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The Effect of Self-Regulated Strategy Education on the Writing Skills of Middle School Students

Tuncay Türkben*

Department of Turkish Education, Aksaray University, Aksaray, Turkey

Corresponding author: Tuncay Türkben, E-mail: tuncayturkben57@gmail.com

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ABSTRACT

This study was conducted to investigate the effect of education based on Self-Regulation Strategy Development Model on the writing skills development of 6th grade (middle school) students. In this study, a pretest-post-test, quasi-experimental method with control group was used. The sample of the study consists of 60 students enrolled in two public middle schools affiliated with Aksaray Central Provincial Directorate of National Education. These two schools were determined as experimental and control groups randomly. The implementation of the study, which included two groups designated as experimental and control groups, was completed in 12 weeks, 2 lesson hours per week. In the collection and evaluation of the data, narrative and informative texts written by students, the Attitude Towards Writing Scale (ATWS), the Self-Regulated Writing Scale (SRWS) and the Ranked Scoring Key for the Evaluation of Written Expression (RSKEWE) were used. SPSS 24 program was used to analyze the data. As a result of the study, it was seen that the experimental group students' written expression skills, writing self-regulation skills and writing attitudes levels were significantly higher compared to the control group students'.

Key words: Turkish Education, Writing Education, SRSD Model, Self-regulation Strategies, Attitude

INTRODUCTION

Writing is a basic language skill required for the individual to adapt to the conditions of the age in our changing and developing world. Writing skills also play an important role in the acquisition of learning and innovation skills, knowledge, media and technology skills, and life and professional skills which are called the 21st century skills. In this context, writing is an important learning area that needs to be acquired and developed for the individual to gain skills that aim to continue learning processes both in school and life outside of school (Bal, 2018). The high-level thinking skills aimed to be acquired in the curriculum and the writing skill, which also contributes to the development of other basic language skills, should be developed as a whole with other language skills (MEB, 2019; Türkben, 2021a). However, this skill area requires simultaneous application of many skills and has a complex structure that develops late and difficult compared to other language skills (Çağlayan Dilber, 2014; Dilidüzgün, 2020; Güneyli, 2016; Harris et al., 2002; Türkben, 2021).

Writing is defined as "explaining the feelings, thoughts, desires and events in our minds with various symbols in accordance with certain rules" (Güneş, 2014, p.157); "a person, an institution or a group turning their wishes, feelings, information, or message into text by using special symbols and codes that were previously developed jointly to share with others" (Yalçın, 2018, p.351). It can be seen from the definitions that writing provides communication between the author and the reader and it is an action that involves many cognitive, affective, and social features. According to Müldür (2017), there are three basic processes of writing. The first is the stage of generating ideas from the accumulation existing in the mind or obtained through research. The second process covers the complete expression of the ideas produced and their translation and editing. The third process is reviewing. Good writing is a complex process in which self-regulation and strategic thinking play an active role (Bayat, 2019). Writing success depends on the individual's acquisition of self-regulation skills and using these skills.

Self-Regulated Writing and Education

It is important for students to gain self-regulation learning skills in school environment to increase their academic success and to improve the learning process. It is stated that having proficiency in the field of writing requires having a high level of self-regulation skills (Zimmerman & Riesemberg, 1997). According to Winne and Perry (2000), the learning process of self-regulation consists of identifying goals, making a goal-oriented plan, implementation of the plan, metacognitive control, and regulation. According to Zimmerman (2002), based on the social cognitive learning

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theory, learning consists of three cyclical stages: forethought, performance, and self-reflection. Zimmerman and Kitsans (2007) explain the act of writing according to these three stages. The forethought phase includes task analysis and motivational beliefs. In task analysis, the author sets goals for themselves and determines the strategies to use accordingly. Motivation also plays an important role in self-regulated learning. Motivational beliefs such as self-efficacy, outcome expectations, intrinsic interest or valuing, and goal orientation underlie the determination of goals and planning strategies. In the performance stage, the individual turns what they planned in the forethought phase into action. The performance stage consists of two sub-stages: self-control and self-observation. There are strategies used by successful writers in the writing process. These include cognitive strategies (involving the individual's editing of plans and translating them into text, and drafting), goal setting and planning (including when and how to achieve the goals and sub-goals set for planning), self-teaching (the author's speaking loudly and silently during the writing process), focusing attention and organizing the environment (reflects focusing throughout the writing process; choosing and organizing an effective environment to avoid distractions), modeling (the author takes as an example of someone who can be a model in the writing process), seeking social support (the author's request of help from friends, peers, family, etc.), documenting and self-monitoring (monitoring self, finding misspelled words by the author, taking notes on how many pages written, etc.), self-evaluation (author's self-evaluation of the product and process using certain criteria), self-rewarding and punishment (rewarding or punishing oneself depending on whether the author achieved the goals or not), searching for information and reviewing records (researching and collecting information on the subject based on the author's readings and observations), mental design (is about the author's visualization of what he will write in his mind). The self-reflection stage is the final stage which has two sub-stages: self-judgment and self-reaction. Self-judgment includes the individual's evaluation of their performance and characteristics, while self-response includes self-satisfaction and adaptive inferences (Graham & Harris, 2000; Zimmerman & Kitsantas, 2007; Zimmerman & Martinez-Pons, 1986; Zimmerman & Risemberg, 1997; as cited in Müldür, 2017). Students overcome the writing task through self-regulation strategies they apply in the writing process such as monitoring, planning, reviewing, and evaluating.

Researchers have put forward different models based on self-regulation to improve writing skills. One of the models used in the writing process is the "Self-Regulatory Strategy Development (SRSD)" model. According to Harris (2005, as cited in Çağlayan Dilber, 2014, p.70), Self-Regulation Strategy Development (SRSD) aims to "master the high-level cognitive process involving text creation, to use writing strategies effectively, autonomously, reflectively and with self-regulation, to know the features of good writing, and to have a positive attitude towards writing and about his/her own abilities as a writer." This model promotes that self-regulation and writing strategies should be taught together in the process. The SRSD teaching model is designed to gradually shift the responsibility of using strategy from teacher to student. Schunk and Zimmerman (2007) also state that gradual skill acquisition is one of the most effective ways to acquire writing skills and improve students' self-regulation processes. The SRSD teaching model shows how to conduct strategy teaching effectively, systematically and step by step, thus it ensures that the critical steps in the strategy teaching process are not missed. SRSD makes students' writings more qualified by enabling learners to develop a positive attitude towards writing, to include sufficient details and make effective observations, and contributes to the experience of high-level cognitive processes while writing (Uygun, 2012, pp. 54-55).

SRSD teaching consists of six steps and can be used in teaching all writing strategies. The practice done by following the steps of mobilizing prior knowledge, discussing the strategy, modeling, memorizing the strategy, supporting the strategy, and writing independently, enables students to use strategies independently (Harris & Graham, 1999; Harris & Pressley, 1991; Harris et al., 2008; Gracia & Hidalago, 2006; Lienemann & Reid, 2006; Milford & Harrison, 2010). These stages are designed as a framework for teaching. In the stage of mobilizing the prior knowledge, the development of prerequisite knowledge and skills specific to the type of writing necessary for students to understand and use the strategy successfully takes place. At this stage, self-regulation strategies including goal setting are introduced to students (Graham & Harris, 2005). Students learn how to use these strategies in the writing process (Zunbrunn, 2010). During the discussion phase, students discuss the aims and benefits of the strategy by taking into account their writing performance. When and how to use strategies, graphic organizer and reminder are emphasized (Harris et al., 2002, p.112). In the modeling phase, the teacher models for the students by using techniques referred to as thinking aloud, speaking to himself, and cognitive modeling. In the phase of memorizing the strategy, the code of the strategies is taught so that students automatically remember the steps in the strategy and the instructions they have determined for the self-regulation strategies they can use in the writing process (Santangelo et al., 2008, pp.82-84). Students work in small or large groups in the supporting the strategy phase. When necessary, they receive support from teacher regarding the implementation of the strategies. The teacher also monitors the process and supports the development of writing skills by providing feedback (De La Paz, 2001, p. 239). In the independent writing phase, students perform independent writing, with little or no support, and without graphic organizers. These stages can be rearranged, combined, or repeated based on the needs of the students (De La Paz, 2001, p. 235). The purpose of SRSD teaching is to enable students to specialize in metacognitive skills such as planning, writing, reviewing, and editing, to improve their independent writing and skills for monitoring their writing, and to help them develop positive attitudes about themselves and their writing (Graham & Harris, 2005, p.11).

When the literature is examined, it was observed that the number of studies on self-regulated learning skills has

increased recently both nationally and internationally. The literature search showed that, studies on direction of learning based on self-regulation focused on writing skills (Almazloum, 2018; Berry & Mason, 2012; Can, 2016; Chalk et al., 2005; De La Paz & Graham, 1997; De La Paz, 1999; De La Paz & Graham, 2002; Eissa, 2009; Fischer, 2002; Glaser & Brunstein, 2007; Graham & MacArthur, 1988; Graham et al., 2005; Mason et al. 2006; Mason & Shriner, 2008; Müldür, 2017; Saddler et al., 2004; Saddler, 2006; Saddler & Asaro, 2007; Sexton et al., 1998; Sperger, 2010; Tolaman, 2017; Tracy et al., 2009; Uygun, 2012; Welch, 1992; Zumbrunn, 2010; Zumbrunn & Bruning, 2013), reading skills (Kayıran, 2014; Mason, 2002; Souvignier & Mokhlesgerami, 2006; Turkben, 2019; Uyar, 2015), listening skills (Mareschal, 2007; Zeng & Goh, 2018) and speaking skills (Aregu, 2013; El-Sakka, 2016; Mahjoob, 2015). An examination of the findings of the studies shows that strategies based on self-regulation are effective in the development of language skills. In addition, there are also quantitative (relational, descriptive and survey type) studies examining the variables related to self-regulated learning (motivation, metacognition, attitude, and academic achievement) (Adıgüzel & Orhan, 2017; Aktan, 2012; Altun, 2005; Cabı & Yalın, 2011; Cera et al., 2013; Dent & Koenka, 2016; Dursun Sürmeli & Ünver, 2017; Gouin, 2012; Hashempour & Ghonsooly, 2015; Kaya, 2019; Özbay, 2008; Pintrich & De Groot, 1990; Sieben, 2013; Soureshjani, 2011; Tılfarlıoğlu & Delbesoğlugil, 2014; Turan & Demirel, 2010; Üredi & Üredi, 2005; Üredi & Erden, 2009; Yalçın & Karadeniz, 2016; Yüksel, 2013), measuring the effect of different learning methods and techniques on self-regulation (Arsal, 2010; Arslan, 2008; Güvenç, 2010; Hatami, 2015; Karaoğlan Yılmaz et al., 2018; Koç & Shirtssiz, 2009; Platt, 2016; Salvador de Arana, 2018; Sever, 2019; Talan & Gülseçen, 2018), examining the effect of self-regulated education on academic achievement (Arslantaş & Kurnaz, 2017; Doostian, Fattahi, Goudini, A'zami, Massah, & Daneshmand, 2014; Jeweler Vardar & Arsal, 2014; Schraw et al., 2006; Yıldız & Saban, 2016), scale development or adaptation based on self-regulation (Aydın et al., 2013; Celikkaleli & Yildirim, 2015; Kocdar et al., 2018) in the literature. It is seen that many national and international studies focusing on self-regulation were conducted.

Studies on self-regulated learning and writing skills reveal that SRSD teaching is a strong teaching approach. The SRSD teaching model proposes various writing strategies. These strategies include organizing the writing process, planning, and editing the text. Although there are many international studies on the subject, it is seen that a limited number of studies have been conducted in our country. When international studies are examined, it is seen that the strategies are effective in the development of writing skills of both students with learning difficulties and students without learning difficulties. There are many scientifically tested strategies regarding the writing of different text types (Jacobson & Reid, 2007; Graham & Harris, 2005). In the present study, KAOST (SPACE) and K6N (W- W- W, What = 2, How = 2) strategies will be tested in the development of story writing skills, and SLD YES (PLEASE) and POY DD (POWER) strategies will be tested in the development of informative text writing skills in 6th grade students. It is thought that strategy education based on self-regulation will be effective in the development of students' writing skills, attitude, and motivation towards writing. This study will contribute to the body of knowledge in the field as studies on self-regulated writing are limited.

The Aim of the Research

This study was conducted to determine whether there is a significant difference between the skills of 6th grade students who receive self-regulated writing teaching and students who receive education based on the Turkish Lesson Teaching Curriculum. In line with this main purpose, the study sought answers to the questions listed below:

1. Is there a significant difference in the achievement scores of written expression skills (general) in favor of the experimental group between the students who were in the self-regulated writing education group and the students in the teaching writing with traditional methods in line with the Turkish Lesson Teaching Curriculum?
   - 1.1. Is there a significant difference in favor of the experimental group between the achievement scores in narrative writing?
   - 1.2. Is there a significant difference in favor of the experimental group between the achievement scores in writing informative texts?
2. Is there a significant difference in the achievement scores of attitudes towards writing in favor of the experimental group between the students who were in the self-regulated writing teaching group and the students in the teaching writing with traditional methods in line with the Turkish Lesson Teaching Curriculum?
3. Is there a significant difference in the achievement scores of self-regulated writing skills in favor of the experimental group between the students who were in the self-regulated writing education group and the students in the teaching writing with traditional methods in line with the Turkish Lesson Teaching Curriculum?

METHOD

Research Design

In this study aiming to determine the effect of self-regulated writing education on middle school students' written expression skills, a pretest-post-test, quasi-experimental method with paired control group was used. It is difficult to create similar or equivalent groups due to the problems arising from the environment in which the study is conducted. In this design, the researcher has to assign one group as the experimental group and the other group as the control group randomly based on certain variables (Büyüköztürk et al., 2015, p. 208). Pre-test is done simultaneously in both groups. Then the experimental procedure is implemented in the experimental group while no intervention is done in the control group (Sönmez & Alacapınar, 2013, p. 60). Using

pretests in the model helps to determine the similarities of the groups before the experiment and to interpret the post-test results accordingly (Karasar, 2017, p. 132).

The study was conducted in two public schools in the city of Aksaray. Since the study was carried out in public schools and artificial classrooms could not be formed in these schools, random method was not used for the experimental and control groups. The results of the pre-tests showed no significant difference between the students in both schools (see Table 1). Thus, one of the groups was determined as the experimental group and the other as the control group randomly. The symbolic view of the quasi-experimental study used in the study is given in Table 2.

Sample of the Study

The sample of the study consists of 60 students in the 6/A cohort at Private Administration Middle School and in the 6/B cohort at Güller Ceylan Acar Middle School under Aksaray Central Provincial Directorate of National Education. Necessary permissions were obtained from the Aksaray Provincial Directorate of National Education to conduct the study in these schools, and care was taken to ensure that the determined schools were at a medium level socioeconomically. There are two cohorts in both schools. Considering the sizes of the cohorts, gender distribution in the cohorts and the academic achievement points in the Turkish course at the end of the semester, one cohort was selected from each school. Using the random method, the 6/A cohort at Private Administration Secondary School was determined as the experimental group and the 6/B cohort at Güller Ceylan Acar Secondary School was determined as the control group. In the pre-test, there was no significant difference in the achievement scores between the two groups. Self-regulated writing education was implemented in the experimental group and writing exercises in line with the Turkish Lesson Teaching Curricula were implemented in the control group. The distribution of students in the study group by gender is given in Table 3:

Data Collection Instruments and Methods

Measuring written expression skills

The Informative Text Writing Scale and Narrative Text Writing Scale used in the study were prepared by the researcher. To measure students' written expression skills, subjects suitable for both informative and narrative text types were determined according to student levels. For the measurement tools prepared, two experts in the field of Turkish education and an expert who is a doctoral candidate in the field of assessment and evaluation were consulted for feedback, and after the necessary corrections, the scales were finalized with five subjects in each measurement tool.

The studies, scales, and publications in the literature regarding the evaluation of the texts written by the students were reviewed. After the review, the Ranked Scoring Key for Assessing Written Expression (RSKAWE) prepared by Uygun (2012) was used in the current study. The items in the ranked scoring key were prepared in a way that allows for evaluation of the story and the informative written expression practices that students would be asked to engage in during the implementation. There are a total of 12 items in the ranked scoring key and these items are scored as "1, 2, 3". For the validity of the scoring key, the opinions of five field experts and three classroom teachers were sought. For the reliability of the ranked scoring key, 5th grade students were asked to write narrative and informative texts. These texts were scored by three field experts separately. Then, the inter-rater reliability was checked. For inter-rater reliability, Kendall's coefficient of concordance was used since the number of raters was more than two. In the analysis, Kendall's coefficient of concordance was found to be W = .83. According to this result, it was seen that there was a high level of agreement between the raters.

Table 1. *T*-Test results of the pre-test scores of control and experimental groups

Scale	Group	*M*	*SD*	df	*t*	*p*
Narrative Text Writing	Control	20.87	4.95	58	4.946	0.503
	Experimental	21.67	4.22			
Informative Text Writing	Control	18.87	4.15		4.150	0.601
	Experimental	19.40	3.68			
Attitudes towards Writing	Control	86.83	9.13		9.135	0.381
	Experimental	84.87	8.10			
Self-Regulated Writing	Control	71.13	6.99		6.996	0.818
	Experimental	71.53	6.38			

*Significance at the .05 level **Significance at the .01 level

Table 2. Semi-experimental research design with pretest-post-test control group

Group	Pretest	Experimental Procedure	Post-test
Control	WEAS ATWS SRWS	Writing Practices according to the Turkish Lesson Teaching Curriculum	WEAS ATWS SRWS
Experimental	WEAS ATWS SRWS	Self-Regulated Writing Practices	WEAS ATWS SRWS

WEAS = Written Expression Assessment Scale (Informative Text Writing Scale / Narrative Text Writing Scale)
ATWS = Attitude towards Writing Scale
SRWS = Self-Regulated Writing Scale

Table 3. Distribution of students in experimental and control groups by gender

Gender	Experimental Group		Control Group	
	n	%	n	%
Female	16	53.3	15	50
Male	14	46.6	15	50
Total	30	100	30	100

Measuring writing attitudes

The measurement tool developed by Can and Topçuoğlu (2017) was used to determine the effects of self-regulated writing education on students' writing attitudes. In developing the scale, expert opinion was sought after on the draft form consisting of 38 items prepared by the researchers to determine the content validity. Then, to determine the construct validity, exploratory and confirmatory factor analyses were completed. The exploratory factor analysis results showed that the scale is three-dimensional with 23 items consisting of 10 items on "interest", 6 items on "perception" and 7 items on "contribution". The goodness of fit values (x^2/sd = 2.19, RMSA = 0.097, GFI = 0.75, SRMR = 0.091, CFI = 0.79, NNFI = 0.76, RMR = 0.071) obtained in the confirmatory factor analysis show that the scale is structurally valid. The Cronbach Alpha coefficient of the scale was found to be 0.891.

Measuring self-regulated writing skills

The Self-Regulated Writing Scale developed by Müldür (2017) was used to determine students' self-regulation skills for writing. During the development phase of the scale, an exploratory factor analysis was completed to examine the construct validity and factor structure of the scale. As a result of the exploratory factor analysis, it was determined that the scale was three-dimensional with 21 items consisting of 6 items on "effort", 6 items on "monitoring and managing the process", 5 items on "getting help" and 4 items on "generating ideas". The factor loads of 21 items in the scale vary between .41 and .78. It can be said that this is important in terms of showing the representativeness power of the items in the scale. The scale was created as a 5-point Likert scale with the ratings of "I never do: 1", "I rarely do: 2", "I occasionally do: 3", "I often do: 4" and "I always do: 5". After the exploratory factor analysis completed on the scale; a confirmatory factor analysis was completed. It was found that $\chi 2$ / df = 290.309 / 183 = 1.586, RMSEA = 0.044, GFI = 0.916, AGFI = 0.894, CFI = 0.927 and NFI = 0.827. The Cronbach Alpha coefficient was calculated to determine the reliability of the scale consisting of 21 items. The internal consistency coefficient for the first sample was calculated as 0.85. As a result, it shows that this scale can be used to evaluate the self-regulation skills of middle school students (6-8th grade students) for writing.

Reliability Analysis of the Scales

The Cronbach Alpha reliability coefficient was calculated based on the data obtained from the control and experimental groups for the types of scales used in the study. Results of the reliability analysis are given in Table 4.

According to Table 4, the reliability coefficients of the scales are at the desired level and significant (α = 0.77, α = 0.94, α = 0.95, α = 0.87; p <0.01). Accordingly, it can be said that the reliability of the scores obtained from the scales is high.

Data Analysis

SPSS 24 package program was used to analyze the data. Prior to the analysis of the data according to the problems of the research, the suitability of the data for analysis was examined. For this, the assumption of normality of the data, which is one of the first assumptions, was examined. For this, a Shapiro-Wilk normality test was used. Then, in the second stage, the equivalence of the initial conditions of the groups was examined according to the pre-test results of the control and experimental groups specified in the quasi-experimental design of the research. In the third stage, it was examined whether there was a difference between the post-test scores of the control groups that did not receive the intervention according to the quasi-experimental design of the research. In addition, the differences between the pretest and post-test scores of the experimental groups were examined under separate headings according to the research questions. For this analysis, the difference between means test was conducted for dependent and independent groups. Accordingly, it was examined whether there was a difference as a result of the experimental change between the control and experimental groups. In the continuation of this section, the reliability coefficients of the scales were recalculated according to the results obtained from each scale.

Experimental Application Process

In this study, the effect of self-regulated writing education on informative and narrative writing skills was investigated. Necessary information was provided to teachers and parents before the application. The appropriate cohorts for the application were determined as a result of meetings with the authorities of the institution and the necessary arrangements were made by the practitioner in advance. The application was carried out in 12 weeks with 2 lessons per week. Writing achievement scale (informative text and narrative text writing), writing attitude scale and self-regulated writing scale were applied to both experimental group and control group students before the study. Then, writing strategies in line with self-regulation were applied on narrative texts for 6 weeks, and the story writing scale was applied at the end of 6 weeks. Afterwards, informative text writing strategies were taught in line with learning based on self-regulation, and the informative text writing scale was applied 6 weeks later. The scales applied as a pre-test were applied as a post-test in the same week. The gradual responsibility transfer model has been adopted in the teaching of strategies. The teacher applies the strategies as a role model, and the student observes the implementation of these strategies. In the second stage, the teacher

Table 4. Cronbach alpha coefficients of the scales

Scale	Number of Items	Cronbach Alpha Coefficient
Writing Narrative Text	12	0.768**
Writing Informative Text	12	0.937**
Attitude Towards Writing	40	0.945**
Self-Regulated Writing	23	0.870**

observes the student writing texts by using strategies and intervenes if necessary. In the next stage, the student writes a text independently. The teacher only observes the student, and only intervenes when the student asks for help. At this stage, the student takes the responsibility completely.

Before the intervention, a 12-week lesson plan was prepared. Lesson plans were created in line with the gradual skill acquisition model. For the strategies used in the study, reminder graphic organizers containing the strategy steps were created. The education process, which starts with the teacher being a model, is gradually transferred to the student with the purpose of student becoming an independent writer who organizes their own writing process. The reason for choosing this model is that the application steps are compatible with the SRSD teaching model. In order to evaluate the suitability and applicability of the prepared plans to the SRSD teaching model to be tested, the opinions of three expert faculty members were consulted. Then, a pilot application was conducted in the 125. Yıl Middle School in Aksaray city center. As a result of the pilot application, adjustments have been made in the lesson plans, and necessary measures have been taken against possible adversities. In developing the narrative text writing skills in line with the self-regulated strategy development education phases, writing strategies of **SPACE** (**S**etting elements, **P**urpose, **A**ctions, **C**onsequences, **E**motions) and W-W-W, What=2, How=2 (Who is the main character? Who else is in the story?, When does the story take place?, Where does the story take place?, What does the main character do?, What happens when they try to do it?, How does the story end?) were used. In developing the informative text writing skills, **POWER** (**P**lan, **O**rganize, **W**rite, **E**dit, **R**evise) and **PLEASE** (**P**ick, **L**ist, **E**valuate, **A**ctivate, **S**upply, **E**nd, **E**valuate) writing strategies were used. The flow of the lesson plans is structured in line with the steps of the Self-Regulated Strategy Development teaching model (activating preliminary information, discussing the strategy, being a model, supporting, independent performance).

The implementation was conducted by the researcher. In the control group, writing activities in the textbook were applied with traditional methods based on the Turkish Lesson Teaching Curricula.

FINDINGS

In this section, the assumptions are tested primarily for the analysis of the data. Then, answers were given to the research problems in order.

Testing Assumptions

One of the necessary conditions for using parametric tests as statistical analysis is the normal distribution of the data. For this purpose, the normality of the scores obtained from all scales was tested for both the control and the experimental groups. The results obtained from the Shapiro-Wilk normality analysis are normal for all groups. As a result of the analysis, the TNTW (S-W = 0.924; p <0.05) in the control group post-test scores, ATWS (S-W = 0.910; p <0.05) in the experimental group pre-test scores, and TITW (S-W = 0.906; p <0.05) and SRWS (S-W = 0.907; p <0.05) in the experimental group post-test scores were found to be significant. In all the remaining groups, the scores are not significant. The distribution of scale scores is normal for groups that do not show significant results. Shapiro-Wilk and Kolmogorov-Smirnov normality tests are very strict/conservative tests. In small samples, they may show the distribution as an abnormal distribution. Therefore, it is beneficial to use a second distribution control measure. For this, the skewness and kurtosis values of the distribution are examined. The fact that the coefficients of skewness and kurtosis are between -1 and +1 is a proof that these distributions are normal (Tabachnick & Fidell, 2013). Accordingly, the skewness and kurtosis coefficients of the scale scores for all groups are given in Table 5.

When Table 5 is examined, it is seen that the skewness and kurtosis coefficients of the scale scores for all groups are between the values of -1 and +1. Accordingly, it can be said that the scale scores for all groups are normally distributed. Therefore, all statistical analyses completed are parametric.

In addition, the assumption of homogeneity of variances of control and experimental groups for all scales was examined and Levene test results are given in Table 6.

When Table 6 is examined, the assumption of homogene-ity of the variances of the control and experimental groups was met for all scales (p> .05).

Table 5. Skewness and kurtosis coefficients of the scale scores for all groups

Groups	Tests	Scales	Skewness	Kurtosis
Control	Pretest	TNTW	0.329	-0.869
		TITW	0.644	-0.067
		ATWS	-0.445	-0.974
		SRWS	0.188	-0.410
	Post-test	TNTW	0.602	-0.721
		TITW	0.807	0.242
		ATWS	-0.520	-0.153
		SRWS	-0.775	0.915
Experiment	Pretest	TNTW	0.096	-0.550
		TITW	0.826	0.317
		ATWS	-0.523	-0.046
		SRWS	-0.231	-0.232
	Post-test	TNTW	-0.073	0.568
		TITW	-0.012	0.068
		ATWS	-0.226	-0.179
		SRWS	-0.561	-0.009

*Significance at the 0.05 level **Significance at the 0.01 level

Table 6. Levene's test for equality of variance results

Tests	Levene's Test for Equality of Variance	*p*
TNTW	0.999	0.322
TITW	0.409	0.525
ATWS	0.676	0.414
SRWS	0.340	0.562

In the second stage, it was examined whether there was a significant difference between the pre-test scores of the control and experimental groups for each scale. The results are given in Table 1.

In Table 1, it is seen that there is no significant difference between the pre-test scores of the control and experimental groups for each scale (t = 4.946, t = 4.150, t = 9.135, t = 6.996; p> .05). Accordingly, it can be said that the initial conditions of the control and experimental groups for the research design are equivalent.

In the third stage, it was investigated whether there was a difference between the pre-test and post-test scores of the control group, which did not receive any intervention, for each scale, and whether there was a significant difference between the pre-test and post-test scores of the experimental groups according to the research questions of the study. Each research problem is given under separate headings.

1. Is there a significant difference in the achievement scores of written expression skills (general) in favor of the experimental group between the students who were in the self-regulated writing education group and the students in the teaching writing with traditional methods in line with the Turkish Lesson Teaching Curriculum?

The results on whether there is a significant difference in favor of the experimental group between the pre-test and post-test scores of the control and experimental groups according to the scale of written expression skills are shown in Table 7.

According to the results provided in Table 7, there is no significant difference between the pre-test and post-test scores of the control group in the written expression skills scale (t = -1.454; p> .05). However, there is a significant difference between the pretest and post-test scores of the experimental group in favor of the experimental group (t = -10.537; p <.01). Thus, self-regulated writing activities caused a significant increase in the written expression skills scores in the experimental group. In other words, the strategy teaching performed in alignment with the Self-Regulated Strategy Development teaching model increases students' writing performance.

1.1. Is there a significant difference in favor of the experimental group between the achievement scores in narrative text writing?

Table 8 shows the results on whether there is a significant difference in favor of the experimental group between the pre-test and post-test scores in the narrative text writing scale of the control group in which writing activities were performed according to the Turkish Lesson Teaching Curriculum, and the experimental group in which strategy teaching was performed with the SRSD teaching model.

The results in Table 8 show that there is no significant difference between the control group pretest and post-test scores in the informative text writing subscale (t = -1.087; p> .05). However, there is a significant difference between the pretest and post-test scores of the experimental group in favor of the experimental group (t = -6.425; p <.01). Accordingly, conducting self-regulated writing activities caused a significant increase in the scores of narrative text writing in the experimental group. Therefore, it can be said that the SRSD model is effective on students' story-writing skills. After the experimental process, it was observed that the students created longer and more qualified texts containing story elements.

1.2. Is there a significant difference in favor of the experimental group between the achievement scores in writing informative texts?

The results on whether there is a significant difference in favor of the experimental group between the pretest and post-test scores of the control and experimental groups in the informative text writing subscale are shown in Table 9.

According to Table 9, there is no significant difference between the pretest and post-test scores of the control group in the informative text writing subscale (t = -1.490; p>.05). However, there is a significant difference between the pretest and post-test scores of the experimental group in favor of the experimental group (t = -10.914; p <.01). Accordingly, conducting self-regulated writing activities caused a significant increase in the scores of informative text writing in the experimental group. It is seen that the experimental procedure

Table 7. Results on the first problem of the study

Scale	Group	Test	*M*	*SD*	df	*t*	*p*
Written Expression Skills	Control	Pretest	39.73	8.18	58	-1,454	0.151
		Post-test	42.83	8.32			
	Experiment	Pretest	41.07	6.92		-10.537	0.000**
		Post-test	60.50	7.35			

*Significance at the .05 level **Significance at the .01 level

Table 8. Results on the first sub-problem of the first research question

Scale	Group	Test	*M*	*SD*	df	*t*	*p*
Narrative Text Writing	Control	Pretest	20.87	4.94	58	-1.087	0.281
		Post-test	22.23	4.78			
	Experiment	Pretest	21.67	4.22		-6.425	0.000**
		Post-test	30.83	6.57			

*Significance at the .05 level **Significance at the .01 level

implemented has a great effect on students' informative text writing skills.

2. ***Is there a significant difference in the achievement scores of attitudes towards writing in favor of the experimental group between the students who were in the self-regulated writing teaching group and the students in the teaching writing with traditional methods in line with the Turkish Lesson Teaching Curriculum?***

The results on whether there is a significant difference in the attitude towards writing scale in favor of the experimental group between the control group in which writing activities were performed according to the Turkish Lesson Teaching Curriculum and the experimental group in which SRSD writing activities were carried out are shown in Table 10.

According to Table 10, there is no significant difference between the pre-test and post-test scores of the writing attitude scale in the control group (t = 1.538; p> .05). However, there is a significant difference between the pretest and post-test scores of the experimental group in favor of the experimental group (t = -6.720; p <.01). Accordingly, conducting self-regulated writing activities caused a significant increase in the attitude scores towards writing in the experimental group. Based on the data, it can be said that the strategies employed by the SRSD teaching model contribute to students' development of positive attitudes towards writing.

3. ***Is there a significant difference in the achievement scores of self-regulated writing skills in favor of the experimental group between the students who were in the self-regulated writing education group and the students in the teaching writing with traditional methods in line with the Turkish Lesson Teaching Curriculum?***

The results on whether there is a significant difference in favor of the experimental group between the pre-test and post-test scores of the control and experimental groups in the self-regulated writing scale are shown in Table 11.

According to Table 11, there is no significant difference between the pre-test and post-test scores of the control group in the self-regulated writing scale (t = 1.574; p> .05). However, there is a significant difference between the pretest and post-test scores of the experimental group in favor of the experimental group (t = -6.458; p <.01). Accordingly, conducting self-regulated activities caused a significant increase in self-regulated writing scores in the experimental group. Based on the data, it can be said that teaching writing strategy in line with the SRSD teaching model also contributes to the development of students' self-regulation skills (goal setting, self-assessment, self-teaching, self-empowerment, description, managing the writing environment).

DISCUSSION AND CONCLUSIONS

This study aimed to determine whether there is a difference in writing achievement levels, attitudes towards writing, awareness of metacognitive writing skills and self-regulated writing skills of students who receive self-regulated writing education and students who receive education according to the current Turkish Lesson Teaching Curriculum.

According to the findings obtained from the research, in the experimental group where Self-Regulated Strategy

Table 9. Results on the second sub-problem of the first research problem

Scale	Group	Test	*M*	*SD*	df	*t*	*p*
Informative Text Writing	Control	Pretest	18.87	4.15	58	-1.490	0.142
		Post-test	20.60	4.83			
	Experiment	Pretest	19.40	3.68		-10.914	0.000**
		Post-test	29.67	3.60			

*Significance at the 0.05 level **Significance at the 0.01 level

Table 10. Results on the second question of the study

Scale	Group	Test	*M*	*SD*	df	*t*	*p*
Attitudes toward Writing	Control	Pretest	86.83	9.13	58	1.538	0.130
		Post-test	83.16	9.33			
	Experiment	Pretest	84.87	8.09		-6.720	0.000**
		Post-test	97.53	6.40			

*Significance at the 0.05 level **Significance at the 0.01 level

Table 11. Results on the third question of the study

Scale	Group	Test	*M*	*SD*	df	*t*	*p*
Self-Regulated Writing	Control	Pretest	71.13	6.99	58	1.574	0.121
		Post-test	67.80	9.25			
	Experiment	Pretest	71.53	6.38		-6.458	0.000**
		Post-test	86.73	11.20			

*Significance at the .05 level **Significance at the .01 level

Development teaching was implemented, PLEASE and POWER strategies used in the writing of informative texts and the SPACE and W-W-W, What = 2, How = 2 strategies used in writing narrative texts are effective in the development of writing skills. When the literature is examined, it is seen that self-regulated learning activities positively affect the narrative writing skills (Can, 2016; Glaser & Brunstein, 2007; Harris et al., 2006; Saddler et al., 2004; Saddler, 2006; Saddler & Asaro, 2007; Tracy et al., 2009; Uygun, 2012; Zumbrunn, 2010; Zumbrunn & Bruning, 2013), informative, persuasive and argumentative writing skills (Berry & Mason, 2012; Çağlayan Dilber, 2014; De La Paz, 1999; De La Paz & Graham, 2002; De La Paz & Graham, 1997; Eissa, 2009; Graham et al., 2005; Harris et al., 2006; Mason et al., 2006; Mason & Shriner, 2008; Müldür, 2017; Sexton et al., 1998; Sperger, 2010; Uygun, 2012; Welch, 1992). It is seen that the strategies shaped by SRSD are utilized by using different methods, with different working groups and for different purposes. It can be said that SRSD model is effective in developing writing skills, and the findings obtained from studies support the findings of this study.

In studies conducted, it has been determined that the writing approach based on self-regulation is effective on the writing success of both students with learning difficulties and normal students, and that students write more coherent, quality, and longer texts. 380 students at the 8th grade level participated in the study conducted by Festas et al. (2015) in six middle schools. Before the intervention, the experimental group teachers were trained in line with the self-regulated strategy. In experimental schools, training on self-regulated strategies for composition writing were provided in 45-minute sessions for three months. Writing activities were carried out in the control groups according to the current curriculum. It was observed that the experimental group students had more gains according to the assessment and evaluation processes performed after the intervention. In a study conducted by Can (2016) with students in 4th grade, it was found self-regulated strategy-based education contributed positively to students' status and levels of including story elements, writing attitudes, and writing self-efficacy. Çağlayan Dilber (2014), in their study aiming to improve the use of text elements, length, coherence and consistency in the argumentative texts produced by middle school students found that argumentative writing strategies of ESOP and GERB were effective in students' levels of creating argumentative text elements. Fischer (2002) examined the contribution of self-regulated education in the classroom environment to students' writing skills. The interviews with the students and teachers, the observations made by the researcher and the compositions written by students during the education process showed that the education provided was effective. In the study conducted by Sexton et al. (1998), 6 students from 5th and 6th grades were taught planning and writing strategy using SRSD teaching. The results of the study revealed that SRSD teaching was effective in improving students' writing performance and ensuring permanence. In a study conducted by Müldür & Yalçın (2019), it was determined that self-regulated writing education has a wide effect on developing informative text writing skills.

There are also meta-analysis studies that reveal that SRSD is a strong teaching approach in writing education (Graham, 2006; Graham & Harris, 2003; Graham et al., 2012; Rogers & Graham, 2008; Yalçın & Karadeniz, 2016). Studies show that there is a high level of relationship between students' self-regulation skills and writing success. There are many reasons why the SRSD teaching approach is effective in writing education. This approach combines the stages that should be followed in the writing process (planning, drafting, correction and evaluation), self-regulation strategies (goal setting, self-observation, self-teaching, and self-reinforcement), and writing strategies (Festas et al., 2015; Harris & Graham, 2009; Harris et al., 2009). According to Harris et al. (2002), one of the aims of the SRSD is to be effective in the development of writing skills by making the use of strategies automatic, routine, and flexible. In line with this approach, the steps applied in the writing process can be combined, changed, rearranged, or repeated according to the needs of the student. With the SRSD teaching steps (activating prior knowledge, discussing strategy, modeling, memorizing strategy, supporting strategy, independent performance), students learn planning and self-regulation skills necessary for organizing writing practices, better understanding the writing process, and using the taught strategy (Graham et al., 2005). The multifaceted nature of the teaching approach makes it effective in developing students' academic skills. A critical feature of this approach is that teachers encourage students' writing mastery and help students become independent authors through modeling (De La Paz & Graham, 2002).

In this study, it was determined that SRSD teaching was effective in developing positive attitudes in students towards writing. Attitude towards writing, which is a high-level skill, is one of the important factors in achieving the writing skill. Therefore, different methods, techniques and strategies should be used in developing students' attitudes towards writing. It is seen that the studies focusing on SRSD education are effective in improving the attitude towards writing (Balsomo, 2019; Fischer, 2002; Graham & Harris, 2005; Harris et al., 1998; Uygun, 2012; Welch, 1992; Zumbrunn, 2010). It is seen that the findings obtained from this study are in alignment with the literature. Students with self-regulation skills have high interest and motivation for learning because they believe they can achieve their own personal development (Yalçın & Karadeniz, 2016). According to Harris, Schmidt and Graham (1997), one of the purposes of teaching self-regulation skills to students is to develop a positive attitude towards writing. Considering the problems such as negative attitude towards writing and writing anxiety, it is understood that approaches towards teaching writing should be made more systematically and different methods, techniques and strategies should be used in teaching writing. Students who develop self-regulation skills and writing skills with self-regulated education perceive themselves as self-efficacious in writing and their attitudes towards writing also change positively.

Self-regulated learning is an essential element for lifelong learning, and it is a process in which the student controls,

monitors and influences his/her own thinking process that requires knowledge and skills (Dabbagh & Kitsantas, 2012). The SRSD teaching approach also aims to equip students with the skills they need to acquire for lifelong learning. SRSD is designed for students to be fluent, independent, self-regulated, goal-oriented learners (Grahamet et al., 1992). According to the findings of the present study, the activities conducted in line with the SRSD is effective on self-regulation skills. Studies in the field show that self-regulation skills can be partially improved with educational interventions (Dignath et al., 2008; Aydın & Atalay, 2015). Fischer (2002) and Müldür and Yalçın (2019) revealed that writing-instruction practices that support self-regulation skills at secondary school level are successful in improving students' self-regulation skills in the field of writing. Studies in the relational screening model that examine the relationship between self-regulation and writing skills also show that there is a high level of relationship between these two variables (Gouin, 2012; Sieben, 2013; Soureshjani, 2011; Yalçın & Karadeniz, 2016). Soureshjani (2011) found that students with high self-regulation skills exhibit high performance in the essay writing task, while students with lower self-regulation skills show poor performance in the same writing task. These studies show that self-regulation skills are a significant predictor of writing skills and support the findings of the present study.

Self-regulated learning is among the 21st century skills. The need to improve self-regulated learning is felt even more in this period we live. Because of the Covid 19 pandemic, which continues to negatively affect all aspects of life in the world, it was the first time that education was affected in such a large, global scale. Educational institutions at all levels, from preschool to higher education, started to be adversely affected by this situation. Due to the closure of educational institutions and quarantine days, education is continued and supported from digital platforms at homes. There have been many difficulties in children's access to education. This situation makes parents and students anxious. This process shows us that gaining self-regulation skills is of vital importance because individuals with self-regulation are successful people who are aware of their responsibilities and can organize or control their own lives (Aydın et al., 2013). Self-regulated students manage their own learning processes and effectively use resources that can help the learning process. Self-regulated students are individuals who can learn on their own, motivate themselves cognitively in line with their determined working principles, and have lifelong learning skills.

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