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## High school teachers' self-efficacy beliefs: A mixed method research

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### Abstract

*The aim of this study is to reveal high school teachers' self-efficacy beliefs with an explanatory sequential design, which is one of the mixed method research designs. Quantitative data of the research were analysed by package program, and qualitative data were analysed by content analysis method. Three hundred and twenty-nine high school teachers participated in the quantitative part of the research and 15 high school teachers participated in the qualitative part of the study. In the quantitative section of the study, the "Teacher Self-Efficacy Belief Scale" was used and in the qualitative dimension an interview form consisting of four research questions were asked. As a result of the research, it was revealed that the factors affecting the academic self-efficacy beliefs of the participants were scientific research, postgraduate education, in-service training, following up-to-date resources, individual development and communication; the factors affecting professional self-efficacy beliefs were the use of different teaching principles and methods, in-service training, personal development, graduate education, communication, professional sharing and experience; the factors affecting social self-efficacy beliefs were social activities, school activities, communication, harmony and sharing; and the factors affecting intellectual self-efficacy beliefs were following periodicals, following the agenda, scientific-philosophical reading, activities and organisations, personal development and travel.*

### Keywords

High school; teacher; self-efficacy; mixed research

### Introduction

Societies have set themselves targets for change and development and have tried to adapt to the era in this direction. Societies mostly place emphasis on education in order to be successful. Education has the quality and power to change the destiny of a society. For this reason, societies that are restructuring or preserving the existing social structure mostly focus on the education system. Therefore, education systems are among the pioneers of social change and development.

It can be essential for teachers to be competent and sufficient in many aspects, such as pedagogical, field and vocational knowledge, technology, classroom management, problem solving, creative thinking, self-confidence and academic achievement in order to achieve their role in the education



system and direct social development. In addition, having self-efficacy can play a special role in teachers' occupational achievement. Self-efficacy, which is generally defined as an individual's belief in their abilities, is expressed in "Social Learning Theory" by Bandura (1977, 1986) and explained as an individual's personal belief about whether they can succeed or how they can cope with a situation or problem.

The effects of self-efficacy, which is among the many characteristics that teachers are expected to have, on social development (in other words, on the education system) have been the subject of many studies (Kelley et al., 2020; Zhou et al., 2020; Zuya et al., 2016). Teacher self-efficacy is the belief in student engagement and ability to achieve expected outcomes for learning (Woolfolk & Hoy, 1990). Teachers' self-efficacy affects class adaptations, such as updating the program or changing its content (Wilson et al., 2016). Teacher self-efficacy is associated with teacher motivation, adaptation, discipline, cooperation and coping behaviours (Skaalvik & Skaalvik, 2010). In the field of teaching, self-efficacy refers to teachers' self-directed decisions about their ability to fulfil the teaching-related tasks necessary to achieve educational goals (Granziera & Perera, 2019). As a result of the studies, it is concluded that teachers' self-efficacy has a direct effect on the education system.

Self-efficacy beliefs of teachers are among the factors that affect their professional success. Self-efficacy affects individuals' emotions, behaviours and motivations. Individuals with high self-efficacy beliefs try to perform their duties despite all difficulties and show endurance (Bandura, 1995). Teachers with a high perception of self-efficacy evaluate different ideas, apply different teaching methods, are enthusiastic in their profession, empathise with students, create a suitable environment for learning, adopt student-centred education, and support students with learning difficulties (Tschannen-Moran & Woolfolk Hoy, 2001). Individuals with low self-efficacy beliefs view difficult tasks as a threat, instead of a challenge to overcome (Spurk & Abele, 2014). Individuals with low self-efficacy perception overestimate the complexity of given tasks and encounter stress. As a result, the individual's stress-related problem-solving skills decrease (Honicke & Broadbent, 2016). When behaviours of teachers with low self-efficacy beliefs are examined, it is observed that teachers avoid stress, do not take risks, prefer a teacher-centred teaching model, exhibit low performance in the classroom and poor problem-solving abilities, and accept defeat.

Teachers are expected to develop in a multi-faceted way in order to ensure their professional competencies and to use these efficiently in the education system. The teaching profession has been investigated at different stages in many studies (Fabelico & Afalla, 2020; Keppens et al., 2021; Thurm & Barzel, 2020). In general, it can be thought that teachers' academic self-efficacy, professional self-efficacy, social self-efficacy and intellectual self-efficacy are important concepts in terms of their professional development. Academic self-efficacy is the individual's belief in their ability to organise, manage and carry out tasks related to displaying the desired academic performance (Zimmerman et al., 1992). Academic self-efficacy is the individual's belief that they have the ability to complete academic tasks given by the school (Chen et al., 2020). Teachers with academic self-efficacy can keep their scientific knowledge constantly strong, can dominate the developments in their field and share this information with students. This contributes to the academic knowledge of the students. Professional self-efficacy expresses teachers' commitment to their profession, the time they devote to professional development, their desire for success, personal development and achievements (Bandura, 2002). Professional self-efficacy is the teachers' belief that they fulfil their professional duties successfully (Tschannen-Moran & Woolfolk Hoy, 2001). Professional self-efficacy is an important factor in creating a sense of learning in students and creating an effective classroom environment (Bandura, 2002). A professionally developed teacher creates appropriate learning environments, monitors student performance, creates a material pool, participates in in-service training and overcomes educational problems. Since this situation ensures success in education, it can be accepted as a part of teachers' self-efficacy beliefs. Social self-efficacy perception enables the individual to demonstrate behaviours when necessary to perform social behaviours and is an important factor in establishing successful interpersonal relationships (Caprara et al., 2003). Teachers who have high social self-efficacy beliefs

establish successful relationships with their colleagues, school administrators, teachers and students, express their thoughts easily and adapt to change easily (Çolak et al., 2017). Teachers with high social self-efficacy create a good communication channel with students, colleagues, school administrators and families; seek solutions and development ways about in-class and out-of-class situations; have high empathy skills; and have the ability to express themselves. This contributes to the students' good communication with the teachers and to the realisation of the aims in education. Intellectual self-efficacy implies that teachers are open-minded, have intellectual curiosity, investigate various learning and teaching approaches, and thus use more effective teaching methods (Poulou, 2007). Teachers with high intellectual self-efficacy have the skills of questioning and research, follow the developments in their profession and try to find the best system by using different methods and techniques in the classroom. This contributes to the success of teachers in their profession.

Although many studies have been conducted on teacher self-efficacy, the number of studies examining high school teachers' self-efficacy with a mixed method is few. In this context, there seems to be a need for further research. Accordingly, high school teachers' self-efficacy beliefs can be dimensioned as academic, professional, social and intellectual.

This research aims to examine high school teachers' self-efficacy beliefs. In this direction, the following questions were directed to the participants.

1. What are the self-efficacy belief levels of high school teachers?
2. Do high school teachers' self-efficacy levels differ significantly according to their gender, branch, professional experience, educational level, and the number of professional development training courses they have attended?
3. What are the factors affecting teachers' academic self-efficacy beliefs?
4. What are the factors affecting teachers' professional self-efficacy beliefs?
5. What are the factors affecting teachers' social self-efficacy beliefs?
6. What are the factors affecting teachers' intellectual self-efficacy beliefs?

## **Method**

The method part of the study includes the research model, study group, data collection tools, data collection, data analysis and validity-reliability sub-headings.

### **Research model**

The aim of this study is to reveal the self-efficacy beliefs of high school teachers by using an explanatory sequential design, which is one of the mixed research methods. The mixed method in social science research is the combination of qualitative and quantitative research methods, approaches and concepts in a single study (Halcomb & Hickman, 2015; Tashakkori & Teddlie, 2003). Explanatory sequential research studies are carried out in two stages. In the first stage, research data are collected and analysed using quantitative methods. In the second stage, qualitative data are collected and analysed, and then the quantitative and qualitative data obtained are combined and associated (Creswell, 2014). The quantitative dimension of the study was carried out with a survey model. The survey model is used to describe an event in the past or present (Karasar, 2009). The qualitative dimension of the research was carried out with a case study design. Case studies are research studies conducted to investigate the boundaries between a phenomenon and context in the context of an existing situation (Yin, 2017). The purpose of using the mixed method in this study was to strengthen the research findings with quantitative and qualitative data and to expand the scope of the research. The purpose of applying the descriptive sequential design was to reveal teachers' self-efficacy beliefs in a multiple and comprehensive way by supporting them firstly with quantitative and then with qualitative data.

## Participants

In this mixed method study, to collect and examine the correct data, appropriate participants were determined for the quantitative and qualitative dimensions. In the quantitative dimension of the research, 329 participants were determined by the maximum diversity method, which is one of the purposive sampling methods. The maximum diversity sampling method is used to determine the participants involved in the research problem in a way that they are composed of similar, changing and different situations (Grix, 2010). In the quantitative dimension of this study, the purpose of determining the participants with the maximum sampling method was to reveal the reasons for the similarities and differences between the various situations. In this research, the differences between participants in terms of branch, professional experience and education level were taken into consideration. In the qualitative dimension of the study, 15 participants were selected by the snowball sampling method. The snowball sampling method is used to access new participants by asking the participants who are interviewed to contact them (Patton, 2014). The demographic information of the participants in the quantitative part of the study is given in Table 1.

**Table 1.** *Participants' Demographic Information*

Variable	Category	f	%
Gender	Female	192	58.4
	Male	137	41.6
Branch	Numerical skills courses	96	29.2
	Verbal skills courses	145	44.1
	Applied courses	26	7.9
	Vocational courses	62	18.8
Professional experience	1–5 years	38	11.6
	6–10 years	74	22.5
	11–15 years	54	16.4
	16–20 years	73	22.2
	21 + years	90	27.4
Education level	Bachelor's	242	73
	Postgraduate	85	25
	Phd	2	6
Number of training courses attended	1–5	80	24.3
	6–10	103	31.3
	11–15	68	20.7
	16–20	35	10.6
	21+	43	13.1

Table 1 presents that 192 (58.4%) female and 137 (41.6%) male participants took part in the quantitative part of the study. In addition, the research included 96 (29.2%) participants from numerical skills courses (math, physics, chemistry, biology, geometry), 145 (44.1%) from verbal skills courses (Turkish, English, history, literature, geography, religion), 26 (7.9%) from applied courses (physical education, visual arts, art education, music) and 62 (18.8%) from vocational courses. According to the professional experience variable, 38 (11.6%) participants had 1–5 years, 74 (22.5%) participants had 6–10 years, 54 (16.4%) participants had 11–15 years, 73 (22.2%) participants had 16–20 years and 90 (27.4%) participants had 21 or more years of professional experience. According to education level, 242 (73%) participants had bachelor's degrees, 85 (25%) had postgraduate degrees and 2 (6%) participants had doctoral degrees. According to the number of professional development training courses that the participants attended, 80 (24.3%) participants attended between 1–5, 103 participants (31.3%) attended between 6–10, 68 (20.7%) participants attended between 11–15, 35 (10.6%) participants attended between 16–20 and 43 (13.1%) participants attended 21 or more professional development training courses.

### Data collection tool

As this research is a mixed method research, quantitative and qualitative research tools were used in the study. In the quantitative dimension of this research conducted with a mixed research method, the “Teacher Self-efficacy Belief Scale”, which was developed by Çolak et al. (2017), was used. In the qualitative dimension of the research, in parallel with the quantitative dimension, a semi-structured interview form consisting of four open-ended questions was prepared and the data were collected via mass media. The interview is a process of obtaining detailed information about a subject with at least two participants (Yıldırım & Şimşek, 2018). The interview form was sent to two field experts and two language experts before the implementation, and finalised. The questions in the interview form are intended to investigate the sub-dimensions of the quantitative data collection tool in depth. This study aims to reveal teachers' views on academic, professional, social and intellectual self-efficacy.

### Data collection process

The research data were collected in the 2019–2020 academic year. The data obtained in the quantitative and qualitative dimensions of the study were collected by using mass media. Participants in the quantitative dimension consisted of branch and vocational teachers working at state high schools. In the qualitative dimension of the study, the participants were determined by the snowball sampling method. Participants were determined on a voluntary basis, and for the ethical procedure before starting the research, all permissions were taken from a provincial ethics committee. Before starting the interview, an explanation was made regarding the purpose, scope and reliability of the research, and interviews were conducted with the teachers who agreed to participate in the study.

### Data analysis

The data obtained in mixed method studies are analysed in accordance with the research model. The descriptive sequential design used in this study aims to analyse quantitative data in the first part and qualitative data in the second part, and combine both sets of data in the last stage (Creswell, 2014).

### Analysis of quantitative data

In the quantitative part of the study, 329 questionnaire forms were included in the analysis with the SPSS statistics program. As a result of the analysis, it was seen that the data were distributed normally, and the t-test and one-way ANOVA tests were applied to the variables of gender, branch, professional experience, education level and the number of professional development training courses attended. Descriptive analysis was applied in the analysis of the data and the level of significance was determined as .05.

### Analysis of qualitative data

In the qualitative part of the research, the content analysis method was used to analyse the data and to reveal the themes and codes. Content analysis enables indirect measurement by communication of behaviours that cannot be observed or measured directly (Fraenkel et al., 2006). Research data were analysed in the six stages specified by Creswell (2014). These stages are (1) preparing and organising the data for analysis, (2) reading the data, (3) encoding the data (4), determining the participants, (5) creating the themes, and (6) interpreting the findings.

### Validity and reliability

As a result of the validity and reliability analyses in the quantitative part of the study, the Kaiser-Meyer-Olkin (KMO) value of the scale was found to be .875 and the Bartlett Test to be 3524.334. Cronbach's Alpha internal consistency coefficients ( $\alpha$ ) were calculated as .88 for the general scale, .66 for academic self-efficacy sub-dimension, .79 for the occupational self-efficacy sub-dimension, .83 for the social self-efficacy sub-dimension, and .83 for the intellectual self-efficacy sub-dimension.

In qualitative research, validity refers to the accuracy of the data collection tool, process steps and results, while reliability refers to the consistency of the research (Creswell, 2014; Gibbs, 2007). In the qualitative part of the study, (a) credibility, (b) transferability, (c) consistency, and (d) verifiability (Erlandson et al., 1993) strategies were used for the validity and reliability of the data. In order to ensure credibility (internal validity) in the study, two experts monitored the implementation and process of the research, and research questions were asked to the participants. In order to ensure transferability (external validity), the description, data collection process, data collection tool and research process were explained clearly and in detail (Glesne & Peshkin, 1992).

In order to ensure consistency (internal reliability), the participants were informed about the purpose and reliability of the research and confidence was given. In addition, the formula (Reliability = consensus/agreement + disagreement) developed by Miles and Huberman (1994) was used to ensure inter-coder reliability. In the research, the similarity between coders was found to be 92%. For confirmability (external reliability), the findings were sent to the participants and their approval was sought, and the participants' statements were given without interpretation.

### Findings

The findings obtained as a result of the analysis of the quantitative data of this study, which aims to reveal the self-efficacy beliefs of high school teachers by using an explanatory sequential design, which is one of the mixed research methods, are given in Table 2.

**Table 2. Descriptive Statistics of Participants' Self-Efficacy Beliefs**

Variables	Self-efficacy beliefs
N	329
$\bar{X}$	4.48
Ss	.346
Ky	-.297
SE(Ky)	.134
Bs	-.611
SE(Bs)	.268

Table 2 presents that the self-efficacy belief levels of the participants are  $\bar{X}=4.48$  out of 5. According to this result, it can be said that the self-efficacy beliefs of the participants are at a high level. Examining the analysis results of the normality of distribution, it can be said that the kurtosis value in the study is -.297, while the skewness value is -.611. In other words, the data demonstrate a normal distribution. The fact that kurtosis values are within the limits ( $\pm 1.5$ ) indicates that the distribution of the data is normal (Tabachnick & Fidell, 2012). As a result of this analysis, the data were analysed by t-test, one-way ANOVA and Tukey test. Table 3 presents the self-efficacy beliefs of the participants according to gender.

**Table 3. Self-Efficacy Beliefs of Participants by Gender**

Variable	Category	N	$\bar{X}$	sd	df	t	p
Gender	Female	192	4.44	.360	327	2.862	.004
	Male	137	4.55	.318			

Table 3 presents that the self-efficacy beliefs of the female and male participants in the study show a significant difference according to gender ( $p < .05$ ). It is seen that this difference is in favour of male participants ( $\bar{X}= 4.55$ ). The reasons for this result can be listed as the high self-confidence of male teachers, their ability to establish authority in the classroom and their emphasis on discipline. In Table 4, the results of the One-Way ANOVA test of the participants' self-efficacy beliefs according to the branch, professional seniority, educational status, and number of vocational programmes they attended are given.



**Table 4.** *Self-Efficacy Beliefs of Participants by Branch, Professional Experience, Educational Level and Number of Professional Development Training Courses Attended*

Variables	Source of variance	Sum of Squares	df	Mean square	F	p
Branch	General	39.609	328			
	Between groups	.129	3	.043	.353	.787
	Within groups	39.480	325	.121		
Professional experience	General	39.609	328			
	Between groups	.817	4	.204	1.705	.149
	Within groups	38.792	324	.120		
Education level	General	39.609	328			
	Between groups	.324	2	.162	1.343	.263
	Within groups	39.285	326	.212		
Number of training courses attended	General	39.609	328			
	Between groups	1.627	4	.407	3.469	.009
	Within groups	37.982	324	.117		

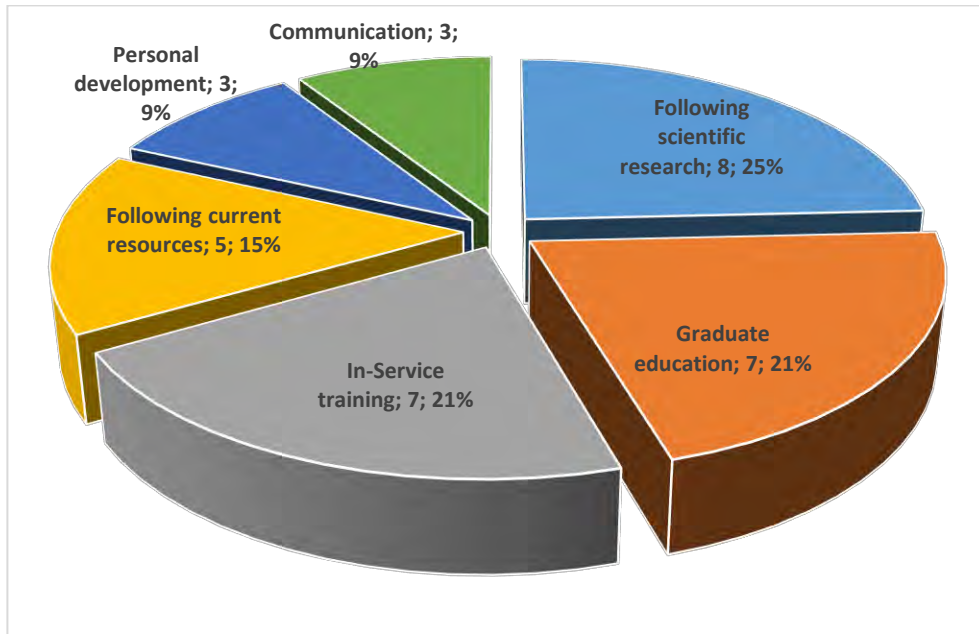
Table 4 presents that the self-efficacy beliefs of the participants in the study do not show a significant difference according to the branch, professional experience and education level variables ( $p > .05$ ). This result demonstrates that teachers' self-efficacy is not affected by branch, professional experience and educational level but there can be factors that affect teachers' self-efficacy. In this context, this research was designed as a mixed method to find other factors.

However, the self-efficacy beliefs of the participants show a significant difference according to the number of professional development training courses they have attended ( $p < .05$ ). According to the results of the Tukey test, which was conducted to reveal which pairs had a significant difference in the number of professional development training attended, it was seen that the significant difference was between "1-5" and "21 and above" pairs ( $p < .05$ ). In Table 5, item mean scores of participants' academic self-efficacy beliefs are given.

**Table 5.** *Item Mean Scores for Academic Self-Efficacy Beliefs Sub-Dimension*

Item no.	Academic Self-Efficacy Beliefs Sub-Dimension	$\bar{X}$
1.	I have sufficient knowledge of my branch.	4.68
2.	When asked a question about my branch, I can easily answer it.	4.72
3.	I can follow the developments in my branch.	4.62
4.	I can gain the trust of my colleagues with my knowledge of my branch.	4.73
5.	I can provide in-service training on subjects related to my branch.	3.87

Table 5 presents that the mean score of the participants' academic self-efficacy beliefs was found to be  $\bar{X}= 4.52$ . When the item means in the sub-dimension are examined, it is seen that the mean of the 5th item is between ( $\bar{X}= 3.00$ ) and ( $\bar{X}= 4.00$ ), while the means of the other items are between ( $\bar{X}= 4.00$ ) and ( $\bar{X}= 5.00$ ). This result shows that the academic self-efficacy beliefs of the participants are high. In the qualitative dimension of the research, the first problem question aims to reveal academic self-efficacy beliefs of high school teachers. The results of the content analysis made in this context are given in Figure 1.



**Figure 1. Academic self-efficacy beliefs of the participants.**

Figure 1 presents that following scientific research (8, 25%), graduate education (7, 21%), in-service training (7, 21%), following current resources (5, 15%), personal development (3, 9%), and communication (3, 9%) are the factors affecting academic self-efficacy beliefs of the participants. In this context, the opinions of the participants are given below:

I observe that I am academically competent, and that I am able to teach the topics in my field without the need for ancillary resources. I can cite the academic resources I follow while sharing the topics in my field with my students. I can use various teaching methods and techniques while teaching the subject. I update the information I have acquired by following academic studies. (P.1)

It is important for me to do research, have knowledge and read a lot of resources in order to improve myself academically. I think it is necessary to receive education until the last point that can be taken. At the same time, it is important to transfer this academic knowledge to the profession. (P.13)

When the quantitative and qualitative findings regarding the academic self-efficacy sub-dimension of the study were examined together, it was concluded that the participants were highly competent, followed scientific research and current developments, were sufficient in terms of academic knowledge and participated in in-service training. According to this result, the quantitative and qualitative findings of the research are in parallel. In Table 6, item mean scores for the professional self-efficacy beliefs of the participants are given.

**Table 6. Item Mean Scores for Professional Self-Efficacy Beliefs Sub-Dimension**

Item no.	Professional Self-Efficacy Beliefs	$\bar{X}$
6.	I can manage negative student behaviour in the classroom.	4.74
7.	I can make the students work together in harmony.	4.74
8.	I can make sure that the activities in the classroom work efficiently.	4.74
9.	I can use time effectively in my lessons.	4.81
10.	I can create suitable teaching environments for students with low academic success.	4.39
11.	I can increase students' motivation.	4.71
12.	I can enable students to develop a positive attitude towards learning.	4.64

Table 6 presents that the participants' professional self-efficacy beliefs mean score is  $\bar{X}= 4.68$ . When the item means in the sub-dimension are examined, it is seen that the means of the items are between ( $\bar{X} = 4.00$ ) and ( $\bar{X}= 5.00$ ). This result shows that the participants' professional self-efficacy beliefs are high. In the qualitative dimension of the study, the second problem question aims to reveal the professional self-efficacy beliefs of high school teachers. The results of the content analysis made in this context are given in Figure 2.

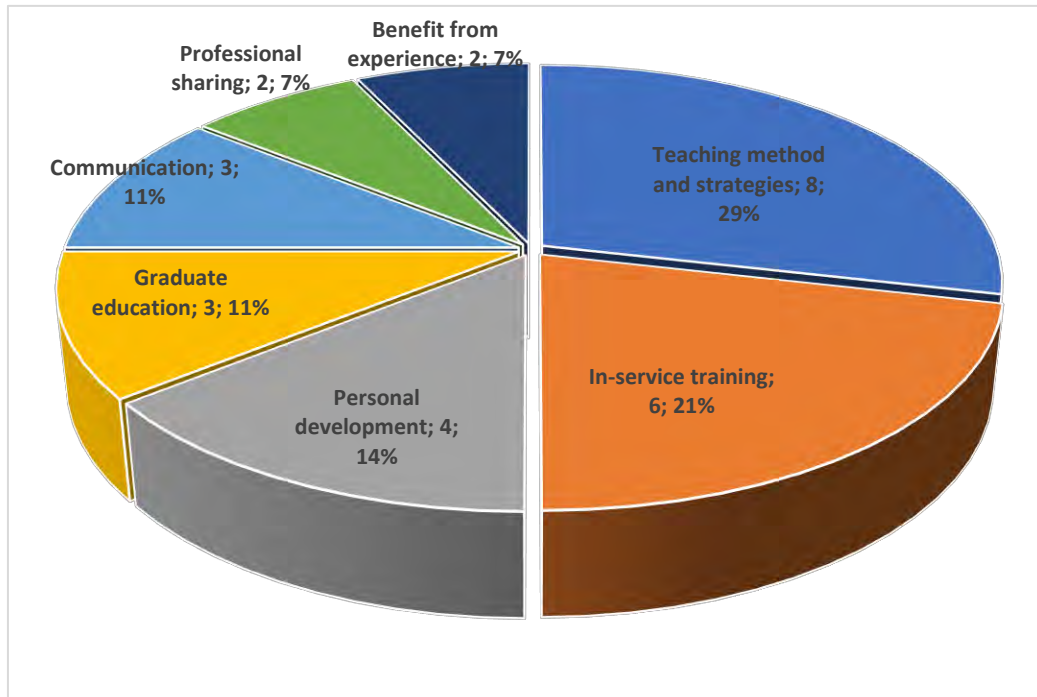
**Figure 2. Professional self-efficacy beliefs of the participants.**

Figure 2 presents that using different teaching methods and strategies (7, 29%), in-service training (6, 21%), personal development (4, 14%), postgraduate education (3, 11%), communication (3, 11%), professional sharing (2, 7%) and benefiting from experience (2, 7%) are the factors affecting professional self-efficacy beliefs of participants. In this context, the opinions of the participants are given below:

I think that every day I spend in the profession is effective on my professional competence level. I observe different learning styles in each student group. The time I spend in the profession enables me to continue to communicate more effectively with the students I have just encountered. Professional studies and professional sharing with our fellow teachers help us gain new perspectives, improving our level of competence. (P.6)

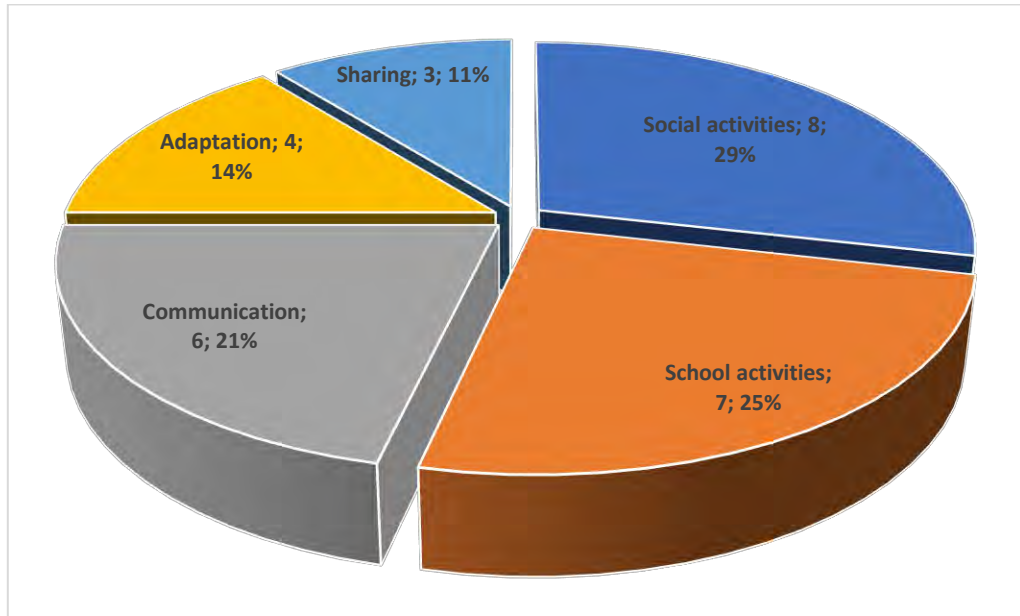
The training I have received for the profession has positively affected my competence and business manner. It has increased my level of competence. The more I can stretch according to the personality styles of my target audience, the more efficiency I acquire. In business life, I pay attention to individual differences and position myself accordingly. (P.12)

When the quantitative and qualitative findings of the study regarding the professional self-efficacy sub-dimension of the study were examined together, it was concluded that the participants were highly competent, adapted to students and colleagues, and used different methods and techniques, and that their communication channels with students were open and their students were motivated for the lesson. According to this result, the quantitative and qualitative findings of the research are in parallel. In Table 7, item mean scores for participants' social self-efficacy beliefs are given.

**Table 7. Item Mean Scores for Social Self-Efficacy Beliefs Sub-Dimension**

Item no.	Social Self-Efficacy Beliefs Sub-Dimension	$\bar{X}$
13.	I can communicate well with parents.	4.64
14.	I can easily communicate with someone I do not know.	4.49
15.	I can easily express my thoughts in the group.	4.50
16.	I can communicate well with my colleagues.	4.77
17.	I can easily join a new group.	4.43
18.	I can attend a group event without hesitation.	4.49
19.	I can easily ask others for help when I need it.	4.58
20.	I can easily adapt to change.	4.38

Table 7 presents that the social self-efficacy beliefs mean score of the participants is  $\bar{X}= 4.53$ . When the item means in the sub-dimension are examined, it is seen that the means of the items are between ( $\bar{X} = 4.00$ ) and ( $\bar{X}= 5.00$ ). This result shows that the social self-efficacy beliefs of the participants are high. In the qualitative dimension of the research, the third problem question aims to reveal social self-efficacy beliefs of high school teachers. The results of the content analysis made in this context are given in Figure 3.



**Figure 3. Social self-efficacy beliefs of the participants.**

Figure 3 presents that social activities (8, 29%), school activities (7, 25%), communication (6, 21%), adaptation (4, 14%), sharing (3, 11%) are factors affecting social self-efficacy beliefs. In this context, opinions of the participants are given below:

I take care to improve myself socially. I believe that learning continues actively in social life, so I take care to enter social environments. I attend various courses and interact with book clubs as a result of my field of literature. I definitely allocate special time for these activities. (P.2)

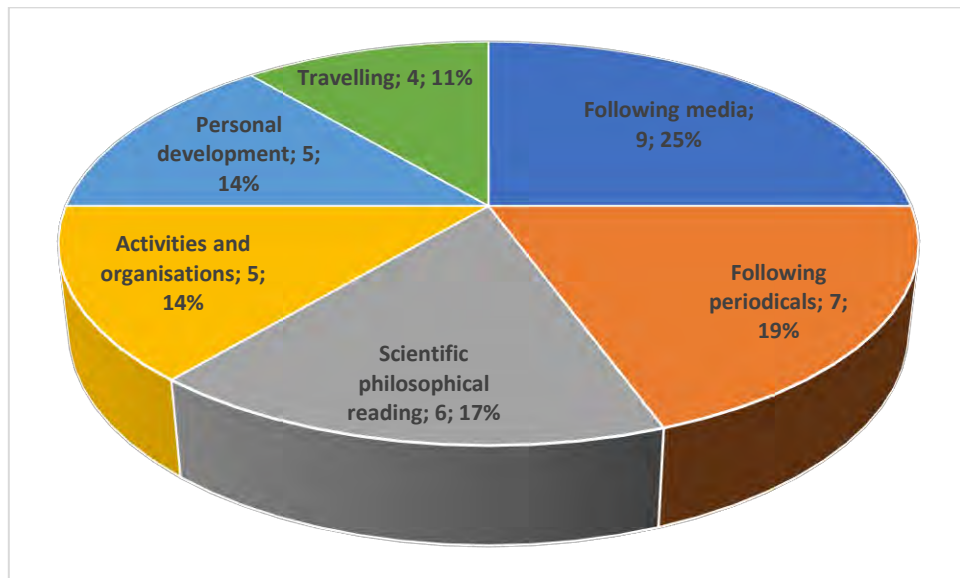
I am a person who loves to do research, share, travel and innovate. I frequently participate in social events organised around me. These events improve my perspective on the world and my profession. I can view events from different angles. I share this learning with my students and colleagues at school. (P.7)

When the quantitative and qualitative findings of the research regarding the social self-efficacy sub-dimension were examined together, it was concluded that the participants were highly competent, could easily participate in social activities, used their communication skills well, were able to adapt, were open to sharing, and could explain their thoughts easily. According to this result, the quantitative and qualitative findings of the research are in parallel. In Table 8, item mean scores of the intellectual self-efficacy beliefs of the participants are given.

**Table 8. Item Mean Scores for Intellectual Self-Efficacy Beliefs Sub-Dimension of the Participants**

Item no.	Intellectual Self-Efficacy Beliefs Sub-Dimension	$\bar{X}$
21.	I rely on my literary knowledge.	3.57
22.	I can evaluate education policies on the basis of different disciplines.	4.05
23.	I can develop solutions for social problems.	4.37
24.	I can evaluate the education system by using educational philosophies.	4.14
25.	I can interpret the current developments in the education system.	4.42
26.	I can evaluate the society I live in sociologically.	4.46
27.	I can evaluate current issues from a scientific perspective.	4.33

Table 8 presents that the intellectual self-efficacy beliefs mean score of the participants is  $\bar{X}= 4.19$ . When the item means in the sub-dimension are examined, it is seen that the mean of item 21 is between ( $\bar{X} = 3.00$ ) and ( $\bar{X} = 4.00$ ), while the means of the other items are between ( $\bar{X} = 4.00$ ) and ( $\bar{X} = 5.00$ ). This result reveals that the intellectual self-efficacy beliefs of the participants are high. The fourth problem question in the qualitative dimension of the study aims to reveal the intellectual self-efficacy beliefs of high school teachers. Content analysis results made in this context are given in Figure 4.



**Figure 4. Intellectual self-efficacy beliefs of the participants.**

Figure 4 presents that following media (9, 25%), following periodicals (7, 19%), scientific-philosophical reading (6, 17%), events and organisations (5, 14%), personal development (5, 14%) and travelling (4, 11%) are the factors affecting intellectual self-efficacy beliefs of high school teachers. In this context, the opinions of the participants are given below:

I am open to many social, scientific and artistic changes that can improve me and contribute to my professional competence and branch. It is already my personal trait not to distinguish anyone in terms of language, religion and race. These behaviours enable me to be an intellectual individual, since I have a universal personality. (P.5)

It is my life principle to learn something new every day, to follow the agenda, to take part in life. I regularly read periodicals. Besides, I follow scientific publications and benefit from social media. These develop me and I explain what I have learned to my students by integrating them with the subjects in the lessons. Thus, I support the students to stay up to date. (P.8)

When the quantitative and qualitative findings of the study regarding the intellectual self-efficacy sub-dimension were examined together, it was concluded that the participants were highly competent, had scientific and philosophical competence, adapted to the environment they live in, attached importance to personal development and followed current topics. According to this result, the quantitative and qualitative findings of the research are in parallel.

## Discussion

This study, which aims to investigate self-efficacy beliefs of high school teachers, was conducted with an explanatory sequential design, which is one of the mixed research methods.

The first problem question of the study aims to reveal high school teachers' academic self-efficacy beliefs. The findings of the study demonstrate that teachers who participated in this study have a high level of academic self-efficacy beliefs. When the qualitative data was examined, it is seen that following scientific research, graduate education, in-service training, current resources, personal development and communication are the factors of teachers' high level of academic self-efficiency beliefs. When the quantitative and qualitative findings were examined together, it was concluded that the participants were highly competent, followed scientific research and current developments, were sufficient in terms of academic knowledge and participated in in-service training. In obtaining these results, it can be said that teachers attach importance to academic self-efficacy, develop themselves in terms of mastery of field knowledge, are aware of the importance of scientific research and are willing to stay up-to-date academically. According to this result, the quantitative and qualitative findings of the research are in parallel. There is a relationship between teachers' self-efficacy levels and their academic achievement, and teachers who are academically competent also have high self-efficacy beliefs (Schunk, 1991). Academic self-efficacy is associated with self-regulated learning efficacy, academic achievement efficacy, and academic achievement, and other factors are expected to be higher together with higher academic self-efficacy beliefs (Zimmerman et al., 1992). The high academic self-efficacy beliefs of teachers significantly affect their academic achievement (Basith et al., 2020). It is seen that teachers try to improve students' understanding and thinking skills together by gaining professional experience and contribute to their success by giving feedback on learning problems (Fer & Cırık, 2006). With their experiences, teachers use different teaching methods and strategies in the classroom environment and find the opportunity to improve their classroom management skills (Tschannen-Moran & Woolfolk Hoy, 2001).

The second problem question of the study aims to reveal the professional self-efficacy beliefs of high school teachers. The findings of the study demonstrate that teachers who participated in this study have a high level of professional self-efficacy beliefs. When the qualitative data was examined, it is seen that using different teaching methods and strategies, in-service training, personal development, postgraduate education, communication, professional sharing, benefiting from experience are the factors of teachers' high level of professional self-efficiency beliefs. According to the results of the analysis, it was seen that the participants were successful in their profession, worked in cooperation with their colleagues, communicated with their students, used motivational tools that enable them to participate in the lesson and used different methods and techniques for the goals and purposes of the course. In achieving these results, teachers attach importance to their professional self-efficacy, they are open to development, they develop themselves in terms of teaching principles and methods and classroom management, they make an effort to communicate with students and colleagues and make an effort to

motivate students for the lesson. According to this result, the quantitative and qualitative findings of the study are in parallel and there is a relationship between teachers' self-efficacy and experience. As the experience of teachers increases, their professional self-efficacy levels also increase (Cheung, 2006). It has been concluded that experience is an important factor in teachers' professional development and that this factor affects self-efficacy, and also that experienced teachers are professionally more successful, they can use different teaching methods and techniques, and they can manage the classroom more successfully (Tschannen-Moran & Woolfolk Hoy, 2001). There is a relationship between teachers' self-efficacy beliefs and their professional experiences, and as their experience increases, their self-efficacy belief increases (Fives & Buehl, 2010). Teachers' self-efficacy beliefs are an important source of motivation for teacher behaviour in the classroom and can significantly affect their professional performance (Garvis & Pendergast, 2011). Effective teachers pay attention to students' thoughts, use visual and audio sources, and practise new and different methods and techniques (Borich, 2017), which can increase teachers' professional self-efficacy beliefs.

The third problem question of the study aims to reveal the social self-efficacy beliefs of high school teachers. The findings of the study demonstrate that teachers who participated in this study have a high level of social self-efficacy beliefs. When the qualitative data was examined, it is seen that social activities, communication, adaptation and sharing are the factors of teachers' high level of social self-efficacy beliefs. When the quantitative and qualitative findings were examined together, it was concluded that the participants were highly competent, and could easily participate in social activities, use their communication skills well, were able to adapt, were open to sharing, and could explain their thoughts easily. In achieving these results, it can be thought that teachers attach importance to social self-efficacy, have an effective social environment, and are open to different ideas and thoughts, and that taking part in social activities plays an important role. According to this result, the quantitative and qualitative findings of the research are in parallel. Teachers with low self-efficacy, however, have difficulty in establishing positive communication channels with students and cannot effectively include the family factor in the teaching process (Ajanga, 2011). Self-efficacy beliefs increase as teachers' access information more easily, share their knowledge and skills with their colleagues and increase their experience (Eker, 2014). Being aware of one's own culture, trying to learn the world views of different cultures, and developing teaching methods sensitive to these cultures (Gay, 2010) can be listed among the behaviours of teachers with high social self-efficacy beliefs.

The fourth problem question of the study aims to reveal the intellectual self-efficacy beliefs of high school teachers. The findings of the study demonstrate that teachers who participated in this study have a high level of social self-efficacy beliefs. When the qualitative data was examined, it is seen that following media, periodicals, scientific-philosophical reading, events and organisations, personal development and travelling are the factors of teachers' high level of intellectual self-efficacy beliefs. When the quantitative and qualitative findings were examined together, it was concluded that the participants were highly competent, had scientific and philosophical competence, adapted to the environment they are in, attached importance to their personal development and followed current issues. According to this result, the quantitative and qualitative findings of the research are in parallel. Exhibition of being an expert in the field, constantly willing to learn, having strong teaching skills and ability to manage learning and behaviours in line with professional ethics behaviours (Appleyard & Appleyard, 2014) can be listed among the intellectual teacher behaviours. Professional success, content knowledge, a broad worldview and awareness of responsibilities (Bubb & Mortimore, 2013) can be considered as behaviours of teachers with high intellectual self-efficacy. Being more committed to the profession, being sensitive to social problems and producing solutions, giving importance to individual development in many areas, transferring what they have learned to their profession and continuing their education for life (Shukla, 2014) can be listed among the 21st century behaviours of individuals.

Teaching is one of the most influential professions today. For this reason, it has been the subject of many scientific studies. Teaching professions are affected by different factors. These factors can be listed as motivation, education system, economic factors, school management, self-efficacy etc. In this



study, high school teachers' self-efficacy beliefs were investigated with the dimensions of academic self-efficacy beliefs, professional self-efficacy beliefs, social self-efficacy beliefs and intellectual self-efficacy beliefs using qualitative and quantitative methods. According to the quantitative findings of the study, the academic, professional, social and intellectual self-efficacy beliefs of the participants were found to be high. School administrators follow the lesson plans of teachers, direct them to in-service training and support their professional development. These reasons can be listed as the factors affecting high school teachers' self-efficacy level. Significant difference was observed at gender variable. The reason for this difference can be listed as high self-confidence of male teachers, their ability to establish authority in the classroom and their emphasis on discipline. According to the quantitative findings of the study, following scientific research, graduate education, in-service training, following current resources, personal development and communication are the factors affecting participants' academic self-efficacy beliefs; using different teaching methods and strategies, in-service training, personal development, postgraduate education, communication, professional sharing, and benefiting from experience are the factors affecting participants' professional self-efficacy beliefs; social activities, communication, adaptation and sharing are the factors affecting participants' social self-efficacy beliefs; following media, periodicals, scientific-philosophical reading, events and organisations, personal development and travelling are the factors affecting participants' intellectual self-efficacy beliefs. These results clearly demonstrate factors affecting teachers with self-efficacy beliefs. In other words, it can be said that the quality of education will increase if teachers' self-efficacy beliefs are taken into account in the pre-service and in-service training process. From this point of view, teachers with high self-efficacy beliefs are open to development in their profession, are researchers, learn new information, use new methods and techniques in their lessons, follow scientific and professional developments, love to read, have high communication skills, share, support their colleagues, follow their students and want to achieve success in the teaching profession.

## Suggestions

According to the research findings, in terms of academic self-efficacy, attending regular in-service training, following scientific research, participating in and organising scientific activities, assigning students to activities and reflecting their academic development in their lessons can be suggested for teachers. For vocational self-efficacy, using different teaching methods and techniques, sharing vocational experiences, postgraduate education and making an effort towards motivation can be suggested. In the case of social self-efficacy, participating in and taking part in activities inside and outside the school, following scientific and philosophical publications, developing and expressing ideas, having good communication skills, sharing thoughts and adapting to the social environment can be suggested. In the field of intellectual self-efficacy, following up-to-date publications, using social media efficiently, attending personal development training, reading world classics, having a wide world view and bringing this experience into the classroom environment can be suggested.

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