The Impact of POW + C-SPACE Strategy on Story Writing Skills of Turkish Students with Specific Learning Disabilities[1]

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Abstract

Since specific learning disabilities (SLD) are widely observed among students with special needs, it is considered in the high-incidence disabilities category of special education. Students with SLD experience academic problems in reading, writing and mathematics, and difficulty in written expression is among their prominent characteristics. The aim of this study is to determine the effect of the Pick my idea-Organize my notes-Write and say more + Characters-Setting-Purpose-Action-Conclusion-Emotions (POW + C-SPACE) strategy developed on the basis of self-regulated strategy development (SRSD) on story writing skills of students with SLD in Turkey. In this quantitatively designed study, pretest - posttest experimental design with control group was used, and the participants consisted of 23 students with SLD at middle school level. The results indicated that the change between pretest and posttest story writing skills scores of participants in the experimental group was statistically significant compared to the change in the scores of participants in the control group. In addition, the change between pretest and posttest self-regulation scores and attitude for writing scores were statistically significant compared to the difference in the scores of students in the control group. Findings manifested that the POW + C-SPACE strategy had positive impact on the story writing skills of the students with SLD in Turkey. Teachers of students with SLD need to be trained on POW + C-SPACE strategy and future research is needed with different samples of students with SLD and teachers by using various research methods.

Introduction

Education of students with special needs, defined as special education, is one of the most important educational issues of the Turkish state (Melekoğlu, 2014). The positive approach of the state regarding provision of special education services has been reflected in educational statistics of Ministry of National Education (MoNE). The number of students receiving special education in formal education system was 141.248 in 2010-2011 school year (MoNE, 2011). In the last 8 years, this number has increased by 150% and reached 353.610 in 2017-2018 school year (MoNE, 2018). There are various categories of special education, including intellectual disabilities, autism spectrum disorder, visual impairments, hearing impairments and specific learning disabilities, in Turkey (Cavkaytar, 2017). Although the number of students in each special education category is not officially reported, specific learning disabilities (SLD) is a rapidly developing category in special education in Turkey (Çakıroğlu, 2018; Öğülmüş, 2015).

Specific Learning Disabilities

There have been critical developments in the area of SLD with a history of approximately 60 years since 1960s in the world and 40 years since 1980s in Turkey. As a result of those developments, many changes have been made in the definition and classification of SLD (Çakıroğlu, 2018). While being defined as a biologically rooted neurodevelopmental disorder according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM 5; American Psychiatric Association [APA], 2013), SLD is stated to be a disorder that is seen at mild, moderate and severe levels in reading, written expression and mathematics. Besides, students with SLD is defined as individuals in need of special education and support education services due to difficulty, which arises in one or more of the information retrieval processes required to understand and use the language in written or oral language, in listening, speaking, reading, writing, spelling, attention or mathematical operations in special education services regulation of 2006 (MoNE, 2006). Since students with SLD experience difficulties in various areas of academic skills, their prevalence among all students in educational systems is high.

Incidence of SLD varies between 5% and 15% according to various resources. In fact, it can be implied from a calculation based on the minimum value that approximately 1 million students suffer from SLD in Turkey with a total student population of 18 million in formal education (Çakıroğlu, 2018). However, there is no official report on the number of students with SLD in education system of Turkey. As a matter of fact, diagnostic problems are the biggest among the problems regarding the students with SLD in Turkey. The leading cause of this problem is that there is no diagnostic tool to be used to identify students with SLD. In fact, there are two stages of evaluation of all individuals with special needs in Turkey. The first stage consists of the medical evaluation conducted at hospitals, and the second stage consists of the educational evaluation carried

out at the Guidance and Research Centers (GRC). A health board report for the disability is issued if an individual is diagnosed with a disability after the medical evaluation is completed, and the type and institution of education to be provided for the individual are determined after the educational evaluation in GRCs (Görgün, 2015). There are various standardized tests and formal and informal assessment tools used to evaluate these students in countries such as United States of America (USA) with great progress in SLD research. The Oral Reading Skill and Reading Comprehension Test - II (SOBAT – II; Melekoğlu et. al., 2014), the Word Reading Test (KOBİT; Babür, Haznedar, Erçetin, Özerman, & Çekelek, 2011) and the Anadolu-Sak Intelligence Scale (ASIS; Sak et. al., 2016) are some tools that can be used for evaluation of students with SLD in Turkey, and those evaluation tools were used in this study. However, aforementioned evaluation tools have not been widely used in GRCs for SLD assessment.

Academic Difficulties of Students with SLD

Students with SLD need to experience continuous difficulties in reading, writing and mathematics in school to be diagnosed. Reading disorder (dyslexia) indicates difficulties in reading skills, including phonemic awareness, phonics, vocabulary, fluency and comprehension, in the context of SLD (Cortiella & Horowitz, 2014). Additionally, many students with SLD experience difficulties in written expression (Pierangelo & Giuliani, 2006), and writing difficulties (dysgraphia) is defined as a neurological disorder that manifests itself with writing difficulties (Flanagan & Alfonso, 2011). Furthermore, mathematical difficulty (dyscalculia) is the difficulties that the individual experiences in arithmetic operations, four operations problems, measurement and other mathematical fields because of the number perception disorder. Similar to reading and mathematical difficulties, writing difficulties can also negatively affect academic life of students (Prater, 2006). Many students with SLD have difficulty in writing skills. Therefore, it is important to develop and provide effective writing strategies for use of those students with SLD to accommodate their needs. Teaching the skill of story writing, which is a genre especially included in the Turkish language curriculum and attracts students' interest at primary school level, constitutes the starting point of this study.

In this study, the POW + C-SPACE strategy is discussed, which was developed to use to help the students with SLD to gain story writing skills. Within this process, the relevant literature was thoroughly reviewed, and it was seen that this strategy was evidence-based and prominent. This strategy developed based on the self-regulated strategy development (SRSD) model will be shared with teachers and researchers to be used in teaching story writing to the students with SLD.

SRSD and POW + C-SPACE

Different strategies are required since students with writing difficulties can learn the strategies that are easily acquired by their peers only when they are more intensely and clearly explained. The

SRSD model, which was developed in this direction, was first used in 1982 by Harris and Graham in order to meet the needs of the students with severe learning disabilities. It is seen that this model has been used in teaching of many writing skills thereafter (Adkins, 2005; Albertson & Billingsley, 1997; Almadani, 2013; Asmara, 2016; Ballard & Glynn, 1975; Chalk, Hagan-Burke, & Burke, 2005; Chenard, 2014; De La Paz & Graham, 2002; Delano, 2007; Fischer, 2002; Glaser & Brunstein, 2007; Graham, 2006; Graham, Harris, & Mason, 2005; Graham, McKeown, Kiuhara, & Harris, 2012; Graham & Perin, 2007; Harris, Graham, & Mason, 2006; Hauth, 2012; Lane et al., 2008; Mason, Harris, & Graham, 2002; Mason, Snyder, Sukhram, & Kedem, 2006; Meyers, 2015; Nashville, 2010; Rogers & Graham, 2008; Rumsey & Ballard, 1985; Schnee, 2010; Shora, 2015; Sperger, 2010; Staal, 2002; Tracy, Reid, & Graham, 2009; Valasa, 2015; Zumbrunn, 2010; Zumbrunn & Bruning, 2012). Five meta-analysis studies have been conducted based on the SRSD model so far. The first meta-analysis was conducted by Graham (2006). All strategy teaching studies were discussed in this study. Comparisons were made using the values of effect size and percentage of the non-overlapping data (PND). Consequently, it was found that the effect of strategy teaching was strong on the writing skills of students. The second study was conducted by Graham and Perin (2007). In this study, strategy teaching and all other studies based on writing were discussed. The study included a total of 107 studies, and while 19% (20/107) of them were about strategy teaching, 40% (8/20) of the strategy teaching studies were based on the SRSD model. As a result of the research, it was revealed that the writing studies using the SRSD model were more effective than the other intervention approaches. The third meta-analysis study was conducted by Rogers and Graham (2008). In this study, 88 single-subject studies were examined. It was concluded that the effect size of the studies performed based on the SRSD model was large. The fourth study was conducted by Graham et al. (2012). In this study, 115 studies based on writing interventions were analyzed. As in the other meta-analysis studies, the effect size of the studies performed using the SRSD model was found to be large.

This study is thought to be important as it aims to meet the needs of students with SLD, especially in the field of writing difficulty. Hence, the aim of this study is to examine the effect of the POW + C-SPACE strategy on the story writing skills of the students with SLD. For this purpose, answers are sought to the following questions:

1. Is there a significant (within-group and between-groups) difference between the story writing skills scores of the students in the experimental group and the story writing skills scores of the students in the control group according to a comparison based on the POW + C-SPACE strategy?

2. Is there a significant (within-group and between-groups) difference between the self-regulation skills scores of the students in the experimental group and the self-regulation

skills scores of the students in the control group according to a comparison based on the POW + C-SPACE strategy?

3. Is there a significant (within-group and between-groups) difference between the attitude-toward-writing scores of the students in the experimental group and the attitude-toward-writing scores of the students in the control group according to a comparison based on the POW + C-SPACE strategy?

4. What are the opinions of the students, the teachers and the parents about the effect of the POW + C-SPACE strategy on the story writing skills and the attitude toward writing (social validity)?

Method

In this quantitatively designed study, pretest - posttest experimental design with control group was used. When determining the study group, first, sufficient number of students with predetermined characteristics were aimed to be reached. Students who had been diagnosed with SLD by a general hospital affiliated to the Ministry of Health and who were taught at special education and rehabilitation centers affiliated to MoNE were the target population. As a result of the searches by the researchers, two institutions were determined where students in sufficient number and with required characteristics could be reached in the province of Eskişehir. Total number of the SLD diagnosed students was 81 who attended the two institutions. After the necessary pre-interviews with the institutions' officials, the necessary permission for legal practice was obtained of 43 parents from the institution A, and of 38 parents from the institution B.

When determining the study group, the method of criterion sampling was used. Within this method, it is aimed to study all of the cases which meet a series of pre-determined criteria (Geçer & Özel, 2012). Therefore, the sample must consist of persons, events, objects or cases with certain characteristics (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2010). In this study, the minimum criteria for the students are (a) being diagnosed with SLD, (b) attending the 4th, 5th, 6th, 7th or 8th grade, (c) having 70 or a higher general intelligence score at ASIS, and (d) a written permission given by their family for participating in the research. Thirteen students from the institution A and 10 students from the institution B were included in the study. The institution A was designated as the experimental group, and the institution B was designated as the control group randomly. The findings regarding the equivalence of the experimental group and the control group were obtained from the following resources.

The Oral Reading Skill and Reading Comprehension Test - II (SOBAT - II): It is an evaluation test to measure the oral reading and reading comprehension skills of children with SLD. Covering the

age range of 7 – 14, the test consists of two interchangeable parallel test forms with equal difficulty. Each form includes original texts prepared at various levels, and reading comprehension questions for these texts. Within the test, 13 increasingly getting more difficult texts are read orally by the child while the administrator keeps time, meanwhile, the reading errors are recorded and five questions are addressed to the child for each text after each reading. By this means, the parameters of the oral reading rate, reading accuracy and reading comprehension are evaluated by the test. Within the evaluation, the individual's score of the reading rate and the number of correctly read words determine their reading fluency score, and their score of the answers to the questions determines their reading comprehension score (Melekoğlu et al., 2014).

Word Reading Test (KOBİT): It was developed to (a) measure the word reading skill, which is a key factor to learning how to read, of children studying at the primary school level, and (b) follow up and evaluate the progress of the word reading skill. KOBİT includes two sub-tests developed as lists of meaningful and nonsense words. Each sub-test includes equivalent parallel forms. The sub-tests within KOBİT consist of words listed one under the other from easy to difficult by taking into consideration the grammatical and phonetic characteristics of Turkish language. The meaningful words sub-test measures the child's reading level by detecting the rapidly read words automatically by them without the need for phonetic coding. The list of meaningful words includes 104 real words. The parallel form of this sub-test includes the same number of words with equivalent characteristics. The other sub-test, which is the nonsense words test, measures the children's knowledge of phonetic coding used while reading the unknown words by them. This sub-test consists of 63 nonsense words that are nonexistent in the written or spoken language. This sub-test also includes a parallel form with equivalent characteristics. KOBİT is implemented individually. It is a test that is easy to implement and evaluate. The child is expected to read the words on the list within 60 seconds correctly, rapidly and orally. What is important in the practice is the number of the words read correctly within 60 seconds. Implementation of only one form of each sub-test takes 5 minutes on an average. The relationships of the subtests with each other and with the total test scores (r = .90-.97 p <.001) and content validity were found to be high. It was determined that the difficulty and distinctive feature of the item was at an acceptable level. It was found that the test-retest and Croncbach alpha coefficients related to reliability were over .85 and the correlation between test equivalent subscales with each other, total test scores and word reading speed was over .75 (Babür et al., 2011).

Anadolu-Sak Intelligence Scale (ASIS): Anadolu-Sak Intelligence Scale is an individual intelligence scale that objectively measures the general intelligence, and the main components that constitute the general intelligence. While the individual implementation of the scale for the children aged 4 – 12 takes 25 – 45 minutes, its scoring takes three minutes. Consisting of seven sub-tests, ASIS provides eight different profiles of performance.

General Intelligence Index

Verbal Potential Index

Visual Potential Index

Memory Capacity Index

Verbal IQ

Visual IQ

Verbal Short-Term Memory Index

Visually-Spatially Operating Memory Index

Within the analyses made, internal consistency reliability coefficient of ASIS is median .91 for the Sub-tests, and median .97 for the components scores. These values indicate a perfect level of internal consistency. The sub-tests and components scores reliability coefficients were found to be .81 minimum, and .99 maximum. Especially since the reliability coefficients of General IQ, Verbal IQ, and Visual IQ are .99, .99 and .97, it is indicated that diagnoses based on these scores will also be quite reliable.

Within the test retest reliability study of ASIS, an increase of .3 standard deviation occurred in the general intelligence index (GIQ), .25 standard deviation in the verbal intelligence (SZE), .3 standard deviation in the visual intelligence (GZE), and about .3 in the memory capacity index (BKE). However, these increases are quite low. Since ASIS is a new test for children and it is very difficult to remember the items of many sub-tests, these may be considered to be the two most important causes of diminishing the effect of learning.

Forty-five record forms of ASIS were randomly selected among the norm practices for calculation of the interscorer reliability. Then, two practitioners trained in ASIS scored the 45 forms individually and calculated the sub-test totals. The interscorer reliability of ASIS was calculated based on the correlations between the sub-test scores. According to the analysis, the reliability coefficients of six sub-tests were found to be 1.00, and the reliability coefficient of SAN, which is the longest sub-test, was found to be .96. The perfect level of correlation coefficients suggests that the interscorer error variance of ASIS is 0 in six sub-tests, and its interscorer reliability is very high (Sak et al., 2016).

The student and family information forms, the Anadolu-Sak Intelligence Scale (ASIS), the Oral Reading Skill and Reading Comprehension Test – II (SOBAT – II), and the Word Reading Test (KOBİT) were administered to a total of 81 students. In addition, the educational evaluation and health reports provided by GRC for each student were examined in detail. The Anadolu-Sak

Intelligence Scale (ASIS) was implemented by field specialists who work at the Research and Application Center for the Education of Gifted providing service within Anadolu University. According to the scores obtained from ASIS, while the average intelligence score of all participants is 88.96, the average intelligence score of the participants in the experimental group is 92.15, and the average intelligence score of the participants in the control group is 84.80. It was evaluated whether there was a significant difference between the intelligence scores of the participants in the experimental group and the control group. Firstly, in order to evaluate the distribution of the scores obtained from ASIS, the Shapiro-Wilk test of normality was applied and it was determined that the scores did not exhibit a normal distribution (W=.,846, p<.05). Therefore, the Mann-Whitney U test, which is a nonparametric test was used to evaluate the difference between the intelligence scores of the participants. According to the results of the Mann-Whitney U test, the two groups have similar characteristics in respect of their intelligence scores (U=48.5, p>.05).

SOBAT and KOBİT were administered by the authors and two doctoral students in the department of special education. All the test administrators received trainings in advance. Besides, it was evaluated whether there was a significant difference between the scores obtained from SOBAT – II and KOBİT applied to all of the participants within the experimental group and the control group. The Shapiro-Wilk test of normality was conducted to evaluate the distribution of the reading fluency scores obtained from SOBAT – II, and it was found that the scores did not exhibit a normal distribution (W=.832, *p*<.05). Therefore, the Mann-Whitney U test was used. According to the results of the Mann-Whitney U test, the two groups have similar characteristics in respect of their reading fluency scores (U=40.0, *p*>.05). The Shapiro-Wilk test of normality was performed in order to evaluate the distribution of the scores obtained from KOBİT, and it was determined that the meaningful words reading scores did not exhibit a normal distribution (W=.879, *p*<.05), but the meaningless words reading scores exhibited a normal distribution (W=.949, *p*>.05). The Mann-Whitney U test was used for the meaningful words reading scores. According to the results of the Mann-Whitney U test, the two groups have similar characteristics in respect of their meaningful words reading scores (U=37.0, *p*>.05). The independent samples t test, which is a parametric test, was used for the meaningless words reading scores. According to the results of the t test applied, the two groups have similar characteristics in respect of their meaningless words reading scores (*t*=1.59, *p*>.05).

In addition, some demographic data were collected with the information form developed by the researchers in order to have more information about the students within the study group. According to the data obtained with the information form, it was seen that most of the students had a study room at home, allocated time for reading a book every day even if just a bit, allocated little time for sports every day, but more time for games, television and computers, the families rarely bought a

newspaper, nearly half of the families had a bookcase at home, none of the students had membership to a library, none of them was a subscriber of a magazine, none of the families had a disabled individual at home, the mothers and the fathers were alive, and finally the families had an average of two or three children.

Measures

Three different data collection tools were used in this study. The attitude-toward-writing scale (YAYTÖ; Susar Kırmızı, 2009) and the self-regulation scale (ÖDÖ; Uygun, 2012) were administered by the authors both to the experimental and the control group before and after the experiment by giving the necessary instructions. The data provided by the story writing skill rubric (ÖYBER) were obtained by scoring the stories written by the students by the researchers. The necessary descriptions regarding the data collection tools used in the research are included below.

Attitude-Toward-Writing Scale (YAYTÖ)

The Attitude-Toward-Writing Scale (YAYTÖ) was developed by Susar Kırmızı (2009) in order to determine the attitudes of 4th and 5th graders at primary schools toward writing. The factor analysis was conducted in order to determine the construct validity of YAYTÖ in the process of development. Consequently, after elimination of 18 items, the scale includes a total of 34 items, 17 of which are within factor one, five of which are within factor two, eight of which are within factor three, and four of which are within factor four. A rating of five was established with the Likert-type scale as "Completely Appropriate, Quite Appropriate, Partially Appropriate, A Little Appropriate, and Not Appropriate At All".

The variance of the items which are gathered under four factors is 59.28%. The factor eigenvalues of the items vary between .50 and .86. After the determination of the scale's sub-scales, its entire reliability analysis was made using the Cronbach Alpha reliability coefficient, the Spearman-Brown correlation coefficient, and the Guttman Split-Half reliability formula, and it was determined that the Cronbach Alpha reliability coefficient was .90. In the reliability analysis made according to the Split-Half model, the scale was divided into two groups of 17 items. The alpha value of the group one was found to be .93, and the alpha value of the group two was found to be .78. The coefficient of the correlation between the two groups was found to be .68. This means that there is a positively linear relationship between the two groups (Equal-Length Spearman-Brown=.5286, Guttman Split-Half=.5129, Unequal-Length Spearman-Brown=.5286). The factor one was named as *The Affective Attitudes toward Writing,* the factor two as *The Personal Efforts to Improve Oneself in Writing,* the factor three as *The Behavioral Attitudes toward Writing,* and the factor four as *Self-Evaluation in Respect of Writing.*

The lowest factor eigenvalue is .51, and the highest is .86 regarding the 17 items included within the factor one (Cronbach's Alpha=.93). The lowest factor eigenvalue is .53, and the highest is .84 regarding the 8 items included within the factor two (Cronbach's Alpha=.71). The lowest factor eigenvalue is .50, and the highest is.78 regarding the five items included within the factor three (Cronbach's Alpha=.82). The lowest factor eigenvalue is .52, and the highest is .65 regarding the seven items included within the factor four (Cronbach's Alpha=.60).

The weighted raw score that could be obtained by each student from the scale is at least 34, and at most 170. It is interpreted that a low total score indicates that the students' attitude toward writing is positive, and a high total score indicates that the students' attitude toward writing is negative.

Self-Regulation Scale (ÖDÖ)

The Self-Regulation Scale (ÖDÖ) for writing was developed by Uygun (2012) in order to determine the levels of self-regulation skills of the primary school 5th graders regarding writing. The method of factor analysis was performed in order to test the construct validity of the assessment tool. When eliminating the items that failed to assess the same purposes or statements in the assessment tool, firstly the unrotated Principal Components Analysis (PCA) was used, and then the Varimax Vertical Rotation Technique. In determining the scale's number of factors, it was firstly considered whether the eigenvalue number was bigger than 1. The total item scores correlation was examined for the scale's reliability. As a result of the analysis made accordingly, 13 items were removed from the scale of which the total item scores correlation was .30, and then the number of the items was reduced to 26. The scale's reliability coefficient is .87. The scale is Likert-type, and it is reversely scored as 3-2-1 for the positive statements, and as 1-2-3 for the negative statements. The scale used in the actual application includes a total of 19 items, of which 18 are positive and one is negative. The lowest score is 19, and the highest score is 57 that can be obtained from the scale.

Story Writing Skill Rubric (ÖYBER)

The Story Writing Skill Rubric (ÖYBER) was developed as a curriculum based measurement tool by the researchers. A pool of items was created theoretically based on the strategy content and the principal components. Firstly, the necessary arrangements were made by taking the opinions of two academicians in linguistics in respect of language and form. Then, the opinions of 12 academicians, 4 postgraduate and 5 graduate students working in special education were taken for the validation of scope and appearance. The rubric was put into its final form based on the opinions taken. The rubric includes eight sub-themes, which are (1) subject, (2) character, (3) time, (4) environment, (5) objective, (6) action, (7) conclusion, and (8) situation. Among the sub-themes, while the character, the action and the conclusion include three items each, the subject, the time, the environment, the

objective, and the situation include one item each. The total number of the items is 14. Each item is evaluated by the user as inadequate, should-be-improved, and adequate. The score value is 0 for the option of inadequate, 1 for should-be-improved, and 2 for adequate. The user can obtain a performance score in percentage through the formula "Total score obtained x 100 / 28". The interscorer consistency was checked by simultaneously evaluating the 50 stories written by the students within the study group by two field specialists. The Kappa and the correlation analysis were performed in order to determine the interscorer consistency. The high correlation between the scores of the scorers found by the Kappa analysis revealing the interscorer agreement is accepted to be an indicator of consistency. According to this, the scores obtained from the first and the second scorers are consistent (Kappa (κ)=.624; p=<.05). The correlation between the scores of the two scorers was found to be positively significant by 98.6 % (p=<.05).

Procedure

In this research, the POW + C-SPACE strategy developed by Harris, Graham, Mason and Friedlander (2008) based on SRSD model was used to teach story writing skills to the students in the experimental and the control groups. The practitioner was the first author. The parents and the teachers were provided with the necessary information about the strategy before starting to implement. The classes were determined which were suitable for the application by making the necessary interviews with the officials of the institutions, and the necessary arrangements were made by the researcher in advance. The application lasted a total of 16 course hours in four weeks, being two class hours a day, and two days a week. The courses were planned to last in 40 minutes based on the state of the students, and they were realized as planned. Each course was conducted according to the objectives and the student outputs provided in Table 1.

Table 1. Course Objectives and Student Outputs

Weeks	Courses	Objective	Student Outputs
1. Week	4 courses	The students will meet each other and the practitioner, and get information about the application. The course materials will be distributed by the practitioner. The objective of teaching of the POW + C-SPACE technique will be discussed. The students will learn the story parts, and memorize the reminder of the POW + C-SPACE technique.	The students meet each other and the practitioner. They get information about the application. The students learn the story parts. They memorize the reminder of the POW + C-SPACE technique.
2. Week	4 courses	The students review the reminder and the parts of the POW + C-SPACE method. The students check their level of performance by finding the parts of a story written before. In this course, the teacher models the use of the POW + C-SPACE method in planning and story writing. The students and the teacher together write a story by using the POW + C-SPACE method.	The students tell the POW + C-SPACE reminder and parts of the story orally. The teacher becomes a model to the students by using the POW + C-SPACE method. The students attend a course where the teacher becomes a model. The students tell the reminder and parts of the POW + C-SPACE orally. The students write a story including all parts of POW + C-SPACE together with the teacher.

3. Week	4 courses	The students start to write stories including all story parts with the help of the teacher. The students memorize the reminder and the parts of POW + C-SPACE. They plan and write their own stories with the help of the teacher.	The students write the parts of a story and the reminder of POW + C-SPACE. They plan and write a story including the six parts of POW + C-SPACE. The students record the story parts in the POW + C-SPACE reminder, and plan and write a story including the character, the environment, the objective, the action, the conclusion and the situation.
4. Week	4 courses	The students memorize the reminder and the parts of POW + C-SPACE. They plan stories with the help of the teacher, and create their own notes and write their own stories. The students learn how to work in pairs while planning a story.	The students write a story including all the parts of POW + C-SPACE. They plan a story on a blank piece of paper without a reminder chart. The students work in pairs to write a story, and attend a course realized by modelling.

Data Analyses

In this research, since the experimental group and the control group exhibited a normal distribution according to the Kurtosis and the Skewness values, the independent samples t test, which is a parametric test, was used in the between-groups evaluations, and the dependent samples t test was used in the within-group evaluations in order to determine whether there was a significant difference between the scores of the pretests and the posttests of the experimental group and the control group. Since the significant differences between the averages of the samples are not a certain indicator of a strong relationship between the independent and the dependent variables (Büyüköztürk, Çokluk-Bökeoğlu, & Köklü, 2016), while $d = t\sqrt{\frac{N_1+N_2}{N_1 N_2}}$ was used as the Cohen's d formula in the cases where the independent samples t test analysis was used, $d = \frac{t}{\sqrt{N}}$ was used in the cases where the dependent samples t test analysis was used in order to calculate the size of the effect of the independent variable on the dependent variable (Cohen, 1988). The d value obtained as a result of the calculations was interpreted as follows: .20 small effect size, .50 medium effect size, .80 large effect size (Cohen, 1988).

The social validity data obtained through the questions of the semi-structured interviews were analyzed using the frequency analysis, which is a type of content analysis. In this method, incidence of the elements is revealed by rating (numbers and percentages) in order to understand the intensity and significance of a certain element (Bilgin, 2006). In this study, firstly the principal elements were determined based on the research questions. Sub-elements were created from the statements which were suitable for the determined elements, and frequencies and the percentages of them were provided. In addition, they were supported with sections from the participants' own statements.

Results

According to the results obtained from the research, the pretest scores for the story writing skill of the experimental group is lower than that of the control group. While there is no significant

change observed between the pretest and the posttest scores of the control group where no post-experimental application was performed, a statistically significant change was seen for the experimental group when both the within-group pretest and posttest scores and the between-groups pretest and posttest scores differences were compared following an application of eight sessions and four weeks in the experimental group. When the same application was conducted for the control group, again a significant change appeared between the ÖYBER posttest and follow-up test scores. In addition, when the effect size of the change between the ÖYBER between-groups pretest and posttest scores differences and between the control group ÖYBER posttest and follow-up test scores were calculated, it was determined that the POW + C-SPACE strategy had a great effect on the story writing skills. Consequently, the POW + C-SPACE strategy is quite effective in improving the story writing skills.

The change between the between-groups ÖDÖ pretest scores and the control group ÖDÖ pretest-posttest scores was not found to be statistically significant. The change between the experimental group ÖDÖ pretest-posttest scores was found to be statistically significant. The change between the control group ÖDÖ pretest-posttest scores is statistically significant compared to the change between the control group ÖDÖ pretest-posttest scores, and the effect size is large. The change between the control group ÖDÖ posttest and follow-up test scores was found to be statistically significant. The effect size of the change between the control group YAYTÖ posttest and follow-up test scores is large. Consequently, the POW + C-SPACE strategy affects the self-regulation skills positively.

Table 2. Statistical Analysis Results

	Exp. (n=13)		Control (n=10)		T		p		d	
	X	SS	X	SS	Exp.	Control	Exp.	Control	Exp.	Control
ÖYBER Pretest	21.31	4.09	27.00	2.91	-3.73		.00			
ÖYBER Posttest	33.54	4.98	28.00	2.06	-13.08	-2.12	.00	.06	3.62	
ÖYBER Control Group Follow-up Scores			34.30	3.02	-6.94		.00			2.20
ÖYBER Pretest-Posttest Scores Between-Groups	12.23	3.37	1.00	1.49	9.79		.00			4.12
ÖDÖ Pretest	39.15	4.38	43.20	6.46	-1.80		.09			
ÖDÖ Posttest	48.77	5.46	42.50	5.32	-5.26	.742	.00	.48	1.46	
ÖDÖ Control Group Follow-up Scores			49.80	4.40	-4.38		.00			1.39
ÖDÖ Pretest-Posttest Scores Between-Groups	9.62	6.59	-.70	2.98	4.58		.00			1.93
YAYTÖ Pretest	101.54	23.70	101.10	24.49	.04		.97			
YAYTÖ Posttest	124.54	21.16	103.20	23.60	-2.63	-.63	.02	.55	.98	
YAYTÖ Control Group Follow-up Scores			120.70	18.26	-2.17		.06			

							.84
YAYTÖ Pretest-Posttest Scores Between-Groups	23.00	31.57	2.10	10.57	2.00	.04	

There is no statistically significant difference between the YAYTÖ between-groups pretest scores and the control group pretest-posttest scores. The change between the experimental group YAYTÖ pretest-posttest scores is statistically significant compared to the change between the control group YAYTÖ pretest-posttest scores, and the effect size is large. The change between the control group YAYTÖ posttest and follow-up test scores is not statistically significant. There is a positive change between the control group YAYTÖ posttest and follow-up test scores. Consequently, the POW + C-SPACE strategy affects the attitude toward writing positively.

According to the social validity results of the research, while the students, the parents and the teachers stated that the POW + C-SPACE strategy improved the story writing skill, the teachers and the parents stated that the strategy improved the students' imagination. The students stated that they noticed their mistakes and deficiencies in their stories, and the parents stated that their children learned how to proceed when writing a story, they had less writing errors, they started making more logical and longer sentences when writing a story, and it affected their other writing-related assignments positively. The teachers stated that their students started planning before writing a story, they checked what they wrote by themselves, and it contributed to their reading comprehension skills. Consequently, according to the opinions of the students, the parents and the teachers, the POW + C-SPACE strategy positively contributes to the story writing skills.

While the students stated about the effect of the POW + C-SPACE strategy on the attitude toward story writing that they loved writing a story and they could write a story, the parents stated that the strategy brought a positive attitude to their children, and the teachers stated that the students became more interested in story writing and more self-confident in story writing. Consequently, according to the opinions of the students, the parents and the teachers, the POW + C-SPACE strategy positively affects the attitude of students toward writing.

According to all of the results obtained from the research, the POW + C-SPACE strategy improved the story writing skills of the students with SLD. At the same time, it positively contributes to their self-regulation skills and attitude toward writing.

Discussion

The fact that the POW + C-SPACE strategy was able to help the students to overcome the limitations they experienced during the writing process as demonstrated by the current study has led the researcher to do this study. The lack of a strategy that can be used in the teaching of writing skills to students with learning difficulties, particularly in Turkey, is another factor.

In addition, writing difficulty is one of the main areas where students with SLD experience primary difficulties (Akçin, 2009; Bender, 2004; Smith, 2004).

In this study, the students in the experimental and control group were evaluated from the perspective of, story writing skills, self-regulation and attitude towards writing by using POW + C-SPACE strategy. The results of this study evaluating the impact of a strategy developed on the basis of SRSD model are in line with the results of studies in literature (Adkins, 2005; Albertson & Billingsley, 1997; Almadani, 2013; Asmara, 2016; Ballard & Glynn, 1975; Chalk et al., 2005; Chenard, 2014; De La Paz & Graham, 2002; Delano, 2007; Fischer, 2002; Glaser & Brunstein, 2007; Graham, 2006; Graham et al., 2005; Graham & Perin, 2007; Graham et al., 2012; Harris et al., 2006; Hauth, 2012; Lane et al., 2008; Mason et al., 2002; Mason et al., 2006; Meyers, 2015; Nashville, 2010; Rogers & Graham, 2008; Rumsey & Ballard, 1985; Schnee, 2010; Shora, 2015; Sperger, 2010; Staal, 2002; Tracy et al., 2009; Valasa, 2015; Zumbrunn, 2010; Zumbrunn & Bruning, 2012). Therefore, it can be stated that the POW + C-SPACE strategy develops students' writing skills, writing attitudes and self-regulation skills, and it is practical, functional and effective.

Beyond these the most important limitation of this study is its focusing on just story writing skill. The effectiveness of the POW + C-SPACE strategy can be re-tested and designed for other writing skills with different student groups. According to the results of the research POW + C-SPACE strategy can be used by teachers in order to improve students' attitudes towards writing, story writing and self-regulation skills as individual and group activity. For further studies research design of this study can be changed using alternative methods such as action or case study. And finally, by developing new strategies on the basis of SRSD similar studies can be held in different writing areas for students with SLD.

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