Analysis of Teachers' Efficacy

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ABSTRACT This study was conducted to determine the parameters that affect a teacher's self-efficacy and to discover which teacher efficacies are better in terms of characteristics. Four hundred sixty-seven teachers from different branches of study participated voluntarily. As a data-collection tool, the Teachers' Efficacy Scale was used. In the statistical analysis of the data obtained from the study, a One-Sample Kolmogorov-Smirnov test, a Mann-Whitney U test and a Kruskal-Wallis H test were employed. To determine the relationship between the sub-dimensions, a Spearman correlation analysis was applied. As a result of this study, it has been identified that teaching-strategy scores differ significantly in terms of gender, age groups and educational status ($p<0.05$). A significant difference was found between teacher efficacy and recognition of students in terms of gender and educational status ($p<0.05$). It was observed that there is no significant difference between professional seniority and the teachers' branches of study in terms of these three sub-dimensions ($p<0.05$). Additionally, environmental factors did not differ in terms of any demographic variables ($p<0.05$). An important finding of this research is the linear relationship between the sub-dimensions ($p<0.05$). That is, a decrease in a feature of efficacy will reduce the other factors.

INTRODUCTION

Teachers are the most important actors of the teaching and learning process. It is widely known that the personal and professional development of teachers have an important role in achieving the desired results for the teaching and learning process (Celikkaleli and Inandi 2012). Besides, school, which is a new environment after family life, is the first social institution in the child's life. In this institution, the duty of teachers is to shape the new life of the children and help them internalise it. Especially during the primary-education stage, teachers' approaches towards the students have an important role in achieving the specified targets (Sama and Tarim 2007). Therefore, it can be said that teachers have a crucial role in students' successes (Caprara et al. 2006).

Overall, efficacy is defined as the ability to overcome the factors that leave the individual in a difficult and stressful situation (Luszczynska et al. 2005). A belief in their own efficacy enables people to take environmental factors under control (Rimm and Jerusalem 1999). Teacher efficacy is described as the individual talents and beliefs exhibited in some cases regarding teaching (Dellinger et al. 2008), and the efficacy factor is necessary for successful education (Baloglu and Karadag 2001). Teacher efficacy is divided into classroom competence and organizational competence. Classroom competence is the ability to regulate relations and fulfil the professional responsibilities that are necessary in the teaching and learning process. Organizational competence is the teacher's ability to fulfil the corporate mission and to be a social and political part of that institution (Freidman and Kass 2002). As in every profession, teaching also requires basic knowledge and skills. Teachers' professional competence levels are provided with pre-service and in-service training, and these competencies should be improved continuously. Yet in time, it has been observed that the desired efficiency in the professional efficacy of teachers couldn't be achieved; therefore, several precautions must be taken to overcome deficiencies (Ersoy 2008).

The classroom environment comes first when evaluating the efficacy levels of teachers. Teachers feel competent when they manage the classroom well, and this helps them support their students' learning process. Thus, if teacher efficacy is at a high level, students' success will increase as well (Atici and Cabaroglu 2013). Teacher efficacy is an important factor in creating a positive classroom and an efficient learning environment. This is because teachers with higher efficacy lev-

els use preventive, long-lasting and positive teaching strategies more often. Students in these classrooms spend most of their time focusing on learning tasks (Atici 2001). Experiences gained by teachers from the very beginning of their professional lives enable them to improve their efficacy. Besides, the capacities of students, daily events, the relationships withthe people around them and self-confidence levels are all factors that increase the level of teacher efficacy (Yeung and Watkins 2000).

In addition to the factor of self-efficacy, qualified and successful teachers can be defined as ones who constantly improve themselves both personally and professionally, and who search for and evaluate these opportunities. Qualified and successful teachers feel confident in their abilities and skills. As a result, to be effective in a teaching environment, they try to improve themselves. In addition, they become insistent to achieve their goal (Seferoglu 2004; Luszczynska et al. 2005). In contrast, some teachers with a high level of teachers can avoid improving themselves because they have high self-esteem (Coskun et al. 2010).

Nowadays, in some research conducted on teacher efficacy, issues such as implementing the curriculum in the classroom, developing an effective education system and increasing students' success have been discussed (Azar 2010). Another important research topic is the extent that teachers see themselves as efficient in their professional lives. That is, teachers' perceptions about their efficacy are closely related to their self-confidence (Ustuner et al. 2009). Teacher efficacy can be affected by many factors, primarily the level of education. Therefore, identifying the factors affecting teacher competence is important. In this study, the efficacy levels of the teachers from different branches of study have been discussed in terms of different variables.

Purpose of Case Study

The purpose of this study is to determine the parameters that affect a teacher's self-efficacy and to discover which teacher efficacies are better in terms of their characteristics.

The Problem of Case Study

The general purpose of this study is to identify the efficacy of teachers working at primary and high schools connected to the Isparta Pro-

vincial Directorate of National Education. In accordance with this purpose, the researchers tried to find answers to the following questions: To what extent do teachers have efficacy? Is there a significant difference among teachers' efficacy levels according to their gender, age, branch of study, educational level and their school's socio-economic level?

METHODOLOGY

Research Design

This is a descriptive study aiming to find teachers' efficacy with respect to different variables.

Sample

The study was conducted in the 2013–2014 academic year on 467 teachers (249 male and 218 female) working at 27 schools (17 primary schools and 10 high schools) connected to theIsparta Provincial Directorate of National Education (Table 1).

Table 1: Descriptive statistics about participants

Variables	Sub-dimensions	f	%
Gender	Male	249	53.3
	Female	218	46.7
Age Groups	20–30 years	99	21.2
	31–40 years	159	34.0
	41–50 years	141	30.2
	50+	68	14.6
Professional	1–5 years	46	9.9
Seniority	6–10 years	95	20.3
	11–15 years	136	29.1
	15+ years	190	40.7
Educational	Associate's degree	32	6.9
Status	Bachelor's degree	395	84.6
	Master's degree	40	8.6
Socio-	Low	70	15.0
economic	Average	290	62.1
Status of	High	107	22.9
the School	English language	54	13.1
Branch	Primary education	146	35.5
	Turkish language	59	14.4
	Science education	77	18.7
	Social science education	75	18.2

Research Instruments

In this research, the "Personal Information Form" and "Teacher Efficacy Scale" were used as data-collection tools. This scale was developed by Gibson and Dembo (1984) and adapted

to Turkish by Ozkahraman (2012). The scale, which included the four sub-dimensions "teaching strategies", "teacher self-efficacy", "recognizing student" and "environmental factors", is a Likert-type scale consisting of 23 questions. A reliability analysis of the scale was carried out, and as a result, Cronbach's alpha value of the scale related to each sub-dimension was found: .87 for "teaching strategies", .75 for "teacher self-efficacy", .78 for "recognizing students" and .64 for "environmental factors". Cronbach's alpha value of the overall scale was .91. As this value is higher than 0.80, it indicates that this scale is highly reliable for analysis (Tavsancil 2002) (Table 2).

In this study, while the scores obtained from the sub-dimensions of teaching strategies and recognition of students are above the average score, the teacher self-efficacy and environmental factors sub-dimensions are at the average level.

Data Analyses

The SPSS 15.0 for Windows software was used for analysing the data obtained from the research. Before applying basic statistical analyses, a One-Sample Kolmogorov-Smirnov test was used to analyse whether the data were suitable for a normal distribution or not. Becausenone of the data related to the sub-dimensions of the scale demonstrated a normal distribution, non-parametric analysis techniques were used to analyse the data. A Mann-Whitney U test was used to compare the data related to the sub-dimensions in terms of gender, and a Kruskal-Wallis H test was applied to compare the teachers' age groups, professional seniority, educational level and their fields of study. A Spearman correlation analysis was carried out to examine the relationship between the data and the sub-dimensions.

RESULTS

Table 3 identifies that the teaching strategies, teacher self-efficacy and recognition-of-student scores of the female participants are significantly higher than the scores of the male participants ($p<0.05$). While there is a significant difference in the teaching-strategies scores only in relation to age groups ($p<0.05$), in terms of educational status, a significant difference has been found in the scores for teaching strategies, teacher self-efficacy and recognition of students ($p<0.05$). No significant difference has been detected in the sub-dimensions of efficacy related to teachers' professional seniority, the socio-economic status of their schools or their branches of study ($p>0.05$). In addition, there is no significant difference between environmental factors and any other variable ($p>0.05$).

Results of Post Hoc Analysis of the Teaching Strategies Sub-dimension

A significant difference has been found between the mean scores of the participants 20–30 years of age and those 31–40 years old, 41–50 years old and 50+ years old ($p<0.05$); the 20–30 age group's mean score is significantly lower than the others. It has been identified that there is a significant difference between the mean scores of the participants with a master's degree and the ones with a bachelor's degree ($p<0.05$): the mean score of the participants with a master's degree has been found significantly lower ($p<0.05$).

Results of Post Hoc Analysis of the Teacher Self-efficacy Sub-dimension

The self-efficacy mean scores of the participants with a master's degree have been found to be significantly lower than both the scores of the participants that graduated with an associ-

Table 2: Data related to the sub-dimensions of the scale

Data related to sub-dimensions	Sub-dimensions of the scale			
	Teaching strategies	Teacher Self-efficacy	Recognition of the student	Environmental factors
Number of items	10	4	5	4
The lowest score that can be taken from the scale	10	4	5	4
The highest score that can be taken from the scale	60	24	30	24
Mean scores obtained from sub-dimensions (X±SD)	41.1±8.9	14.9±4.0	20.6±4.9	13.0±4.0

Table 3: Comparison of teacher self-efficacy in terms of demographic variables

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Variables	Sub-dimenson	Teaching strategies	Teacher self-efficacy	Recognition of student	Environmental factors	Significant level Teaching strategies	Teacher self-efficacy	Recognition of student	Environmental factor
		X±SS	X±SS	X±SS	X±SS				
Gender	Male (n=249)	40.3 ±8.9	14.5± ±4.0	20.1 ±5.0	12.9± ±3.8	Z= -2.0 P= .036	Z= -2.5 P= .011	$\div^2$= -2.5 P= .012	Z= -.14 P= .885
	Female (n=218)	42.1± 8.9	15.5± 14.1	21.2± 4.8	13.2± 4.4				
Age Groups	20–30 years (n=99)	38.9± ±9.4	14.2± ±4.6	19.7± ±5.0	13.4± ±4.1	$\div^2$= 8.85 P= .031	$\div^2$= 5.37 P= .146	$\div^2$= 4.93 P= .177	$\div^2$= 5.70 P= .127
	31–40 years (n=159)	41.8± 9.0	15.2± 4.0	21.1± 5.0	13.5± 4.2				
	41–50 years (n=141)	41.8± 8.8	15.4± 3.8	20.8± 5.1	12.5± 4.0				
	50+ years (n=68)	41.4± 8.2	14.6± 3.9	20.3± 4.5	12.8± 3.7				
Professional Seniority	1–5 years (n=46)	38.3± 9.1	13.8± 3.9	18.8± 4.9	12.7± 4.2	$\div^2$= 6.84 P= .077	$\div^2$= 3.65 P= .301	$\div^2$= 5.29 P= .116	$\div^2$= 4.48 P= .186
	6–10 years (n=95)	40.2± 10	14.8± 4.7	20.3± 5.3	13.8± 4.6				
	11–15 years (n=136)	41.6± 8.8	15.2± 4.0	21.2± 4.9	13.0±1 4.1				
	15+ yilyears (n=190)	42.0± 8.3	15.2± 3.7	20.8± 4.7	12.8± 3.6				
Educational Status	Associate's degree (n=32)	41.0± 9.2	15.6± 4.0	21.3± 5.7	12.6± 2.7	$\div^2$= 7.16 P= .028	$\div^2$= 8.98 P= .011	$\div^2$= 8.05 P= .018	$\div^2$= 2.08 P= .353
	Bachelor's degree (n=395)	41.5± 8.7	15.1± 4.0	20.8± 4.8	13.2± 4.2				
	Master's degree (n=40)	37.7± 10	13.6± 4.8	18.6± 5.3	12.2± 3.5				
Socio-Economic Status of the Schools	Low (n=70)	40.8± 10	14.8± 4.3	21.2± 5.2	12.4± 3.6	$\div^2$= .46 P= .791	$\div^2$= 3.28 P= .193	$\div^2$= 5.82 P= .054	$\div^2$= 2.04 P= .360
	Average (n=290)	41.2± 8.1	15.2± 3.9	20.8± 4.7	13.3± 4.2				
	High (n=107)	41.1± 10	14.5± 4.5	19.8± 5.4	12.9± 4.0				
Branches of the Teachers	English language (n=54)	41.5± 8.2	14.8± 4.1	21.9± 4.4	13.6± 3.7	$\div^2$=4.60 P= .330	$\div^2$= 3.07 P= .545	$\div^2$= 8.59 P= .072	$\div^2$= 1.68 P= .794
	Primary education (n=146)	41.0± 9.9	15.0± 4.6	20.3± 5 5.5	12.9± 4.6				
	Turkish language (n=59)	43.1± 8.2	15.3± 3.7	21.7± 4.4	13.2± 4.5				
	Science education (n=77)	40.3± 9.1	14.3± 4.1	19.8± 14.6	13.1± 3.5				
	Social sciences education (n=75)	40.1± 9.4	15.1± 3.9	20.4± 5.3	13.4± 4.0				

Z=Mann-Whitney U test; $\div^2$=Kruskal-Wallis H test; P=Significance Level

ate's degree and those with a bachelor's degree (p<0.05).

Results of Post Hoc Analysis of the Recognition-of-Student Sub-dimension

The recognition-of-student mean scores of the participants with a master's degree has been found to be significantly lower than the ones with an associate's degree and the ones with a bachelor's degree (p<0.05).

Table 4: Examining the relationships between the sub-dimensions of the scale

	Corre-lation	Teaching strategies	Teacher self-efficac	Recog-nition of student
Teacher	r	.666		
self-efficacy	p	.000		
Recognition	r	.630	.614	
of student	p	.000	.000	
Environmental	r	.167	.257	.218
factors	p	.000	.000	.000

Table 4 identifies that there is a linear and significant relationship among all the sub-dimensions (p<0.05). A decrease in a feature of efficacy will reduce the others, and an increase will enhance the others.

In this research, it is ascertained that the teaching-strategies scores vary significantly in terms of gender, age groups and educational level (p<0.05). It is established that the features of teacher efficacy and recognizing students vary significantly only in terms of gender and educational level (p<0.05). There is no significant difference between these three sub-dimensions in terms of teachers' fields of study and professional seniority (p<0.05). In addition, it is observed that the environmental factors sub-dimension does not vary in terms of any demographic variable (p<0.05). Another important finding of this research is that there is a linear relationship with a significant level between the sub-dimensions (p<0.05).

DISCUSSION

One of the important findings of this study is that the teaching strategies, teacher self-efficacy and recognition-of-student scores of the female participants are significantly higher than the scores of the male participants. In some stud-

ies in the literature (Cifcili 2008; Kapikiran 2007; Kahyaoglu and Yangin 2007; Ustuner et al. 2009; Coskun et al. 2010; Azar 2010; Altuncekic et al. 2005; Coskun et al. 2009; Seker et al. 2005; Karahanand Balat 2011; Britner and Pajares 2006), it has been established that the self-efficacy levels of the teachers and teacher candidates do not differ in terms of gender. In some studies, it has been found in favour of female teachers (Sunbul and Arslan 2009; Shaid and Thompson 2001), and in some studies it has been found in favour of male teachers (Klassen and Chiu 2010).

When the researchers evaluate the findings of this study and the research results in the literature, it can be clearly seen that there are conflicting results about teacher efficacy in terms of gender. The main reason why these differences occur is that the teachers participating in this study have lived in different environmental conditions, have had different cultural features and have received training from different educational systems. In some research, cultural differences and environmental features in teaching and learning environment are the factors affecting teacher self-efficacy; therefore, it has been highlighted in most of the studies that sufficient information could not be obtained in time (Yeung and Watkins 2000; Luszczynska et al. 2005). In contrast, a change in the social roles of women nowadays lies at the bottom of females' higher level of self-efficacy than males. Today, in the transition from a traditional to a modern society, women who express themselves better and have more self-confidence choose teaching as a profession, and this contributes to their feeling more competent than males in their professional life (Akbas and Celikkaleli 2006).

In this study, it has been identified that the teaching-strategies scores regarding age groups demonstrate a significant difference. This difference results from the teachers in the 20–30 age group. Accordingly, the teaching-strategies scores of the teachers in the 20–30 age group are found to be significantly lower than those teachers with an average age of 31–40, 41–50 and 50+ years of age. According to these findings, it can be said that as the teachers grow older, their perception of efficacy increases.

Teachers who are proficient in the area of classroom management and teaching can develop positive strategies for their lessons. Teachers with a low level of efficacy show a high potential for criticising their students, and their po-

tential for encouraging students to find the right answer when they respond incorrectly has been found to be lower (Atici 2001). Therefore, taking precautions against developing the self-efficacy levels of teachers, especially at young ages, will contribute to enhancing teachers' self-efficacy and consequently increase students' successes.

An important finding of this study is that the teaching strategies, teacher self-efficacy and recognition-of-student scores of the teachers regarding educational status significantly vary. According to the results obtained from this study, it has been identified that the teaching-strategies scores of the teachers with a bachelor's degree education are higher than those with a master's degree. Likewise, the teacher self-efficacy scores and recognition-of-student scores of teachers with a bachelor's degree have been found to be higher than those with a master's degree. Because teaching is a complex skill, many factors need to be considered regarding the teaching environment where the teachers have been trained. Thus, teacher-training programs have great importance for preparing teachers to have a good professional career (Egel 2009). From a professional standpoint, well-trained teachers are expected to provide a positive learning environment for their students. Yet, having different approaches and methods of teaching, having different subject areas and different socio-economic status and having different opportunities provided to them for qualified professional development affect teacher self-efficacy levels (Seferoglu 2004). Hence, it can be said that in addition to educational status, factors such as the teaching environment, the facilities provided for the teachers and other external factors are efficient in determining the level of efficacy.

For instance, if you provide those teachers who received a master's degree and have a high level of knowledge in their field with insufficient course material and an inadequate teaching environment, their self-efficacy level will be affected negatively. In addition, in some research it has been found that the educational levels of teachers do not have a significant effect on their professional efficacy (Karahan and Balat 2011).

In this study, it has been established that teaching strategies, recognition of students and teacher self-efficacy do not show a significant difference regarding teachers' professional seniority. While in some similar studies in literature it has been identified that there is no difference in the level of teacher efficacy in terms of professional seniority (Ustuner et al. 2009; Karahan and Balat 2011; Kapikiran 2007), in other studies it has been specified that efficacy levels of teachers with different years of professional seniority differ—as the professional seniority of the teachers enhances, their efficacy level shows a significant increase as well (Sunbul and Arslan 2009; Cifcili 2008; Shaid and Thompson 2001). A teacher having high professional seniority also means that they have more experience. It is an expected result that the teaching efficacy of teachers with a high level of professional experience is in direct proportion to their experiences.

In this study, it has been observed that the teaching strategies, recognition-of-student and teacher self-efficacy scores of teachers in terms of the socio-economic status of the schools in which they have been working do not differ significantly. In a similar study conducted by Kapikiran (2007), it has also been found that the professional seniority of the teacher shows no difference in terms of the socio-economic status of the schools. Teachers' efficacy in terms of the schools they work in becomes more of an issue. In the studies, the socio-economic status of the schools generally has not been taken into consideration. This study, in which the socio-economic status of the schools teachers work in has been evaluated, will form an important resource for literature.

Another important finding of this study is that the teaching strategies, recognition-of-students and teacher self-efficacy scores in terms of branches of study do not differ significantly. In similar studies supporting the researchers' findings, it has been identified that there is no significant difference in the level of teacher efficacy according to the variable of the branches of study (Ustuner et al. 2009; Karahan and Balat 2011). On the contrary, in many studies in the literature, it has been found that the attitudes of teachers and teacher candidates towards teaching strategies and professional competence in different branches are at different levels (Seker et al. 2005; Azar 2010; Sunbul and Arslan 2009; Kahyaoglu and Yangin 2007; Coskun et al. 2010; Altuncekic et al. 2005). The features of the materials, the general attitudes of the students towards lessons, teachers' professional competence specific to their fields, and some advantageous and disadvantageous conditions in the

branches lie at the bottom of the reason for why teachers in different branches have different efficacy levels.

In this study, it has been found that an increase occurring in any of the sub-dimensions causes an enhancement in the other sub-dimensions; therefore, it can be said that there is a positive linear relationship among them. In the various studies conducted, it has been established that the sub-dimensions of efficacy perception are associated with each other and that positive developments occurring in any sub-dimension affect other sub-dimensions positively (Coskun et al. 2010). In another study, a positive correlation has been found between academic efficacy and efficacy related to teaching (Tabancali and Celik 2013). Therefore, beside the correlation between each of the sub-dimensions of efficacy, we can say that there is a significant relationship among the different types of efficacy.

As a result, factors such as gender, educational level and age characteristics affect the professional efficacy of the teachers, whereas it has been identified that the socio-economic status of the schools, the branches of study and professional seniority are the factors that do not affect professional efficacy. It should be noted that teacher efficacy affects students' success directly. Hence, the training of teachers with high professional competence is required by eliminating individual, environmental and educational factors that affect teacher efficacy negatively. In addition, by examining teachers' efficacy levels throughout their professional lives, the shortcomings in their efficacy can be identified, and studies need to be carried out to fulfil these shortcomings.

CONCLUSION

As a result of this study, it has been identified that the teaching-strategies scores differ significantly in terms of gender, age groups and educational status. A significant difference has been found between the dimensions of teacher efficacy and recognition of students in terms of gender and educational status. It has been observed that there is no significant difference between professional seniority and the teacher's branches of study in terms of these three sub-dimensions. Additionally, environmental factors did not differ in terms of any demographic variables. It is an important finding of this research

that there is a linear relationship between the sub-dimensions. That is, a decrease in a feature of efficacy will reduce the other factors.

RECOMMENDATIONS

At the end of the study, it is understood that gender and educational level are both important features that affect teacher efficacy. A linear relationship among the efficacy sub-dimensions is an important case to be taken into consideration, because a decrease in one feature of efficacy will reduce the others as well. It is considered that identifying the deficiencies of teachers by carrying out periodic measurements and investigations, along with using the studies in accordance with these findings, will make a contribution toward improving teacher efficacy. Therefore, periodic investigations and measurements about a teacher's efficacy should be carried out to detect shortcomings, and these shortcomings of present teachers need to be fulfilled.

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