

Research on Teacher Self-efficacy in Turkey: 2000-2017

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Abstract

In this study, 48 empirical studies on teacher self-efficacy published between 2000-2017 were reviewed in terms of certain basic characteristics, and the research trends were revealed in this area. According to the results obtained in the review, teacher self-efficacy studies in the Turkish context showed an increase in the course of time. Teacher self-efficacy in a specific area was observed to be frequently examined within the context of teaching a subject or using technology in education. This increase in the number of studies did not reflect much on the diversity of the research methods employed, and the studies were often conducted by using quantitative methods. Elementary and middle schools were mostly chosen as the research context. Furthermore, the amount of research on three self-efficacy areas (i.e. collective teacher efficacy, teacher self-efficacy sources, and teachers' general self-efficacy) were considerably limited. Moreover, none of the studies examined the relationship between teacher self-efficacy and collective teacher efficacy and student achievement. Common findings of the studies showed that teacher self-efficacy was a strong predictor or a mediator variable. In this sense, researchers are suggested to study how self-efficacy can be developed experimental and longitudinal works and to conduct studies to reveal insights about collective efficacy in schools, teachers' general self-efficacy, and the outcomes of these efficacy characteristics.

Keywords: teacher, self-efficacy research, systematic review.

1. Introduction

1.1 Introduce the Problem

Self-efficacy, a concept of the social learning theory, was introduced to the literature by Bandura (Gist, 1987; Henson, 2001; Pajares, 1996; Shunk, 1989; Zimmerman, 1995). According to Bandura (1993), self-efficacy is individuals' beliefs that they can successfully fulfil a task or be successful in a job. Self-efficacy beliefs determine how people feel, how they motivate themselves, what they think and which behaviours they exhibit. In other words, self-efficacy affects individuals' choice of activities, their resistance against difficulties, and their efforts and performance. For Zimmerman (1995), self-efficacy is individuals' beliefs about their ability to accomplish a task. Pajares (1996) defines self-efficacy as individuals' effort for achieving a task, and their resistance against problems. Gist and Mitchell (1992) state that self-efficacy includes an ability perceived by individuals, a dynamic structure that changes with knowledge and experience, and individuals' regulating their performance based on changing conditions. As Schunk and Meece (2006) indicate, self-efficacy is the change in individuals' behaviours and goals depending on environmental conditions and personal actions.

Teacher self-efficacy can be conceptualised as personal teacher beliefs towards the skills of planning, organising and implementing the activities necessary to reach certain educational goals (Bandura, 1993). Teacher self-efficacy refers to the beliefs that teachers have for individual and collective competencies that affect student learning. In self-efficacy, the beliefs that influence student learning and teachers' professional behaviours play a key role in motivation (Klassen, Tze, Betts & Gordon, 2010). Schwarzer and Hallum (2008) argue that teachers with high self-efficacy always try to enhance student achievement, set challenging goals for themselves and struggle to achieve these goals. On the other hand, teachers with low self-efficacy can neither meet the expectations imposed by others nor cope with stress. In this regard, teacher self-efficacy is teachers' beliefs in their abilities of instructional strategies, student participation and classroom management (Tschannen-Moran & Woolfolk Hoy, 2001). Dembo and Gibson

(1984) describe teacher self-efficacy as important beliefs that affect teacher-student interaction and teachers' success in student achievement. Teacher self-efficacy is teachers' beliefs that positively affect their instructional behaviours (Skaalvik & Skaalvik 2007; Tschannen-Moran & Woolfolk Hoy, 2001), and student achievement and motivation (Bandura 1995). In brief, according to Friedman and Kass (2002), conceptualisations related to teacher self-efficacy focus on teachers' success in classroom management and student participation.

In his social learning theory, Bandura states that there are different tendencies in behavioural change including psychological processes and result expectations. One of the differences is the performance-focused processes that affect psychological changes. Psychological processes are the ways of creating and reinforcing expectations related to individual ability. The other difference relates to the result expectations that arise after an individual behaviour is performed (Bandura, 1995; 1997; 2004). Furthermore, Bandura states that self-efficacy consists of three dimensions that are magnitude, strength and generality. Magnitude shows the degree of difficulty that an individual feel in a task to be fulfilled. Strength is about whether individual belief is strong or weak. As for generality, it forms the degree of generalisation for an individual expectation (Bandura, 1977; Bandura & Adams, 1977; Gist, 1987).

With regard to social learning, Bandura asserts that there are four important sources of self-efficacy beliefs forming individual behaviours, and these are (i) *experiencing success*, (ii) *others' experiences*, (iii) *verbal persuasion* and (iv) *physical and emotional state*. Experiencing success is individuals' having faith in their own knowledge and skills for achieving a task as a result of gaining knowledge and experience in their life. Others' experiences is individuals' modelling the experiences of successful individuals in their environment by observing them. Verbal persuasion is individuals' being encouraged by others that they can be successful and yield a good result in a job. Lastly, physical and emotional state is individuals' feeling good physically and emotionally, and coping with emotional problems and stress (Bandura, 1977; 1993; 1995; 2004; Cansoy, Parlar & Kılınc, 2017). Schunk (1989) claims that factors such as ability, result expectations and the way in which results are perceived have an effect on self-efficacy behaviours. As can be inferred from the arguments above, the concept of self-efficacy is a multidimensional construct that relates to individuals' beliefs regarding their success.

In the educational literature, Bandura's works are commonly cited in studies that set out to define self-efficacy beliefs and develop measurement tools for self-efficacy. Henson (2001) states that Dembo and Gibson's (1984) Teacher Efficacy Scale, and the Ohio State Teacher Efficacy Scale developed based on the works of Pajares (1996) and Tschannen-Moran and Woolfolk Hoy (2001) have been frequently used in the field of education. Besides, Skaalvik and Skaalvik (2007) also developed a scale titled Norway Teacher Self-Efficacy Scale (NTSES) containing sub-dimensions such as adapting education based on the individual needs of students, motivating students, maintaining discipline, cooperating with colleagues and parents, and coping with changes and difficulties. Based on Bandura's sources of self-efficacy, Tschannen-Moran, Woolfolk and Hoy (1998) dimensioned teacher self-efficacy as mastery experience, verbal persuasion, modelling experiences and physiologic stimulation. Schwarzer, Schmitz and Daytner (1999) classify the areas of self-efficacy in improving teachers' professional skills as (i) job success, (ii) developing job skills, (iii) social interaction with students, parents and colleagues, and (iv) coping with work stress. Dembo and Gibson (1985) argue that self-efficacy constitutes two factors; (1) it shows teachers' beliefs regarding that the ability to manage the change is limited by factors such as family environment and background, and (2) it represents individual efficacy beliefs that teachers have the skills and abilities to enable student learning. In short, the available scales developed to measure self-efficacy were developed in the framework of elements such as motivation, performance, interaction, coping with stress, and experience.

1.2 Explore Importance of the Problem: State and Aim of the Studies on Teacher Self-efficacy

State Self-efficacy affects human behaviours in areas including health, administration, sports and education (Bandura 1995). In the international literature, the research on teacher self-efficacy examined this construct mostly in relation to concepts such as collective teacher efficacy and burnout (Skaalvik & Skalvik, 2007, 2010), professional development (Watson, 2006), job satisfaction (Klassen & Chiu, 2010), and classroom management (Friedman & Kass, 2002). Stipek (2012) claims that studies on teacher self-efficacy focused on teachers' behaviours, student motivation and learning, but these studies did not make reference to the factors that affect teacher self-efficacy. Pajares (1997) states that academic motivation and self-control in particular attracted a great deal of attention in studies on self-efficacy beliefs in education. He concludes that researchers studying self-efficacy concentrated on three different areas. The researchers in the first area investigated the connection between self-efficacy beliefs and career choices particularly in science and mathematics. Those in the second area focused on teachers' self-efficacy beliefs, instructional practices and student achievement. Lastly, those in the third area examined the relationships of student self-efficacy with their motivation, academic performance and achievement.

In the Turkish context, researchers studied the relationships of teacher self-efficacy with concepts such as the use of technology and material development (Şimşek & Yazar, 2017), teacher burnout (Cansoy, Parlar & Kılınç, 2017; Sarıçam & Sakız, 2017; Savaş, Bozgeyik & Eser, 2014), leader-member interaction and integration to work (Kavgacı & Çalık, 2017), teachers' thinking skills (Dilekli & Tezci, 2016), encouraging creativity (Çayırdağ, 2016), bureaucratically effective school structure (Kılınç, Koşar, Er & Öğdem, 2016), favouritism in school administration and organisational silence (Aydın, 2016), distributive leadership and teacher leadership (Kurt, 2016), inclusive education (Toy & Duru, 2016), academic optimism (Sezgin & Erdoğan, 2015), trust in administrator and teachers' professional behaviours (Koşar, 2015), job satisfaction (Buluç & Demir, 2015), self-efficacy towards using computers (Çetin & Güngör, 2014), creating a constructive learning environment (Koç, 2013), self-efficacy towards teaching English and perception of professional development (Yaman, İnandı & Esen, 2013; Yılmaz, 2011), teacher performance (Gür, Çakıroğlu, Çapa & Aydın, 2012), instructional leadership and collective leadership (Çalık, Sezgin, Kavgacı & Kılınç, 2012), teachers' support in students' levels of autonomy (Güvenç, 2011), teachers' classroom management skills (Babaoğlu & Korkut, 2010) and transformational leadership behaviours and collective teacher efficacy (Demir, 2008).

The initial research on teacher self-efficacy in the international literature was mostly in the form of descriptive case studies (Henson 2001). As for the Turkish context, most of the research consisted of relational survey studies (Cansoy, Parlar & Kılınç, 2017; Yaman, İnandı & Esen, 2013; Yılmaz, 2011). In this respect, analysing individual and organisational variables related to teacher self-efficacy is of significance for demonstrating the potential effects of self-efficacy. Moreover, revealing an overall picture of the relevant literature is important to determine the gaps in research, and guide further studies in the field. Accordingly, this study aimed at evaluating the research on self-efficacy. Since most of the research on teacher self-efficacy in Turkey was conducted between 2000-2017, the studies published in this period were examined. The following research questions were addressed based on the aim of the study: *How does the tendency of the research on teacher self-efficacy change across years? What are their methods and designs? What are their sample distributions? Which self-efficacy areas are examined in teachers? Which individual and organisational variables do teacher self-efficacy perceptions have potential relationships with?*

2. Method

In this study, the studies on teacher self-efficacy in Turkey were analysed through a systematic review. Systematic review or examination is a method of defining and synthesising research findings regarding a certain topic (Karaçam, 2013). Systematic reviews are implemented in a progressive process. In systematic reviews, empirical findings are brought together based on predetermined criteria to answer a research question. In this methodology, clear and systematic methods are used to minimise researchers' subjective judgements. Systematic review studies enable researchers to make a synthesis of the studies on a topic and determine the areas that need to be explored, and practitioners and policy-makers to take measures for possible or existing problems (Higgins & Green, 2011). Consequently, the systematic review method was adopted in this study since the aim was to analyse, evaluate and synthesise the studies on teacher self-efficacy in Turkey, and to determine the tendencies of these studies. Systematic review studies consist of steps that are demonstrating the objective and scope, using certain inclusion criteria, data gathering methods and gathering the data (Lunny, Brennan, McDonald & McKenzie, 2016). In this regard, systematic reviews include the sections of search strategy, inclusion criteria, scanning, gathering and defining the data, demonstrating the quality of the studies included, and synthesis of the findings, respectively (EPPI-Centre, 2018; Karaçam, 2013).

2.1 Criteria for the Selection of Studies

The criteria for the selection of studies were determined as the first step of the systematic review.

2.1.1 Search Strategy and Databases

In this review, studies were searched in the field of education in accordance with the research questions, and they were searched in Web of Science, ERIC, SCOPUS and ULAKBİM databases. In the data gathering process, the studies conducted in the Turkish context were searched with the query “self-efficacy, teacher self-efficacy” was searched in the databases concerned. These searches were done in both Turkish and English.

2.1.2 Describe Inclusion Criteria

In this step, the criteria that the studies needed to meet to be included in the analysis included (i) being a full-text empirical paper in the field of education, (ii) being published in national and international journals between 2000-2017, (iii) being an original study, (iv) focusing on teacher self-efficacy, (v) reporting findings related to the

research aim, (vi) being conducted in educational institutions other than universities, (vii) being conducted in schools in the Turkish context, (viii) being quantitative and relational studies, (xi) clearly describing elements such as sample, method and measurement tools and providing statistically necessary information accurately. In this sense, the selection was limited to studies found in databases that are accepted as reputable in science and published in refereed journals. Besides, the time frame was set as between 2000-2017 because the empirical studies on teacher self-efficacy became widespread in the national literature during this period.

2.1.3 Scanning

As is seen in Figure 1, a total of 570 studies were found by searching the key words “self-efficacy, teacher self-efficacy” in the databases. Among these studies, 481 works including theses/dissertations, theoretical papers and those conducted outside the Turkish context were excluded from the analysis, leaving 89 articles. Only 59 of these articles were about teacher self-efficacy, but 11 of them were the same articles appeared in different databases. Finally, the remaining 48 studies were analysed in the scope of this study.

The scanning process is summarised in Figure 1.

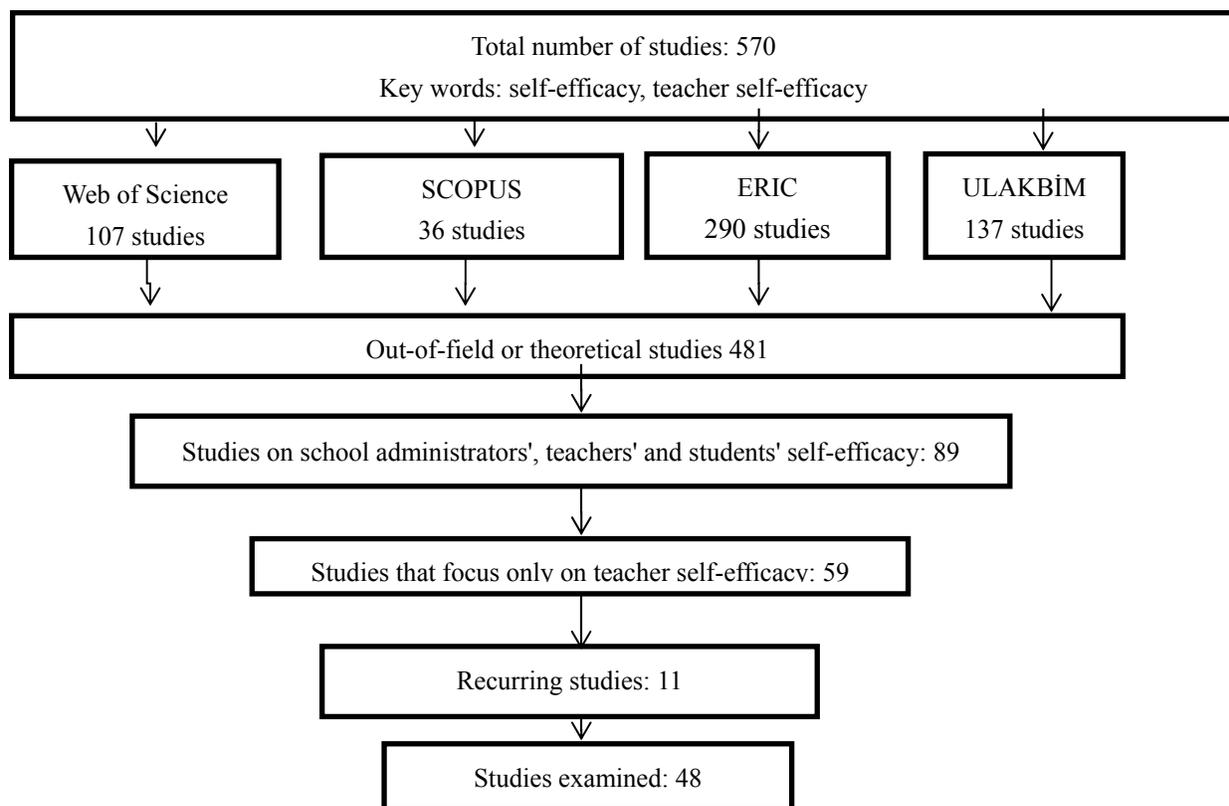


Figure 1. Flow Chart for the Evaluation of the Studies

2.2 Data Gathering and Analysis

An evaluation form was developed in accordance with the criteria for the selection of studies. The studies were retrieved by the researchers as they used this form. The full-text studies were coded as S1, S2, S3,...S29, and stored in the computer environment. The authors, topics, methods and findings of the studies were divided into categories by using Microsoft Office Excel.

2.3 Determining the Quality of the Studies

The quality of the 48 studies were evaluated based on EPPI-Centre (2018), and the framework for assessing the weights of evidence proposed by Gough, Oliver and Thomas (2017). Evaluating the methodological quality, methodological relevance and topic relevance of studies as a whole demonstrates the weights of evidence. In this regard, the design of the studies can make them stronger in terms of evidence. Besides, the methodology and the

topic of the articles being relevant also contribute to this aspect. Accordingly, the researchers of the present study prepared a quality check-list and evaluated the studies by rating them from 1 to 4 based on quality. In the case of a disagreement, expert opinion was obtained, and the data were revised based on the expert's opinions.

2.4 Synthesis of the Findings

In this step, the studies were summarised, and the themes were formed in accordance with the research aims. The summaries under each theme were read and evaluated to reach primary themes. The studies were read and evaluated independently by the two researchers. Lastly, the studies evaluated by the researchers were combined in a single form. The studies examined were marked with an asterisk (*) in the end-of-text references.

3. Results

In this study, the studies published after 2000 were examined because the research on self-efficacy increased in the international literature after this year, and accordingly, such studies started to be conducted within this period. The distribution of the methods and topics of the studies is presented across years in Figure 2.

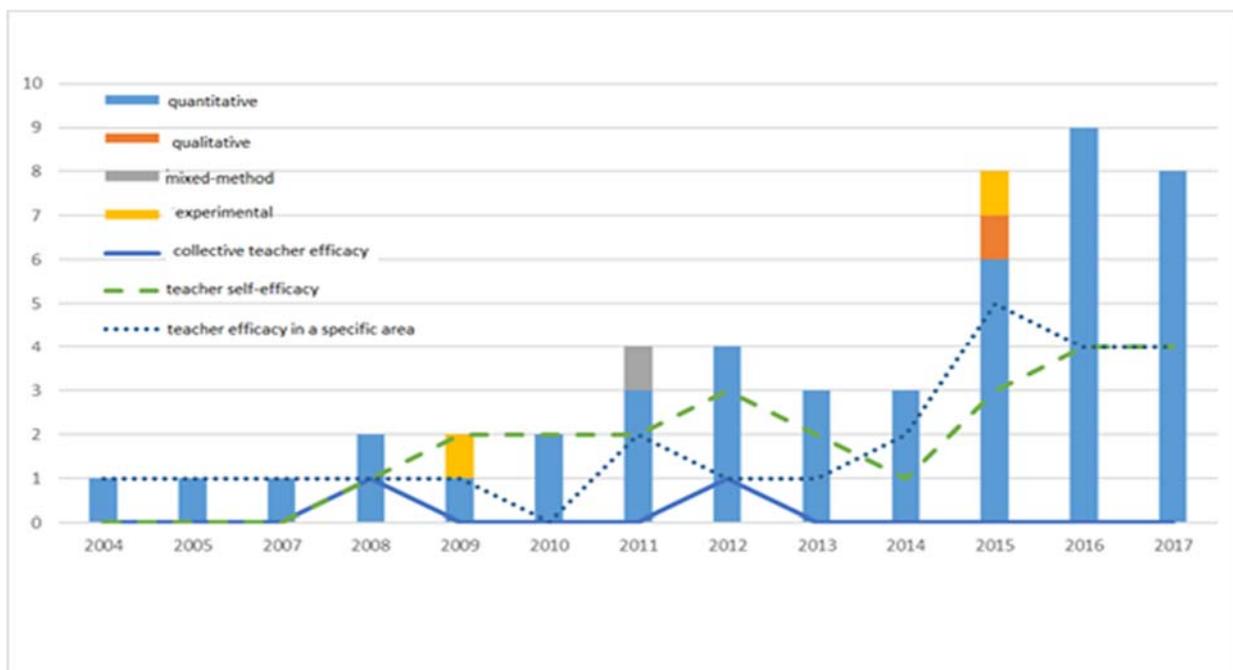


Figure 2. The Distribution of the Studies on Teacher Self-Efficacy Across Years

As is seen in Figure 2, the studies on teacher self-efficacy showed an increase throughout the 14-year period after 2004. Yet, self-efficacy studies were mostly conducted between 2014-2017. The most important source of this increase was quantitative studies. The number of quantitative studies was higher than qualitative and mixed-method studies. Particularly after 2008, the studies on teacher self-efficacy started to increase steadily until 2017. Similarly, the number of the studies that aimed to determine teachers' self-efficacy in a particular area (e.g. computer self-efficacy, technology usage self-efficacy) showed an increase at high levels. However, the studies on collective teacher efficacy were limited to several works. These findings show that researchers often preferred quantitative methods, and were not quite interested in qualitative, mixed-method and experimental studies.

As is seen in Table 1, there were 45 quantitative studies examined while there were only three studies employing a quantitative and mixed methodology. Twenty-two of the quantitative studies were designed in the relational model, 22 in the descriptive survey model and one study in the experimental model. There were only one qualitative study, and two mixed-method studies. Researchers examined teachers' self-efficacy based on demographic and social variables in accordance with the survey model and relational comparison. In relational studies, teacher self-efficacy were examined in relation to individual or organisational variables.

Table 1. Distribution of Studies Based on Methods and Designs

Method	Design	f
Quantitative	Relational	22
	Descriptive	22
	Experimental	1
Qualitative	Semi-Structured Interviews	1
Mixed	(Quantitative+Qualitative) Survey and Interview	1
	Experimental + Interview	1
Total		48

Some of the studies focused on the relationships between individual and organisational variables and teacher self-efficacy or self-efficacy perceptions towards an area. In these studies, self-efficacy was either regarded as mediator, predictor or predicted variables, or examined based on mutual causality. The variables that were examined at the individual level are as follows: burnout, job integration, learning styles, teacher leadership, attitudes towards inclusive education, academic optimism, hope, perceived success, professional teacher behaviours, delivering constructive education, instructional leadership, teachers' support for autonomy, perceived classroom management skills, and job satisfaction. On the other hand, the variables examined at the organisational or group level included distributive leadership, organisational silence, organisational trust, collective efficacy, administrators' transformational leadership, and cooperation at school. The relational studies mostly concentrated on in-class teacher behaviours and self-efficacy beliefs. Besides, variables regarding organisational behaviours were also studied in relation to teacher self-efficacy.

Survey studies were mostly designed in the form of descriptive and causal comparison. They investigated teachers' self-efficacy levels, self-efficacy towards teaching a subject (e.g. geography, mathematics), and self-efficacy perceptions for using technology in education. Self-efficacy towards teaching a subject was evaluated in teaching games, mathematics, visual arts, English and geography, instructional processes, using creative drama, and personality education. Moreover, there were studies on computer self-efficacy for using technology, technological pedagogical content knowledge, and using the Internet for educational purposes.

The mixed-method studies focused on teachers' self-efficacy perceptions towards using technology and the effects of a professional development program on self-efficacy, while the qualitative study examined self-efficacy perceptions in teaching mathematics. These studies seem to be quite limited in scope.

Table 2. Distributions REGARDing the SAMPLES of the Studies

School levels	f	Sample size	f
Middle school	24	<100	9
Elementary School	19	101-500	31
High school	9	>500	8
Preschool	2	Total	48
Special Education	2		

The school levels in which the studies were conducted and their sample sizes are presented in Table 2. The samples mostly consisted of elementary and middle school teachers, and they were followed by high school teachers. Yet, the studies conducted in special education and preschool contexts were few. Sample sizes mostly ranged between 101-500 individuals (f=31). The school levels studied the most were elementary (f=19) and middle school (f=24). The number of studies conducted at preschool and special education levels was limited to four. Researchers usually preferred to focus on elementary and middle school students in their studies.

Table 3. Research Topics Related to Teacher Self-Efficacy Areas

Self-efficacy area	f
1. Teacher self-efficacy	23
2. Collective teacher efficacy	2
3. Teacher self-efficacy sources	1
4. General self-efficacy	1
5. Self-efficacy towards teaching a subject; Teaching games, mathematics, thinking skills, visual arts, English and geography, and personality education.	7
6. Self-efficacy towards using technology in education; Internet for educational purposes, using computers, using technology, technological pedagogical content knowledge, using technology in education, technology standards in education	9
7. Other self-efficacy areas; Interpersonal self-efficacy, creativity self-efficacy, self-efficacy towards information literacy, self-efficacy towards using creative drama	5

The self-efficacy areas examined are presented in Table 3. The studies on self-efficacy focused on three primary areas. These are teachers' self-efficacy levels, self-efficacy towards teaching a subject, and self-efficacy perceptions for using technology in education. Twenty-three studies investigated teacher self-efficacy among the 48 studies examined. There were two studies that focused on collective teacher efficacy, and one study on the sources of teacher self-efficacy. The remaining 21 studies were those that revealed self-efficacy perceptions towards teaching a subject or using technology in education. Additionally, five studies enquired into teachers' self-efficacy perceptions in different areas. Among these studies, those that examined collective teacher efficacy and teachers' general self-efficacy were considerably insufficient.

As is seen in Table 4, teachers' self-efficacy perceptions were reported to have relationships with different variables. According to these relationships, teachers' self-efficacy is a predictor, mediator or predicted variable. There is evidence that teacher self-efficacy is an important predictor.

The studies reported that teacher burnout decreased with self-efficacy, and teacher self-efficacy was a predictor of burnout (Cansoy, Parlar & Kılınç, 2017; Sariçam & Sakız, 2017; Savaş, Bozgeyik & Eser, 2014). Furthermore, teacher self-efficacy was reported to be a significant predictor of teachers' professional behaviours (Koşar, 2015), teacher behaviours that encourage creativity (Çayırdağ, 2016) and teachers' job satisfaction (Buluç & Demir, 2015).

The studies showed that teacher self-efficacy was a predicted variable. A bureaucratically effective school structure (Kılınç, Koşar, Er & Öğdem, 2016), perceived success, academic optimism, hope and one's loving his/her job (Sezgin & Erdoğan, 2015), teachers' general self-efficacy perceptions (Yaman, İnandı & Esen, 2013), their satisfaction with the job (Gür, Çakıroğlu, Çapa & Aydın, 2012), school administrators' transformational leadership behaviours (Demir, 2008) and organisational learning (Kurt, 2016) were found to predict teacher self-efficacy.

The studies revealed that teacher self-efficacy was related to different variables in the context of mutual causality. Teachers' practices of thinking skills in the classroom (Dilekli & Tezci, 2016), inclusive education (Toy & Duru, 2016), creating a constructive learning environment (Koç, 2013), perceived English proficiency (Yılmaz, 2011), their support in student autonomy (Güvenç, 2011) and their classroom management skills (Babaoğlu & Korkut, 2010) were found to be related to teacher self-efficacy.

The studies examined in the present review also showed that self-efficacy could be an important mediator variable. Teacher self-efficacy was a mediator variable between transformational leadership and collective self-efficacy (Demir, 2008), between instructional leadership and collective teacher efficacy (Çalık, Sezgin, Kavgacı & Kılınç, 2012), between leader-team interaction and teacher autonomy and job integration (Kavgacı & Çalık, 2017) and between distributive leadership and teacher leadership (Kurt, 2016).

The studies that were designed in the relational model demonstrated that teachers' self-efficacy characteristics were positively related to their attitudes, motivation, perceptions and practices regarding different areas. These findings represent important evidence for the relationships of teachers' self-efficacy characteristics with organisational and group behaviours.

Table 4. Findings of the Studies on Teachers' Self-Efficacy

Researcher	Results
Şimşek & Yazar (2017)	Teachers' self-efficacy towards educational technology standards is predicted by the attitudes towards technology usage and developing materials with technology.
Cansoy, Parlar & Kılınç (2017)	Teacher self-efficacy is significantly related to all sub-dimensions of teacher burnout.
Sarıçam & Sakız (2017)	Teacher self-efficacy significantly predicts teacher burnout.
Kavgacı & Çalık (2017)	Self-efficacy is a mediator in the relationships between leader-member interaction and job integration, and between teacher autonomy and job integration.
Dilekli & Tezci (2016)	Teachers' self-efficacy in teaching thinking skills is positively and significantly related to their in-class practices of thinking skills.
Cayirdag (2016)	Teacher self-efficacy predicts encouraging teacher behaviours.
Kılınç, Koşar, Er & Öğdem (2016)	A bureaucratically effective school structure predicts teacher self-efficacy.
Aydın (2016)	Teacher self-efficacy is not related to favouritism in school administration and organisational silence.
Kurt (2016)	Teacher self-efficacy is a mediator between distributive leadership and teacher leadership. Organisational learning predicts teacher self-efficacy.
Toy & Duru (2016)	Teacher self-efficacy is significantly related to inclusive education.
Sezgin & Erdoğan (2015)	Perceived success, academic optimism, hope and one's loving his/her job predict teacher self-efficacy.
Koşar (2015)	There is a significant relationship between teacher self-efficacy, and trust in administrator and teachers' professional behaviours. Teacher self-efficacy predicts teachers' professional behaviours.
Buluç & Demir (2015)	Teacher self-efficacy perceptions are a significant predictor of job satisfaction.
Çetin & Güngör (2014)	There is a positive and significant relationship between self-efficacy towards using computers and attitudes towards computer-assisted instruction.
Savaş, Bozgeyik & Eser (2014)	Teacher self-efficacy predicts teacher burnout.
Koç (2013)	There is a positive moderate relationship between teacher self-efficacy perceptions and creating a constructive learning environment.
Yaman, İnandı & Esen (2013)	General self-efficacy predicts self-efficacy in teaching English and professional development perceptions.
Gür, Çakıroğlu & Çapa Aydın (2012)	Teachers' satisfaction with their performance predicts their self-efficacy.
Çalık, Sezgin, Kavgacı & Kılınç (2012)	Teacher self-efficacy is a mediator between instructional leadership and collective efficacy.
Yılmaz (2011)	Teacher self-efficacy is positively and significantly related to perceived English competence.
Güvenç (2011)	Teachers' support in student autonomy is moderately related to teacher self-efficacy.
Babaoğlu & Korkut (2010)	Teacher self-efficacy perceptions are positively and significantly related to teachers' classroom management skills.
Demir (2008)	School administrators' transformational leadership behaviours predict collective teacher efficacy and teacher self-efficacy. Teacher self-efficacy predicts collective efficacy and cooperation at school.

RELATIONAL

Table 5. Findings Related to Teachers' Self-Efficacy

	Researcher	Results
EXPERIMENTAL	Bilici & Baran (2015)	The training program for improving science teachers' self-efficacy levels regarding their technological pedagogical content knowledge was effective.
	Bümen (2009)	The professional development program that was implemented in the study led to positive development in teachers' self-efficacy levels.
MIXED-METHOD	Erdemir (2011)	Teachers' self-efficacy was not effective in writing in the computer environment and using graphics software.
QUALITATIVE	Nurlu (2015)	Teachers with high self-efficacy in mathematics instruction were found to make more effort and be more persistent for student learning and be open and have faith to new ideas and methods. These teachers put more effort for student achievement.

As is seen in Table 5, teachers' self-efficacy perceptions were reported to improve with certain interventions. In a qualitative study, teachers with high self-efficacy were also found to put forth more effort for student achievement. On the other hand, in a mixed-method study, teacher self-efficacy was observed to be ineffective in writing in the computer environment and using graphics software. These findings show that teacher self-efficacy can be developed depending on intervention programs

4. Discussion

In this study, the research on self-efficacy conducted in the Turkish context between 2000-2017 was examined through a systematic review. The research topics, the variables examined and the research tendencies were focused in terms of self-efficacy.

Among quantitative methods, descriptive and relational survey models were adopted in the studies analysed. Qualitative, mixed-method and experimental studies were limited in number. Causal comparisons and descriptive analyses were common in the survey studies. As for the relational studies, the levels of relations and predictive power of different variables were examined, and the structural equation model was often preferred. These studies mostly investigated the concepts that can be related to teachers' self-efficacy characteristics. On the other hand, there were few experimental studies on different intervention programs that can be effective in improving teachers' self-efficacy beliefs. It can thus be argued that there is limited research on strengthening teachers' development of self-efficacy through support programs. Moreover, the fact that methods such as interviews and observations that would provide insights about the relationships reported were not sufficiently used is a limitation of the current research.

In the studies examined, teacher self-efficacy perceptions were addressed in the context of teaching a subject, using educational technologies, collective teacher efficacy and general self-efficacy characteristics. The self-efficacy that referred to teachers' levels of using instructional strategies, ensuring student participation and classroom management was the most commonly studied research topic. This was followed by the teacher self-efficacy towards teaching a subject, and using technology in education. Additionally, certain self-efficacy areas such as establishing interpersonal relationship and creativity were also studied. The least studied research topics were collective efficacy and general self-efficacy. In this respect, it can be stated that there is a significant gap in the research on collective teacher efficacy and general teacher self-efficacy. Collective efficacy represents the belief and conscience of making an effort together to enable student learning, and the studies on its antecedents and schools' levels of having collective efficacy seem not to be sufficient. A similar observation can also be made for general self-efficacy. Besides, the research that demonstrates how teachers' self-efficacy sources can be strengthened is considerably limited. For this reason, there is a need for explanatory studies regarding how direct or indirect experiences influence self-efficacy beliefs, and the sources of self-efficacy.

The self-efficacy towards teaching a subject or using technology was frequently examined in the studies analysed in this review. Accordingly, there is a debate on whether studying self-efficacy in such a variety of aspects causes various conceptual problems related to self-efficacy (Klassen, Virginia, Betts & Gordon, 2009). This also seems to be the case in the national literature in Turkey. For example, nine different aspects of self-efficacy were examined in

using technology, and 12 different self-efficacy areas were focused in teaching a subject. This variety can lead to misconceptions regarding the predictive power of self-efficacy in practice (Klassen, Virginia, Betts & Gordon, 2009), but may contribute to teacher effectiveness by determining teachers' self-efficacy perceptions. In this sense, results of further studies can provide insights related to this debate.

Common findings showing that teacher self-efficacy was related to individual or organisational variables were reported in the studies. These findings show that teacher self-efficacy has a potential effect on strengthening individual or organisational variables. Moreover, according to the findings of the studies, collective teacher efficacy has a similar characteristic, although the amount of research on this dimension is limited. It can be argued that teacher self-efficacy and collective teacher efficacy have not been sufficiently investigated with regard to their effects on student achievement and learning or school outcomes. The research on self-efficacy as a predictor or predicted variable also seems limited, and there is a need for further studies conducting predictive examination at individual, group or organisational level.

Based on the findings revealed in this review, researchers of further studies can be suggested to: (i) investigate teacher self-efficacy through qualitative, mixed-method and longitudinal studies, (ii) carry out studies at preschool, high school and special education contexts, (iii) examine how self-efficacy can be improved with experimental and longitudinal studies, (iv) conduct studies on collective teacher efficacy, general teacher self-efficacy and understanding the outcomes of these characteristics, (v) determine the relationships of teacher self-efficacy, efficacy in an area and collective teacher efficacy with student learning and achievement, (vi) analyse the relationships of general self-efficacy, collective efficacy and efficacy in a specific area with variable at individual, group and organisational levels, and (vii) put more emphasis on factors that may influence teachers' self-efficacy sources.

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