



Teaching Description Structure of Expository Texts to Third Grade Students with Learning Disabilities

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Abstract

The present study utilized a multiple probe, single-case design to examine the effects of a description text structure intervention on the reading comprehension skills of three third grade students with learning disabilities (LD). Analyses using visual analysis and percentage of non-overlapping data (PND) indicated that all students demonstrated an increase in the number of correct answers on the multiple-choice comprehension tests after the training phase. On the retell tasks, two participants provided more information units and better retell quality. Results indicated that explicit text structure instruction of descriptive text was effective. Participants need continuous support on extracting main ideas and identifying supporting detail information. Implications of the practice, limitations of the research, and suggestions for future research were discussed.

Keywords: Learning Disabilities, Reading Comprehension, Expository Text, Oral Retell, Multiple Probe Single-Case Design

Reading is a complex activity involving the readers' reading capacities, their background knowledge, the level of text difficulty, and genre (Lipson & Cooper, 2002; The RAND Reading Study Group, 2002). Researchers have found that the distinct features inherent in narrative and expository texts require students to use different skills to comprehend them. For example, decoding skills are highly correlated with successful recall of narrative texts, whereas word knowledge and higher-level cognitive skills contribute extensively to comprehension of expository texts (Best et al., 2008; Eason et al., 2012). In a world in which massive amounts of information is consumed daily, comprehension of expository texts is indispensable. The importance of comprehending expository text is reflected in the National Assessment of Educational Progress recommendations and Common Core State Standards (CCSS; National Assessment of Educational Progress, 2010). As early as kindergarten, and into second grade, students are expected to answer questions from expository texts, identify reasons to support points the author makes, and identify text structures such as similarities and differences or compare and contrast. By the end of second grade, students are expected to read and comprehend expository texts. The importance placed on expository texts has affected instruction for every student from K through 12th grade, including students with disabilities.

Challenges for Students with Learning Disabilities Reading Expository Texts

Students with disabilities encounter more challenges than their typically developing peers when reading expository texts, especially students identified with LD. Unfamiliar content, the density of vocabulary, and the variety of structures are major roadblocks for the successful comprehension of expository texts (Englert & Thomas, 1987; Martin & Duke, 2011). In particular, students' limited ability to detect text structure makes comprehending expository text difficult (Englert & Thomas, 1987). Working memory deficits impede students' ability to process new information in the text and integrate it with background knowledge (Fletcher et al., 2007). The scarcity of informational text instruction in early elementary grades also affects students' exposure to expository texts and contributes to their unfamiliarity with the expository texts (Duke, 2000; Ness, 2011).

Students with disabilities have been increasingly placed in general education settings with specialized instruction, or pull-out services for their individual needs (McLeskey et al., 2011); however, their performance on academic tasks lags behind that of their peers. According to US national data on student placement, 95% of students with disabilities were placed in regular schools in fall 2018. For students with specific learning disabilities, 71.4% were placed in general education classrooms for more than 80% of their school time (U.S. Department of Education, National Center for Education Statistics, 2019). Being placed in general education classrooms allows students with disabilities to access core curriculum and educational programs (McLeskey & Waldron, 2011), however, despite access to the core curriculum, most students with disabilities do not perform as well as their peers

in reading (NAEP, 2019).

Improving Reading Comprehension for Students with Learning Disabilities

Researchers have devoted efforts to identifying effective reading comprehension strategies for students with LD and have identified several strategies effective in assisting students with LD comprehend texts (for examples: Gajria et al., 2007; Gersten et al., 2001; Mastropieri et al., 1996). The large effect sizes for strategies researched ($M = 1.64$, Gajria et al., 2007; $M = 1.07$, Mastropieri et al., 1996) indicate that students with LD can learn from expository texts. In scrutinizing the findings, only a few syntheses have examined studies with expository texts exclusively (Gajria et al., 2007; Ciullo et al., 2014). Two major categories of reading comprehension intervention were identified by Gajria et al. (2007): Cognitive strategies (e.g., identify main idea, text structures, self-questioning) that help students actively monitor comprehension and content enhancements (e.g., graphic organizers, mnemonic illustrations) that utilize visual displays to aid understanding. Ciullo et al. (2014) examined studies with elementary level students with LD. They found that effect sizes reported for content enhancement were large when compared to medium to large effect sizes for cognitive strategy. The combined results indicate that the use of cognitive strategies at the elementary level is still an under-research topic, especially in third grade when the demands of reading expository texts start to increase.

Learning with Expository Text Structures

The theoretical framework for teaching text structure to facilitate comprehension of readers is grounded in cognitive psychologists' view of human development and learning. Reading (expository text, especially) is a cognitive demanding process. Therefore, employing cognitive strategies to reduce the cognitive load frees up cognitive capacity for comprehension (Britton et al., 1985). Text structure is a cognitive strategy that represents the underlying logical thinking of the author. If readers can identify the authors' organization of the text, less effort is required to understand and remember information authors are trying to convey (Meyer, 1985).

According to Meyer (1985), the three primary levels of expository text are (1) the sentence, also called the microproposition level; (2) the logical organization and argumentation of the text, or the macropropositional level; and (3) the overall organization of the text, or the top-level structure. Five top-level text structures have been identified: description, sequence, comparison, causation, and response (Akhondi et al., 2011; Meyer, 1985; Meyer et al., 1980). Description structure has hierarchical levels. That is, the attribution, settings, and features that are used to describe a topic are subordinate to the topic. Sequence structure is often referred to a time-ordered collection of events or ideas. Authors use chronological order to list items or events. Comparison structure is the structure that authors use to compare two or more events, topics, or objects that have similarities and differences. Causation structure is often used to describe causal relationships between activities, events, or instructions. The last text structure is response. Authors use a problem-and-solution structure to post questions and provide answers. The organization includes two parts: the problem (or the question) and the solution (or the answer) in response to the problem. Signaling (signal words) and visual display of the structure are tools assisting readers in identifying the top-level text structure of expository texts (Akhondi et al., 2011; Meyer et al., 1980).

Research has shown that text structure instruction is more effective than traditional instruction for students with LD or reading difficulties in upper elementary (fifth grade; Armbruster et al., 1987) and in middle school (Bakken et al., 1997; Lovett et al., 1996). Students who received text-structure instruction were more likely to identify the top-level text structure than the control group students (Armbruster et al., 1987), and they also recalled more information from the text, as well as transferred the skill to untaught passages (Bakken et al., 1997; Lovett et al., 1996).

Younger elementary students have also shown similar effects (Meyer & Ray, 2011). Findings from a series of studies indicate that second grade students are able to learn to use text structure to obtain content knowledge when provided explicit instruction (Williams et al., 2004; Williams, 2005; Williams et al., 2005; Williams et al., 2007; Williams et al., 2009).

Studies that include students with LD in upper elementary grades and middle school students and typical developing young students have demonstrated the positive effect of teaching students to use text structures, however, research that includes younger students with LD with identified difficulties in reading comprehension are limited. Therefore, the purpose of this study is to examine whether text structure instruction can have a significant impact on the comprehension outcomes of third-grade students with LD. The study addressed the following research questions:

- What is the effect of description text structure training on multiple-choice comprehension test scores of third-grade students with learning disabilities?
- What is the effect of description text structure training on information recall task scores of third-grade students with learning disabilities?
- What is the perception of third-grade students with learning disabilities toward description text structure instruction?

Method

Setting and Participants

The study took place in an elementary school located in a predominately rural school district near a fast-growing city in a Southern state of the United States. A majority of the students (73.56%) were Hispanic/Latino, 21.86% were Caucasian, and 2.95% were Black/African American of the year. Students eligible for special education services represented 11.25% of student enrollment and 86.12% students eligible for free or reduced-price meals.

A two-step process was employed to identify participants. First, the teachers were asked to recommend students who met the following criteria: (1) students have reading comprehension difficulties, and (2) reading must be identified as an area of improvement in their IEP goals. Students with learning disabilities whose first language was not English were excluded.

Next, six students who met the initial criteria were administered the Nonsense Word Fluency (NWF) and Oral Reading Fluency (ORF) subtests of the DIBELS (Dynamic Indicators of Basic Early Literacy Skills, 6th Edition). To demonstrate severe reading difficulties, the potential participant's DIBELS NWF score must be in the emerging (30–49) or established (>50) range while his/her ORF score was in the at-risk range (<66 for third-grade students) (Fuchs et al., 2001; Kim et al., 2011). All six students met the criteria; however, two students were not identified as having LD and the third student withdrew from the study for personal reasons. Table 1 provides demographic information for the three remaining students.

Name	Grade	Age	Ethnicity	Eligibility	Services Received up to date of research (years)	DIBELS NWF/ORF
Brian M.	3	9	Caucasian	LD, SI	Reading, Math, Math Calculation, Language Arts (1)	49/21
Casey N.	3	9	Caucasian	LD, SI	Basic Reading, Written expression, Math calculation, Problem solving, Fine motor skills (1)	43/28
Pam R.	3	9	Caucasian	LD, SI	Reading, Speech, Language Arts (1)	48/36

Table 1. Demographic Information of Participants

Note. Student names are pseudonyms; LD = learning disabilities; SI = speech impairment

All students received pull-out reading services individually from a special education teacher daily for 40 minutes. Project Read[®] was the reading intervention program. The intervention being examined by this study was provided by the first author who had over eight years of teaching and research experience in special education in elementary and middle school levels. All lessons were delivered in a one-on-one setting in a classroom with minimal disturbance. The intervention was delivered outside of core reading time, usually during participants' non-academic courses, such as PE.

Intervention Design

Multiple probe design is a variation of multiple baseline design (Kennedy, 2005) in which two or more baselines are established simultaneously. A single-case multiple probe design across participants was chosen as the most appropriate for the study since the participants in this study had experienced academic difficulties, a continuous baseline involving reading and answering questions might increase students' frustration and decrease their motivation. Multiple probe design also saves time and effort while maintaining sufficient sensibility to the change in student outcome measures (Horner & Baer, 1978).

Materials

Thirty-two reading texts were selected from second-grade decodable readers (Read on Your Own[®]) from the Reach for Reading[®] program (National Geographic School Publishing, 2011). Each text had approximately 100-350 words (average 229 words), averaging 25 sentences per text. All readings were rated with the Flesch-Kincaid Grade Level readability test. The average readability of the readings was 1.28 (range 0.5–2.8). The description text structure, complex words, possible unknown words, number of signal words, complexity of the text, explicitness of main ideas, and explicitness of supporting details of the readers were analyzed to ensure the comparability between texts.

Measures

Comprehension Questions

Immediately after reading, participants were asked to complete an eight-item comprehension test for each reading. Participants were allowed to refer back to the reading and notes or the organizer they had while they completed the comprehension test. Comprehension questions assessed the following: main idea, detail information, and word meaning.

Oral Retell

After the multiple-choice test, the participant was prompted to recall information from the reading. Retell has been used to assess reading comprehension (Hansen, 1978; Klingner, 2004; Reed & Vaughn, 2012), and has been proposed as a valid measure of reading comprehension, though it is moderately correlated with standardized reading comprehension measures (Reed & Vaughn, 2012). To be consistent across participants and phases, questions were restricted to: “*Tell me, what is the reading about?*” When the student stopped, the researcher prompted him or her by asking, “*Can you tell me anything else?*” to allow participants to give every possible answer. The oral retells were audio recorded and transcribed verbatim. The oral retell tasks were scored in four ways: the percentage of main ideas, the number of information units, total words, and the quality of retell.

Student interviews

Social validity is an important indicator on the feasibility of the intervention (Horner et al., 2005). Five open-ended questions designed to elicit participants’ perceptions of the text structure strategy were administered after the intervention phase.

Procedure

The study consisted of four phases: baseline, training, intervention, and maintenance. All four phases had similar procedures. Each session lasted 25–35 minutes. The study was conducted over 15 weeks, approximately three sessions per week. All participants entered the baseline phase at the same week. When the first participant demonstrated a stable trend in the baseline, the training phase was initiated.

Baseline Phase

Participants were told to read the article orally or silently and to write notes on the blank paper as they read to assist with comprehension. After completing the reading, the participants were asked to answer the eight-item comprehension test pertaining to the reading. When they completed the test, the text and comprehension questions were removed. They were then prompted to recall information from the text.

Training Phase

As each participant demonstrated a steady trend in the baseline, he/she was trained on the use of description text structure to increase comprehension. The training phase consisted of three consecutive sessions (35 minutes each) to introduce students to text structures, the difference between narrative and expository structures, and how to use the targeted structure (i.e., description) to assist understanding text better.

The training sessions employed explicit teaching and gradual release of support, which have been found to be effective for students with LD (Gersten et al., 2001; Pearson & Gallagher, 1983). The goal of the training phase was to train students to identify the main idea and supporting details of the description structure text and to use an organizer to organize information independently. The exit criterion for the training phase was met when participants obtained two out of three data points over 60% correct on the comprehension tests.

Intervention Phase

After completing the training sessions, participants transitioned into the intervention phase. Participants in the intervention phase first received a review of the previous reading. Then, the participant was instructed to read the text, encouraged to write information on the blank piece of paper, and directed to answer the eight-item comprehension test as well as the oral retell.

Maintenance Phase

The maintenance sessions were administered two weeks after the completion of the last data point of the intervention phase. To determine whether the participant maintained the skills taught, two readings were administered in the same week. The procedure for the maintenance phase was the same as that used during the intervention phase.

Fidelity and Validity

Three observers used a fidelity checklist to rate the implementation of the intervention across participants. Approximately 25% of all sessions were observed. Implementation fidelity was 99.9%.

The first author graded all the comprehension tests and coded all oral retell transcripts. A second coder coded 10% of the eight-item comprehension test and 33% of oral retell transcripts. The inter-rater agreements were 100% and 81.35%, respectively, which met the evidence standards provided by Kratochwill et al. (2010).

Results

This study examined the effects of description text structure instruction on students’ reading comprehension using a multiple-probe, single case design. Data points were plotted and results were examined with visual analysis (Kennedy, 2005; Kratochwill et al., 2010) and PND (Scruggs et al.,1987). An interview was administered at the end of the intervention phase to obtain information on students’ perceptions of the training and the intervention.

Visual Analysis

Eight-item, Multiple-choice Comprehension Tests

Throughout the study, the eight-item comprehension tests served as the main reference for decision making to move participants to the next phase, because of the immediacy of scoring. Participants’ data were presented in Figure 1.

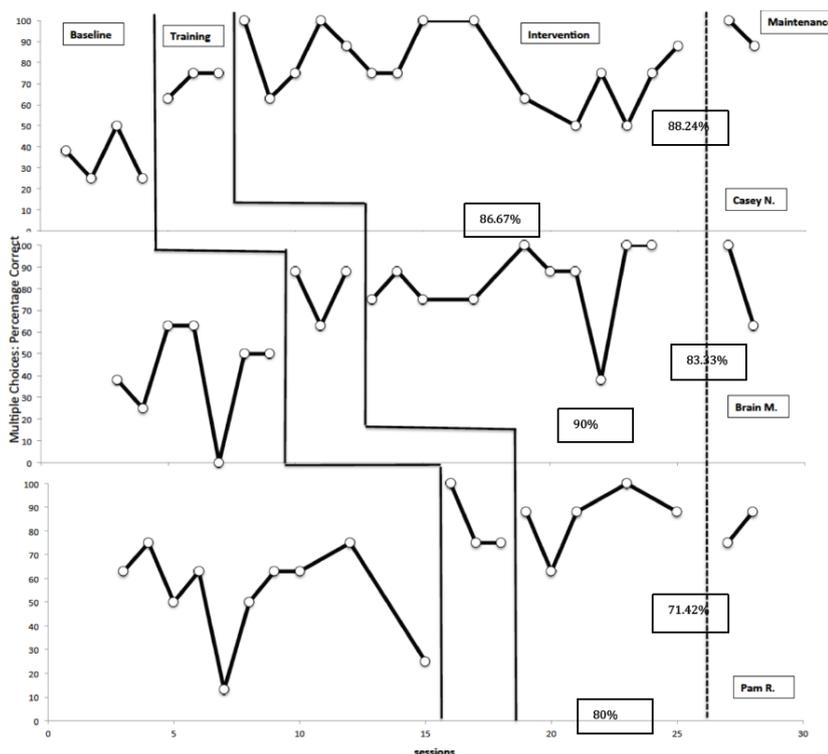


Figure 1. Percentage scores on eight-item comprehension tests

Casey N. Casey demonstrated an obvious level change from the baseline phase to the intervention phase. She performed increasingly better when she went into the intervention phase. Although she experienced a downward trend after session #17, the trend went up again towards the end of the intervention phase. Variability in the intervention phase was larger than in the baseline phase. There were two overlapped data points between the baseline and the intervention phase. Overall, Casey improved after the training phase and her data demonstrated a functional relation.

Brian M. The average score doubled when he moved from the baseline phase to the intervention phase. The trend during the intervention phase was clearly going upward, except for session #22. In session #22, Brian showed signs of fatigue due to insufficient sleep (Field Notes: 0140513B). The variability was larger in the baseline phase than it was in the intervention phase. Brian demonstrated immediacy of effect in the training phase, but it was not obvious in the first few sessions of the intervention phase. The overlap of data was found in only one (session #22) between the baseline and the intervention phase.

Pam R. Pam was the last participant to receive training. She demonstrated the highest baseline scores. However, the variability in the baseline phase was greater than it was in the intervention phase. She demonstrated an immediate gain in the training phase, and the trend went down in the first two sessions, but went up stably afterwards in the intervention phase. She also had one overlapped score between the baseline and the intervention phases.

The results of the eight-item comprehension tests indicated that all participants made gains after the training sessions. The functional relationship of expository text structure training was established when examining the level, trend, variability, immediacy of the effect, overlap, and consistency of data patterns across similar phases. Based on the data, training for these students was moderately effective.

Oral Retell Tasks
The results of oral retell contained four elements which are presented in Figures 2 through 5.

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Main Ideas

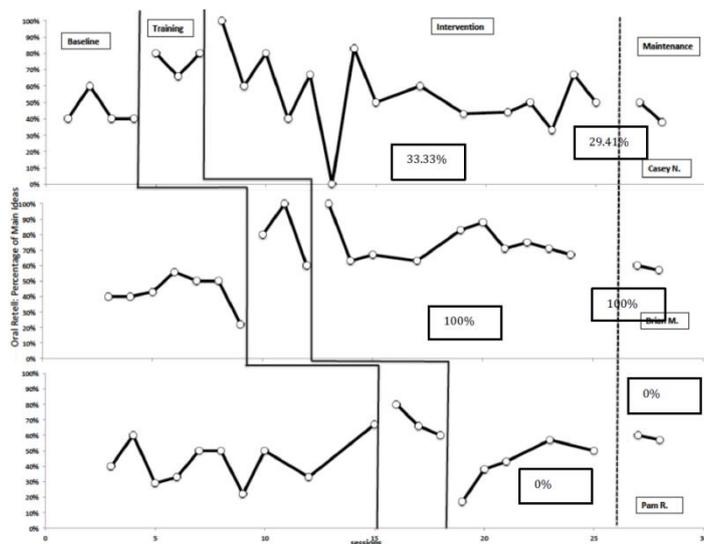


Figure 2. Percentage of main ideas of oral retell

Information Units

Information units are the smallest units of an idea, a concept, or an object. Figure 3 provides data on information units. The data showed that Casey and Brian provided more information units during the intervention phase than baseline phase. The trend was slightly upward for Casey and Brian, but decreased at the end of the intervention phase. Similar to the results for main ideas, the variability in Casey’s and Brian’s data were greater in the intervention phase than in the baseline phase. The immediacy of the effect was observed only in Brian’s intervention phase. Pam and Casey had significant overlaps between the baseline phase and the intervention phase. In the maintenance phase, Pam provided more information units compared to the intervention phase.

Main ideas are higher-level information units pertaining to the essence of the article or text. A visual analysis of the data indicated that Brian identified more main idea units after training than he did at baseline. His data also had an upward trend in the intervention phase. Casey’s intervention data, on the other hand indicated a downward trend, probably because of increasing difficulties of the texts. The variability in Casey’s data during the intervention phases was higher than it had been in the baseline phase. The immediacy of the effect was present for Brian and Casey after training, but not for Pam. Pam’s data points during the intervention phase overlapped with data points during baseline. In the maintenance phase, all participants remained at a level similar to the level achieved during the intervention phase.

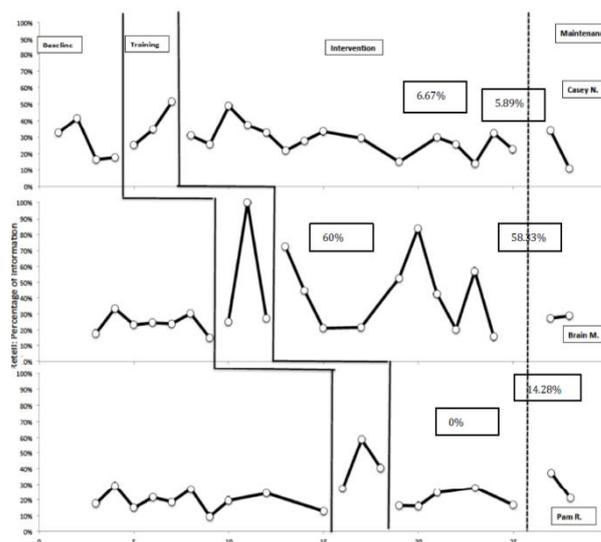


Figure 3. Percentage of information units of oral retell

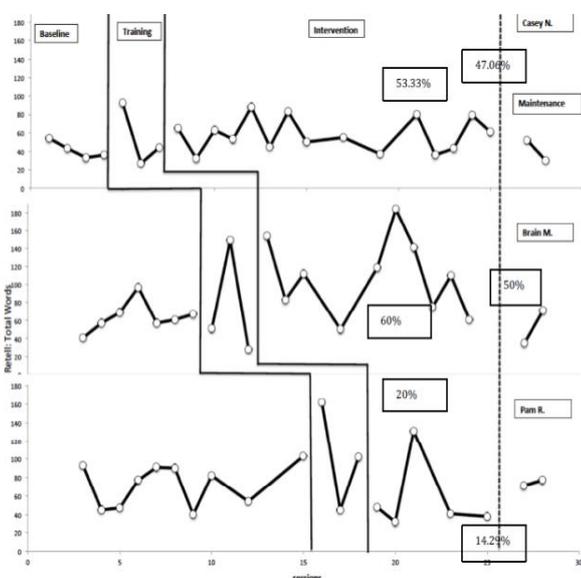


Figure 4. Total words of oral retell

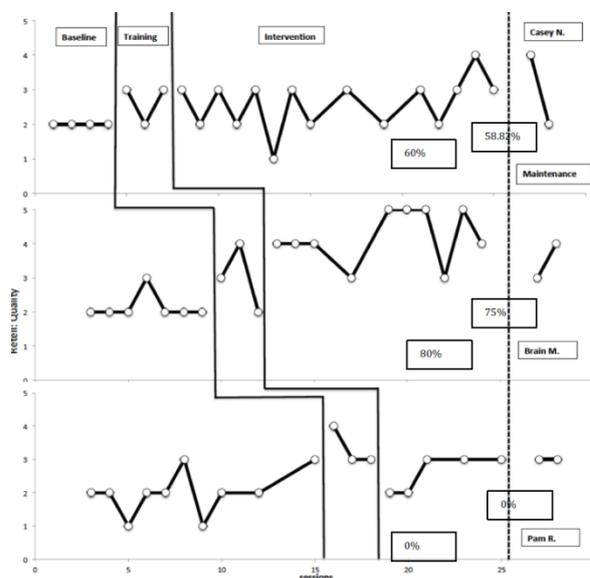


Figure 5. Quality of oral retell

Total Words

Figure 4 presents the results for number of total words retold by each participant. An examination of the graph indicates that Casey and Brian uttered more words during the intervention phase than in the baseline phase. The means for the intervention phase were higher than those of the baseline phase (Casey: 41.50 v. 58.00; Brian: 64.14 v. 108.90). Pam's data showed the opposite (Pam: 72.20 v. 58.00). Pam was loquacious during the retell tasks, but most of her utterances were of her personal experience related to the texts. Data variability for each of the three participants was greater during the intervention phase than in the baseline phase, suggesting that participants might utter more words if they read texts of their interests. Again, immediacy of effect was only observed in Brian's data. Casey's data showed a slower increase. Pam and Casey's data points overlapped in the baseline and intervention phase. In the maintenance phase, Pam maintained a similar level when compared to the intervention phase, but Casey and Brian did not.

Retell Quality

The data shown in Figure 5 indicates that the quality of the students' retell improved in the intervention phase. Mean retell quality scores during baseline and intervention were: Casey (2.00 v. 2.60), Brian (2.14 v. 4.20), and Pam (2.00 v. 2.60). Casey and Brian's data trended upward, though they had higher variability in the intervention phases. Casey and Brian increased one or more points over their last data point during baseline after training. They also did not have many overlap scores between the baseline and intervention phases. In the maintenance phase, all participants maintained similar retell quality as they were in the intervention phase.

The results also indicated that the training was more effective for Brian and Casey than for Pam. Again, from examining the level, trend, variability, immediacy of effect, overlap, and the similarity across the same phase, the data indicated that Brian had the greatest gain after training on all four indicators. Casey recalled more information units, total words, and had better retell quality. Pam showed an increase in information units and retell quality.

Effect Size Analysis

Eight-item, Multiple-choice Comprehension Tests

The PND of the intervention phase and intervention phase plus maintenance phase was calculated. For Casey, it was 86.67% and 88.24%. Brian had the PND of 90.00% and 83.33%. Pam had the PND of 80% and 71.42%. All participants demonstrated a moderate to large effect on the multiple-choice comprehension tests.

Oral Retell Tasks

The PND effects of the four indicators of the retell tasks fell in the ineffective range for Casey and Pam, but not for Brian. After training, there was not a notable increase in the percentage of main ideas. There were slight increases on the number of information units, the number of total words, and retells quality; however, based on the data, the overall effectiveness of the training is inconclusive.

For individual performance in recalling main ideas, Brian made a significant increase (100%) in the percentage of main ideas. As for the number of detail information units, Casey and Brian improved after training (Casey: 66.67%; Brian: 60.00%), both in the debatable range of effectiveness. Pam improved slightly in the intervention phase (40.00%), and made more gains on the number of information units in the maintenance phase (57.14%). She may have made more significant progress, if more sessions were administered to her. Casey and Brian had increases in the number of total words (Casey: 53.33%; Brian: 60.00%), but not in the maintenance phase (Casey: 47.06%; Brian: 50.00%). Pam did not recall more total words after training (Pam: 20.00%). Casey and Brian had notable increases in their retell quality scores (Casey: 60.00%; Brian: 80.00%).

The PND on retell tasks by four indicators suggest the training was not effective in increasing participants' recall of main ideas. The training had some effect in increasing the number of Casey and Brian's information units, but was in the debatable range of effectiveness. The training did not have an effect on students' total words spoken, except for Brian who showed a slight improvement. Retell quality improved for Casey and Brian.

Social Validity

All participants comments indicated that the experience was positive. They stated that they internalized the strategy and used them in the maintenance phase (Field Notes: 0140515B, 0140515C, and 0140515P). Although they considered the training a good experience, they expressed honestly that they would not be willing to learn more about other text structures in the future because the training steps and strategies were overwhelming (Field Notes: 0140515C and 0140515P).

Discussion

Reading informational texts to obtain information and knowledge is one of the learning foci after students have acquired the skills needed to read (Gajria et al., 2007; RAND Reading Study Group, 2002). Students with disabilities, especially those who are experiencing difficulties in reading comprehension need effective strategies to understand the text they read. In the current study, we found that participants comprehended the text well after the intervention phases, however, some concerning signs also showed that their ability to retain important information from the text is not adequate.

Teaching Description Text Structure Assists Comprehension

The results indicated that students with LD responded to the description text structure training when measuring their comprehension using multiple-choice questions. This finding extended the previous research on fifth grade (Armbruster et al., 1987) and seventh to eighth grade (Bakken et al., 1997; Lovett et al., 1996) students with LD, also with a moderate to large effect after receiving training on description text structure of expository texts. It should be noted that this study used single-case design to investigate the effectiveness of the description text structure intervention, while other studies that investigate the effect of text structure (e.g., Bakken et al., 1997) used group design. Although group design demonstrates effects for more students, single-case design is more sensitive to individual change during the intervention phase. For example, Casey's scores decreased towards the end of the intervention phase. In addition, the study also adds to William et al. (2005), Williams et al. (2007), and Williams et al. (2009) findings on teaching text structures to young elementary students. They found that typical and at-risk second-grade students' reading comprehension levels and strategy use of compare-and-contrast and cause-and-effect structure increased after intervention. This study extended the research on the effect of text structure to third-grade students with LD.

Extended Support on Retell Tasks is Needed

Despite a moderate to large effect on multiple choice tests, participants did not recall sufficient main ideas and supporting details of the text. The results of the retell tasks explains why some students with LD might seem to understand the content but do not have deep understanding of the main ideas and supporting details.

Multiple-choice reading comprehension tests, a receptive measure, provided participants four choices. Participants had only to pick one correct answer from the four choices. The multiple-choice comprehension tests were considered to measure one aspect of the participants' understanding of the reading texts, whereas the oral retell task, an expressive measure, measured several aspects of comprehension. To perform this task, multiple skills were required. Participants were asked to recall what was read in the text, to organize in their mind the main ideas and the supporting details, and to retell the information in a coherent manner.

Therefore, the results of the present study indicate that although Brian, Casey, and Pam performed well on multiple-choice comprehension tests, not all of them were able to detect higher-level information units (i.e., main ideas). Brian was able to excel on all four indicators in the recall tasks, while Casey and Pam needed extra support in extracting main ideas from the texts and identifying supporting details.

Thus, the oral recall task would be a good assessment to examine students' deeper understanding of the text. Yet, despite this advantage, given the laborious scoring procedure, using retell and examining its four indicators would not be recommended as an efficient tool for teachers to administer to obtain immediate scores for reading comprehension on a regular basis, unless new technology, such as voice identification, would be used.

Perceived Usefulness of the Intervention

Participants generally perceived the training and the intervention to be very helpful for their reading and they indicated that they would like to continue using the training and reading strategies in the future. However, when asked about receiving more training on text structures, their responses were negative. This revealed that students with reading comprehension problems couldn't process large amounts of information. It would have to be divided into small portions and taught with extensive or repeated practices.

Implication for Practice

It is every teacher's wish to equip his/her students to be successful readers ready to face the challenges of this information-loaded world. Students with disabilities who have trouble understanding what they read are at a disadvantage. They are likely to experience lower rates of attaining post-secondary degrees and income compared to their typical developing peers (McLaughlin et al., 2014).

Three implications of the current study can be applied to the current classroom practice. First, this study suggests that teaching description text structure to third-grade students with LD might be effective in helping students learn from expository texts. Components of the current study—explicit instruction on learning description text structure, identifying signal words, and organizing information via a visual display—provide moderate improvement and could be applied to one-on-one instruction. The current study extended previous interventions on

teaching text structure to older students with LD (Armbruster et al., 1987; Lovett et al., 1996; Bakken et al., 1997) to younger students with LD.

A second implication derived from the feedback from third-grade students with disabilities towards learning description text structure were positive. They perceived that it was a useful and fun activity. Although the social validity data were not investigated in the previous studies, it was a great reference for educators who are planning to teach text structure. However, teachers should be cautious that students might perceive the process of teaching text structures laborious. Educators would have to identify individual preference to the intervention, in addition to his/her response, when administering text structure instruction.

Lastly, under the scope of tiered-practice, such as response to intervention (RtI), researchers and educators are in need of effective interventions for students who are placed in Tier 3 instruction (Gersten et al., 2008). The findings of the present study can be used as one of the Tier 3 instruction strategies to improve students in reading expository texts.

Limitations of the Study

Two limitations of the study need to be considered when interpreting the results. First of all, the study contained a small number of participants. Although three participants might be sufficient for a single-case study, it would be more persuasive if more participants were included. According to the standards proposed by Kratochwill et al. (2013), a study is considered to provide “Moderate Evidence” if it includes three demonstrations of effects and at least one non-effect. The current study demonstrated all three third-grade students with LD made significant gains, and therefore, met the standards by Kratochwill et al. (2013).

The other limitation pertained to intervention design. Since signal words were one of the important elements of text structure, they were taught and reviewed in the training sessions. However, signal words were not attended to in-depth in the study. Therefore, it was not clear if participants understood the concept of signal words or the usage of them. Further studies are needed to examine if students understand the concept by using them in a writing measure.

Suggestions for Future Research

Future research for students with disabilities should replicate the current study and continue to teach different types of text structures. This study explored one type of text structure (i.e., description). Further studies should attempt to systematically implement studies with different types of text structures to students with LD who demonstrate difficulties in reading comprehension. Moreover, studies should also be directed to investigate the effective length of training sessions and the most efficient timing of review sessions. It would take extensive research and multiple studies to accomplish.

While retell was not found to be an efficient progress-monitoring tool (Reed & Vaughn, 2012), it reveals more information than multiple-choice comprehension questions. Future studies should also aim to develop a standardized process to utilize retell as a progress-monitoring tool in examining students' progress in reading comprehension. In light of the complicated scoring procedure of the current study, future studies should explore more practical procedures for classroom teachers without sacrificing the quality of information extracted from retell. Nonetheless, a paucity of studies pertains to elementary students with disabilities learning to incorporate text structure to writing. More studies on text structure intervention for writing expository texts are needed.

Acknowledgment

Our gratitude goes to Michael Burton who gave suggestions on the manuscript.

Works Cited

- Akhondi, M., Malayeri, F. A., & Samad, A. A. (2011). 'How to teach expository text structure to facilitate reading comprehension.' *The Reading Teacher*, 64, pp. 368–372.
- Armbruster, B. B., Anderson, T. H., & Ostertag, J. (1987). 'Does test structure/ summarization instruction facilitate learning from expository test?' *Reading Research Quarterly*, 22, pp. 331–346.
- Bakken, J.P., Mastropieri, M.A., Scruggs, T.E. (1997). 'Reading comprehension of expository science material and students with learning disabilities: A comparison of strategies.' *The Journal of Special Education*, 31 (3), pp. 300–324.
- Best, R. M., Floyd, R. G., & McNamara, D. S. (2008). 'Differential competencies contributing to children's comprehension of narrative and expository texts.' *Reading Psychology*, 29, pp. 137–164.
- Boyle, J. R. (1996). 'The effects of a cognitive mapping strategy on the literal and inferential comprehension of students with mild disabilities.' *Learning Disability Quarterly*, 19, pp. 86–98.
- Britton, B. K., Glynn, S. M., & Smith, J. W. (1985). 'Cognitive demands of processing expository text: A cognitive workbench model.' In B. K. Britton, & J. B. Black (eds), *Understanding Expository Text*, pp. 11–64. Lawrence Erlbaum.
- Ciullo, S., Lo, Y. S., Wanzek, J., & Reed, D. K. (2016). 'A synthesis of research on informational text reading interventions for elementary students with learning disabilities.' *Journal of Learning Disabilities*, 49, pp. 257–271.
- Duke, N. K. (2000). '3.6 Minutes per day: The scarcity of informational texts in first grade.' *Reading Research Quarterly*, 35, pp. 202–224.
- Eason, S. H., Goldberg, L. F., Young, K. M., Geist, M. C., & Cutting, L. E. (2012). 'Reader-text interactions: How differential text and question types influence cognitive skills needed for reading.' *Journal of Educational Psychology*, 104(3), pp. 515–528.
- Englert, C. S., & Thomas, C. C. (1987). 'Sensitivity to text structure in reading and writing: A comparison between learning disabled and non-learning disabled students.' *Learning Disabilities Quarterly*, 10, pp. 93–105.
- Fletcher, J.M., Lyon, G. R., Fuchs, L. S., & Barnes, M. A. (eds) (2007). *Learning disabilities: From identification to intervention*. New York, NY: Guilford.
- Fuchs, L. S., Fuchs, D., Hosp, M., & Jenkins, J. R. (2001). 'Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis.' *Scientific Studies of Reading*, 5, pp. 239–256.
- Gajria, M., Jitendra, A. K., Sood, S., & Sacks, G. (2007). 'Improving comprehension of expository texts in students with LD: A research synthesis.' *Journal of Learning Disabilities*, 40, pp. 210–227.
- Gersten, R., Fuchs, L. S., Williams, J. P., & Baker, S. (2001). 'Teaching reading comprehension strategies to students with learning disabilities: A review of research.' *Review of Educational Research*, 71, pp. 279–320.
- Gersten, R., Compton, D., Connor, C.M., Dimino, J., Santoro, L., Linan-Thompson, S., and Tilly, W.D. (2008). *Assisting students struggling with reading: Response to Intervention and multi-tier intervention for reading in the primary grades. A practice guide. (NCEE 2009-4045)*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- Haager, D., & Vaughn, S. (2013). 'The Common Core State Standards and reading: Interpretations and implications for elementary students with learning disabilities.' *Learning Disabilities Research*, 28, pp. 5–16.
- Hansen, C. L. (1978). 'Story retelling used with average and learning disabled readers as a measure of reading comprehension.' *Learning Disability Quarterly*, 1, pp. 62–69.
- Horner, R. D., & Baer, D. (1978). 'Multi-probe technique: A variation of the multiple baseline.' *Journal of Applied Behavior Analysis*, 11(1), pp. 189–196.
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). 'The use of single-subject research to identify evidence-based practice in special education.' *Exceptional Children*, 71, pp. 165–179.
- Kratochwill, T. R., Hitchcock, J. H., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M. & Shadish, W. R. (2010). 'Single-case designs technical documentation.' http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf
- Kratochwill, T. R., Hitchcock, J. H., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2013). 'Single-case intervention research design standards.' *Remedial and Special Education*, 24, pp. 26–38.
- Kennedy, C. H. (2005). *Single-case designs for educational research*. Boston, MA: Pearson Education.
- Kim, Y., Wagner, R. K., & Foster, R. (2011). 'Relations among oral reading fluency, silent reading fluency, and reading comprehension: A latent variable study of first-grade readers.' *Scientific Studies of Reading*, 15, pp. 338–362.
- Klingner, J. K. (2004). 'Assessing reading comprehension.' *Assessment for Effective Intervention*, 29, pp. 59–70.

- Lipson M. Y., & Cooper, J. D. (2002). Understanding and supporting comprehension development in the elementary and middle grades. In *Current research in reading/language arts*. Boston, MA: Houghton Mifflin.
- Lovett, M.W., Borden, S.L., Warren-Chaplin, P.M., Lacerenza, L., DeLuca, T. & Giovinazzo, R. (1996). 'Text comprehension training for disabled readers: An evaluation of reciprocal teaching and text analysis training programs.' *Brain and Language*, 54, pp. 447–480.
- Martin, N. M., & Duke, N. K. (2011). 'Interventions to enhance informational text comprehension.' In A. McGill-Franzen, & R. L. Allington (Eds.), *Handbook of Reading Disability Research* (pp. 345–361). New York, NY: Routledge.
- Mastropieri, M. A., Scruggs, T. E., Bakken, J. P., & Whedon, C. (1996). 'Reading comprehension: A synthesis of research in learning disabilities.' *Advances in Learning and Behavioral Disabilities*, 10, pp. 201–227.
- McLaughlin, M. J., Speirs, K. E., & Shenassa, E. D. (2014). 'Reading disability and adult attained education and income: Evidence from a 30-Year longitudinal study of a population-based sample.' *Journal of Learning Disabilities*, 47, pp. 374–386.
- McLeskey, J., Landers, E., Hoppey, D., & Williamson, P. (2011). 'Learning disabilities and the LRE Mandate: An examination of national and state trends.' *Learning Disabilities Research & Practice*, 26, pp. 60–66.
- McLeskey, J., & Waldron, N. L. (2011). 'Educational programs for elementary students with Learning Disabilities: Can they be both effective and inclusive?' *Learning Disabilities Practice*, 26(1), 48–57. <https://doi.org/10.1111/j.1540-5826.2010.00324.x>
- Meyer B. J. F. (1985). 'Prose analysis: Purposes, procedures, and problems.' In B. K. Britton, & J. B. Black (Eds.), *Understanding Expository Text*, (pp. 11–64). Hillsdale, NJ: Lawrence Erlbaum.
- Meyer, B. J. F., Brandt, D. M., & Bluth, G. J. (1980). 'Use of top-level structure in text: Key for reading comprehension of ninth-grade students.' *Reading Research Quarterly*, 16, pp. 72–103.
- Meyer, B. J. F., & Ray, M. N. (2011). 'Structure strategy interventions: Increasing reading comprehension of expository text.' *International Electronic Journal of Elementary Education*, 4, pp. 127–152.
- National Assessment of Educational Progress. (2019). 'National Student Group Scores and Score Gaps.' <https://www.nationsreportcard.gov/reading/nation/groups/?grade=4>
- U.S. Department of Education, National Center for Education Statistics. (2019). 'Digest of Education Statistics, 2018 (NCES 2020-009)', Chapter 2. <http://nces.ed.gov/fastfacts/display.asp?id=59>
- National Geographic Society (2011). 'Reach into Reading, Second and Third Grade.' Johnson City, TN: Author.
- Ness, M. (2011). 'Teachers' use of and attitudes toward informational text in K–5 classrooms.' *Reading Psychology*, 32, pp. 28–53.
- Pearson, P. D., & Gallagher, M. C. (1983). 'The instruction of reading comprehension.' *Contemporary Educational Psychology*, 8, pp. 317-345.
- RAND Reading Study Group. (2002). *Reading for understanding: Toward an R&D program in reading comprehension*. Rand Education.
- Reed, D. K. & Vaughn, S. (2012). 'Retell as an indicator of reading comprehension.' *Scientific Studies of Reading*, 16, pp. 187–217.
- Scruggs, T. E., Mastropieri, M. A., & Casto, G. (1987). 'The quantitative synthesis of single-subject research: Methodology and validation.' *Remedial & Special Education*, 8, pp. 24-33.
- Williams, J. P. (2005). Instruction in reading comprehension for primary-grade students: A focus on text structure. *Journal of Special Education*, 39, pp. 6–18.
- Williams, J. P., Hall, K. M., Lauer, K. D. (2004). 'Teaching expository text structure to young at-risk learners: Building the basics of comprehension instruction' *Exceptionality: A Special Education Journal*, 12, pp. 129–144.
- Williams, J. P., Hall, K. M., Lauer, K. D., Stafford, K. B., DeSisto, L. A., & deCani, J. S. (2005). 'Expository text comprehension in the primary grade classroom.' *Journal of Educational Psychology*, 97, pp. 538–550.
- Williams, J. P., Nubla-Kung, A. M., Pollini, S., Stafford, K. B., Garcia, A., & Snyder, A. E. (2007). 'Teaching cause—effect text structure through social studies content to at-risk second graders.' *Journal of Learning Disabilities*, 40, pp. 111–120.
- Williams, J. P., Stafford, K. B., Lauer, K. D., Hall, K. M., & Pollini, S. (2009). 'Embedding reading comprehension training in content-area instruction.' *Journal of Educational Psychology*, 101, pp. 1–20.