




## The Effect of The POW + C-SPACE Strategy on Writing Skills of Students with Specific Learning Difficulties Attending Classes in the Resource Room

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### ABSTRACT

In this study, the POW + C-SPACE (Pick my idea - Organise my notes - Write and say more + Characters - Setting - Purpose - Action - Conclusion - Emotions) strategy shaped on the basis of the Self-Regulated Strategy Development Model (SRSDM) was presented through teachers working in the resource room, to evaluate the effects on story-writing skills of the students with Specific Learning Difficulties (SLD). The study was designed with the multiple probe model with probe phase between subjects. The independent variable of the research is the POW + C-SPACE strategy presented through the teachers working in the resource room. The dependent variable is the story writing levels of the children with SLD who are educated in the resource room. The study group consists of three teachers and their students with SLD in the resource room. The POW + C-SPACE strategy was presented to the students with SLD through the teachers working in the resource room. As a result of the study, it was concluded that when the teachers in the resource room presented the POW + C-SPACE strategy, it effectively developed the students' story writing skills.

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#### Keywords:

Self-regulated strategy development, story writing skill, writing difficulty, specific learning difficulty, resource room, the POW + C-SPACE strategy

### 1. Introduction

Human beings have biological, psychological, social, spiritual, and economic aspects that are interrelated and affect one another constantly, shaping a person. All these aspects and each human being live in a multi-layer context from a micro-systems level to a chronological-systems level. Taking a contextual perspective in addition to biological aspects is important to understand and develop evidence-based programs for children with SLD (Öğülmüş, Acikgoz, & Tanhan, 2021). SLD is a type of inadequacy that causes difficulties in acquiring and processing information, remembering strategies, understanding their environment, problem-solving, understanding and using language, and making connections between thoughts (Talbot, Astbury & Mason, 2010). SLD has exclusionary diagnostic factors that differ from mental disability, hearing impairment, visual impairment, or not knowing the region's language (American Psychiatric Association [APA], 2013). To talk about the existence of SLD, although the cognitive potential of a child is within the normal range, the child should not be able to show the expected performance in some academic areas. At the beginning of primary school, while their peers learn basic academic skills such as reading, writing, and mathematics at the scheduled times, children with SLD cannot learn these skills at the expected time. Writing skills are especially seen as

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one of the most complex literacy activities for adults and children (Troia & Graham, 2003). When writing skills are mentioned, they should not solely be understood as handwriting or writing letters following their forms (İlker & Melekoğlu, 2013). Explaining and conveying thoughts can also be accomplished through writing (Gerde, Bingham & Wasik, 2012). Writing is defined as a language activity that occurs with the combination of many different components such as the mind, fine motor skills, sense, and understanding, and students are expected to have such writing skills to reveal what is expected of them in school life (Rosenblum, Weiss, & Parush, 2003). Any student needs a good writing skill in an average of 30-60% of a school day (McHale & Cermak, 1992). To academically succeed, students must demonstrate writing skill sufficiently (Kuşdemir, Kurban & Bulut, 2018). While children with normal development generally exhibit this skill at an adequate level, children with SLD cannot exhibit this skill sufficiently compared to their normally developing peers. It is stated that students who develop effective writing skills during their school years have a significant advantage over those who do not develop their writing skills in later life (Graham & Perin, 2007). It is thought that the more the writing skill is developed at an earlier period, the more this will affect the future academic life of the children with SLD.

Several models and strategies are used to improve writing skills in which children with learning difficulties experience limitations and to enable them to benefit from learning environments more effectively (Öğülmüş et al., 2021). The most common models are mainstreaming education and resource rooms. Mainstreaming education has been implemented in Turkey since the early '80s (Batu, Çolak & Odluyurt, 2014), and its importance in the following years has increased more with the increase in SLD awareness (Öğülmüş, 2018). However, the resource room is a newer model compared to mainstreaming education. Resource rooms are educational environments that aim to support individuals with special needs in schools where general education services are carried out. In resource rooms, special education experts provide services to students with special needs individually or as a group (Batu & Topsakal, 2003). Children have benefited from resource rooms for their reading, writing, and mathematics difficulties, and they continue to benefit from them today (McNamara, 1989). Education offered for one-to-one or small groups creates a positive basis for implementing strategies developed to support the writing skills of children with SLD. There are other scientifically based models (İlker & Melekoğlu, 2013) developed to support writing skills in such environments. One of these is the Self-Regulated Strategy Development Model (SRSDM).

SRSDM is a model that brings together highly effective strategies that enable students to organise themselves in the writing process that requires planning, reviewing, and producing (Harris, Graham, Mason, & Friedlander, 2011). Based on this model, researchers found many strategies that have proven effective such as POW+WWW, POW+TREE, STOP & DARE, PLANS, PLAN+WRITE (Al Shammari, 2018; De La Paz, Owen, Harris, & Graham, 2000; Ennis, Jolivette & Boden, 2013; Hoover, Kubina & Mason, 2012; La Mboi, 2020; Mason & Shriner, 2008; Tika, 2015). One of the most frequently used is the POW + C-SPACE strategy. This strategy was adopted by Öğülmüş (2018) based on SRSDM, and the strategy gives very effective results in developing the story writing skills of children with SLD. Considering that the writing skill is of great importance for the primary school and future academic life of the individuals, it is thought that the implementation of the POW + C-SPACE strategy in resource rooms is essential. When the related literature is examined, its effectiveness has been proven by many studies (Ballard & Glynn, 1975; Budak, 2016; Chalk, Hagan-Burke & Burke, 2005; Graham, Harris, & Mason, 2005; Özen, 2016; Rogers & Graham, 2008; Uygun, 2012; Zumbrunn & Bruning, 2012). However, no study proves the effectiveness of the strategies shaped based on SRSDM on students with SLD in the resource room. On the other hand, while many studies have been conducted on students with different types of disabilities who study in the resource room (Affleck, Adams & Lowenbraun, 1988; Akay, Uzuner & Girgin, 2014; Glomb & Morgan, 1991; Şahin & Güler, 2018; Vaughn & Bos, 1987), there is a limited number of studies on SLD students studying in the resource room.

Regarding all these points, taking a contextual approach, the purpose of this study is to determine whether the POW + C-SPACE strategy effectively develops the story-writing skills of children with SLD when presented in resource rooms through teachers, who were trained through online platforms. Experts in special education and related research also called for more evidence-based services for the children with special needs and their parents (e.g., Özekes, 2013). For this purpose, answers to the following questions were sought:

1. Are participating teachers able to reliably apply the POW + C-SPACE strategy to their students with SLD?

2. Is the POW + C-SPACE strategy presented by the teachers in the resource rooms effective in improving the story writing skills of students with SLD?
3. Does the POW + C-SPACE strategy presented to students with SLD through teachers in resource rooms cause permanent student performance changes?
4. What are the teachers' opinions participating in the research on the effectiveness of the strategy used?
5. What are the children's opinions participating in the research on the effectiveness of the strategy used?

## 2. Method

### 2.1. Research Model

This research was carried out with a single subject research model. Single-subject studies are quasi-experimental research models that include the interpretation of findings related to a subject (Büyüköztürk, Kılınc Çakmak, Akgün, Karadeniz, & Demirel, 2018; Tekin-İftar, 2018). Single-subject research models are suitable models to be used in cases where a single experiment needs to be examined intensively for a while and in studies conducted on individuals with significant differences from the others (Büyüköztürk et al., 2018). In this study, a multiple probe model with a probe phase between subjects, a single-subject research model, was used. The multiple probe model with probe phase between subjects is a research model in which the effectiveness of an independent variable on three subjects is examined. This model aims to bring the same behaviour to three different participants in the same environment or eliminate it in three different participants (Tekin-İftar, 2018). Experimental control in this study was established because there was no change in trends and data levels before the independent variable was applied to all participants. The change was only due to the application of the independent variable.

#### 2.1.1. The dependent variable

The story writing levels of the students with SLD was the dependent variable in the study. The story writing levels of the students were measured by scoring the stories they wrote in the last lesson of each practice session.

#### 2.1.2. Independent variable

The independent variable of the research is the POW + C-SPACE strategy applied by the teachers in the resource room. The POW + C-SPACE strategy was developed by Harris, Graham, Mason, and Friedlander (2011) based on SRSDM to help students develop a writing plan by thinking about the details that should be in a story. This strategy was adapted by Öğülmüş (2018) to be used in Turkey. It was implemented to the participating students (as an independent variable) through the teaching sessions applied by the classroom teachers who were working in the resource room.

## 2.2. Participants

Participants consisted of three students with SLD and three classroom teachers working in the resource room.

**Participating teachers:** Three classroom teachers were included in the study. The teachers also work in the resource room. All three teachers were male. The professional experience of all teachers is between 5-10 years. Teachers were included in the study voluntarily. The study' purpose and how it would be carried out were explained to the participants beforehand. It was stated that the POW + C-SPACE training, which would be carried out *with online education*, will be carried out at suitable times for both themselves and the researcher. It was also explained that they had to send the application results to the researcher *remotely via internet channels*. During study reporting, teachers and families of the students were told that code names would be used for the students.

**Participating Students:** Participating students were asked to have the following conditions when enrolled in the study: (a) being diagnosed with developmental disorders of scholastic skills from any hospital, (b) having an educational diagnosis of SLD from any Guidance Research Centers (GRS), (c) studying at primary school, (e) study in the resource room for at least three hours a week, and (f) have writing difficulties. Following these conditions, three primary school third-grade students with SLD were included in the study. All the children had the SLD educational report issued by the GRS, and all of them were nine years old. All children continue their education in rehabilitation centres affiliated to the Ministry of National Education (MoNE) in Turkey

throughout the study. Code names were used for the students participating in the study to protect their identity and conduct the study anonymously.

### 2.3. Environment

The POW + C-SPACE training for teachers within the scope of the study was carried out online through the Zoom Meetings program. After the training, the teachers' probe, practice, and monitoring sessions were held in the resource rooms in the schools where the students attended. The application environment has been arranged following the teaching and implementation of the POW + C-SPACE strategy. All teachers applied the strategy with their students at a table suitable for the developmental characteristics of their students. In the implementation of the strategy, the teacher and the students were seated side by side. Resource rooms were arranged against the stimuli that would distract the students during the application. After the applications, teachers took photos of the stories written by their students and sent the photos to the researcher via WhatsApp.

### 2.4. Materials

The POW + C-SPACE training, which was organised individually with the participating teachers through distance learning, was recorded by the researcher through the Zoom Meetings program and sent to the teachers via internet channels. The video, sample stories, story rockets, graphic organisers, and application notes of the POW + C-SPACE training conducted in the study were used in this context. In the POW + C-SPACE training record, there is a simplified version of how to implement the POW + C-SPACE strategy to improve the story writing skill and how to use the materials given to the teachers by the researcher. In the application notes, there are notes that teachers should remember while performing the application and providing tips on how to carry out the application. The sample stories given to teachers while implementing the strategy are easy-to-understand stories, consisting of an average of 130-150 words, containing the basic components of a story.

### 2.5. General Process

**Experimental Process:** The training offered to teachers consists of probe (full probe and daily probe sessions), practice, and monitoring sessions. The teachers conducted all probe sessions held within the scope of the experimental process.

**Probe Sessions:** Two types of probe sessions were conducted in the study. These sessions are (a) full probe sessions and (b) daily probe sessions.

**Full Probe Sessions:** The first probe phase of the full probe sessions was carried out by the teachers before the POW + C-SPACE training were presented and the teachers' practices with their students. The first probe phase also formed baseline data. The teachers carried out the second, third, and fourth probe phases with the guidance of the researcher until at least three consecutive sessions of stable data were obtained for all students after meeting the criteria for story writing skills.

Collective probe sessions were held by the teachers in the resource room, one-on-one with their students. The teachers asked their students to write stories when they were ready. Participating students, on the other hand, wrote a story that they independently fictionalised. The stories written by the participating students were sent to the researcher via WhatsApp. The researcher, on the other hand, obtained the data of the probe stages by scoring these stories with the story rubric developed by Ögülmüş (2018).

**Daily Probe Sessions:** The teachers held daily probe sessions at the end of each teaching session. The teaching session includes three lessons in which the steps of the strategy are applied. After the teachers applied the POW + C-SPACE strategy with their students, they asked them to write a story. After the students wrote the story, the teachers sent a photo of the story to the researcher via WhatsApp. In the daily probe sessions, the steps followed in the full probe sessions were applied precisely. The behaviours expected from teachers during daily probe sessions are the same as in full probe sessions.

**Teaching Sessions:** Teaching sessions in which the POW + C-SPACE strategy was applied were held in the resource rooms where the participating teachers worked. Teaching sessions were expressed as (a) the POW + C-SPACE training sessions and (b) teaching sessions in which the POW + C-SPACE strategy was applied.

**The POW + C-SPACE Strategy Training Sessions:** The training sessions of the strategy were conducted remotely with each teacher through the Zoom Meetings program. The training lasted 45 minutes in three sessions. The training was done with a clear narration over the presentation by projecting a PowerPoint presentation on the program. At the end of the first session, teachers were introduced to the materials they will use while implementing the strategy. In the second session, a sample application was made for teachers to grasp the story components better. The sample application includes separating the story into its components using graphic organisers over a sample story. In the third session, teachers were asked to write stories using the main components of the story, and feedbacks were given. All the steps of this strategy training session, conducted through distance education, were recorded and shared with teachers so that they can watch it whenever they want. All the POW + C-SPACE strategy training sessions were conducted individually with the teachers. After the POW + C-SPACE strategy training sessions, the materials and the application notes prepared to be used by the teachers during the application were sent to them.

**Teaching Sessions in which the Teachers implemented the POW + C-SPACE Strategy:** The teachers applied teaching sessions after the POW + C-SPACE strategy training sessions were held. Each teacher used the POW + C-SPACE strategy with their student after carrying out the full probe phases and receiving the POW + C-SPACE strategy training presented by the researcher. The strategy has been simplified so that teachers can understand and apply it more easily. The strategy consists of three lessons. The first lesson includes explaining the purpose of the strategy, why it is implemented, how it will contribute to the story writing skill, memorising the components of the story (character, setting, goal, action, result, situation) to the student, and finding the memorised story components together with the practitioner through a sample story. The second lesson includes finding the story components from a sample story, writing these components in graphic organisers, and evaluating the sample stories that are read and placed in graphic organisers with story rockets. The third and last lesson includes creating a topic pool, selecting a topic from this pool, writing the story sections of the selected topic in the graphic editor, writing the story with the notes taken in the graphic editor, checking the written story and completing the missing components, and evaluating them with story rockets. All these applications were videotaped by the teachers and shared with the researcher via internet channels. Treatment fidelity was calculated by watching the teaching session videos. Teaching sessions were held three days a week and continued at least three times in a row after the criteria were met until stable data were obtained.

**Monitoring Sessions:** Monitoring sessions were held five weeks after teachers' teaching sessions, where the strategy was implemented. The teachers asked their students to write a story as in the full probe sessions. The stories written independently by the students were shared with the researcher via WhatsApp. The researcher scored the shared story and recorded the data.

## **2.6. Data Collection**

Four different data were collected in the study: effectiveness, maintenance, social validity, and treatment fidelity data. The effectiveness and maintenance data were collected by scoring the stories that students wrote independently after applying the POW + C-SPACE strategy. These data were obtained after the stories were shared with the researcher.

Social validity data were collected by the social validity data collection form created by the researcher. There are open-ended questions about the work done in the form. The questions were sent to the teachers via Google Forms, and the social validity findings were presented by taking the answers on the same platform. There are no questions in the form that will identify the teachers.

Treatment fidelity data were collected only in teaching sessions. The data were obtained by watching the video recordings that the teachers took while applying the POW + C-SPACE strategy.

## **2.7. Data Analysis**

The effectiveness and maintenance data were scored by the students' story rubric, converted into percentages, and graphically analysed. The analysis of the social validity data was carried out by descriptively analysing the answers collected from the teachers and students with a semi-structured social validity form. The formula "observed practitioner behaviour/planned practitioner behaviour x 100" was used to analyse the treatment fidelity data (Tekin-İftar & Kırcaali-İftar, 2013).

### 3. Findings

#### 3.1. Treatment Fidelity Findings Regarding the Implementation of the Strategy by Teachers Using the POW + C-SPACE Strategy

The treatment fidelity data were collected and analysed to determine how reliably teachers implemented the POW + C-SPACE strategy with their students. For this purpose, the video recordings of the teaching sessions that the teachers held during the implementation phases were watched by the researcher.

Selim's teacher implemented the POW + C-SPACE strategy reliably at 100%, while Ege's teacher was at 94.87%, and Gökberk's teacher was 96.68% reliable.

#### 3.2. Effectiveness Findings of the POW + C-SPACE Strategy on Students' Story Writing Skills

The graph of the data related to the teachers' development of story writing skills of their students with SLD by using the POW + C-SPACE strategy is shown in Figure 1 below. The line graph in Figure 1 indicates the story writing skill levels on the vertical axis and the number of sessions held on the horizontal axis. The data obtained due to the applications were examined in three different stages as polling, application, and monitoring.

While Selim's average story writing level in the first probe phase was 30.66%, it was observed that after the application of the independent variable, the story writing level reached the desired level by meeting the criteria for three sessions. He maintained this level in the same way in other probe sessions. While Ege's average story writing level was 26% in the first probe phase, it was observed that the story writing level reached the desired level by meeting the criteria for three sessions after the application of the independent variable. He maintained this level in all other probe sessions. Similarly, while the average of Gökberk's story writing level in the first probe phase was 26%, it was observed that the level of story writing reached the desired level by meeting the criteria for three sessions after the application of the independent variable. Gökberk maintained this level in all other probe sessions.

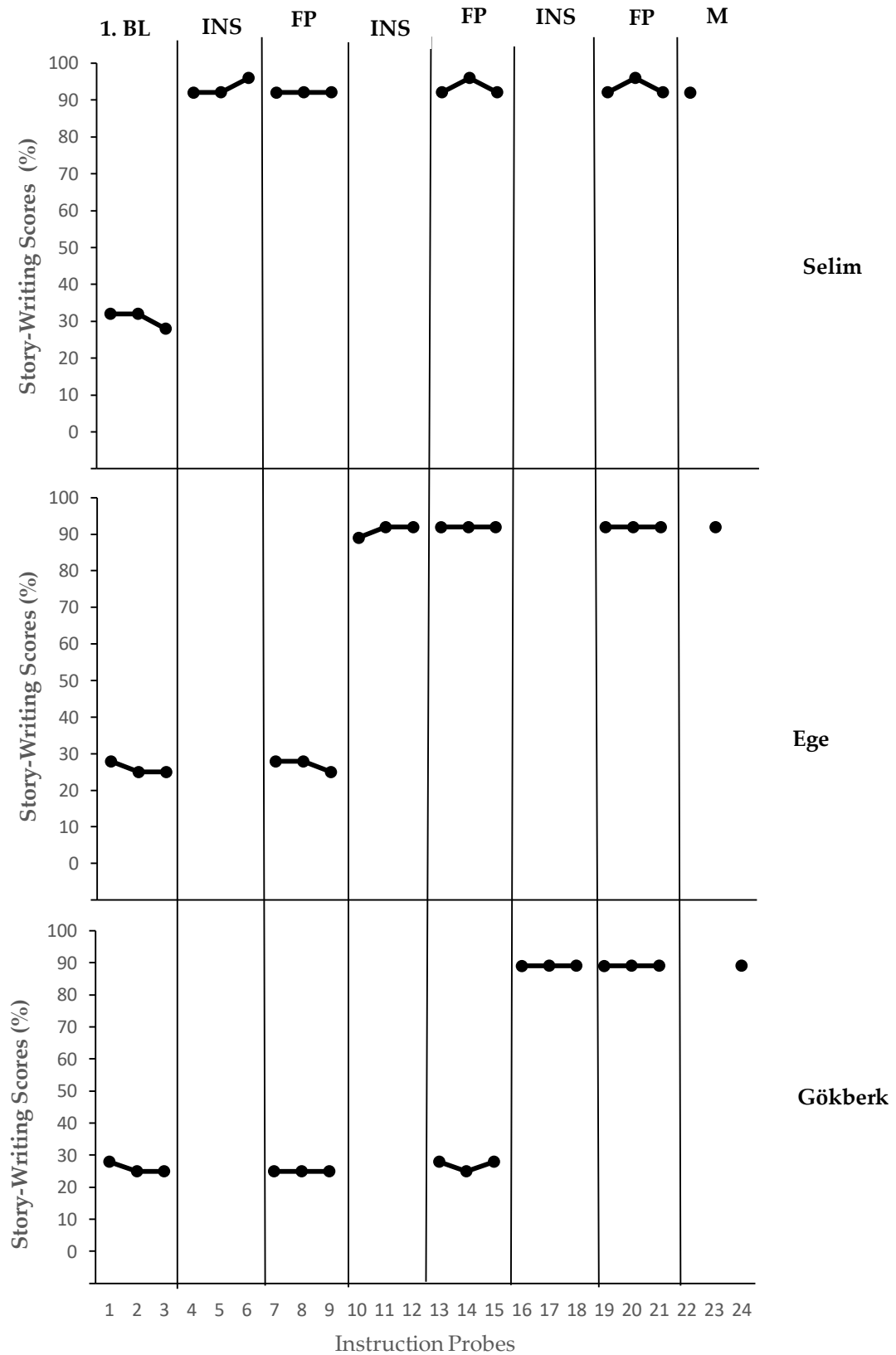


Figure 1. The Story-Writing Scores of the Participants

### 3.3. Findings Regarding Social Validity

The participant teachers and students were administered the POW + C-SPACE education social validity form to obtain the social validity findings of the study. The form consists of two parts. In the first part, participating teachers must answer five open-ended questions. In the second part of the form, there are three questions that the participant students must answer. For the children to answer easily, the questions were prepared as multiple choice. The data obtained after the form was applied were analysed with content analysis.

When the responses of the participating teachers are examined; regarding the question of what he thinks about the POW + C-SPACE Strategies Education, a teacher stated that his student, who has SLD, developed his story writing skill at a high level, and in this respect, it was a very good strategy. One teacher stated that the implementation of the strategy is very practical. It can be easily applied in the resource room and many environments. Furthermore, one teacher stated that it is a very useful strategy and should be taught to all teachers with SLD students.

Regarding the question of what the positive and negative aspects (if any) of the POW + C-SPACE strategy developed to improve the story writing skill; a teacher stated that his student with SLD knew the story components but could not organise these components; at this point, the POW + C-SPACE strategy helped his student. One teacher stated that the strategy was very useful in making his student aware of the story components. Similarly, the other teacher stated that memorising the story components was very useful in improving his student's story-writing skill.

Regarding whether they had difficulties while applying the POW + C-SPACE strategy during the study process and what they did to overcome these difficulties; two teachers stated that their students had difficulty memorising the story components but overcame this difficulty. Another teacher stated that his student had difficulty in finding the subject of the story to be written. Still, they were able to find a topic by brainstorming and following his interests.

Based on how they felt while implementing the strategy, the aspects of the strategy (if any) they like or dislike, and their different experiences (if any); a teacher stated, *"I was very happy as a teacher that my student wrote longer and more meaningful stories when I was unable to write more than two or three sentences. I realised that our students with SLD were considered unsuccessful due to the lack of appropriate teaching methods, although they actually have the capacity to do many things. Also, it is a practical and great strategy to implement in the resource room."* The other teacher said, *"I would have a hard time finding a strategy for writing in the resource room. I don't have such a problem anymore. By using this method, we have come a long way in writing a story with my student with SLD. Thank you."*

It was observed that all teachers gave a positive opinion to the question 'would you recommend the POW + C-SPACE strategy to other teachers working with students with SLD in resource rooms?'. When the participant students were asked how they found working, it was seen that two of them stated that they liked the method, while the other student stated that they started to like writing stories. When the participant students were asked whether they would like to repeat the same application, they expressed positive opinions. Finally, when the students were asked whether they would recommend it to their friends, it was seen that all of them gave a positive opinion.

### 4. Conclusion, Discussion and Recommendations

The POW + C-SPACE strategy was taught to teachers working with students with SLD in the resource room. The taught strategy was applied to the students by the teachers. It was evaluated whether these practices were effective on the story writing skills of students with SLD. The resource room structure is a very suitable and efficient environment for working one-on-one with students with SLD and applying special strategies developed for them. One of the most important reasons for using the POW + C-SPACE strategy, which is shaped based on SRSDM, is that it is capable of helping students with SLD to overcome the limitations in the writing process (Öğülmüş & Melekoğlu, 2021).

Furthermore, story writing skills, one of the writing skill areas, is an important tool for students with SLD to express their feelings, thoughts, and themselves. The POW + C-SPACE strategy will greatly contribute to these students in enabling them to use this tool effectively. Thus, contributing to their current and future academic life. Therefore, the teachers and students were taught the POW + C-SPACE strategy within the scope of this



study. All these align and suggest that contextual factors can increase the quality of education (Öğülmüş et al., 2021; Tanhan & Strack, 2020). As educators, we can increase education levels by focusing on changeable factors (e.g., education methods).

The study's findings show that the POW + C-SPACE strategy applied by teachers in resource rooms increased the story-writing skill levels of children with SLD in the desired direction. The children maintained their story-writing skill levels five weeks after the application. As a result of the analysis, which evaluated the effectiveness of presenting the POW + C-SPACE strategy developed based on the SRSDM, our study is similar to previous studies (Asmara, 2016; Ballard & Glynn, 1975; Budak, 2016; Chalk, Hagan-Burke & Burke, 2005; Delano, 2007; Graham, Harris, & Mason, 2005; Özen, 2016; Rogers & Graham, 2008; Sperger, 2010; Staal, 2002, Uygun, 2012; Zumbrunn & Bruning, 2012). At the same time, this study is one-to-one compared to studies that prove the effectiveness of the strategies developed based on SRSDM in large groups and as applied in the classroom environment (Almadani, 2013; Ballard, 1985; Demircan, 2014; Meyers, 2015; Rogers & Graham, 2008; Rumsey & Ballard, 1985). It has shown that similar results can be obtained when applied in the resource room.

Furthermore, this study parallels the results of some other studies (Al-Zoubi & Rahman, 2012; Çağlar, 2016; Kethley, 2005) on teachers' effectiveness with students with different disability types in resource rooms. As in the resource room studies mentioned, it has been observed that the teaching provided after the training was effective.

According to the data obtained from the social validity findings, the participant teachers stated that they found the POW + C-SPACE strategy very useful and were satisfied with the application. In another study, in which families applied the same strategy to their children with SLD, similar social validity findings were obtained (Almadani, 2013; Asmara, 2016; Öğülmüş, 2018, Öğülmüş & Melekoğlu, 2021; Öğülmüş, 2021). The POW + C-SPACE strategy was found useful in different studies by different participants in different environments such as home, resource room, classes, rehabilitation centres, etc., supporting this strategy's functionality and effectiveness.

This is also the first study that enables teachers to apply a strategy based on SRSDM in the resource room. The treatment fidelity data show that teachers can apply this strategy with high treatment fidelity when the POW + C-SPACE strategy is taught through online education. The findings obtained in this direction have once again demonstrated that the POW + C-SPACE strategy is practical, effective, easy to apply, and functional. The results show that this strategy can be applied in the classroom, the resource room, or individually.

In the relevant literature, it is seen that similar studies for students with SLD and teachers working in the resource room are limited. In this context, it can be said that the current study has a quality that will contribute to the relevant literature. It is thought that this study will shed light on researchers and educators by leading to studies that include teaching other strategies based on SRSDM to teachers working in resource rooms and other educational environments. Furthermore, it may increase studies that support teachers working with students with SLD. Following are some suggestions for researchers in line with the results obtained.

- The effectiveness of the teacher education program developed based on the strategy of the POW + C-SPACE on the story writing skills of students with SLD can be examined by presenting it to other branch teachers (Turkish teacher, literature teacher, etc.).
- Other strategies developed based on SRSDM for enhancing the basic writing skills of children with SLD can be applied by the resource room teachers and examined by the researchers in the same way.
- The POW + C-SPACE strategy can be applied to students at different education levels (such as middle school) studying in the resource rooms.
- The effectiveness of the POW + C-SPACE strategy can be compared with different writing strategies.

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