use of technology and GIS in the lessons are so crucial in the commonly use of GIS and technologies in Turkey. Also as Artvinli (2009) stated Ministry of National Education (MEB) or Universities should give sufficient education to the teachers or teacher candidates.

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