

The professional-social concern levels of the secondary school mathematics teachers in their first-year in-service and their opinions related to the pre-service education

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ABSTRACT

This research aimed to determine the challenges that the secondary school mathematics teachers experienced in their first-year in-service during the orientation process and their opinions related to the pre-service education. In the study, in which a longitudinal survey method was employed, the data were obtained from two measurements carried out six years apart. The data were obtained with a novice teacher questionnaire from 141 participants in total consisting of 61 in the first application and 80 in the second. The descriptive statistics, independent samples t-test, correlation analysis, Mann Whitney U or Kruskal Wallis tests were used in the analysis of the obtained data. It was found that the professional concerns and social concerns of the mathematics teachers did not differ in years; however, their professional concerns were higher than their social concerns in general. A moderate level significant relationship was found between social and professional concerns experienced by the mathematics teachers. Workload and class management were the significant factors underlying their professional concerns; on the other hand, social status-identity confusion, and problems in dealing with principals or supervisors were the underlying their social concerns. While the place of duty and the situation of selecting the profession were effective on concerns, the variables of gender and cooperation with guidance teachers were not effective on teachers' professional and social concerns. The rate of finding the pre-service education by the pre-service teachers who were in their first year was low.

Keywords: teaching profession orientation process, professional concern, social concern

INTRODUCTION

Teaching is a very significant profession that shapes the future of countries. But teachers may encounter problems originating from school culture and physical environment, as well as problems arising from pedagogy, conceptual knowledge, and pedagogical content knowledge (Akkus & Karakaya, 2020). As in each profession, there is an orientation process in teaching as well and teachers come across several difficulties in this process. Veenman (1984) explains the challenges that teachers experience in this process with the reality shock concept that he describes as, "the reality shock deals with the assimilation of a complex reality which forces itself incessantly upon the beginning teacher, day in and day out." Müller-Fohrbrodt et al. (1978) express the five signs of a reality shock as, *perceptions of problems, changes of behaviour, changes of attitudes, changes of personality and leaving the teaching position*. This shock that teachers experience in their first years in-service can be originated from *personal* (a wrong choice for the profession of teaching, inappropriate attitudes and inappropriate personality traits) and *situational* (insufficient professional training, a problematic school situation (strict, bureaucratic and hierarchical relations, firm organisational structure, insufficient staff and material, and material deficiency, lack of educational goals that are mentioned, loneliness at the workplace, the heavy workload that a teacher must perform, etc.) reasons (Müller-Fohrbrodt et al., 1978).

Veenman (1984) reviewed 83 articles to reveal the challenges that teachers experience in their orientation process and listed 24 problem situations by their frequency of emphasis. The eight of the most important of these were classroom discipline, motivating students, dealing with individual differences, assessing students' work, relations with parents, organisation of classwork, insufficient and/or inadequate teaching materials and supplies, and dealing with problems of individual students. Veenman (1987) raised the number of the studies that reviewed to 100 and reported that the eight most important challenges that he raised remained unchanged although there were some changes in the rankings (Meister & Melnick, 2003).

An important question here is what are the challenges that the teachers in their first years in service experience according to the current research. As claimed by Müller-Fohrbrodt et al. (1978), the challenges that teachers experience originate from

situational reasons and since this study was carried out with the teachers working in Turkey, mostly the Turkey-focused studies were included. The challenges that teachers have experienced in the first years of their profession can be expressed, as follows:

1. *Contact with parents* (Akdag, 2014; Alincak, 2021; Anali & Sahin, 2020; Basar & Dogan, 2015; Britt, 1997; Cantú & Martínez, 2006; Dilci & Dervisoglu Kalkan, 2013; Dickson et al., 2014; Duran et al., 2011; Erdemir, 2007; Fantilli & McDougall, 2009; Gulay & Altun, 2017; Korkmaz et al., 2004; Kozikoglu & Senemoglu, 2018; Tepebas, 2010; Yanik et al., 2016; Yildirim et al., 2017).
2. *Lack of support from guidance teachers, school administrators or provincial national education administrators* (Anali & Sahin, 2020; Canak & Katitas, 2016; Cantú & Martínez, 2006; Duran et al., 2011; Ekinci, 2010; Fantilli & McDougall, 2009; Gergin, 2010; Kozikoglu & Senemoglu, 2018; Sari & Altun, 2015; Stanulis et al., 2002; Tepebas, 2010; Van Hover & Yeager, 2004; Yesilyurt & Karakus, 2011).
3. *Feeling alienated to the culture of place they assigned to* (Akdag, 2014; Anali & Sahin, 2020; Basar & Dogan, 2015; Duran et al., 2011; Erdemir, 2007; Gulay & Altun, 2017; Guvendir, 2017; Kozikoglu & Senemoglu, 2018).
4. *Physical characteristics of school and surrounding and infrastructure* (Akdag, 2014; Alincak, 2021; Anali & Sahin, 2020; Dilci & Dervisoglu Kalkan, 2013; Gomleksiz et al., 2010; Guvendir, 2017; Korkmaz et al., 2004; Kozikoglu & Senemoglu, 2018; Tepebas, 2010; Yanik et al., 2016; Yesilyurt & Karakus, 2011).
5. *Classroom management* (Bozan & Ekinci, 2020; Britt, 1997; Gulay & Altun, 2017; Kozikoglu & Senemoglu, 2018; Yildirim et al., 2017) and adequate class management (Dickson et al., 2014; Gergin, 2010; Ozer, 2013; Taneri & Ok, 2014).
6. *Challenges in running official works* (Anali & Sahin, 2020; Dickson et al., 2014; Korkmaz et al., 2004).
7. *Material deficiency* (Alincak, 2021; Anali & Sahin, 2020; Cantú & Martínez, 2006; Dickson et al., 2014; Gomleksiz et al., 2010; Guvendir, 2017); Tepebas, 2010; Toker Gokce, 2013), and inability to use (Erdemir, 2007; Korkmaz et al., 2004; Yanik et al., 2016; Yildirim et al., 2017).
8. *Communication problems with other teachers or administrators* (Alincak, 2021; Anali & Sahin, 2020; Basar & Dogan, 2015; Dickson et al., 2014; Duran et al., 2011; Erdemir, 2007; Kozikoglu & Senemoglu, 2018; Taneri & Ok, 2014; Tepebas, 2010).
9. *Relations with students* (Erdemir, 2007; Sari & Altun, 2015; Taneri & Ok, 2014; Van Hover & Yeager, 2004; Yildirim et al., 2017).
10. *Workload* (Anali & Sahin, 2020; Basar & Dogan, 2015).
11. *Inadequacy of students* (Erdemir, 2007; Guvendir, 2017; Kozikoglu & Senemoglu, 2018; Yesilyurt & Karakus, 2011).
12. *Not knowing personal rights* (Duran et al., 2011; Korkmaz et al., 2004; Tepebas, 2010).
13. *Inadequacy of knowledge in official correspondence and administrative transactions* (Alincak, 2021; Basar & Dogan, 2015; Erdemir, 2007; Taneri & Ok, 2014; Yanik et al., 2016; Yildirim et al., 2017).

Around the world, dropout rates are quite high among new teachers (Dickson et al., 2014). For this reason, the problems experienced by teachers, some of which have been mentioned above, bring about serious problems. These researches can be carried out with specific branches such as *elementary school teaching* (Anali & Sahin, 2020; Dickson et al., 2014; Kara & Demir, 2020; Stanulis et al., 2002, etc.), *science* (Erdemir, 2007), *physical education* (Alincak, 2021), *English* (Guvendir, 2017), *social studies* (Tepebas, 2010), *pre-school* (Akdag, 2014), *biology* (Gergin, 2010), *history* (Van Hover & Yeager, 2004), and *mathematics* (Kutlu, 2018; Yanik et al., 2016). In addition, there are the studies (Bozak et al., 2016; Canak & Katitas, 2016; Gulay & Altun, 2017; Kozikoglu & Senemoglu, 2018; Ozer, 2013) which consist of teachers in different branches in their sample as well.

As stated by Müller-Fohrbrodt et al. (1978), another reason for the challenges experienced by teachers who are new in service is the deficiencies that may arise in their vocational training processes. The relevant literature places the results related to these deficiencies.

1. *That the pre-service training is theoretical and cannot be put into practice* (Basar & Dogan, 2015; Bozak et al., 2016; Duran et al., 2011; Erdemir, 2007; Fantilli & McDougall, 2009; Gomleksiz et al., 2010; Gulay & Altun, 2017; Guvendir, 2017; Kara & Demir, 2020; Kozikoglu & Senemoglu, 2018; Stanulis et al., 2002; Tepebas, 2010; Yesilyurt & Karakus, 2011).
2. *That the program does not coincide with the undergraduate education* (Kara & Demir, 2020; Yesilyurt & Karakus, 2011).
3. *That they are not educated in schools similar to the institutions they will work* (Duran et al., 2011; Erdemir, 2007; Kara & Demir, 2020; Yesilyurt & Karakus, 2011).

For developing or redesigning the pre-in-service training processes to make the process of orientation to the profession easier, it is highly significant to determine the challenges that teachers experience (Veenman, 1984). Although the current literature provides important information in this direction, it has been determined that the researches on mathematics teachers are quite limited and in most of the studies, the data have been collected in a cross-sectional manner at one time. In the research designed by considering this point, it was aimed to determine the challenges that the secondary school mathematics teachers experience in their first-year in-service during the orientation process and their opinions related to the pre-service education. Accordingly, these research questions were asked.

1. What are the professional and social concern levels of the secondary school mathematics teachers who are in their first-year in-service in their orientation process to the profession?
2. Do the professional and social concern levels of the secondary school mathematics teachers who are in their first-year in-service differ according to demographic variables?
3. What are the opinions of the secondary school mathematics teachers who are in their first-year in-service about the adequacy of pre-service training?

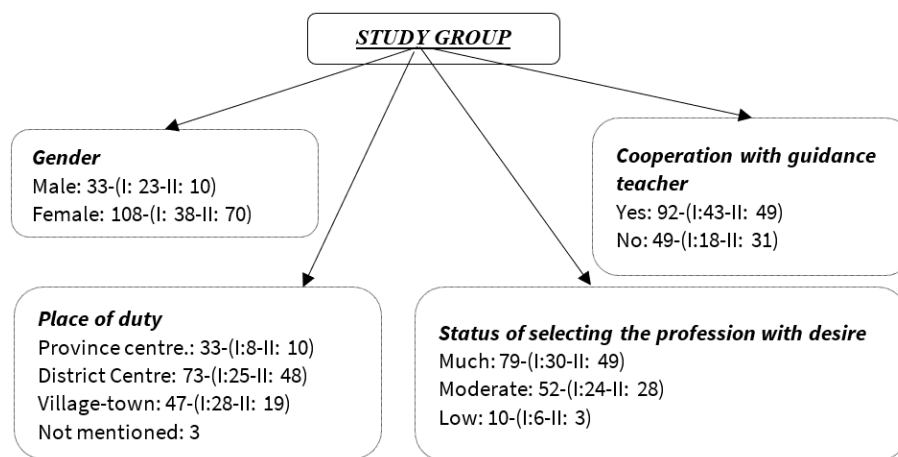


Figure 1. The form of study group according to demographic features

METHOD

This research was designed based on a longitudinal scanning method. In longitudinal research, data are collected on one or more variables for two or more periods, thus allowing at least measurement of change and a possible explanation of the change (Menard, 2007).

Study Group

The research was carried out with the participation of 141 secondary school mathematics teachers who were in their first-year in-service consisting of 61 participants (first application) in the 2013-2014 educational year and 80 (second application) in the 2019-2020 educational year. During the process of creating the study group, a proper sampling method was used by considering the effective use of time and labour (Saumure & Given, 2008). In the first application, no limit was determined for the number of participants. All teachers who gave voluntary feedback were included in the study. While determining the number of participants in the second application, the criterion of not being more than 1.5 times the number of participants in the first application was taken as the basis and the number of participants was limited to 80. The reason for this criterion is that the difference between the two applications will be determined using parametric tests. The data collection process was carried out based on the internet and no missing data was encountered. The form of study group according to the demographic characteristics is presented in **Figure 1**.

As presented in **Figure 1**, the distribution of the demographic features according to the variables does not have a homogenous structure. It is seen in the study group that the participants consisting of approximately 77% women, approximately 52% of those working in the district centre, approximately 65 % those who get guidance teacher support and 56% who prefer the profession with desire were predominant. The participants attended a total of 56 lessons, 4 hours a week in the first term, and a total of 96 lessons, 6 hours a week in the second term within the scope of the teaching application course in their last year of the pre-service training process. In addition, they were appointed to the duty after they achieved the exams which they entered at the end of their education and which are held by the state to measure general culture, general ability, general education knowledge, field knowledge and field education knowledge.

Data Collection Tools

For the data collection tool, the first four sections of the novice teacher questionnaire which were developed by Ozturk (2008) was used. In the data collection process, since 17 participants had not completed their in-service education, the fifth section in which the in-service education was evaluated was not reported. The content of the four sections that were used is as follows.

Data related to the demographic features were collected in the first section. In this section, the participants were asked questions about their gender, place of duty (province, district, and village), the status of cooperation with a guidance teacher (yes, no) and the status of choosing the profession with desire (much, moderate, and low).

In the second section, the professional concerns of the teachers were examined. In this section, there are 23 items in total under the workload (six items; for example: "due to the workload, I may have difficulty completing my work."), training (11 items; for example: "I may have difficulties in choosing the appropriate methods and techniques.") classroom management (six items; for example: "I can use effective classroom management strategies."). In this section in which the items were prepared in 5-point Likert type, the answers were *1-never*, *2-rarely*, *3-sometimes*, *4-generally*, and *5-always*. The lowest score that can be taken in this section was 23, the highest score was 115. The highness of the relevant score represents the highness of the professional concern. The Cronbach's alpha coefficient related to this section was stated as .88 by Ozturk (2008); it was calculated as .90 for this research.

In the third section, the teachers' social concerns were examined. In this section, there were a total of 55 items in total under the dimensions of social status and identity confusion (15 items; for example: "As a teacher, I think that I am respected in the society."), relations with students (10 items; for example: "I have difficulty establishing a positive relationship with students."), relations with parents (four items; for example: "I can establish positive relationships with students' parents."), relations with

Table 1. Findings for the data distribution

Type of concern	Skewness		Kurtosis		Kolmogorov-Smirnov		
	Statistic	Standard error	Statistic	Standard error	Statistic	df	Sig.
Professional concern	-.346	.204	-.401	.406	.069	141	.098
Social concern	-.011	.204	-.377	.406	.049	141	.200

Table 2. Descriptive data related to the results of the 1st and 2nd application

	1st application		2nd application	
	Professional	Social	Professional	Social
Average	61.70	129.07	61.56	126.35
Standard deviation	11.861	24.784	13.152	21.491
Number of teachers with low concern	14	29	22	80
Number of teachers with moderate concern	47	32	57	-
Number of teachers with high concern	-	-	1	-

other teachers (eight items; for example: “My teacher friends share with me about the profession.”), relations with school administrators or supervisors (10 items; for example: “I hesitate to ask questions of my manager.”) and relations with guidance (counsellor) teacher (eight items; for example: “I have a positive relationship with my guidance teacher.”). The answers in this section prepared in 5-point Likert type were as *1-never*, *2-rarely*, *3-sometimes*, *4-generally*, and *5-always*. While the lowest score that can be taken in this section is 55, the highest score is 275. The higher the relevance score is the higher the social concern. The Cronbach’s alpha coefficient, which was referred to as .92 by Ozturk (2008), was calculated as .91 for this research.

In the fourth section, the teachers’ opinions related to pre-service education were obtained. In the second application, there was an error in writing an item in this section and therefore the data related to the relevant item were omitted from the analysis. For this section that included the rest 14 items, the Cronbach’s alpha coefficient was calculated as .95. The answers in this section were as *sufficient*, *moderately sufficient*, *slightly sufficient*, *insufficient*, and *no idea*.

Collecting the Data

The data were collected through the net since the participants were in different cities of the country and it was not possible to get in touch with them face to face. McMillan and Schumacher (2006, p. 238) call these sorts of researches as internet-based surveys. The participants were reached through their guidance of each other and thus the forming of the proper study group was tried to be guaranteed for the research. The questionnaires filled were collected and prepared for analysis.

Analysis of the Data

In the analysis process, the distribution of the data was primarily examined. The skewness and kurtosis values, which were found with the analysis using the hypothesis tests related to the distribution of the professional and social concerns, are presented in **Table 1**.

As presented in **Table 1**, since the ratio of skewness and kurtosis values to standard error for both data is within the range of ± 1.5 (Tabachnick & Fidell, 2013), it can be claimed that the relevant data demonstrated normal distribution. In addition, according to the Kolmogorov-Smirnov test results, it was determined that the relevant distribution was normal ($p > .05$). The analyses within the scope of the sub-dimensions are summarized below.

Descriptive statistics were used to reveal the professional and social concern levels of the teachers within the scope of the first sub-problem. According to the total scores that were taken through the total score from the scale, the participants were grouped as *low-concerned*, *moderate-concerned*, and *high-concerned*. The professional concern scores were classified as *low* between 23-53.59; *moderate* between 53.60-84.18; and *high* between 84.19-115. On the other hand, the social concern scores were classified as *low* between 55-128.15; *moderate* between 128.16-201.3 and *high* between 201.4-275. In addition, whether there was a difference and relationship between the participants’ professional concern and social concern scores or not were examined within the scope of the first sub-problem. The independent samples t-test was applied to compare the scores and the Pearson correlation analysis for the relationship. To determine whether the specified demographic variables were effective or not since the distribution of the variables were not close to each other and that the ratio of group sizes was greater than 1.5 times (Stevens, 2009), the non-parametric tests (Mann Whitney U or Kruskal Wallis) were used in the second sub-problem. Since there was not any difference between the applications, these analyses were performed on the total number of participants and the total amount of data. The descriptive statistics were used in the third sub-problem as well.

FINDINGS

In this section, the findings that have been reached within the scope of the sub-problems are presented.

Findings Related to the First Sub-Problem “What Are the Professional and Social Concern Levels of the Secondary School Mathematics Teachers Who Are in Their First-Year In-Service in Their Orientation Process to the Profession?”

The descriptive analysis results related to the participants’ professional and social concern levels in the 1st and 2nd applications are presented in **Table 2**.

Table 3. The independent sample t-test results according to application

Concern	Application	n	Mean	SD	t	p
Professional	First application	61	61.70	11.861	0.66	.947
	Second application	80	61.56	13.152		
Social	First application	61	129.07	24.784	0.695	.488
	Second application	80	126.35	21.491		

Table 4. Distribution of the participants' answers according to sub-dimensions of the scale

Dimensions & sub-dimensions	Items	First application						Second application					
		Never (%)	Rarely (%)	Sometimes (%)	Generally (%)	Always (%)	Average	Never (%)	Rarely (%)	Sometimes (%)	Generally (%)	Always (%)	Average
Professional concerns	Workload challenges	4	16	38	33	10	3.29	7	17	39	29	8	3.15
	Teaching	22	34	33	10	2	2.35	18	35	31	15	2	2.47
	Classroom management	15	32	30	20	4	2.67	16	34	27	19	5	2.61
Social concerns	Social status-identity complexity	17	37	27	14	5	2.53	18	28	26	17	11	2.75
	Relations with students	31	42	21	7	0	2.03	29	39	22	9	2	2.15
	Relations with parents	29	47	18	5	1	2.02	19	53	18	7	4	2.23
	Relations with other teachers	30	40	19	9	3	2.14	36	40	13	8	2	2.00
	Relations with school principal & supervisors	16	35	30	15	4	2.55	23	37	23	11	7	2.43
	Relations with guidance (counsellor) teacher	30	44	11	10	6	2.17	33	38	17	7	5	2.14

Table 5. The relationship between the professional and social concern scores of the participants

Professional	Social	
	Pearson correlation	.656**
Sig. (2-tailed)	.000	
n	141	

As presented in **Table 2**, it can be claimed that the concerns of the participants for the professional (for the 1st application: \bar{x} =61.7; ss =11.86 and for the 2nd application: \bar{x} =61.56; ss =13.152) and social (for the 1st application: \bar{x} =129.07; ss =24.784 and for the 2nd application: \bar{x} =126.35; ss =21.491) were close to each other. The number of people with moderate occupational concerns is predominant in both groups. In the 1st application the social concern levels were at a low (29) and moderate (32) level; the number of participants was close to each other. There were no teachers with high concern levels. On the other hand, in the 2nd application, all of the participants had low concern levels.

The results of the independent sample t-test on whether there is a difference between the two applications are presented in **Table 3**.

As presented in **Table 3**, it is seen that there no significant difference was found between the two applications in terms of the professional ($t_{(139)}=.066$; $p=.947>.05$) and social concerns ($t_{(139)}=.695$, $p=.488>.05$).

The distribution of the data obtained in the 1st and 2nd applications according to the dimensions and sub-dimensions are presented in **Table 4**.

As presented in **Table 4**, it is seen that workload (1st: 3.29; 2nd: 3.15) is the most significant factor underlying the professional concerns considering the frequencies in both applications. Considered in terms of the social concerns, the most significant factors are social status-identity complexity (1st: 2.53; 2nd: 2.75) and the relations with principal and supervisors (1st: 2.55; 2nd: 2.43). The factors with the lowest concern are the relations with students (1st: 2.03; 2nd: 2.15) and parents (1st: 2.02; 2nd: 2.23).

The relationship between the professional and social concerns of the participants was investigated and the analysis results are presented in **Table 5**.

As presented in **Table 5**, there is a moderately and positive significant relationship between the social and professional concerns of the mathematics teachers in their first-year in-service ($r = .656$; $p < .05$).

Findings Related to Second Sub-Problem "Do the Professional and Social Concern Levels of the Secondary School Mathematics Teachers Who Are in Their First-Year In-Service Differ According to Demographic Variables?"

The results of the analysis, which was applied to determine whether the professional and social concern levels differ according to the variables of gender, cooperation with guidance teacher, place of duty and the status of choosing the profession with desire, are presented in **Table 6**.

As presented in **Table 6**, there is no significant difference between the participants' professional ($U=1,712.50$; $p=.735>.05$) and social concern ($U=1,541.50$; $p=.241>.05$) levels according to the gender variable. In terms of the cooperation with guidance teacher variable, the professional ($U=1,967$; $p=.214>.05$) and social ($U=2,121$; $p=.565>.05$) concerns the participants did not differ significantly.

Table 6. The Mann Whitney U results according to the gender and cooperation with guidance teacher

Variable	Concern	Application	n	Mean rank	U	z	p
Gender	Professional	Male	33	68.89	1,712.50	-.339	.735
		Female	108	71.64			
	Social	Male	33	63.71	1,541.50	-1.171	.241
		Female	108	73.23			
Cooperation with guidance teacher	Professional	Yes	92	74.12	1,967	-1.243	.214
		No	49	65.14			
	Social	Yes	92	72.45	2,121	-.576	.565
		No	49	68.29			

Table 7. The Kruskal Wallis results according to the place of duty variable

Concern types	Group	n	Mean rank	SD	X ²	p
Professional concerns	Province	18	48.69	2	11.473	.003
	District	73	65.53			
	Village	47	83.63			
Social concerns	Province	18	52.97	2	7.2	.027
	District	73	66.38			
	Village	47	80.68			

Table 8. The Kruskal Wallis results according to the status of choosing the profession with the desire

Concern types	Group	n	Mean rank	SD	X ²	p
Professional concern	Much	79	65.40	2	5.114	.078
	Medium	52	75.14			
	Low	10	93.70			
Social concern	Much	79	63.64	2	6.087	.048
	Medium	52	79.24			
	Low	10	86.30			

The analysis results related to the differing status of the participants' professional and social concerns according to the variable of the place of duty are presented in **Table 7**.

As presented in **Table 7**, the professional concerns of the participants differ significantly according to the place of duty variable ($H_{(2)}=11.473$; $p=.003<.05$). The Mann Whitney U test was applied to determine which groups the difference was. According to the relevant test results, the professional concerns of the participants working their first year in the village had higher significant concerns compared with the participants working in the province centre ($U=214$; $p=.002<.05$) and district centre ($U=1,260.5$; $p=.014<.05$).

As presented in **Table 7**, the participants' social concerns differ significantly according to the place of duty ($H_{(2)}=7.2$; $p=.027<.05$). The social concerns of the participants working in the village were significantly higher compared with the participants working in the province centre ($U=259$; $p=.016<.05$).

The analysis results related to the changes of the participants' professional and social concerns according to the status of choosing the profession with desire are presented in **Table 8**.

As presented in **Table 8**, the professional concerns of the participants did not differ according to the variable of the participants' choosing the profession with desire ($H_{(2)}= 5.114$; $p=.078>.05$).

As presented in **Table 8**, the social concerns of the participants differed significantly according to the variable of choosing the profession with desire ($H_{(2)}=6.087$; $p=.048<.05$). The participants who did their work with desire had significantly lower social concerns at the medium level ($U=1,602$; $p=.033<.05$) and low level ($U=193.5$; $p=.026<.05$).

Findings Related to the Third Sub-Problem "What Are the Opinions of the Secondary School Mathematics Teachers Who Are in Their First-Year In-Service About the Adequacy of Pre-service Training?"

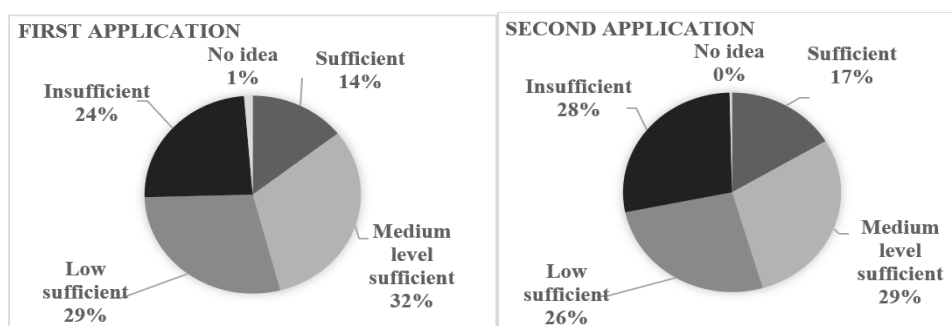
The descriptive statistics findings of the data obtained from the fourth section of the questionnaire to determine the thoughts of the participants related to the pre-service training are presented in **Table 9**.

As presented in **Table 9**, the percentages related to the thoughts of the participants related to the sufficiency of the pre-service training changes between 7% and 25%. In addition, the percentages related to sufficiency are not at the highest value in any row. Among the 14 items, seven are medium sufficient, four are low sufficient, two are insufficient. In one item, the distribution of medium-low and insufficient options is equal. The participants find the pre-service training insufficient specifically on reaching resources for professional development (I: 41%, II: 28%) and introducing ministry curricula (I: 39%, II: 30%) pre-service training is less sufficient, legislation related to the teaching profession (I: 54%, II: 39%). The item with the highest percentage of satisfaction is the training for teaching methods and techniques (I: 20%, II: 25%).

It was intended to create a general distribution regarding the opinions of the participants about the sufficiency of the pre-service training by using the total scores of the answers given to the items presented in **Table 9** and this distribution is presented in **Figure 2**.

Table 9. The opinions of the participants related to the pre-service training

Items	Answers									
	Sufficient		Medium level sufficient		Low-level sufficient		Insufficient		No idea	
	I %	II %	I %	II %	I %	II %	I %	II %	I %	II %
On familiarising the profession	15	21	38	31	28	26	18	20	2	1
On preparing me for the profession	11	14	44	33	21	28	21	25	2	1
On planning the teaching activities	16	20	36	33	25	19	21	29	2	-
On teaching methods and techniques	20	25	46	26	21	21	11	28	2	-
On evaluating student achievement	18	19	44	33	20	28	15	20	3	1
On classroom management	13	13	36	24	21	30	26	34	3	-
On overcoming the teaching-related challenges	7	10	33	29	34	28	26	34	-	-
On guiding students	10	15	26	28	38	25	26	33	-	-
On making teaching more interesting	20	21	31	33	21	23	28	24	-	-
On using the textbooks	25	11	25	30	31	29	20	30	-	-
On introducing the curricula	10	18	21	24	39	30	28	29	2	-
On the legislation related to the teaching profession	11	9	15	20	20	31	54	39	-	1
On reaching resources for professional development	15	19	16	25	41	28	26	2	2	-
On gaining teaching identity	11	16	30	40	41	25	16	19	2	-

**Figure 2.** The opinions of the participants on the sufficiency of the pre-service training

As presented in **Figure 2**, the answer that pre-service training was sufficient constituted 14% of all answers in the first application and 17% in the second application. Considered in terms of all the answers, no obvious difference was noticed in the two applications made six years apart. 53% of the total answers in the first application and 54% in the second application indicated low proficiency or insufficient.

RESULT AND DISCUSSION

This research, which has aimed to determine whether the levels of professional and social concerns that the secondary school mathematics teachers experience in their first-year in-service differ in years and according to the specified demographic variables, and in which these teachers' opinions related to the pre-service training have been investigated, the results can be summarised as follows.

In the first application in 2014, it was determined that the professional concerns of the teachers who were in their first-year in-service were at medium level, and their social concerns were at medium and low levels in general. On the other hand, in the second application carried out in 2020, their professional concerns were at a medium level in general; their social concerns were entirely at a low level. In the second application, the decrease in social concerns to a completely low level may be related to the increase in communication opportunities today. That the participants' professional concerns were higher compared with their social concerns were among the results. The professional concerns and social concerns of the mathematics teachers in their first-year in-service did not demonstrate the difference between the two applications that were carried out six years apart.

The most significant factor that constituted the professional concerns of the secondary school mathematics teachers in their first-year in-service was the *workload*. This problem was mentioned even by Anali and Sahin (2020) and Basar and Dogan (2015). The *classroom management* problems are another factor underlying the professional concern and this case has been discussed in many researches in the relevant literature (Bozan & Ekinci, 2020; Britt, 1997; Dickson et al., 2014; Gergin, 2010; Gulay & Altun, 2017; Kozikoglu & Senemoglu, 2018; Taneri & Ok, 2014; Veenman, 1984, 1987; Yildirim et al., 2017). Although teachers had challenges related to their *teaching processes*, its level was low compared with other variables.

In terms of the social concerns, the challenges in *social status-identity complexity* and *the relations with principal or supervisors* were the social concern components that the secondary school mathematics teachers emphasised most. The challenges that teachers in their first year in-service can experience (Alincak, 2021; Anali & Sahin, 2020; Basar & Dogan, 2015; Fantilli & McDougall,

2009; Kozikoglu & Senemoglu, 2018; Lundeen, 2004; Tepebas, 2010; Yesilyurt & Karakus, 2011) and that they could not get enough support (Anali & Sahin, 2020; Canak & Katitas, 2016; Duran et al., 2011; Ekinci, 2010; Fantilli & McDougall, 2009; Kozikoglu & Senemoglu, 2018; Sari & Altun, 2015; Tepebas, 2010;) are among the results in the literature.

In addition, as has been mentioned in the introduction section, communication problems may also be encountered with students, other teachers and their guidance teachers. Although the same problems were mentioned by the participants in this research, most of the participants claimed that they rarely or never encountered these problems. In addition, it was determined that there was a medium level of relationship between the professional and social concerns of teachers.

Within the scope of the second sub-problem in which whether the professional and social concerns of the secondary school mathematics teachers in their first-year in-service differ according to the demographic features, the following results were reached.

1. The professional concerns of the teachers working in villages were determined to be high compared with the teachers working in province and district centres; besides their social concerns were higher than those working in province centres. This situation is thought to be originated for several reasons. However, within the light of the relevant literature, this difference in social concerns is thought to be originated from the challenge they experience in getting used to the culture they assigned to (Akdag, 2014; Anali & Sahin, 2020; Basar & Dogan, 2015; Duran et al., 2011; Erdemir, 2007; Gulay & Altun, 2017; Guvendir, 2017; Kozikoglu & Senemoglu, 2018) and being away from their families (Duran et al., 2011; Yesilyurt & Karakus, 2011). In addition, when considered in terms of professional concerns, the physical infrastructural properties of the school in villages and the deficiencies in teaching materials can be included in these problems. Both the features of schools (Alincak, 2021; Akdag, 2014; Anali & Sahin, 2020; Dilci & Dervisoglu Kalkan, 2013; Gomleksiz et al., 2010; Guvendir, 2017; Korkmaz et al., 2004; Kozikoglu & Senemoglu, 2018; Yesilyurt & Karakus, 2011; Tepebas, 2010) and the deficiencies in materials (Alincak, 2021; Anali & Sahin, 2020; Cantú & Martínez, 2006; Dickson et al., 2014; Gomleksiz et al., 2010; Guvendir, 2017; Tepebas, 2010; Toker Gokce, 2013) can be included to the sources of challenges during the teachers' orientation processes. This situation can be evaluated among the possible reasons for the results that have been reached within the scope of the school in villages.
2. While the mathematics teachers' choosing the profession with desire is not an effective variable on their professional concerns, the concerns of the teachers who chose the profession with desire were determined to be low compared with those who chose their profession with the medium and low level of desire.
3. The variable of gender and working with the teacher are not effective on teachers' professional and social concerns.

The rates of finding the profession sufficient by the secondary school mathematics teachers who were in their first-year in-service were low. However, the points that were regarded to be most sufficient were the teaching methods and techniques they had gained. However, in the relevant literature, it is necessary not to be overlooked the fact that the teachers in their first year in-service find pre-service training theoretical and cannot put it into practice (Basar & Dogan, 2015; Bozak et al., 2016; Duran et al., 2011; Erdemir, 2007; Fantilli & McDougall, 2009; Gomleksiz et al., 2010; Gulay & Altun, 2017; Guvendir, 2017; Kara & Demir, 2020; Kozikoglu & Senemoglu, 2018; Yesilyurt & Karakus, 2011; Tepebas, 2010) is a situation that is often emphasised. In addition, as it has been stated within the scope of the first sub-problem, it can be claimed that practice-oriented teaching activities can increase the effectiveness of pre-service education in this respect because the components related to the teaching process are the least expressed factor in terms of creating professional concerns. In addition, it was concluded that the pre-service training on reaching the resources for the professional development and introducing the curricula by the Ministry was found to be low sufficient, and on the legislation related to the teaching profession was insufficient by the secondary school mathematics teachers.

As mentioned by (Müller-Fohrbrodt et al., 1978), the problems that are experienced by the teachers during the orientation process can be originated from personal and situational reasons. In this research, teachers who do not know the working conditions adequately can be claimed to be the main source of difficulties in the adaptation process, although they have professional basic skills. Within the light of these results,

1. Giving the practice courses in the fifth, sixth, seventh, and eighth mid-terms, if possible, during the pre-service training process after gaining the basic skills, can be useful in terms of putting theoretical knowledge into practice and enabling pre-service teachers to know the school environment in more detail.
2. Activities or course contents, in which teachers will share their experiences with teacher candidates, can be added to the pre-service training process.
3. In this research, it was determined that the teachers working in villages had high professional and social concerns compared with those working in the province and district centres and these situations were tried to be explained with the results of this research. In addition, exploring the effects of workplace variables on the secondary school mathematics teachers' professional and social concerns in detail from a qualitative perspective will contribute to the literature.

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