

A Study on the Inquiry Skills of Social Studies Teacher Candidates

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Abstract—The objective of this study is to determine the views of social studies teacher candidates on inquiry skills. “Inquiry Skills Scale” developed by Karademir, Ç.A. and Saracaloğlu, A.S. containing 14 items was applied to the participants to determine their views on inquiry skills. The study was conducted in the fall semester of 2014-2015 academic year. The sample of the study consisted of 174 students attending Elazığ Firat University, Faculty of Education, Department of Social Studies Teaching. The surveys distributed to the students were then collected and analyzed. In the analysis of the collected data via the survey forms to determine the views of pre-service teachers on inquiry skills independent t-test and one-way variance analysis (ANOVA) were utilized. For the analysis, gender, class, academic GPA, mother’s and father’s educational background of the social studies pre-service teachers were assigned as independent variables. Results of the analysis demonstrated that there was a statistically significant difference between the inquiry skills of social studies teacher candidates based on gender, class and academic grade points average, while there was no evidence of a significant difference based on mother’s educational background and father’s educational background.

Index Terms—skill, inquiry skills, social studies education

I. INTRODUCTION

The individuals are expected to have different faculties to accommodate the needs of a rapidly developing world. These faculties are led by high-level thinking ability. Thus, an essential education on thinking would prevent unsolicited situations to occur in the society that the individuals live in. In every country, the main objective of education is to train individuals as thinking human beings in their actions, discourses and attitudes. Thus, it is expected from the political power and high-level ministerial experts that plan the educational and instructional activities on one hand, and from teachers, who are responsible from the implementation of the program on the other that the educational and instructional activities at school to pursue this objective [1].

Studies have been conducted since the earlier times to develop thinking, which included several definitions for thinking skills. In its broadest sense, thinking skills were stipulated as a multi-faceted and individualistic

phenomenon ranging from specific skills to general skills, from efficient reasoning to the efficiency of intelligently recognizing asunder similarities, from the capacity to differentiate within all sections to the capacity of random words or thoughts coming together to form a whole, from the skill of forecasting how a process would shape up to the skill of differentiating unilateral and similar situations, from determining unique and singular aspects and from establishing valid evidences and convincing reasons to facilitating thought and concept formation, from the power of discovering alternative possibilities to discovering systematical and general imaginations, from the capacity to solve problems to the capacity of surviving the handicaps created by problems, from the skill of evaluation to the skill of creating reevaluation criteria [2].

A significant part of the thinking skills is occupied by the inquiry skills. Because, when changes and developments such as a new world order, globalization, opening up to the world are considered, to keep pace with this change, it is expected from the educated individuals to have the necessary traits to research, inquire and solve problems [3]. “The skill of research-inquiry includes recognizing and apprehension of the problem by asking significant questions, planning a research on the how and what to do to solve a problem, estimation of the results, considering possible problems, testing the findings and developing ideas. It includes skills such as to make significant estimations, to decide about the appropriate research environment, to decide about the type and amount of the evidenceto be gathered for the research, to plan the research using a scientific approach, to determine the methods of observation and comparison, to use tools and equipment, to be able to make accurate and sensitive measurements, to determine the means of presentation, to decide whether the results should be reexamined or not, to relate the findings with the main idea, to express the findings using an appropriate language, to exhibit the data, to decide on the efficiency of the data that support results, to decide whether the findings met the initial expectations” [4]. Inquiry skills are what learners use to make sense of the world around them. These skills are important both to create citizens that can make sense of the science in the world they live in so that they make informed decisions and also to develop scientific reasoning for those undertaking future scientific careers or careers that require the logical approach that science encourages [5]. Part of students’

difficulties stem from their lack of inquiry skills. When students engage in explanatory activities and inquiry learning, they are believed to develop a set of intellectual skills that enable them to construct understandings about science [6]. Thus, it is considered very significant that to raise individuals with high inquiry skills, teachers and even pre-service teachers should have high inquiry skills [7].

The objective of this study is to examine the inquiry skills of social studies teacher candidates within the framework of existing literature knowledge in relation with several variables.

II. METHODOLOGY

A. Model

In the study, in which the views of teacher candidates on their inquiry skills were evaluated, survey method was used in accordance with the nature of quantitative research methods. Survey methods are defined as approaches that aim to describe an existing situation as is. [8]

B. Universe and the Sample

The universe of the study consisted of the students attending Firat University, Faculty of Education and the

sample is the social studies teacher candidates trained in the same faculty.

C. The Collected Data and Analysis

The data was collected using the "Inquiry Skills Scale" developed by Çiğdem ALDAN KARADEMİR and A. Seda SARACALOĞLU that includes 14 items. The Cronbach Alpha reliability coefficient is .82. The 14 items in the scale were compared based on the demographic data. 5-item Likert-type scale was used in the study for evaluation. The analysis of data was conducted using SPSS statistical software package. In the analysis, arithmetic mean, percentages and frequencies were utilized. The rate of interaction between the student views and demographic variables were tested using independent groups t-test and ANOVA.

III. FINDINGS AND COMMENTS

A. Findings and Comments on the Personal Information of the Participating Social Studies Teacher Candidates

Table I demonstrates that 47.7% (83) of the participating social studies teacher candidates in the study were female and 52.3% (91) were male.

TABLE I. THE DISTRIBUTION OF THE PERSONAL INFORMATION OF THE PARTICIPATING SOCIAL STUDIES TEACHER CANDIDATES

		f	%
Gender	Female	83	47,7
	Male	91	52,3
Grade	Sophomore	49	28,2
	Junior	55	31,6
	Senior	70	40,2
Academic GPA	1,51-2,00	8	4,6
	2,01-2,50	35	20,1
	2,51-3,00	82	47,1
	3,01-3,50	43	24,7
	3,51-4,00	6	3,4
Mother's Educational Background	Illiterate	73	42,0
	Primary School	79	45,4
	Middle School	9	5,2
	High School	6	3,4
	College	7	4,0
Father's Educational Background	Illiterate	17	9,8
	Primary School	93	53,4
	Middle School	23	13,2
	High School	28	16,1
	College	13	7,5

Based on the variable of the grades that the participants attended; 28.2% (49) were sophomores, 31.6% (55) were juniors and 40.2% (70) were seniors.

The academic grade percent averages were as follows: 4.6% (8) were between 1.51-2.00; 20.1% (35) were between 2.01-2.50; 47.1% (82) were between 2.51-3.00; 24.7% (43) were between 3.01-3.50 and 3.4% (6) were between 3.51-4.00.

42% (73) of the participants stated that their mother was illiterate, while 45.4% (79) were primary school graduates; 5.2% (9) were middle school graduates; 3.4% (6) were high school graduates and 4% (7) were college graduates.

Based on the father's educational background, 9.8% (17) of the participants stated that their father was illiterate; 53.4% (93) stated that he was primary school

graduate; 13.2% (23) stated that he was middle school graduate; 16.1 (28) stated that he was high school graduate; while 7.5% (13) stated that he was college graduate.

B. The Distribution of the Views of Social Studies Teacher Candidates Related to Their Inquiry Skills

Table II demonstrates that social studies teacher candidates that participated in the study declared their opinion at the level of “always” in the items of “I use previous knowledge when I am faced with a different problem” ($\bar{X}=4,27$) and “I immediately correct the information I learned when I realize that it was wrong” ($\bar{X}=4,35$).

TABLE II. THE DISTRIBUTION OF THE VIEWS OF SOCIAL STUDIES TEACHER CANDIDATES RELATED TO THEIR INQUIRY SKILLS

I	Views on Inquiry Skills	N	Approval Rate (%)					\bar{X}	SD
			Always	Mostly	Seldom	Rarely	Never		
1	I would reread my answer at least once after I respond a question in an exam.	174	33,3	33,3	26,4	2,9	4,0	3,89	1,03
2	I differentiate the information that I should learn.	174	31,0	50,6	14,4	2,9	1,1	4,07	0,82
3	I would listen to the answers my peers give in the classroom.	174	20,7	52,3	22,4	2,3	2,3	3,87	0,82
4	I use previous knowledge when I am faced with a different problem.	174	43,1	43,1	10,9	1,1	1,1	4,27	0,79
5	I review my knowledge to answer the questions asked in the classroom.	174	40,2	43,1	13,8	2,3	0,6	4,20	0,80
6	I immediately correct the information I learned when I realize that it was wrong.	174	52,3	36,8	6,3	2,9	1,7	4,35	0,86
7	I combine the materials, events and objects to discover the solution of a problem.	174	25,9	31,6	32,8	8,6	1,1	3,72	0,98
8	I test the truth of what I read, when I read anything on any subject.	174	28,7	41,4	21,3	6,3	2,3	3,88	0,98
9	I investigate alternative solutions even when I solve a problem.	174	16,1	25,3	37,9	14,4	6,3	3,30	1,10
10	I try different solutions while answering a question.	174	20,7	35,1	31,0	6,9	2,9	3,62	1,05
11	I confirm the information gained by personal experiences with information from more than one resource.	174	23,6	34,5	29,3	10,9	1,7	3,67	1,01
12	I verbalize my thoughts about a subject instructed in the classroom without any reserve.	174	20,7	25,9	31,0	16,1	4,6	3,41	1,15
13	I ask about the things I did not know about a subject instructed in the classroom without any reserve.	174	19,0	28,7	27,6	20,1	4,6	3,37	1,14
14	I would ask about any subject that I did not comprehend to the teacher.	174	24,7	28,2	27,6	13,2	6,3	3,52	1,18

Table II demonstrates that social studies teacher candidates that participated in the study declared their opinion at the level of “mostly” in the items of “I would reread my answer at least once after I respond a question in an exam” ($\bar{X}=3,89$), “I differentiate the information that I should learn” ($\bar{X}=4,07$), “I would listen to the answers my peers give in the classroom” ($\bar{X}=3,87$), “I review my knowledge to answer the questions asked in the classroom” ($\bar{X}=4,20$), “I combine the materials, events and objects to discover the solution of a problem” ($\bar{X}=3,72$), “I test the truth of what I read, when I read anything on any subject” ($\bar{X}=3,88$), “I investigate alternative solutions even when I solve a problem” (\bar{X}

$=3,62$), “I confirm the information gained by personal experiences with information from more than one resource” ($\bar{X}=3,67$), “I verbalize my thoughts about a subject instructed in the classroom without any reserve” ($\bar{X}=3,41$), and “I would ask about any subject that I did not comprehend to the teacher” ($\bar{X}=3,52$).

Table II demonstrates that social studies teacher candidates that participated in the study declared their opinion at the level of “seldom” in the items of “I investigate alternative solutions even when I solve a problem” ($\bar{X}=3,30$) and “I ask about the things I did not know about a subject discussed in the classroom without any reserve” ($\bar{X}=3,37$).

These results showed that in general social studies teacher candidates had high levels of inquiry skills.

C. The Comparison of the Views of Social Studies Teacher Candidates Participating in the Study Related to Their Inquiry Skills Based on Gender Variable

Table III shows that, as a result of the analysis, there was a significant difference between the participants of the study on the 1st item, “I would reread my answer at least once after I respond a question in an exam” based

on gender [$t=2,146$; $p<.05$]. This opinion was accepted by the female teacher candidates ($\bar{X}=4,08$) more than male pre-service teachers ($\bar{X}=3,71$).

Table III demonstrates that, as a result of the analysis, there was a significant difference between the participants of the study on the 2nd item, “I differentiate the information that I should learn” based on gender [$t=3,195$; $p<.05$]. This opinion was accepted by the female teacher candidates ($\bar{X}=4,28$) more than male teacher candidates ($\bar{X}=3,89$).

TABLE III. THE COMPARISON OF THE VIEWS OF SOCIAL STUDIES TEACHER CANDIDATES PARTICIPATING IN THE STUDY RELATED TO THEIR INQUIRY SKILLS BASED ON GENDER VARIABLE

MN	Female			Male			t	P
	n	\bar{X}	SD	n	\bar{X}	SD		
1	83	4,08	0,89	91	3,71	1,13	2,146	0,017
2	83	4,28	0,75	91	3,89	0,84	3,195	0,002

D. The Comparison of the Views of Social Studies Teacher Candidates Participating in the Study Related to Their Inquiry Skills Based on Grade Attended Variable

The data presented in Table IV were studied and the significant difference displayed as a result of variance analysis conducted was interpreted in this section. Tukey test was utilized primarily for paired comparisons. Thus,

a significant difference was found as a result of variance analysis between the participants of the study based on grade attended variable for the 8th item; “I test the truth of what I read, when I read anything on any subject”(F=3,733; $p<.05$). It was shown that the juniors($\bar{X}=4,13$) accepted the item “I test the truth of what I read, when I read anything on any subject” more than the sophomore teacher candidates($\bar{X}=3,61$).

TABLE IV. THE COMPARISON OF THE VIEWS OF SOCIAL STUDIES TEACHER CANDIDATES PARTICIPATING IN THE STUDY RELATED TO THEIR INQUIRY SKILLS BASED ON GRADE ATTENDED VARIABLE

MN	Sophomore (a)		Junior (b)		Senior (c)		Variance		Groups with Difference
	\bar{X}	S	\bar{X}	S	\bar{X}	S	F	P	
8	3,61	1,11	4,13	0,84	3,87	0,93	3,733	0,026	a-b*

These results demonstrated that the inquiry skills of teacher candidates increased statistically with their grade level.

E. The Comparison of the Views of Social Studies Teacher Candidates Participating in the Study Related to Their Inquiry Skills Based on Academic GPA Variable

When Table V is examined, it is observed that a significant difference was found as a result of variance analysis between the teacher candidates that participated in the study based on academic GPA variable for the 2nd

item; “I differentiate the information that I should learn” (F=5,458; $p<.05$). As a result of the Tukey test used in paired comparisons, it was shown that the students with a GPA of 2,01-2,50 ($\bar{X}=4,40$) as compared to those with a GPA of 2,51-3,00 ($\bar{X}=3,80$) and the students with a GPA of 3,01-3,50 ($\bar{X}=4,35$) as compared to those with a GPA of 2,51-3,00 ($\bar{X}=3,80$) accepted the item “I differentiate the information that I should learn” more.

Other independent variables of the study, mother’s academic background and father’s academic background were not tabulated since there was no evidence of a significant difference.

TABLE V. THE COMPARISON OF THE VIEWS OF SOCIAL STUDIES TEACHER CANDIDATES PARTICIPATING IN THE STUDY RELATED TO THEIR INQUIRY SKILLS BASED ON ACADEMIC GPA VARIABLE

MN	2,01-2,50 (a)		2,51-3,00 (b)		3,01-3,50 (c)		Variance		Groups with Difference (Tukey)
	\bar{X}	S	\bar{X}	S	\bar{X}	S	F	P	
2	4,40	0,64	3,80	0,89	4,35	0,65	5,458	0,000	a-b*, b-c*

IV. RESULTS AND SUGGESTIONS

The following results and suggestions could be derived from the findings of the study:

A. Results

- Social studies teacher candidates that participated in the study stated that when they realized what they have learned is wrong, they have corrected it immediately.
- Social studies teacher candidates that participated in the study stated that they could differentiate which information they should learn.
- Teacher candidates stated that when they faced a different problem, they utilized previously learned knowledge.
- Teacher candidates stated that they tested the truth in the things they read.
- Teacher candidates stated that they tried different solutions while answering a question.
- They stated that they verified the information they acquired via personal experiences with the information obtained from more than one other source.
- Social studies teacher candidates that participated in the study stated that they tried different solutions while answering any question.
- Teacher candidates stated that when they arrived at a solution for a problem, they did not look for other solutions.
- Teacher candidates stated that when they expressed their opinion on a subject in classroom, they usually shy away from doing it.

According to these findings, social studies teacher candidates that formed the sample of this study did not face any problems on their inquiry skills when gathering information, despite rare, they experienced problems in verifying the information and self-confidence.

B. Suggestions

- During undergraduate studies, activities aimed to develop inquiry skills in the classroom would help students develop these skills.
- The teachers enriching the instruction using more than one materials and objects would help students develop ability to verify the correctness of the information in solving problems.

- *In inquiry-based experiences, skills are internalized and these skills become a part of the student's information structure. Thus, for a real learning to occur, students should be allowed to have certain experiences and hence, internalization of the information and skills should be accomplished [6.]* Thus, the problems of students in gathering and verifying information and self-confidence could be decreased in that manner.
- To improve the self-confidence of the students, students should be placed at the center in classes and they should be provided with opportunities to develop high-level mental skills.

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