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Teaching Note-Taking Skills to Students with Learning Disabilities: CUES+CC Strategy

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Abstract

The main purpose of this research is to examine the effectiveness of the CUES+CC strategy in improving the note-taking performance of students with learning disabilities. Within the scope of this purpose, the effect of the CUES+CC strategy on students' note-taking and exam performances and maintenance of the performance was investigated. Moreover, the students' level of generalizing of their note-taking performance to Turkish lesson was also examined. Three students who were diagnosed with learning disabilities in the study. 'Multiple Probe Design Across Subjects,' one of the single subject designs, was used in this study. The students' note-taking percentages and exam performance were used to score the data. The findings revealed that the CUES+CC strategy is effective on note-taking and exam performance of students with disabilities and upon learning the strategy, the students displayed the same improved performance on note-taking after one, three, and five weeks, and they extended this performance to a different course as well. The findings of the research were discussed within the framework of the relevant literature and theoretical opinions, and suggestions were made to researchers working in the field for future research.

Keywords: Learning Disabilities, CUESS+CC Strategy, Middle School, Note-Taking, Cognitive Strategy, Self-Regulated Strategies Development

1. Introduction

Students must not only require academic skills and knowledge but also know how to learn to meet the academic demands in the general education curriculum. A large body of research reveals that students have difficulties in learning many skills required to be successful in middle school and high school (Baharev, 2016; Boyle, 2010a). The primary learning method in middle school and high school is to acquire effective note-taking and study skills (Boyle & Weishaar, 2001). Many studies that were conducted in recent years showed that students generally lack study skills such as note-taking and doing homework (Boyle, 2010a; Boyle, 2012; Boyle & Forchelli, 2014). In the meantime, these difficulties are even greater for students with learning disabilities (Baharev, 2016).

Studies in the literature showed that students used insufficient note-taking and ineffective studying strategies (Karpicke et al., 2009; Titsworth & Kiewra, 2004). According to Neef et al. (2006), students often take missing notes, have difficulty in distinguishing relevant and irrelevant information, use inadequate learning strategies or use no strategies at all. Generally, students with learning disabilities experience problems in reading, reading comprehension, mathematical operations, problem solving and transferring verbal knowledge to written format (Boyle & Forchelli, 2014). Note-taking is a much more difficult skill for students who have difficulty in acquiring academic competencies and learning difficulties and who use inadequate learning strategies (Boyle, 2010b; Boyle & Forchelli, 2014).

When the literature is examined, the findings of the studies that were conducted with middle school children revealed that when the note-taking skill is taught with a strategy in the middle school, successful results are obtained. Note-taking strategies that were taught to secondary school students were tested on students with learning disabilities (Baharev, 2016; Ciullo et al., 2015).

Literature provides various studies conducted with normally developing individuals on note-taking skills (Bachhel & Thaman 2014; Butler, et al., 2001; Call, 2000; Campbell & Mayer, 2009; Chiu, et al., 2013; Gier & Kreiner, 2009; Haynes et al., 2013; Igo et al., 2008; McKinney & Luber, 2009; Stringfellow & Miller, 2005; Suritsky & Hughes, 1991; Titsworth & Kiewra, 2004). However, there is limited number of studies carried out with students with learning disabilities (Baharev, 2016; Boyle, 2010a; Boyle, 2010b; Boyle, 2012; Boyle & Forchelli, 2014; Boyle & Rivera, 2012; Stephen et al., 2015). Some of these studies compared the note-taking performance of individuals with learning disabilities with their normally developing peers (Boyle 2010a; Boyle, 2012; Boyle & Forchelli, 2014). Their findings mainly indicated that students with learning disabilities performed significantly lower in all variables. On the other hand, some studies were conducted with students with learning disabilities to improve the quality of their note-taking, comprehension and remembering (Boyle, 2010b). In a general manner, findings reported that introducing the note-taking strategies and other supporters such as guided notes also improved the quality of note-taking.

One of the effective approaches to improve students' note-taking skills is to help students gain strategic note-taking. Strategic note-taking provides continuity of cognitive processes at a higher level and it is more detailed than basic memorization techniques (Baharev, 2016; Boyle, 2010b; Boyle et al., 2014). Some of the strategies that were developed for note-taking are strategic note-taking paper and CUES + strategies.

Strategic note-taking paper is based on Mayer's learning model, which has three steps: selection, organization, and integration (Mayer, 1996). The first question in SN is to ask students to define the topic of the lesson and associate it with their current prior knowledge. Next, students are given the clue (CUES) strategy that they must follow. In the first step, students put together three to six main points along with the details of the lesson. Then, the students are asked to summarize how ideas are associated to make it easier to code new information. In the second step, the students are asked to pay attention and to listen and record the clues that are given by the teacher. In the following step, the students need to list new words and terms in their notes. During the summarizing step, the students enter some words to categorize the three to six lecture points that they have listed. Finally, the students are required to record five important notes from the lesson and define the details of each note (Boyle, 2010b; Boyle, 2012). Boyle & Weishaar (2001) examined the effects of strategic note-taking on recall and comprehension of high school students with mild intellectual disabilities, and strategic note-taking was found to be effective. The students who received strategic note-taking training recorded more words in their notes. Later, Boyle (2010a) conducted a study on the strategic note-taking skills of sixth through eighth-grade students with learning disabilities. While the students in the experimental group were trained in strategic note-taking and how to do homework, the students in the control group were asked to take notes in the classroom in a conventional way. The students' notes were analyzed in several ways: cued lecture points, non-cued lecture points, total lecture points, and total words. Moreover, immediate free recall measure, long-term free recall measure, comprehension test, and a strategic note-taking questionnaire were also administered. The results revealed that the students who used strategic note-taking recorded more notes and displayed better performance on recall and comprehension measures. In light of the studies in the literature, the CUES+CC strategy was

developed for middle school students with learning disabilities. CUES+CC strategy is the adapted version of the CUES+ strategy that was developed by Boyle et al. (2014).

Table 1: Steps of the CUES+CC strategy

CUES+CC Strategy	
Cluster	Did I read the topic before the lecture?
	Is my classification paper in front of me?
	Have I written three to six main points that I find important?
Use	Is my cue paper and notepaper in front of me?
	Have I recorded all the cues that I heard from the teacher?
Enter	Have I written down everything important to me from what the teacher told me?
	Did I write the words that I do not know in the "I don't know" section?
Summarize	Is my summary paper in front of me?
	Have I written a summary sentence about the lecture I listened to?
	Have I written the five most important points?
	Have I explained these points in my own words?
Compare	Are my summary paper and classification paper in front of me?
	Did I find the differences between summary and classification papers?
Check	Did I answer the questions?
	Did I check the questions with my notes?
	Have I mentioned the points that I should pay attention to for the next lecture?

CC steps of the CUES+CC strategy are different from the CUES+ strategy that was developed by Boyle et al. The CC (compare and check) step was effectively used in Harris and Graham (1992)'s study (Graham & Harris, 2003). The compare step shows students the difference between what they predicted and what comes out as a product. In this way, it is expected that students' prediction skills will be improved, and they will be aware of the points that they should pay more attention to. The student must associate the difference between his/her first and final product. The term association refers to the results of students' success or failure, that is, the ability to establish cause and effect relationships on their academic success. (Graham & Harris, 2003). Children with learning disabilities have problems with the association and it was emphasized that it needs to be improved (Graham & Harris, 2003). With the step of the check, upon using the strategy, the students are expected to check their answers to the questions. When students check their answers, they get the opportunity to realize their mistakes and identify the points that they should pay more attention in the next lecture. For all these reasons, the CC steps were added to the CUES+ strategy.

As a result, the CUES+CC strategy in this research was used in the following ways; a) the steps of the strategy were adapted from CUES+ as "cluster, use, enter, summarize, +, compare, check," b) self-regulation and self-monitoring were integrated into the strategy, c) supporters were used for the student to achieve independence, d) self-regulation strategies were formed according to the instruction stages (Activating Prior Knowledge, Discussing the Strategy, Modeling, Memorizing the Strategy, Guided Application, Independent Practices), e) the feature of being criterion-based, which is also the feature of self-regulation approach, was adopted. There is a scarcity of research in the literature that investigated strategic note-taking with students with learning disabilities (Baharev, 2016; Boyle, 2010a). It is thought that this research will contribute to the field of special education in two ways. The results of this research will provide information on teaching strategic note-taking and note-taking skills to students with learning disabilities. At the same time, this strategy aimed to investigate how students' ideas about their own learning change with the strategy and to determine the processes of how students transferred what they had learned to their notes and using information.

The aim of this study was to determine the effect of CUES+CC strategy on the note-taking performance of middle school students with learning disabilities. In accordance with this aim, answers were sought to the following questions:

1. Does the CUES+CC strategy affect the note-taking skills of students with learning disabilities?

2. Is the CUESS+CC strategy effective in the exam success of students with learning disabilities?
3. After teaching with the CUESS+CC strategy, do students with learning disabilities continue their note-taking performance after one, three, and five weeks?
4. After teaching with the CUESS+CC strategy, does exam success of students with learning disabilities continue after one, three, and five weeks?
5. Can students with learning disabilities generalize their note-taking performance to a different course after being taught with the CUESS+CC strategy?

2.Method

2.1 Research Design

'Multiple Probe Design Across Subjects,' one of the single subject designs, was used in this study to examine whether strategic note-taking is effective in the note-taking skills and exam success of middle school students with learning disabilities. In this model, the effectiveness of a method on a target behavior is investigated in more than one subject with the same characteristics (Gast, 2010).

2.2 Participants and Their Selection

Three students with a Specific Learning Disability (SLD) who attend an inclusive class in a middle school participated in this study. Potential participants were required to meet some criteria to participate in the study: they need to have reading comprehension skills (to be able to answer all the 5W1H questions), to have mechanical writing skills (to be able to write what is heard), to attend middle school, and being diagnosed with SLD. To select the participants of the study, firstly the middle schools in the city center of Bolu, where inclusive education is given, were determined. Permission was obtained to conduct research in these schools. Classroom teachers were interviewed by going to the designated schools. By interviewing these teachers, students with SLD, who meet the study's participant selection criteria were determined. The teachers selected the students who would participate in this study. Then, a meeting was arranged with the counselor of these students, and detailed information about their SLD diagnosis was obtained. An evaluation was carried out to investigate whether the chosen students with SLD meet the participation selection criteria of the study. For this purpose, firstly, students' reading comprehension and mechanical writing skills were evaluated. To that end, texts containing the 5W1H questions were given to the students and they were asked to write down their answers. Three students were randomly selected and included in the study among nine students, who met the prerequisite performance criteria. Permission was taken from the parents and teachers of the participants for being involved in this study. Table 2 presents the characteristics of the participants.

Table 2: Demographic Information

Participants	Gender	Age	Grade	IQ	Types of Disabilities
Participant 1	Female	13 years old and 3 months	7	101	Learning Disability
Participant 2	Male	13 years old and 5 months	7	105	Learning Disability
Participant 3	Male	13 years old 2 and months	8	105	Learning Disability

2.3 Dependent and Independent Variables

The dependent variable is the percentage of note-taking performance and exam success performance. The independent variable is the strategic note-taking strategy.

2.4 Environment and Time

The application process was carried out in the classrooms for individualized education in the school. The classroom for individualized education was is 6 m x 6 m in size. The students sat at a square table, and the researchers sat next to them. The sessions were held every weekday between 10:30 and 12:30, once a day.

2.5 Qualifications of Participants

One of the researchers had a doctorate from the Department of Special Education, and the other was doing a master's thesis. Other researcher had publications on strategy instruction for students with special needs (Karabulut et al., 2015; Karabulut & Özmen, 2018; Karabulut & Özkubat, 2019, 2021; Özkubat et al., 2020a, 2020b; Özkubat & Karabulut, 2021; Özkubat et al. 2021). Besides, the researchers took the Cognitive Strategy Instruction course in their doctorate and master's education. The researchers carried out the experimental process together.

2.6 Application

The application process was carried out in five stages: baseline sessions, instruction sessions, post-instruction sessions, generalization, and monitoring sessions.

2.7 Baseline Sessions

The note-taking performances of the participants and their exam performances at the end of the lessons were determined. During this period, students watched videotaped lessons, and they were provided with pen and paper so that they could take notes. At the end of the lesson, they were asked to answer 10 open-ended questions. By evaluating the notes and worksheets, the students' baseline performances were calculated as a percentage and shown on the graph.

2.8 Instruction Sessions

Instruction sessions were set up with the participants who obtained stable data at the baseline level. The instruction sessions were continued until the students' note-taking performance during the lectures with the CUESS+CC strategy reached %80, and they answered 10 open-ended questions that were given after the lecture with %90 accuracies. Worksheets that contain strategy instruction were used in the instruction sessions. In this process, videotaped lectures were presented to the students. The instruction was created in five stages according to the instructional stages of self-regulation strategies (SRS): *Develop and Activating Background Knowledge, Discuss the Strategy, Modeling, Guided Application, and Independent Performance*. The papers that were used to support the instruction stages are presented in Table 3.

Table 3: Supporters used in CUESS + CC Strategy

1. Tracing Paper	It is a supporter that includes the steps of the CUESS+CC Strategy and helps the student determine the step he/she is in while applying the strategy. The tracing paper consists of four columns. The first column contains the names of the steps of the strategy. The second column contains the substages of each step. The third column is the “yes” column. The fourth column is the “no” column. If the student has completed the step, he/she will mark the yes column, if not, he/she will mark the no column.
2. Classification Paper	It is a supporter that was developed to facilitate the classification step of the strategy. This column consists of one column and seven lines. The title is written in the first line, while a minimum of three and a maximum of 6 sentences on the topic are written in the other lines.
3. Cue Paper	It is a supporter that was developed to facilitate the ‘Use’ step of the strategy. This supporter consists of three columns. The student should capture the cues, one of the prerequisite skills, during the lecture and write to this supporter.
4. Notepaper	It is a supporter that was developed to facilitate the ‘Enter’ step of the strategy. The front and back of this paper will be used. There is a lined blank page on the front side of the paper for the student to take note. On the back of the paper, there is the ‘I don’t know’ section. In this section, the student will note the words that he/she does not know during the lecture, to learn later.
5. Summary Paper	It is a supporter that was developed to facilitate the ‘Summarize’ step of the strategy. This supporter consists of one column and six lines. The first line asks the student for a summary sentence. The first line asks the student for a summary sentence. The other five lines want him/her to explain the five most important points on the student in his/her own words.

2.9 Application Stages of the CUES + CC Strategy

Developing and activating background knowledge: At this stage, teacher tips that are necessary for the student to apply the CUES + CC Strategy and note-taking skills were taught (This topic is important, it may be asked in the exam, especially, it needs to be learned, etc.).

Discussion: Discussing the strategy enables students to learn and adopt the strategy. At this stage, the strategy introduced was introduced and students were helped to believe that the strategy would guide them. CUES + CC Strategy included steps such as classification, find a clue, take note, summarize, +, compare, check. Students were told what to do in which step. The importance of the steps was discussed with the students.

Modeling: At this stage, the use of strategy was modeled. The modeling stage consists of the realization of all steps by the researcher through tracing papers and thinking aloud. By stopping the course recordings at the required steps, the researcher performed the step loudly, and then the student took the researcher as a model. The practitioner became a model by thinking out loud about how the step should be realized. The modeling process continued in the same way for each step. The course was conducted simultaneously with the student. This stage continued until the student stated the steps of the strategy and until the student applied self-instruction and monitoring in all steps.

Guided Application: At this stage, the student started to take notes using the strategy and the teacher helped the student if necessary. Aids and supporters were withdrawn as the student gained experience in the use of strategies. Teacher guidance continued until the student succeeded in using the strategy alone.

Independent Performance: At this stage, the student started to apply the strategy on his own. The teacher made only observations to keep this performance of the student constant. The independent performance stage was

completed when the students took notes with an accuracy of more than 80% and met the correct answer criteria for 9 of the 10 questions determined for the course.

2.10 Post-Instruction Sessions

In this process, the process carried out in the baseline sessions was followed. Students watched videotaped lessons, and they were provided with a blank paper and a pen so that they could take notes. At the end of the lesson, they were asked to answer 10 open-ended questions. After level students' papers and worksheets, their post-instruction performances were calculated as percentage and shown on the graph. Considering the baseline level, the criterion determined for the students was 80% for note-taking performance at the end of the teaching and 90% for the 10-question exam. Instruction and post-instruction sessions were terminated when stable data were obtained for at least 3 consecutive sessions for each student.

2.11 Generalization Sessions

Generalization sessions were held to determine the students' generalization levels of note-taking and exam performances to different courses. Generalization data were collected with pre- and post-test. At the end of the lesson, students were asked to watch the videotaped Turkish lessons, take notes and answer the 10-question exam. After evaluating their answers and grades, correct answer percentages and quality grade percentages were determined and graphed. Once the teaching was completed, generalization post-test sessions were started. As in the pre-test sessions, students were asked to watch the videotaped Turkish lessons, take notes and answer the 10-question exam at the end of the lesson. Again, students' answers and grades were evaluated, and correct answer percentages and quality grade percentages were determined and graphed. Students were observed to use the CUES + CC Strategy while taking notes in the post-test sessions.

2.12 Monitoring Sessions

After the teaching was completed, monitoring sessions were initiated. In the monitoring sessions, it was aimed to determine students' level of continuing the CUES + CC Strategy in the first, third and fifth weeks after the completion of the instruction. Monitoring sessions were held in the classroom where the students were studying. In these sessions, similar to the post-instruction sessions, students watched videotaped lessons, and they were asked to take notes and take a 10-question exam after the lesson. After evaluating the worksheets, the students' post-instruction performances were calculated as a percentage and noted on the monitoring data section of the graph. A monitoring session was held for each student in the determined weeks. Thus, monitoring data were collected, and their note-taking performances and correct response percentages were graphed.

2.13 Data Collection Tools

Data collection tools included strategy papers to be used during the instruction, exam questions, a laptop, pencils and erasers, and a camera.

2.14 Data Analysis

The data were shown with a line chart and analyzed visually. The horizontal axis of the graph presented the number of sessions, while the vertical axis showed grade taking and exam performance percentages. When analyzing the data on note-taking and test performance skills, the level of the data obtained at the baseline level was compared with the level of the data obtained at the end of the instruction practices. The data obtained at the baseline level was compared with the data obtained at the end of the instruction practices. Considering the baseline level, at the end of the application of the CUES + CC strategy, the increase in the level of the data revealed the effect of the applied strategy. The follow-up data were compared with the post-instruction data to determine whether there was a difference in the level. Generalization data were analyzed by column graph. The baseline data and the end of instruction data were compared to determine whether there was a difference in the level.

2.15 Interobserver Agreement and Application Reliability

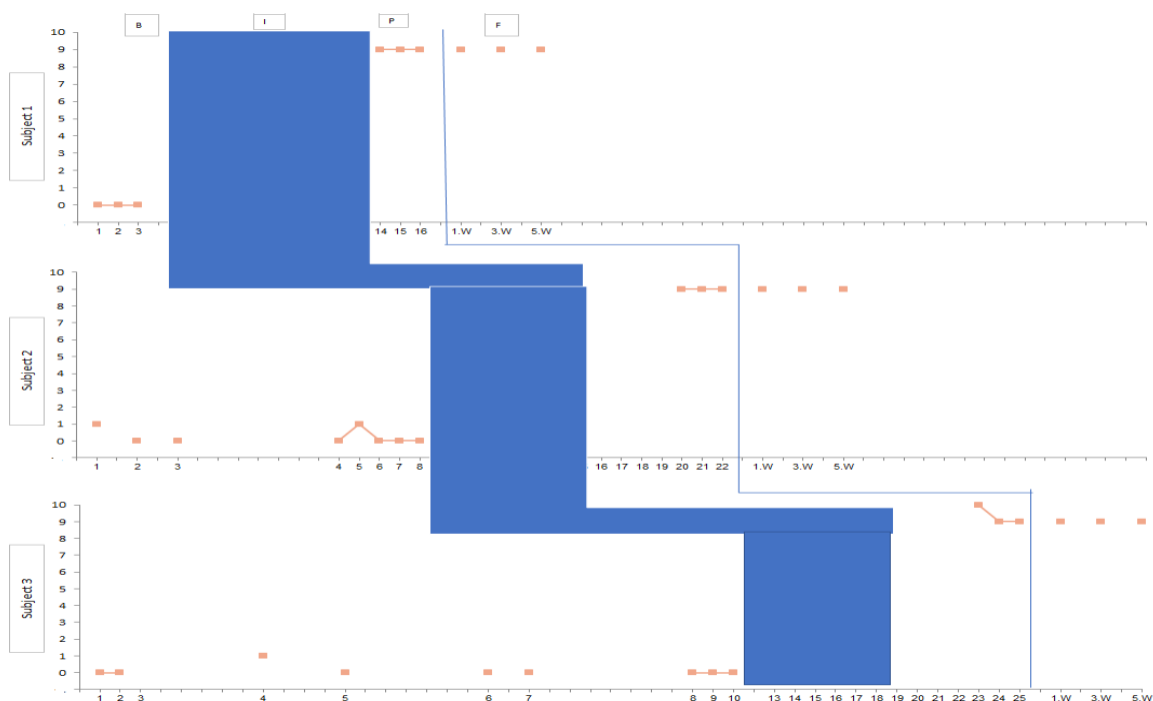
Interobserver agreement was calculated via the following formula: Researcher and observer total consensus was divided by the sum of consensus and disagreement and multiplied by 100 (House et al., 1981). Interobserver reliability was calculated for at least 30% of the research data by taking samples from each student, including all evaluation stages (baseline, post-instruction, generalization, and monitoring). Observers were experts who had bachelor's and master's degrees in special education and who took a single subject research design course. They were provided with the student's note-taking strategy papers and exam questions related to the lesson. The observers were asked to determine the student's grade-taking level and their correct answers. The observers were told how to score the data and they were asked to fill the Observer Reliability Registration Form by marking the "Yes" and "No" columns. Interobserver agreement for all three students was found to be 88%.

Application reliability was calculated by dividing the observed behaviors of the researcher by the planned behaviors of the researcher and multiplying the result by 100 (Billingsley, et al., 1980). Accordingly, the application reliability for all three students was found to be 86%.

3. Findings

Graph 1 presented students' baseline levels, end of instruction and monitoring findings regarding their note-taking skills.

Graph 1: Students' Baseline Levels, End of Instruction and Monitoring Findings Regarding Their Note-Taking Skills



At the baseline level, the first student did not take any notes while she was required to take 10 important notes during three consecutive sessions. However, at the end of the CUES + CC strategy instruction, she could take nine notes. During the monitoring sessions, she was observed to take nine notes one week later, nine notes three weeks later, and nine notes five weeks later. Thus, there was no decrease in the student's grades regarding monitoring sessions.

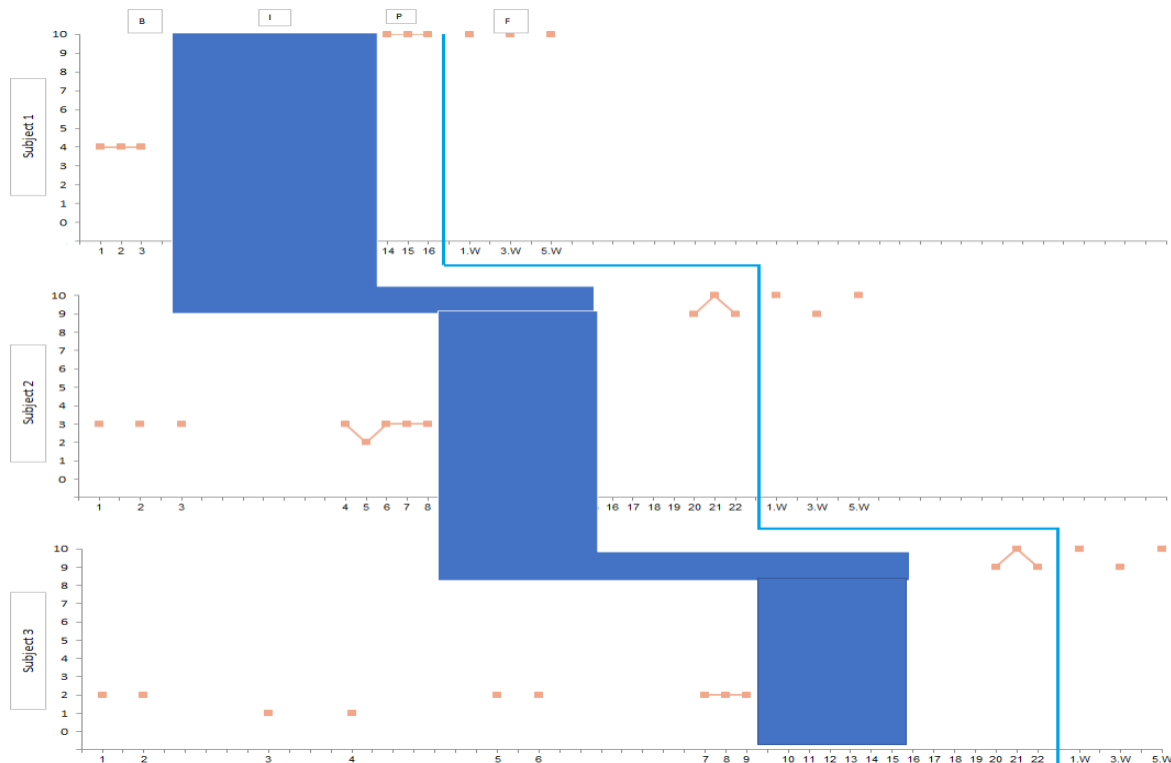
The second student took only one note in two sessions but did not take notes in the remaining six sessions at the baseline level. Yet, at the end of the CUES + CC strategy instruction, he was observed to take nine notes in three consecutive sessions. During the monitoring sessions, he could take nine notes one week later, nine notes three weeks later, and nine notes five weeks later. Therefore, no decrease was observed in the student’s grades regarding monitoring sessions.

The third student took only one note in one session but did not take notes in the remaining sessions at the baseline level. However, at the end of the CUES + CC strategy instruction, he was observed to take ten, nine and nine notes in three consecutive sessions, respectively. During the monitoring sessions, she was observed to take nine notes one week later, nine notes three weeks later, and nine notes five weeks later. Thus, there was no decrease in the student’s grades regarding monitoring sessions.

As a result, a difference was found between the note-taking skills performances of all three students regarding the baseline level and the end of the CUES + CC strategy instruction. As is seen in Graph 1, the level of data obtained at the end of the instruction is higher than the baseline level. Students met the criteria determined at the end of the instruction. This progress was not observed before the application of the independent variable, but it was observed after applying the independent variable. Therefore, the CUES + CC strategy was found to be effective in note-taking skills. Besides, there was no decrease in the monitoring sessions after the instruction compared to the end of the instruction. This finding shows the effectiveness of the CUES + CC strategy in maintaining the note-taking skills performances after one, three, and five weeks.

Graph 2 included students' baseline levels, end of instruction and monitoring findings regarding their exam success.

Graph 2: Students' Baseline Levels, End of Instruction and Monitoring Findings Regarding Their Exam Success



At the baseline level, the student gave correct answers to an average of four questions in the sessions related to 10 questions asked in the exam. However, after the CUES + CC strategy instruction, she gave correct answers to 10 questions in three consecutive sessions. In the monitoring sessions, she could give correct answers to 10 questions one week later, three weeks later, and five weeks later. Thus, there was no decrease in the correct answers of the student in the monitoring sessions.

The second student gave correct answers to an average of three questions in the sessions related to 10 questions asked in the exam. At the end of the CUES + CC strategy instruction, he gave correct answers to nine, 10 and nine questions in the three consecutive sessions, respectively. In the monitoring sessions, he gave correct answers to 10 questions one week later, nine questions after three weeks and 10 questions five weeks later. Thus, no decrease was observed in the correct answers of the student in the monitoring sessions.

The third student gave correct answers to an average of two questions in the sessions related to 10 questions asked in the exam. At the end of the CUES + CC strategy instruction, he gave correct answers to nine, 10 and nine questions in the three consecutive sessions, respectively. In the monitoring sessions, he could give correct answers to 10 questions one week later, nine questions three weeks later and 10 questions five weeks later. Thus, no decrease was observed in the correct answers of the student in the monitoring sessions.

As a result, a difference was found between the baseline level and the end of the CUES + CC strategy instruction regarding the exam performances of all three students. As is seen in Graph 2, the data path level obtained from all students at the end of the instruction was higher. All three students met the criteria determined at the end of the instruction. This progress was not observed before the independent variable; it was observed after applying the independent variable. Therefore, the CUES + CC strategy was found to be effective in students' exam performance. Besides, no decrease was observed during the monitoring sessions after the instruction compared to the end of the instruction. This finding shows that the CUES + CC strategy is effective in maintaining exam performances after one, three and five weeks.

Figure 1 presents the findings of pre- and post-instruction regarding the generalization levels of the students' note-taking skills to different lessons.

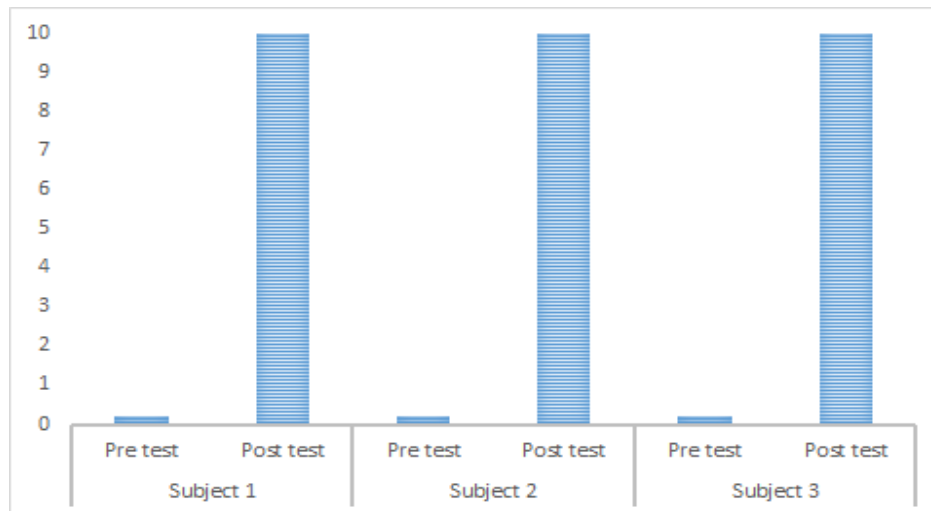


Figure 1: Levels of Generalization of the Students' Note Taking Skills Performance to Different Lessons (Turkish)

While all students took 0 notes out of 10 important notes that should be noted in the generalization pre-test phase, they were observed to take 10 notes in the post-test performed at the end of the CUES + CC strategy instruction. Consequently, a significant difference was found between pre- and post-test data of all three students. They reached a 100% accuracy level in note-taking skills at the end of the instruction. Therefore, students with learning disabilities participating in the study generalized their note-taking skill performances to a different course (Turkish).

4. Discussion

This paper investigated whether the CUES + CC strategy had an effect on the note-taking skills and exam success of students with learning disabilities and examined the permanence of their performance. Findings showed that the CUES + CC strategy affected note-taking skills and exam success, and students could maintain their performance for up to five weeks. Based on these findings, the CUES + CC strategy affects the note-taking skills and exam success of students with learning disabilities. Research underlines the effectiveness of the CUES + CC strategy (Boyle et al., 2014). In this study, the impact of the adapted version of the CUES + strategy on students with learning disabilities was examined, and it was found effective. This finding confirms research conducted with normally developing students, low performing students, and students with learning disabilities (Baharev, 2016; Boyle, 2010a; Boyle 2010b; Boyle, 2012; Boyle et al., 2014; Boyle & Forchelli, 2014; Boyle & Rivera, 2012; Boyle & Weishaar, 2001; Stephen et al., 2015).

After the CUES + CC Strategy instruction, the participants got more grades on average during the lesson, and their exam success showed that these grades were significant. Participants with a baseline data of 0% to 10% started writing by using abbreviations or by interpreting the sentence instead of writing what was said as it was. Also, it was observed that their note-taking levels increased to 90%. This helps the lesson to be understood and remembered better (Baharev, 2016; Boyle, 2010a). Research advocates that having the grades at a workable level later will lead to better learning; thus, test performance will be higher (Boyle & Rivera, 2012; Titsworth, 2004).

The literature provides many cognitive processes that affect note-taking. Cognitive processes are attention, working memory, understanding language, basic knowledge level, learning strategies, and transcription fluency. Disruption in any of the processes or steps can result in insufficient grades. Students who have difficulties in all these skills need a strategy to achieve note-taking skills (Boyle, 2010a; Baharev, 2016). Many studies have aimed to overcome these situations that affect the note procession. With the CUES + CC strategy used in the study, it was aimed to regulate the cognitive processes that the students experienced during the note-taking process, and it was created in a way to include self-instruction and monitoring (one of the self-regulation strategies). The difference between the CUES + CC strategy and CUES + (Boyle et al.) is the CC steps. The CC steps (compare, check) were used effectively for a long time in classroom settings (Graham & Harris, 2003). The steps used in the CUES + CC Strategy are classification, find a clue, take note, summarize, +, compare, and check. Based on the research findings of Kobayashi (2005), the method to be used in note-taking instruction for students with low academic success should be more strategic. Literature advocates that an academically competent learning strategy should be applied for note-taking skills (Bachhel & Thaman 2014; Campbell & Mayer, 2009; Butler et al., 2001; Stringfellow & Miller, 2005). It is also stated that strategy instruction can help students with learning disabilities and low academic performance to close the success gap regarding normally developing students (Bachhel & Thaman 2014; Titsworth & Kiewra, 2004).

The steps of the CUES + CC strategy show the steps students should follow while taking notes during the lesson. They also emphasize the cognitive strategies to be used at each stage and the metacognitive strategies used for the student's self-instruction and monitoring during the note-taking process. Especially, students with learning disabilities should know these stages for getting good grades (Baharev, 2016; Boyle, 2010a). Self-instruction and monitoring were used as a metacognitive strategy in this study. Self-monitoring helps students to follow the steps of the strategy accurately and completely, and to follow which task to do in which step while solving the problem, thus helping them to control themselves (Montague, 2007). In this study, self-monitoring allowed students easily to monitor whether the strategy steps used in note-taking were implemented during the lesson, and helped them learn self-control, self-evaluation and strategy steps. The increase in strategy performances played an important role in the permanent note-taking and exam performance, as well as generalizations to different courses.

In order for the students to become independent in the strategy, the study utilized supporters used in cognitive strategy instruction, such as tracing paper, classification paper, cue paper, and summary paper. The CUES + CC strategy tracing paper, which includes the steps of the CUES + CC strategy, helped students to monitor themselves and learn the strategy steps by marking the steps they went through while taking notes. The

classification paper made it easier to write the topic and identify the important steps in the lesson. The cue paper made it easier to catch the important clues in the lesson and increase the quality of the notes. Finally, the summary paper helped the students self-instruct and explained the five most important points related to the student in their own words. The supporters used in the CUES + CC strategy are structured sophisticatedly and are thought to help students use effective strategies rather than ineffective strategies.

Instruction Self-Regulation Strategy (SRS) is thought to have an important role in the effectiveness of the CUES + CC strategy. There are important reasons for this instruction to be effective on students (Graham & Harris, 2003). The first reason is that this instruction approach has emerged as a result of extended research and is used effectively (Graham & Harris, 2003). Another reason is that it has an inclusive feature that concentrates on the cognitive and academic characteristics of students with learning disabilities. Therefore, SRS includes basic information in terms of providing metacognitive information about the strategy to be taught to students with learning disabilities who have academic limitations and to support knowledge transfer processes. Finally, different self-regulation strategies (self-monitoring, self-instruction, self-reinforcement and self-goal setting) can be used together in the instruction approach. According to the literature, using these strategies together is more effective (Graham & Harris, 2003; Karabulut & Özmen, 2018; Reid & Lienemann, 2006). The main purpose of this instruction approach is to train self-regulated students (Reid & Lienemann, 2006). To achieve this, cognitive and metacognitive strategies should be combined with appropriate self-regulation strategies and implemented in coordination (Reid & Lienemann, 2006). Thus, applying of the CUES + CC strategy according to stages of the SRS (Self-Regulated Strategy Development) approach is believed to help the students with learning disabilities acquire these steps and be successful in their exams due to their note-taking performance.

The modeling stage of the SRS approach is necessary for the success of instruction (Karabulut & Özmen, 2018; Montague & Dietz, 2009). Cognitively modeling generally refers to modeling the process by using the model of thinking aloud while applying cognitive activities (Montague & Dietz, 2009; Özkubat & Özmen, 2018). At this stage, the practitioner becomes a model for how those who take strategic notes think and behave during the lesson. Thus, students had an opportunity to observe what should be considered while taking notes in the modeling phase, how they should monitor and control themselves. During the guided application and independent application stages, students were observed to apply thinking aloud (which they did not initially include in the note-taking process) and self-instruction and monitoring. This shows that students started to internalize the strategy. Also, students stated that they were more willing and successful when using the strategy. Findings showed that students generalized their note-taking performance and use of strategy to the different lesson (Turkish) after learning the CUES + CC Strategy. Why students generalize their note-taking performances and their use of strategies to the different lesson (Turkish) may be because of the following reasons: the strategy information they acquired as a result of the CUES + CC strategy instruction, supporters guiding the use of strategy, and the use of self-monitoring and self-instruction. Considering generalizing strategy performances to a different lesson (Turkish), this study shares similar findings with previous research conducted with normally developing students and students with learning disabilities (Baharev, 2016; Boyle, 2010b; Boyle & Weishaar, 2001).

Consequently, students using a certain strategy for note-taking used to take more notes. Thus, the quality of their note-taking increased which resulted in better exam success. Also, an increase was observed in their performance regarding recalling the information they had learned in the lesson. Despite having problems with memory and cognitive, note-taking skills of students with learning disabilities lasted for five weeks. Besides, they could generalize the note-taking skills they acquired to different lessons. The CUES + CC strategy provided significant support for students with learning disabilities to use metacognitive and self-regulation strategies. Findings indicate that basic cognitive skills, including processing what information is important and how to note and use that information, developed.

Based on the research findings, the following suggestions can be recommended. The CUES + CC strategy was found to be effective on the note-taking skills of students with learning disabilities. Therefore, it can be suggested that teachers of students with learning disabilities should use the CUES + CC strategy while gaining note-taking skills. For generalizability of the findings, further studies may be conducted with more participants

(both normally developing students and students with learning disabilities), including different courses as well as grades. Also, the effectiveness of the CUES + CC strategy can be tested on the note-taking skill of students with learning disabilities by creating a instruction package that includes self-regulation, self-instruction, self-assessment, and self-reinforcement.

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