



## Efficacy of Note-Taking Skills Instruction Supported by Self-Monitoring on the Reading Comprehension

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### Abstract

Note-taking, considered to be a combination of cognitive abilities, requires more than just writing. This is because note-taking is a conscious process that initiates reader into the process of comprehending and writing and requires, the note-taker to encode, organize clearly, to synthesize and to recall of the information. The aim of this study was to investigate the effects of note-taking skills instructional intervention supported by self-monitoring skill instruction on the reading comprehension of three primary school 4th grade students who read at frustration-level at their grade placement. The students' initial reading comprehension level was evaluated by the use the "Informal Analysis Inventory". A multiple baseline across-participants-design was used in the study. Reading comprehension questions (both recall and deep understanding) pertaining to expository passages were used to evaluated the participants' reading comprehension in all the probe sessions. Social validity data were collected from the participants on the instructional intervention. Results showed that the instructional intervention contributed to all the participants' reading comprehension skills and note-taking performance. Each of the participant achieved at the instructional-level comprehension (Comprehension levels > 70%) after the self-monitoring skills instruction. The social validity results confirmed that the students found that they had a better understanding of what they read taking more accurate and concise notes by paraphrasing the content instead of the use of verbatim copying.

### Keywords

Reading comprehension  
Note-taking  
Note-taking skills instruction  
Direct instruction  
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## Introduction

Reading is a critical skill which is necessary for school achievement and for the professional success of students in both academic life and life beyond the school. Teachers should provide differential teaching activities and effective learning strategies in their classrooms to ensure that all students show sufficient academic success and improvements each year in-school. One way to improve the efficiency of academic achievement is to provide students with effective reading comprehension strategies that enable them to achieve complex and diverse content experiences (Biancarosa & Snow, 2006; Heward, 2001; Kirsch et al., 2002; Nessel & Graham, 2006). As reading comprehension is a complex cognitive process that requires the inferring of meaning from the context, teachers in all branches must employ strategy instruction on reading comprehension and, if necessary, should provide to gain their students a variety of effective strategies and skills that improve their reading comprehension and learning (Gove et al., 2011).

The most practical way to teach students how to elaborate and organize new information while reading or listening is to teach them how to take effective notes. Taking notes is a conscious action that initiates reader into the process of comprehension and writing in terms of what they read, including coding, organizing, and generating the information contained in a text (spelling rules, syntactic and textual structure) (Boch & Piolat, 2005; Borich, 2014; McPherson, 2011; Turkel & Peterson, 2003). One of the features that is considered important in the note-taking process is “working memory” (Olive & Piolat, 2002). Working memory, which is also conceptualized as primary memory, temporarily stores a certain amount of information in memory and can process this information at the levels of consciously different and interacting organization (Çepelioğullar, 2014; Olive, 2004). Taking notes has some aspects of improving the efficiency of the working memory. Note-taking enhances the ability of the reader to encode information in the working memory, organize it clearly, store it in the long-term memory, support recall from memory, create internal links between information, and network connections with stored information. Thus, the reader understands what he reads and remembers his experiences better in-memory; it allows him to recall the information for a long time (Borich, 2014; Boyle, Forchelli, & Cariss, 2015; Czarnecki, Rosko, & Fine, 1998). According to Conway and Gathercole (1990), while listening to the lectures requires phonetic data processing, writing notes requires writing (coding). Consequently, the translation effect (notes produced from the material) contributes more to customized data processing sets in the individual's long-term memory.

### *What is the note taking?*

According to Hartley (2002), note-taking is the process of coding critical information captured from a temporary source such as text, oral discussion, class presentation, interview, lectures, listening or conference. Note-taking involves coding, organizing and storing important information pieces in the working memory using main ideas, short sentences, symbols, or abbreviations on paper or on a technological device to understand the content (İltter, 2017). Austin, Lee and Carr (2004) have noted that note taking is a process of comprehension, analyzing and synthesizing that requires the recording of important pieces of information and an understanding of the main ideas and details of reading materials. The most important aspect of taking notes is that the reader discovers the main points that reveal the essence of the paragraphs in the text, differentiates it from unnecessary information, organizes the relevant information, and unifies and paraphrases the information in a different way than is found in the original text. The nature of the notes taken is the shortness, accuracy and main points in the content of the notes taken and in representing the key points rather than the amount of notes (Chang & Ku, 2014). Piolat, Olive, and Kellogg (2005) state that by creating an organization chart of the notes, the reader develops originality in terms of the concepts they use. The weaknesses associated with the notes taken may be due to the difficulties in coding skills and the organizing process due to the increased cognitive load on the working memory, possibly due to the use of low-level cognitive skills and strategies (Olive & Piolat, 2002). Taking notes is, therefore, considered to be a combination of cognitive and metacognitive reading skills (Ghaith, 2018).

### *Cognitively Note Taking Process*

In schools, students are expected to listen effectively lectures and to record critical points with regard to what the teacher is saying in order to ensure their overall success and benefit from the learning experiences they are exposed to during the academic year. Students are also responsible for the information provided by the teacher in examinations or other assessment activities. Taking notes in the classroom is considered as one of the important indicators of success at schools. Taking notes during lectures and learning from notes taken is widely accepted as an important part of the educational experiences. Therefore, identifying correctly the main points of the lectures and making a systematic record are considered as a prerequisite for school success (Boyle et al., 2015; Horton, Lovitt, & Christensen, 1991; Hughes & Suritsky, 1994; Sweeney et al. 1999).

Students who do not take notes have difficulty in understanding the content of the courses or lectures, understanding key ideas, recalling information and paraphrasing them using their own concepts (Austin et al., 2004; Gür, Dilci, Coşkun, & Delican, 2013). The advantage of taking regular and effective notes encourages the reader's skills to code, organize, comprehend and/or listen to and recall details of lectures. Taking notes encourages students to effectively use metacognition processes by presenting a written and visual framework in the working memory (the short-term memory) based on the detailed preparation of critical ideas and pieces of information. These skills relate to selective attention, temporal-coding, sequencing, classification, comprehension monitoring and long-term recall (Boyle & Weishaar, 2001; Gülcan, 2014; Roy, Brine, & Murasawa, 2014; Safa & Rozati, 2017). During the note-taking process, the reader poses questions for himself about the content he is reading, using his working memory while recording critical information. He then records this information using his own concepts and records them in his long-term memory. This is due to the fact that the person who takes the notes while reading, encodes, critically organizes and paraphrases important information. However, it is assumed that the reader is able to combine many cognitive skills such as conceptual mapping using words or key ideas, and by using metacognitive processes through note-taking while reading (Chang & Ku, 2014; Najjar, 1997; Slotte & Lonka, 1999). In this way, the level of processing, meaning, and storage of information from the context also increases. Note-taking significantly configures the comprehension and writing process as it helps to make quick transitions between multiple cognitive processes and images in the working memory. For instance, when students take notes during the reading process, writing and recalling information becomes easier when they think simultaneously (Dewitt, 2007; Piolat et al., 2005; Sweller & Chandler, 1991).

### *Note-Taking Instruction for Frustrated Readers*

Use of instructional intervention that include effective note-taking skills is focused on reducing verbatim copying and creating quality notes (Titsworth & Kiewra, 2004; Van Meter, Yokoi & Pressley, 1994). Taking notes is a natural learning strategy used by good readers. However, it may be difficult, boring, or frustrating for students who are at risk academically or students with learning disabilities (Suritsky & Hughes, 1991). Factors such as selective attention and lack of intrinsic motivation, lack of instructional scaffolding, insufficient motor skills, poor cognitive processes, task complexity and the level of the materials being used are factors that prevent students taking effective and consistent notes (Mercer & Mercer, 1998; Polloway, Patton, Smith, & Buck, 1997). However, it is also difficult to take notes when reading because students must use the skills of combining low-level ideas and identifying symbols or graphic organizers to fit the content of the material while creating important ideas with regard to grasping textual material during note-taking. In addition, the student who takes notes while studying or reading is expected to explain and organize the text in a different way from the original, without disturbing the semantic integrity (Faber, Morris & Lieberman, 2000; Slotte & Lonka, 1999).

All students must have effective note-taking skills from an early age to ensure academic gains (Boyle, 2010; Konrad, Joseph & Itoi, 2011). However, it is often observed in schools that the teacher wants students to record only critical information without telling them how to obtain better notes, or instructs students to save by providing them with or lecturing critical information (Slotte & Lonka, 1999). According to Kiewra (1989), just relying on the teacher's lecture notes can hinder or disqualify

the student from learning how to develop his own note-taking ability. This view indicates that students should be provided with effective learning opportunities to allow them to take notes during reading and/or listening to lectures. Many low-skilled students miss out on important information or main points because they take notes in an insufficient or unqualified way (i.e., with a high percentage of verbatim copying) and cannot fully benefit from the gains of the lecture. This is particularly observed in the case of poor readers (Chang & Ku, 2014; Hughes & Suritsky, 1994). This is because poor readers often have difficulty in focusing on reading materials and distinguishing important pieces of information, taking accurate and concise notes or organizing them with appropriate notetaking representations.

It is known that many students who have difficulty in reading comprehension, such that they cannot comprehend texts, use verbatim word by word representations of the content, take incomplete notes, or ones that contain only a small percentage of the critical ideas presented in the lecture or in the textbook (Akyol, 2014; Boyle et al, 2015; Chang & Ku, 2014; İltter, 2017; Stefanou, Hoffman & Vielee, 2008). Poor readers tend to have problems with what the text material tells as a whole, or to understand the big picture of a text (Carnahan, Williamson, & Christman, 2011; Kirsch et al., 2002). Hamilton, Seibert, Gardner, and Talbert-Johnson (2000) have explained that students who lack the ability to take notes can stop note taking as the difficulty and complexity of the tasks increases due to a growing frustration while reading. This leads to a negative cycle in terms of the student's reading comprehension and writing process. Because of the difficulty in deciphering the information, the student will experience a growing sense of tension due to difficulties in identifying important information, feel reading and note-taking as frustration, and will have an unsettled attitude to reading (Halladay, 2012; Stringfellow, & Miller, 2005). For this reason, such students prefer not to take notes during lectures and to become passive readers or note-takers while reading. Researchers have noted that such experiences can lead to poor reading and writing habits and that such students may be reluctant to continue reading and writing in any reading activity (Mariotti & Homan, 2001; Tompkins, 2006). Good-note takers are independent readers who can identify the main points and key ideas in the text while reading and also use many effective visual representations, paraphrasing information and synthesizing processes. As a result, they produce high quality and systematic notes (Boyle & Forchelli, 2015; Hughes & Suritsky, 1994; Nist & Holschuh, 2000). Previous research has supported this view. In their study, Brown and Miller (1996) observed that a large majority of good readers took high quality notes which they increased in value by adding questions and answers related to the content. Stefanou et al. (2008) found that students who lacked note-taking skills copied the information in the lectures or the content of PowerPoint presentations made by the teacher piece by piece, and their performance was found to be low in terms of responding to reading comprehension questions.

Note-taking is considered as a cognitive strategy that tends not to be directly taught to students and is generally considered to be a self-acquired skill (Chang & Ku, 2014). However, all students should develop effective note-taking skills from an early age for better reading comprehension and learning (Anderson, Yilmaz, & Washburn-Moses, 2004; Boch & Piolat, 2005; Stahl, King, & Henk, 1991). It is important for students to have experience of effective note-taking through the use of instructional intervention programs to allow them to participate better and more effectively in the reading process. Among the reasons for not providing note-taking skills instruction intervention in general classrooms is that teachers do not, in general see the need for such an intervention, and because teachers' lecture notes or digital presentations are provided to students in order to ensure time efficiency. However, such practices may not allow students to discover important information pieces while lecturing to students, allow them to engage in active cognitive processes, and to synthesize the most important ideas associated with pieces of knowledge in order to produce good notes (Lewis & Doorlag, 1991; Horton & Lovitt, 1994). The provision of completed notes on the part of the lecturer may give rise to passive learning behaviors that limit active participation opportunities as part of the student's learning process. This gives rise to the loss of potential cognitive effort or outcomes for processing and storing information in the working memory (Greenwood, Delquadri, & Hall, 1984). A process of verbatim copying of text cannot allow the student to perform sufficient coding and data organization clearly

because it increases the cognitive load in working memory. This situation is both inefficient and wasteful for a student who uses conventional note-taking (Biggs, 2011). Taking good notes while reading or listening can alleviate the cognitive burden on the working memory, allowing the reader to think deeply about the material so that cognitive processes in-memory can be increased. Taking quality notes during lectures may help students to think deeply about the material by alleviating the cognitive burden in the working memory so that it can increase productive processes in memory (İlter, 2017; Katayama & Robinson, 2000). Accordingly, a comprehensive teaching of students with regard to note-taking in order to reduce duplication during reading can be a powerful instructional intervention in that it actively involve the student in various other learning activities.

#### ***Purpose and Importance of the Study***

The aim of this study was to investigate the effects of note-taking skills instructional intervention supported by self-monitoring on the reading comprehension of three primary school 4th grade students who read at frustration-level. There were two sub-objectives of this study. First, to repeat previous research on note-taking instruction and to determine the generalizability of the previous research findings (Boyle & Weishaar, 2001; Chen, Teo, & Zhou, 2017; Reed, Rimel, & Hallett, 2016; Safa & Rozati, 2017; Sweeney et al., 1999). The second one was to evaluate the effect of the instructional intervention on the reading comprehension skills of the frustrated readers by the throughout direct instruction steps using the multiple probes. Direct instruction was used to improve the note-taking skills of the participants. The strategy-based instruction method is considered an effective approach to improving students' reading comprehension strategies and enhancing their independent learning skills (Hagaman, & Reid, 2008; İlter, 2018a, 2018b; Souvignier & Mokhlesgerami, 2006; Sung, Chang, & Huang, 2008; Tsai & Talley, 2014). The aim of strategy-based instruction with regard to reading skills is to teach students how to think and to make sense of what they read, while encouraging their participation in the reading process (Gersten, Fuchs, Williams, & Baker, 2001). In this study, it was hypothesized that the note-taking skills instructional intervention supported by self-monitoring skill can reduce the reading comprehension difficulties of students who read at frustration-level at their grade placement. The students were provided with a series of effective note-taking skills in throughout direct instruction lessons to improve note-taking and reading comprehension skills. It can be helpful to provided guide notes to help students understand the content of lectures. Teachers sometimes help students by presenting lecture notes or allowing them to use copies of peer ready notes. Providing students with notes that have already been created is generally not as effective as using what is produced by the student. However, neither application helps students to compensate for their lack of understanding or to distinguish the subtle differences between similar concepts and key ideas presented in the course (Reid, Lienemann, & Hagaman, 2013). Having teacher provided lectures notes may give rise to students having to take fewer notes in the course, and this does not promote the use of students' metacognitive reading comprehension processes (Gee, 2011). It is important to note that students must read at an independent-level in order to benefit from the prepared guide notes (Konrad et al., 2011). Using instructional intervention include how to take effective notes for students is useful in terms of promoting their reading comprehension and encouraging their success in learning. As qualified and systematically taken notes predicts an understanding of what they read, in order to retain learning it is thought that teaching students effective note-taking skills will be more useful than conventional note-taking techniques which includes a classical textual appearance (Boch & Piolat, 2005; Bui, Myerson, & Hale, 2013). This current study aimed to expand the understanding of the relationship between reading comprehension and note-taking skills instruction. This study hypothesized "Note-taking skills instructional intervention supported by self-monitoring skill is effective on the reading comprehension of students who read at frustration-level." However, one of the reasons for conducting this current study was to contribute to the related literature in the Turkish research context. This is because previous research in Turkey has shown that studies on note-taking skills and note-taking instruction were found to be limited (Arslan, 2000; Aslandağ & Çetinkaya, 2019; Ceran, 2015; Çekici, 2018; Çetingöz & Açıkgöz, 2009; İlter, 2017; Kocaadam, 2011; Oğuz, 2000).

## Method

### *Experimental Design and Participants*

A multiple baseline across-participants-design was the single-subject research model used in this study. A multiple probe design is used to modify a behavior or evaluate the effectiveness of instruction programs. According to Hagaman and Reid (2008), multiple probes are accepted as best practice and are the most accurate method for evaluating reading comprehension outcomes. In this method, initial level (baseline) data is collected simultaneously in all probe sessions and After stable data are achieved in the first probe, the baseline is fixed and the intervention is started. Once the criterion is met for the first participant, follow-up probe sessions are conducted until stable data are obtained in at least three sessions (Gast, 2010). For the effectiveness of the independent variable to be evaluated, at least three different participants must be recruited (Tekin-İftar & Kırcaali-İftar, 2016).

The sample in this study consisted of three male students selected from a class of 29 in the fourth grade of a primary school in a city in Turkey. All participants received the note-taking skills instruction supported by self-monitoring skill. The experimental stages consisted of the first probe session (P1) (baseline), instructional (teaching) sessions, the second probe session (P2), the self-monitoring session, the third probe session (P3), and the maintenance probe session. Reading comprehension outcomes in all probe sessions were evaluated through questions that measured simple and deep understanding of expository texts. After stable data was obtained in the first probe session, note-taking lessons for the instruction intervention were provided to one participant at a time using a direct teaching method.

### *Selection of Participants*

The participants were selected from the 4th grade of a primary school. Developmentally, complex activities, various challenging texts in the school curriculum, and areas of content require students to read in order to develop new perspectives. As the content becomes more complex, learning to read is achieved through specific reading comprehension strategies (e.g., monitoring understanding, using context cues, estimating, summarizing, taking notes, opening, etc.) not emphasized at previous grade levels (Chall, 1996). In this study, participants were included in the note-taking skills instructional intervention within the framework of these requirements.

The selection of participants was based on several criteria. First, prior to the instructional intervention, open-ended interviews were conducted with their teacher to determine which students were reading at what is termed a "frustration" level. The teacher disclosed the names of three students who were identified as poor readers. The teacher also documented the inability of these students to understand what they had read by showing their examination papers and portfolios. Second, the researcher interviewed the students' parents to obtain their approval for participation in the study. During the interviews, the researcher informed the parents about the aim of the study, the conditions, and the content of the intervention program. The parental interviews also confirmed that these students had difficulties in reading comprehension. Parents then read and signed the parental consent letter to allow their children to be a participant. Following this step, the reading comprehension levels of the students were determined. To achieve this, the "Informal Analysis Inventory" was used, which was developed by Ekwall and Shanker (1988) and adapted into Turkish context by Akyol (2014). Students were given a text of about 208 words that they were asked to read silently and then aloud. The researcher checked and followed each student while he read. At the end of reading, participants were asked to answer the reading comprehension questions in the Informal Analysis Inventory. This inventory

consisted of five simple and five in-depth questions related to the expository texts. When this process was completed, the researcher used the guidelines of the Informal Analysis Inventory to determine the participants' vocabulary recognition skills, errors made, the number of words read incorrectly, and the number of correct answers given to the reading comprehension questions. Demographic characteristics and the reading levels of the participants are presented in Table 1.

**Table 1.** The participants' demographics and reading levels

Participant	Gender	Grade	Reading Level	Comprehension (%)
Participant 1	Male	4	Frustration-Level	44
Participant 2	Male	4	Frustration-Level	42
Participant 3	Male	4	Frustration-Level	46

For ethical reasons, the names of the participants were anonymized. The first participant was named Participant 1, the second Participant 2, and the third Participant 3. The results of the Informal Analysis Inventory showed that participants achieved less than 50% of the required reading comprehension success rate. Both teachers' opinions and the Informal Analysis Inventory results confirmed that each participant was at a frustration level of reading according to their grade level. Reading skills researchers have noted that frustrated readers are an “at risk” group in terms of reading comprehension (Akyol, 2014; Leslie & Caldwell, 2011; Rasinski, 2012).

#### *Participants*

**Participant 1.** Participant 1 was a ten-year-old male student. As shown in Table 1, his mean reading comprehension average was 44% according to the results obtained from the Informal Analysis Inventory. The teacher disclosed that Participant 1 did not have any learning disabilities, but had problems identifying the main idea in the text, making inferences, and summarizing. However, he was willing to learn and participated diligently in math lessons.

**Participant 2.** Participant 2 was a ten-year-old male student. His mean reading comprehension score was 42%. The teacher reported that participant 2 worried about reading as he found it difficult to understand what he has read. The teacher also stated that he did not have any mental disability but had low vocabulary knowledge and was unmotivated to read. The teacher also reported that participant 2's level of word recognition was insufficient and therefore he found it a challenge to derive the meaning of unknown words from the context.

**Participant 3.** Participant 3 was a ten-year-old male student. His mean reading comprehension score was 46%. The teacher reported that he did not have any problems reading aloud but was not always able to understand what he read, for example when mainstreaming and summarizing. The teacher also stated that he did not like writing or taking notes in-class and his handwriting was also poor. In Turkish Language lessons, the teacher disclosed that participant 3 was greatly affected by environmental stimulants while reading and found it difficult to pay attention.

### ***Environment and Instructor***

The note-taking skills instruction program was conducted by the researcher (instructor). The instructor worked as an academic staff member in a higher education institution. He has a PhD in education and had worked as a primary school teacher in different grades at the Ministry of National Education in Turkey. All probe sessions, teaching sessions, and maintenance probe sessions were conducted in a scaffolding education classroom in the treatment school where the participants were studying. This classroom covered an area of 28 square meters. In the classroom there was a teacher's desk, two chairs, five student desks and an additional desk, a projector, a computer, a wired mouse, a printer, papers, crayons, a cabinet with materials, three windows to illuminate the classroom, blackboard, 1x1.5 meters sized wall-mounted boards, and two trestles.

### ***Note-Taking Instructional Intervention***

The note-taking skills instruction program, which was the independent variable in this study, included five lessons adapted from the effective note-taking skills practice developed by Chang and Ku (2014). The note-taking skills intervention was developed by taking into consideration the reading, comprehension needs, and viscosity of elementary school students and was organized in five stages according to the degree of difficulty. The lessons were extremely useful for students who had difficulty in the areas of reading comprehension and taking notes (İltter, 2017). Note-taking skills lessons were delivered to the students using the direct instruction steps associated with a modified version of the strategic instructional model (Deshler & Schumaker, 1988 as cited in Ellis, Deshler, Lenz, Schumaker, & Clark, 1991; Prado & Plourde, 2011). These steps were as follows:

1. Describe the strategy
2. Model the strategy (Demonstration, introduction, think-aloud method)
3. Verbally elaborate and rehearse
4. Controlled practices and feedbacks (Guided applications)
5. Undertake advanced practices (Independent performance)
6. Assessment and feedbacks

Direct instruction provides students with cognitively guided teaching support as they learn new skills (Beck & Eno, 2012). The note-taking skills lessons were given to each participant individually and conducted over twenty-four sessions. The duration of the teaching sessions ranged from 20 to 30 min. Students were helped to understand what they had read by learning effective note-taking skills. The lessons that were given are summarized as follows.

### ***Teaching Sessions***

#### ***Lesson 1. Highlighting the main idea***

This lesson includes defining the most important pieces of information in the paragraphs of a text, identifying the subject of paragraphs, teaching the main idea of the text (the main idea defining the text) by synthesizing all the common knowledge and ideas determined. The focus of the course is the ability to use the textual clues (key concepts related to the subject of paragraphs, illustrative examples, comparisons, relevant definitions, generalizations) to identify the sentences associated with the main idea and to express the main idea sentence. "What is the subject of the first / second / third paragraph?", "What are the sentences related to the main idea?", "What is the subject of the text?", "What is the best idea to describe the text?", "What is the main idea in the text?" are asked to ask questions.

#### ***Lesson 2. Reducing information in paragraphs***

The aim of this lesson is to teach students how to get short sentences and more qualified notes quickly to reduce letter-to-letter copying. The focus of the course is to provide students with tips on

shortening long sentences to reduce unnecessary information in the paragraph. To teach students to select the most important information in the text, delete the redundancies in paragraphs, identify distractors (sentences not related to the main idea), skip insignificant information, and combine higher-level ideas. The focus of learning is to be selective in taking notes and not to write everything in the paragraphs and to select and intensify the most important pieces of information associated with the main idea.

### ***Lesson 3. Identifying keywords and related connected concepts that summarize text***

The aim of this lesson is to identify the key words and to organize them and to improve the quality of notes in order to connect, elaborate and organize the helper ideas and ideas in the text. The focus of the course is to identify keywords that describe the lexical relationship between two or more ideas or important pieces of information, such as comparison, causality, sampling and problem / solution (Cook & Mayer, 1988). Students are asked to write textual clues about the regulation and codification of information and to pay attention to the memory symbols that briefly point to important information. To determine the keywords, comparative relationships in the text, causal relationships and the words related to sort-classification relationships are identified.

### ***Lesson 4. Organizing information with note-taking representations***

The fourth lesson involves introducing various note-taking representations and explaining their benefits. Visual symbols display textual content and may contain graphs, numbers, tables, diagrams and similar visual elements. The use of visual symbols allows students to visualize what they read and helps to demonstrate the semantic relations and text structure between concepts related to improving reading comprehension (Hannus & Hyöna, 1999; Vacca, Vacca, & Mraz, 2011). This course is designed to enable students to recognize various code letters, images, arrows, symbols, and graphic editors (e.g. concept map, concept network, flowchart, graph, table, etc.), such as reducing the amount of time required to re-read and write when dealing with complex information while taking notes. and allows them to learn the benefits of taking notes. For example, illustrative and comparative information can be shown in a table, information is shown in a flowchart with a sorting relationship, information from a hierarchical structure is given in the concept map or a central concept and the concept network for words related to that concept are used.

### ***Lesson 5. Awareness of the text structure***

The aim of this lessons is to teach students to analyze text structure. Being aware of the text structure helps students to support them in creating the main idea and details of the text and to organize information and semantic patterns related to high-level and low-level ideas in the text. In this course, three types of text structure are introduced: 1) Main headings and subheadings, 2) Order relations and 3) and Classification. Main headings and subheadings present the hierarchy of a text and are considered the main lines of the text. Sequence relationships define a series of continuous and interconnected events and stages in a series of processes. Classification means grouping the material and categorizing it according to certain characteristics of the events in the person or text. Students learn how to divide the contents of paragraphs into sections when they learn the structure of a text, and how to identify key information in different parts of the text and how to identify the main idea.

### ***Analyses of students' notes***

At the end of the five lessons, each participant was asked to write a paper using colored pencils and take notes independently. The worksheets consisted of an expository text and a blank A4 page. This text contained five main concepts and was 300 words in length. The participant was asked to read the text carefully and use the notes they had learned to present or paraphrase the information in a different way (Boyle, 2010). In a text, a terse value requires the identification and clear organization of key ideas

and critical information (Kiewra, 1989). A student can therefore take concise notes by using important words or key ideas to present a key concept in the text. The terse value of the notes taken by students were calculated (Boyle, 2010). A higher terse value means that the student uses fewer words and includes main concepts in his / her notes (i.e. be careful and not to write down everything) (Borich, 2014; Chang & Ku, 2014). The higher the terse value, the lower the copy percentage from the text. In this study, each of the main concepts were assigned a score to determine the number of correct concepts included in the participant's individual notes. If the student has correctly identified a main concept and expresses it completely, they are given 2 points. If the correct concept is expressed partly, 1 point is given. If there are no main concepts in the notes, no points are awarded. The concept score ranged from 0 to 10 (maximum). The score obtained was divided by the number of words used to define the main concepts and calculate the terse value of the notes. This can be expressed using the formula [Terse of value of notes = the concept score) / the number of words] developed by Chang and Ku (2014). Following this step, two raters were consulted to assess the reliability of the analysis and the terse of the notes. To this end, the instructor submitted a copy of the student notes and worksheets to the raters. Raters then independently evaluated all notes. As a result of this analysis, the reliability coefficient was found to range from 88% to 94%.

#### *Self-Monitoring Skill Instruction*

Teaching sessions based on the self-monitoring skills were conducted for each student at the end of the note-taking skills lessons. Self-monitoring refers to the ability of students to check their own progress by observing how well they understand what they read (Gove et al., 2011; Harvey & Goudvis, 2007). Students received only two days of the self-monitoring skill intervention to achieve the desired level. Teaching sessions were carried out by observing how well the students followed the steps in each of the note taking skills lessons. This helped students monitor their reading comprehension performance and ability to take good notes so that they were aware of their deficiencies or mistakes during reading and when taking notes. To create good notes from the texts, clue cards containing the steps mentioned above were given to the students. After reading the track silently, the student tries to use the note-taking strategy using the clue card. An example clue card is presented in Figure 1. The instructor, together with the student, reviews the clue card and provides corrective feedback to the student so that they can use their note taking skills effectively. Self-monitoring teaching sessions continued until the level of independent performance obtained by the student reached 80% (Hagaman & Reid, 2008).

Name-Surname	Date
Text	
Ask yourself question (s) about the main idea while reading	
<ol style="list-style-type: none"> <li>1. What is the subject of the paragraph?</li> <li>2. What is the subject of the paragraph?</li> <li>3. What is the subject of the paragraph?</li> <li>4. What is the subject of the paragraph?</li> <li>.</li> <li>.</li> </ol>	
Subject of the text	
Identifying the main idea of the text	
Identify important keywords / details	
<ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>	
Organizing notes with note-taking representations	

**Figure 1.** Self-Monitoring Note-Taking Clue Card

### *Probe Session Measures*

**A-First probe condition (P1):** The first probe session (baseline phase) was conducted to determine the frequency, duration, or level of the dependent variable (reading comprehension) before the note-taking skills instructional program. Baseline probes were carried out in an empty classroom outside school hours. The baseline level provided information about the initial performance levels of all participants. To assess this, participants were given a worksheet containing expository passages with 10 reading comprehension questions addressing both simple and deep understanding. They were asked to complete these individually. The participants were not given any information and were given sufficient time (15 to 20 minutes) to complete the worksheet. Following this step, the total number of correct answers (correct response percentage) was calculated. The baseline sessions continued until at least three achieved stable data (Tekin-İftar & Kırcaali-İftar, 2016).

**B-Second probe condition (P2):** Following the teaching sessions for each participant, the second probe sessions were conducted under the same conditions as the baseline. Once again, participants were given a worksheet to complete containing expository passages with 10 reading comprehension questions addressing both simple and deep understanding.

**C-Third probe condition (P3):** At the end of the note-taking skills intervention, self-monitoring instruction sessions were conducted for each participant. After training, the third probe sessions were conducted. In these sessions, the procedures were the same as those used as in the baseline phase and the second probe sessions. Reading comprehension was also evaluated the same as in the previous two probe conditions.

**D-Maintenance Procedures:** Maintenance probe sessions were conducted for all the participants in the 2nd and 4th weeks after the intervention. The participants were not given information about note-taking skills or teaching. The same procedures were used as in the previous sessions, and the same method of evaluation conducted.

### *Data Collection Tools*

This section provides information on the data collection tools and texts used in this study.

#### *1- Informal Analysis Inventory:*

To determine participants' reading comprehension levels before the instructional intervention, the Informal Analysis Inventory developed by Ekwall and Shanker (1988) and adapted into Turkish by Akyol (2014) was used. This determines the level of comprehension in terms of word accuracy, errors, and prepared questions during read-aloud. From these, three reading levels are determined: Independent, teaching, and frustration level. Independent level comprehension means the student reads materials appropriate for his level fluently, vocalizes the words correctly, reads according to punctuation marks, and correctly understands what is read. Instructional-level comprehension means the student can read and understand as desired following the guidance of a teacher or an adult and is able to make progress. The frustration level is the lowest reading and comprehension level. Frustration level comprehension means that the student makes many mistakes during reading and understands very little of what he/she reads (Akyol, 2014; Leslie & Caldwell, 2011; McKenna & Stahl, 2015). Frustrated readers have difficulties comprehending what they read and thus show tension, poor reading fluency, and poor insights. The frustration level is so-called because that the student experiences emotional frustration when reading. A scaffolding instruction intervention is therefore required to enable the student to gain reading skills and develop comprehension strategies (Gove et al, 2011; McKenna & Stahl, 2015). In the Informal Analysis Inventory, a level of 90% represents independent-level comprehension, a level of 50%-89% represents instructional-level comprehension, and a level of 50% and below represents frustration level. At frustration-level, readers exhibit less than 90% accuracy in word recognition and can correctly answer less than 50% of the questions given in the reading comprehension (Akyol, 2014; Leslie & Caldwell, 2011). The reliability of the answers obtained from the reading comprehension questions can be calculated using the reliability formula of Miles and Huberman (1994) ( $\text{Reliability} = \frac{\text{Agreement}}{\text{Agreement} + \text{disagreement}} \times 100$ ). The reading comprehension questions and a copy of the student responses were therefore delivered to two raters who had conducted research on literacy education. They found the reliability coefficient to be .88.

#### *Text Materials*

Expository passages were based on the participants' reading level in the probe sessions, teaching sessions, and maintenance probe sessions. Williams (2005) argued that more attention should be paid to the understanding of expository texts. Because expository texts contain many special terms, primary concepts, facts, and generalizations, reading comprehension is more difficult. Expository texts mostly consist of text structures such as a main idea, ranking, cause and effect. In addition, because the vast majority of readings in content areas consist of such texts, it is extremely important to understand expository texts successfully (Williams 2005). The texts used in the study were accessed from the TUBITAK Science Children's Series, and the Ministry of National Education (Arik, 2006; Can, 2007; Heper, 2017; Kara, 2017; Sivişoğlu, 2016; Uysal, 2011). The fact these texts had not been encountered before by the participants was an important factor in their selection. The researcher shared a copy of the texts with the teacher before the instructional intervention. The teacher confirmed that the students had not seen these texts before. This enabled the participants to read their texts with interest and without boredom, and the instructor to robustly evaluate reading errors and reading comprehension levels. The length of texts varied between 120-318 words and consisted of at least three paragraphs. The readability levels of the selected texts were calculated before the instruction using the readability formula adapted by Ateşman (1997) from Flesch-Kincaid to Turkish [ $\text{Readability count} = 198,825 - 40,17 \times \text{Mean word}$

length as syllable - 2,610 x Mean sentence length as word]. The results show the readability of the texts corresponds to 54 (lowest 29 and highest 75) [Very easy = 90-100; Easy = 70-89; Moderate difficulty = 50-69; Difficult = 30-49; Very difficult = 1-29]. This indicated average legibility for the text passages (Ateşman, 1997).

### ***Reading Comprehension Questions***

Reading comprehension questions were used in the probe sessions and maintenance probe sessions to assess the effect of the note-taking skills instruction program on reading comprehension. The researcher prepared 10 open-ended questions pertaining to expository passages to evaluate reading comprehension in each of the probe sessions. Five of these questions tested simple (recall) comprehension and 5 were questions based on in-depth understanding. Recall comprehension questions were based on level of knowledge and recall as the answers were clearly in the text. In-depth comprehension questions required inferences from the text, making sense based on the main idea, and the ability to make comments. The correct answers to both the recall and in-depth comprehension questions were thus based on the information students read in the texts rather than previously learned knowledge. Due to the use of expository texts, descriptive, problem solving, and inferential types of questions were used to test reading comprehension (Caldwell, 2008; Hagaman & Reid, 2008; Williams, 2005). The suitability of the open-ended questions for the assessment of reading comprehension was judged by four experts in the field of Turkish Education. They concluded that most of the questions evaluated reading comprehension. Participants were then asked to respond in writing to the reading comprehension questions in the probe sessions and maintenance probe sessions. The instructor scored the reading comprehension questions without changing each participant's responses. Those who answered the simple comprehension questions correctly received 2 points, those who answered half were awarded 1 point, and those who did not answer any questions correctly received 0 points. Those who answered in-depth comprehension questions accurately scored 3 points, those who had some shortcomings but gave more than half of the expected answers received 2 points, those who answered half received 1 point, and those who did not answer any questions correctly received 0 points (Akyol, 2014). The level of comprehension was expressed as a % (percentage) by calculating the total number of correct responses (correct answers) given to open-ended questions. To calculate this percentage, the sum of the points received was divided by the total points to be awarded. The number of answers and percentages were thus determined by the number of correct responses to open-ended questions. The guidelines in the Informal Analysis Inventory were taken into account when determining and interpreting levels of understanding.

### ***Social Validity Form***

Social validity data were also collected from the participants. The social validity form consisted of three questions. First, participants were asked to assess the effectiveness of the instructional intervention using ratings from 1 to 5, where 5 = Highly effective and 1 = Not effective at all. The second question concerned the use of note-taking skills and asked, "How often do you use your note-taking skills?". The options given for this question were: 4 = Always; 3 = Often; 2 = Occasional; and 1 = Never. The third question concerned satisfaction with the intervention and asked, "Would you recommend the note-taking skills you've learned for your friends in your class? The options given for this question were: 4 = I would definitely recommend; 3 = I recommend; 2 = I recommend a bit; and 1 = I would never recommend. Participants were then asked to share their feelings and thoughts regarding what they liked the most about the intervention.

### ***Intervention Fidelity***

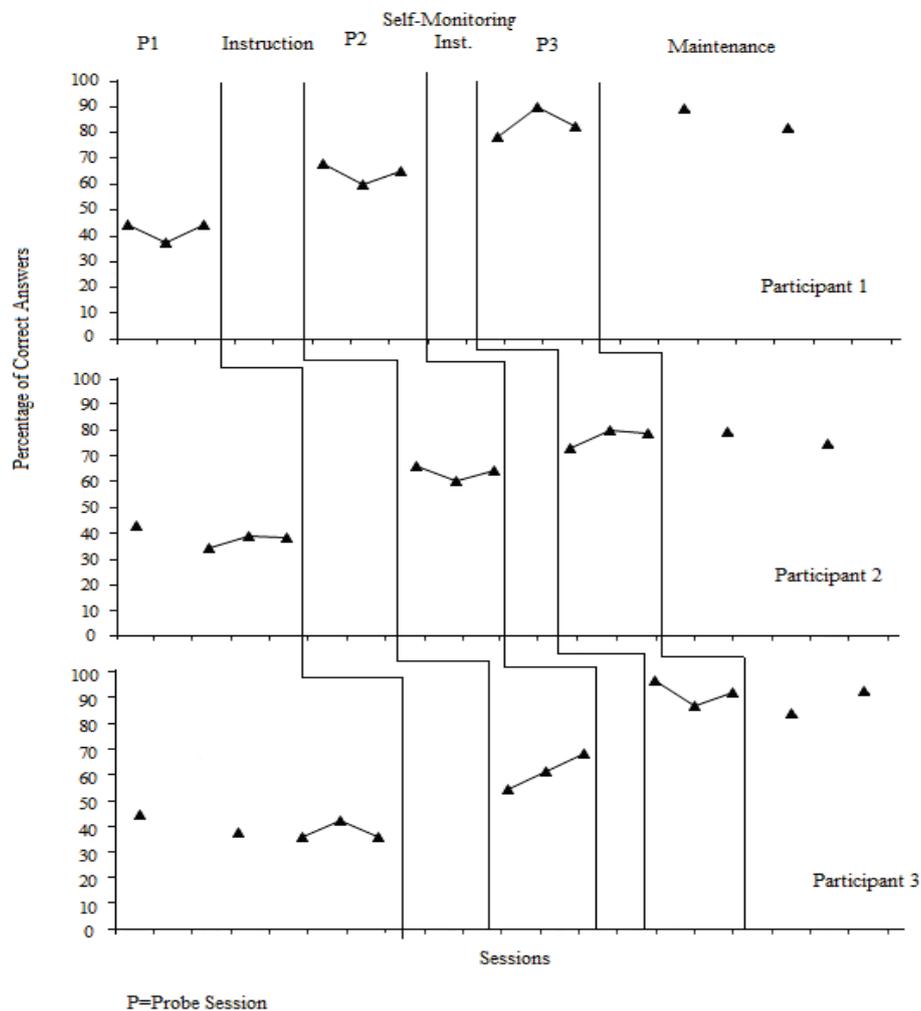
In this study, two types of reliability data were collected: inter-observer reliability and intervention fidelity. Reliability analyses were performed by two independent observers to ensure inter-observer reliability and intervention fidelity. The first observer was a research assistant with a master's degree in education. The second observer was the teacher of the participants, who had twelve years of teaching experience and held a master's degree in education. The teacher had also worked for five years at the school where the intervention was conducted. Researchers suggest that reliability data should generally consist of 30% of all sessions (Tekin-İftar & Kırcaali-İftar, 2016). The first form of reliability assessed was inter-observer reliability. This is a comparison of two observers' independent but concurrent assessments of the level of target behavior in the participating student. To obtain inter-observer reliability data, all probe sessions and data were collected in 30% of the instructional sessions. Inter-observer reliability was calculated using the formula:  $\frac{\text{Agreements}}{\text{Agreements} + \text{disagreements}} \times 100$  (Miles & Huberman, 1994). For reliability calculations, the inter-observer reliability coefficient is judged to be sufficient at 80%, although ideally it should reach 90% and above (Tekin-İftar & Kırcaali-İftar, 2016). In this study, inter-observer reliability was found to be 88% for probe sessions and 92% for instructional sessions. The second reliability analysis assessed intervention reliability. This determined the extent to which the intervention instruction carried out by the instructor aligned with the prepared implementation plan. A checklist for instructor behavior was prepared to assess the reliability of the intervention. These behaviors included the components of the direct instruction method. Implementation reliability (observed instructor behavior/planned applicator behavior) was calculated using the formula  $\frac{\text{Agreements}}{\text{Agreements} + \text{disagreements}} \times 100$  (Billingsley, White, & Munson, 1980 as cited in Tekin-İftar & Kırcaali-İftar, 2016). Observers monitored 30% of all instructional sessions and completed the items on the form to assess intervention reliability. They found the reliability coefficient to be 89%.

### ***Data Analysis***

The dependent variable in this study was the improvement in reading comprehension of students who read at frustration-level. Data were analyzed using graphical analysis (visual analysis), which is commonly employed in single-subject studies. Graphical analysis contributes to the performance of the subject in a realistic manner and facilitates the necessary changes in the implementation process (Tekin-İftar & Kırcaali-İftar, 2016). The data was analyzed and interpreted by looking at the level of the data path in the graph. The trend, stability, and level of the data were then visually analyzed (Gast, 2010). As shown in Figure 2, on the horizontal axis teaching sessions related to the note-taking skills instruction supported by self-monitoring skill, all probe sessions, and maintenance probe sessions. The vertical axis shows the percentage of correct answers to the reading comprehension questions at these sessions. The data obtained from the social validity form were then analyzed descriptively.

## Results

### A- Findings on Reading Comprehension Questions



**Figure 2.** Percentages of correct responses given by respondents to reading comprehension questions measuring recall and in-depth comprehension in the experimental phases

As shown, the number of correct responses given by the three participants increased from the P1 session (baseline) to the P2 session (second probe) at the end of the intervention. This increase was the most significant for Participant 3, whose mean score of 42% in the P1 session improved significantly in the P2 session to 64.5%. For Participant 2, the percentage of correct answers given increased from 38.5% in the P1 session to 58% in the P2 session. For Participant 1, a score of 40.5% in the P1 session increased to 62.5% in the P2 session. Following the note-taking skills instruction, the participants received two-day self-monitoring skill instruction sessions. A third probe session (P3) was then carried out for participants. According to the reading levels of the texts measured by the Informal Analysis Inventory, the average response to the reading comprehension questions was 80% for Participant 1, 73% for Participant 2, and 85% for Participant 3. This indicates that self-monitoring instruction was more effective in improving reading comprehension for Participant 1 and Participant 3. All participants showed higher performance in reading comprehension than the baseline sessions (P1). Moreover, the fact that all three participants scored above 70% can be attributed to the teaching sessions related to the self-monitoring skill instruction. Thus, the reading comprehension skill level has improved to instructional level from a baseline frustration-level. It can therefore be concluded that the instructional

intervention on note-taking skills supported by self-monitoring had an effect on reading comprehension and the hypothesis of the study was supported. Follow-up teaching sessions at the second and fourth weeks were conducted for each participant. The percentage of correct answers given to reading comprehension questions measuring simple (recall) and in-depth understanding was calculated in these sessions. The results show that the average percentage of correct answers was 80% for Participant 1 75% for Participant 2, and 82% for Participant 3. This shows that participants maintained the skills they learned in the lessons and their reading levels remained at instructional level according to the Informal Analysis Inventory.

### ***B- Social Validity Results***

The social validity results showed that the note-taking skills intervention had a positive effect on the reading comprehension of all three students. When students were asked whether they would recommend the skills they learned through the intervention to their classmates, all three reported they would strongly recommend it. The evaluations of the students regarding the benefits of the application were 3.9 for participant 1, 2.9 for participant 2, and 4.3 for Participant 3. When asked about their satisfaction with the note-taking skills instructional intervention in an open-ended question, all the students responded positively. For example, one student stated: "I did not know how to make short notes from a text; I usually write everything while I was writing a note, but now I'm making a short note by determining the main idea and important information of a text. In other words, I can distinguish what information is more important in the text." Another student stated: "The lessons were pretty fun; it wasn't hard to understand a text or make notes from the text ... I understood that. The lessons also helped me understand what I read better." In terms of the effect on reading, the student replied: "For example, I underline the information that I think is important in the text while reading, then I try to think of what you want to tell by combining them, and finally I can determine the main idea of the text." Another student reported that he was very satisfied with the lessons and could use the skills he learned during his reading. After learning about note-taking skills, this student stated that he was not bored while reading, had no problem understanding what he had read, and enjoyed learning note-taking techniques. The student's point of view was stated as follows: "I learned that I was taking notes rather than writing long notes thanks to taking notes. I can now immediately determine the important information in the text while taking notes, and I enjoyed text passages." The opinions obtained show that instruction on note-taking skills gives students a wide learning experience in terms of taking notes and reading comprehension. They also show that the perception of the intervention was positive; participants did not have any worries while reading and made quality notes.

## Discussion and Conclusion

In this study, the results indicated that the students who read at frustration-level were associated with increased reading comprehension performance after the note-taking skills the instructional intervention supported by self-monitoring skills. All participants showed better performance in their reading comprehension measurements at the end of the intervention compared to the baseline. The results of the probe sessions conducted after the instruction given about self-monitoring skills showed more positive effects in two of the three participants. Two of the participants showed more improvements in their reading comprehension in the third probes conducted at the end of self-monitoring instruction (P3). However, it was found that all three participants had a reading comprehension level of more than 70% at the end of the intervention. In the results obtained from the maintenance probe sessions, all the participants maintained their gains and the level of comprehension was above 70% instructional-level comprehension. These results indicate that the note-taking skills instruction supported by self-monitoring was effective in maintaining the reading comprehension performance of the participants. Social validity results confirmed the practical usefulness of the instructional intervention programme for the comprehension of textual knowledge. The results showed that teaching students how to create effective notes during their reading has a strong effect on improvement of their reading comprehension. This finding supports the view of Chang and Ku (2014) who found that students can combine a note-taking strategy with reading comprehension skills. Previous research has confirmed that there is an excellent relationship between students learning reading comprehension strategies and their better comprehension of what they read (Lau & Chan, 2003; Pressley, 2002; Samuelstuen & Braten, 2005). In the majority of these research studies, it was observed that the students who took notes during lectures were able to comprehend the information presented in class by coding and organizing their notes and producing concise notes. Furthermore, it was found that students had better learning experiences in various subject areas and increased their academic success through the note-taking process (Kobayashi, 2005; Lee, Lan, Hamman, & Hendricks, 2008; Slotte & Lonka, 1999). In their study, Faber et al. (2000) found that students who were part of the strategy to provide instruction on note-taking skills showed significant improvement in their reading comprehension.

The results confirmed that poor readers can learn note-taking skills and combine their skills with reading comprehension during reading. Researchers have noted that learning from a text and learning to organize notes are useful in developing students' skills of summarizing, comprehension and paraphrasing (Boch & Piolat, 2005; Friend, 2001; İltter, 2017). Students who use low reading comprehension strategies often tend to be more anxious or frustrated during reading, due to lack of attention, vocabulary knowledge and experience. They experience a negative cycle of reading when they encounter complex and challenging texts at their grade level. They experience a sense of frustration in the processes of reading and learning (Halladay, 2012; Hamilton et al., 2000; Rasinski, 2012). However, in this study, the social validity result suggested that the students learned effective note-taking skills and produced short and concise notes. Students experienced no frustration during reading through their experience in note-taking skills lessons and self-monitoring teaching. In the third probe session, each of the participant achieved at the instructional-level comprehension after the self-monitoring instruction (comprehension level >70%) according to the Informal Analysis Inventory guidelines. Accordingly, the hypothesis of the study was confirmed by H1: "Note-taking skills instruction supported by self-monitoring skill is effective on the reading comprehension of students who read at frustration-level". This finding indicates that the instructional intervention on note-taking and self-monitoring skills eliminated the students' reading difficulties. This result also supported the view of Pressley (2006) who found that the more familiarity poor readers have with reading

comprehension skills, the more they become proficient readers. Previously research has suggested this finding (Bahrami & Nosratzadeh, 2017; Boyle & Weishaar, 2001; Bui et al., 2013; Carrell, 2007; Castell'o & Monereo, 2005; Faber et al., 2000; Najar, 1997; Laidlaw, Skok & McLaughlin, 1993; Oğuz, 2000; Sweeney et al. 1999; Rahmani & Sadeghi, 2011; Reed et al., 2016; Tsai & Wu, 2010). In this research, it was found that students with learning disabilities, poor readers who were trained how to use note-taking skills, showed significant improvements in reading comprehension strategies. Consequently, the results suggest that teaching students note-taking and self-monitoring skills can be described as a roadmap to improve their reading comprehension (Pressley & McCormick, 1995; Sweeney et al, 1999).

### **Implications for Practice and Limitations**

The findings showed that the strategy of instruction based on note-taking skills supported by self-monitoring skills could be effective for improving reading comprehension. Three participants made significant gains in reading comprehension by improving their note-taking skills at the end of the instructional intervention. Teachers can use direct instruction components within the context of their curriculum for their students who are at frustration-level comprehension to teach effective note-taking skills until the students read at an instructional-level or independent-level. They can also teach a variety of specific reading comprehension strategies, such as paraphrasing, summarizing and inferring, to improve the reading comprehension of students. The findings showed that note-taking strategy instruction supported by self-monitoring could be a practical and acceptable academic intervention for teachers. This study can be described as an attempt to achieve Stage 2 (Tier 2), which suggests that a Response to Intervention Method may be a necessary and useful component for early diagnosis to meet the educational needs of students with special needs (İltter, 2018a). In this study, through individualized, targeted interventions and multiple probes, each of the three students who were identified as frustrated readers achieved significant gains in reading comprehension, and so they read at an instructional-level score after the instruction. Response to Intervention is a method that uses scientifically sound practices to intervene academically with students at risk of academic failure or learning disability (Fuchs, Fuchs, & Stecker, 2010). In this method, there are many opportunities to eliminate the difficulties experienced by low-level ability students and increase their success. Instruction models and assessments have been proven systematically to be effective for early diagnosis and support of students who need learning and behaviour assistance. In the Response to Intervention Response method, the failure of students due to lack instructional support or learning disabilities is addressed through research-based academic or behavioural interventions (manipulatives, conceptual accents, modeling, demonstrations, etc.) (Chidsey & Steege, 2010 as cited in Ölmez & Argün, 2017; Van De Walle, Karp, & Bay-Williams, 2013). In this method, Tier 2 students who have difficulty understanding what they are reading can acquire effective reading comprehension strategies by taking advantage of the strategy of instruction based on research-based interventions aimed to improve their reading comprehension (Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016). If the student responds positively to the intervention, that is, if sufficient progress is made on the expected knowledge and skills, the student continues his/her normal education, but if not, he/she moves to the next step, Tier 3, to be transferred to intensive interventions and assessments. All the results indicate that teachers have the potential to benefit from strategy instruction as a proof of the Response to Intervention method, to increase their students' reading comprehension achievement. Accordingly, teachers may be able to increase their students' reading comprehension success or overcome students' reading difficulties by providing academic interventions. As in all research, this study had some limitations. First, this study was conducted with a multiple baseline across-participants-design. The number of participants was limited to three students. A small number of participants limits the generalizability of the findings. Future research should investigate whether small-group or whole-grade note-taking skills instruction will have an effect on reading comprehension.

In order to generalize the findings, the research needs to be repeated with different class levels and with different participants. Second, only the reading comprehension section of the Informal Analysis Inventory was used to determine the reading levels of the participants. Future research should assess the levels of various reading skills, such as word recognition, fluency and motivation to read. Third, participants' reading comprehension performance was evaluated by using recall and in-depth comprehension questions developed by the researcher in all probe sessions and maintenance probe sessions. Future research should address evaluation measures such as comprehension, coding, recall, clue capture or delayed recall. Fourth, there were no probe sessions regarding the generalization of the skills acquired by the participants to the academic subject or different situations or contents. Future research should include generalization probes to determine whether students generalize their gains to different materials (notebook, computer) or contents (e.g. lectures, homework, projects etc.).

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