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Geography Teacher Candidates' Metacognitive Awareness Levels: A Case Study from Turkey

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ABSTRACT

The purpose of this research is to analyze geography teacher candidates' metacognitive awareness and to find out whether a significant difference exists according to gender and grade level. For this purpose, Metacognitive Awareness Inventory that was originally developed by Schraw and Dennison (1994) and adapted to Turkey by Özsoy and others (2010) in order to use in this study over a total of 84 students in undergraduate programs in geography teaching department, Dokuz Eylül University (Turkey), was applied in this study. Survey method was used in the research. In data analysis, descriptive statistics, t-test and one-way variance analysis was used. Results of the study revealed that geography teacher candidates' have a medium-high level metacognitive awareness. According to another result of the study, metacognitive awareness scores of geography teacher candidate did not show significant differences according to gender and class level variable.

Keywords: Metacognition, Metacognitive Awareness, Geography Teacher Candidates.

INTRODUCTION

The concept of "**metacognition**", was first put forward in 1976 by John Flavell and have been developed by many researchers until today. [1] Stated metacognition as, "*the individual, cognitive processes and outcomes associated with them or anything about the information*". The concept of metacognition was stated as; "*high-level thinking*" [2, 3]; "*understanding and controlling cognitive activity*" [4]; "*awareness of something that you learn how to*" [5]; "*the idea of being aware of their own*" [6]. As a result, with its shortest definition, metacognition is awareness of one's own thinking processes and being able to control these processes. Metacognitive knowledge is also referred to as metacognitive awareness [7]. Metacognitive awareness is determining how to do the evaluation by being aware of the individual's knowledge, motivation and anxiety levels and needs of an individual by defining objectives and personal resources [8].

Çakıroğlu (2007:21-24) states that for metacognitive strategies teaching SQ3R, PQ4R, STOP, learning to understand and mutual learning approaches can be used. **SQ3R (ISOAT) approach;**

survey (*inspection*), question (*asking questions*), read (*read*), recite (*description*), review (*to repeat*), **PQ4R approach**; preview (*pre-review*), questioning (*asking questions*), read (*reading*), recite (*recite description*), reflect (*mirror*) and review (*review*), **STOP approach**; summarize (*summary*), troubleshoot (*problem determination*), organized (*organization*), predict (*prediction*), the individual's learning to understand approach is controlling and preparing, summarizing what they read and understand from the texts, asking questions to oneself and, re-read and understand and animating them in one's mind, developing emotional images for the imaginary things in the mind, being aware of the organization of the things that was read in a text and establishing relations among with the characters and one's individual life, mutual teaching is forming a peer learning atmosphere by students' entering the role of both a teacher and a learner mutually [9].

There are studies examining the levels of students' metacognitive awareness in the literature. In these researches [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20] has it was concluded that metacognition has an important role in education.

The purpose of the study

The purpose of this study, is to investigate the status of geography teacher candidates' metacognitive awareness and compare their awareness levels in terms of gender and grade level. Accordingly, with this research these questions were tried to be replied:

1. What is the geography teachers' metacognitive awareness levels?
2. Do geography teacher candidates' of metacognitive awareness levels show significant differences according to *gender*?
3. Do geography teacher candidates' metacognitive awareness levels show significant differences according to undergraduate *class level*?

By obtaining the results about the level of metacognitive awareness of geography teacher candidates in the study, efforts for more qualified geography teachers will be provided. There has not been any research examining the levels of metacognitive awareness geography teachers in the literature. In this respect, it is expected to contribute in the field of geography education and researchers.

MATERIALS AND METHODS

Research Model

This research is a survey type of study since the geography teacher candidates' metacognitive awareness levels were determined. Survey model is based on surveying organizations through a group, an example or a sample of the universe to have an overall idea in a universe with a lot of constituents.

Study Group

The research population is geography teacher candidates at Teaching of Geography Department, Faculty of Education in Turkey; sample of the study is consisted of geography teacher candidates at Dokuz Eylül University Faculty of Education, Teaching of Geography Department at fall semester in 2010-2011 academic year. 84 geography teacher candidates participated in the study. 46 female and 38 male students participated in the research. 23 first-class, 22 second class and 39 third grade students were participants. Geography teacher candidates were the graduates of 25 Science and Anatolian High Schools, 2 vocational schools, 4 Anatolian teacher high school and

53 ordinary high school graduates. As it is seen a majority of the geography teacher candidates (63%) were ordinary high school graduates.

Data Collection Tool

The study of geography teachers in order to determine the levels of metacognitive awareness, *Metacognitive Awareness Inventory (MAI)* developed by Schraw and Dennison (1994) was used. The adjustment of the inventory to Turkey was carried out by [11]. Metacognitive Awareness Inventory (PPI) consisted of Likert type 52 items in total. The inventory of the items in the answer options are between “5= *Always*” and “1=*Never*”. Among given options of the inventory the scores are between 1 and 5, the lowest 52 and the highest score 260 in total. For adapting, Metacognitive Awareness Inventory (MAI), applied for a total of 536 classroom teacher candidates; 198 male and 338 female candidates. On the result of the pilot implementation Ozsoy et al (2010), Cronbach's alpha reliability coefficient of inventory composed of eight factors (*declarative knowledge, process information, status information, planning, information management and evaluation*) was .94. Validity and reliability of the expert opinions of this scale have been made previously (two faculty members working in the field of geography education) has been decided in accordance with the use of research.

Data Collection and Analysis

Research was conducted by the students studying at University Degree Program in Teacher Training in Geography, in the fall semester in 2010-2011 academic year. The Inventory was applied in a single session for 30 minutes to geography teacher candidates. The data obtained were analyzed using the SPSS 15.0 statistical analysis program. Geography teacher candidates' metacognitive awareness levels by using the arithmetic mean and standard deviation values. Geography teacher candidates' metacognitive awareness levels according to gender was obtained using t-test, significant difference according to grade level was analyzed through One-Way Variance Analysis (ANOVA).

Findings

1. Results Related to Geography Teacher Candidates' Metacognitive Awareness Levels

Geography teacher candidates participated in the research about metacognitive awareness levels of the arithmetic mean and standard deviation values are presented in Table 1.

Table 1: Mean and standard deviation of the scores obtained from the scale

Factor	N	\bar{X}	S
Metacognitive Awareness Levels	84	192.845	26.68

As shown in Table 1, metacognitive awareness inventory scores of geography teacher candidates were examined, geography teacher candidates' have a medium-high level metacognitive awareness (\bar{X} = 192.845; S = 26.68).

2. Comparison of Geography Teacher Candidates' Metacognitive Awareness Levels According to “Gender” Variable

Geography teacher candidates' levels of metacognitive awareness according to "gender" variable varies significantly or not "*independent samples t-test*" conducted and the results are given in Table 2.

Table 2: T-test results of geography teacher candidates' metacognitive awareness levels according to "gender" variable.

Gender	N	\bar{X}	Ss	Sd	t	p
Male	46	192,3913	26,48478	82	-,171	,865*
Female	38	193,3947	27,27888			

* $P > 0.05$

When Table 2 is examined, the average male geography teacher candidates' metacognitive awareness levels is 192.3913, points the average of female geography teacher candidates metacognitive awareness levels were found around 193.3947. According to the results of the t-test; There has not been found significant difference between geography teacher candidates' metacognitive awareness levels with gender [$t_{(82)} = -,171$; $p > 0.05$]. This finding, can also be interpreted as there was not a significant relationship between geography teacher candidates' metacognitive awareness levels and their genders.

3. Comparison of Geography Teachers Candidates' Metacognitive Awareness Levels according to "Class Level" Variable

In order to determine whether the Geography teacher candidates' metacognitive awareness levels vary significantly according to "class level" variable, for the "One-Way Variance Analysis (ANOVA)" was conducted.

Descriptive statistics of geography teacher candidates' metacognitive awareness levels according to class level are given in Table 3 and *One-Way Variance Analysis* results are given in Table 4.

Table 3: Descriptive statistics of Geography teacher candidates' levels of metacognitive awareness according to class level

Grade	N	\bar{X}	S
1 st Grade	23	186,0435	30,52641
2 nd Grade	22	195,1364	20,78987
3 rd Grade	39	195,5641	27,18048
Total	84	192,8452	26,68852

Table 4: ANOVA results of Geography teacher candidates' of metacognitive awareness levels according to grade level

Source of the variance	Sum of Squares	df	Mean Square	F	P
Between groups	1467,851	2	733,925	1,031	,361*
In-groups	57651,137	81	711,742		
Total	59118,988	83			

* $p > 0.05$

When Table 3 is examined, the average first-grade geography teacher candidates' of metacognitive awareness levels are 186.0435, average second-grade geography teacher candidates' levels of metacognitive awareness is 195.1364 and metacognitive awareness level of the average third-grade geography teacher candidates was found as 195.5641. When Table 4 is examined, geography class levels with teacher candidates did not differ significantly between the levels of metacognitive awareness [$F_{(2,81)} = 1.031$, $p > 0.05$]. This finding can be interpreted as geography teacher candidates' metacognitive awareness levels and class levels do not indicate a significant relationship.

DISCUSSION AND CONCLUSION

In this research, it was aimed at investigating the status of geography teacher candidates' metacognitive awareness and comparing awareness levels in terms of gender and grade level. For this purpose, Metacognitive Awareness Inventory (MAI) that was originally developed by *Schraw and Dennison (1994)* and adapted to Turkey by Ozsoy and others (2010) in order to be used in this study over a total of 84 students in undergraduate programs in geography teaching department, Dokuz Eylul University (Turkey) was applied. When the collected data analyzed at the end of the application it was seen that, geography teacher candidates have a moderate metacognitive awareness. However, these results should be considered to reflect the level of metacognitive awareness instead of inventory property of metacognitive knowledge and skill levels of geography teacher candidates. In addition, this research, it was concluded that there has not been a significant relationship between the geography teacher candidates' metacognitive awareness levels with gender and grade levels.

This study reached *different conclusions* with the use of MAI (Metacognitive Awareness Inventory) in the research as a measurement tool.

Metacognitive Awareness Inventory scores of prospective teachers were found at secondary level ($\bar{X}=188.44$, $S=27.56$) with the study conducted by [11] in general. They concluded that class teacher candidates' scores of metacognitive awareness differ according to age, gender and education, but there is no significant difference in terms of grade level.

In his study [9] evaluates several variables by the teacher candidates' awareness of metacognitive levels, teacher candidates' levels of metacognitive awareness levels were found high. MAI was used as a measurement tool. Significant differences were found in of student teachers' metacognitive awareness levels according to gender, department, class, and type of school they graduated.

Akın and others (2007) made a validity and reliability study over 607 university students by MAI. As a result it is stated as a valid and reliable tool the field of education [12].

In a study conducted by [13] about the metacognitive awareness of preschool teachers using MAI, preschool teacher candidates the Metacognitive Awareness of their second-class average is 186.51 points ($S = 12.71$), for the fourth year students average was found ($\bar{X}= 187.48$ $S = 15.05$).

The relationship between metacognitive awareness and decision-making performances was investigated by [14] in their study over university students. It was found that organization of cognition has more effects than knowledge of cognition in decision-making process with the use of MAI as a measurement tool.

In their study [15] examined the relationship between university students' metacognitive awareness and academic achievement. MAI was used as a measurement tool. According to the survey results there were significant correlations between the MAI and measurements of broad academic achievement. Undergraduate and graduate students showed similarities in terms of cognitive knowledge that there were significant differences between the cognitive factors in favour of graduate students in terms of cognitive regulation.

In the study conducted by [16] made by (N = 179), nin seven-point Likert form of MAI was used, the average scores of undergraduate students metacognitive awareness levels was found 254.42 (S = 40.5). When the similar studies taken into consideration,, this research results were consistent with previous research in terms of metacognitive awareness levels.

Metacognitive awareness is one of the important skills that especially teacher candidates need to have. Research results show that geography teachers are not fully adequate on this subject. Teacher training programs should include activities through the development and support of metacognitive skills will be helpful in terms of professional and personal development for geography teacher candidates.

Recommendations:

1. In this research, the geography teacher candidates' metacognitive awareness levels were determined. In other words, metacognitive knowledge and skills of prospective teachers of geography was not measured. Therefore, metacognitive knowledge and skills of prospective teachers of geography research can be conducted.
2. The precautions to be taken to upgrade geography teacher candidates' skills that have the low average of metacognitive awareness level can be ascertained.
3. The study was carried out only for teacher candidates that study at Graduate Program of Dokuz Eylül University Teaching of Geography Department. Metacognitive awareness levels of geography teacher candidates in different universities can also be determined.

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