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Effects of a Treatment Package to Facilitate English/Language Arts Learning for Middle School Students with Moderate to Severe Disabilities

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Effects of a Treatment Package to Facilitate English/Language Arts Learning for Middle School Students with Moderate to Severe Disabilities

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Abstract: This pilot study sought to develop and evaluate the use of a treatment package that included systematic and direct instruction on acquisition of literacy skills aligned with middle school English/Language Arts standards for students with moderate to severe disabilities, including autism. Participants included five teachers and 15 middle school students with moderate to severe disabilities who were primarily served in a self-contained setting. A one-group, nonrandomized, pre-posttest design was implemented to measure vocabulary, comprehension of familiar text and unfamiliar text, poetry, research, and writing skills. Results indicated significant gains in vocabulary and comprehension of familiar text. Limitations, implications, and the need for future research are discussed.

English Language Arts (ELA) form one of the core content areas of the general curriculum. Through ELA instruction, students gain a means for accessing and understanding the various forms of text encountered in daily life as well as skills in research and communication. In middle school, the overarching goals of ELA focus on effective communication. Middle school curriculum creates opportunities for students to communicate in different context, for different purposes and for different audiences (*Middle School English Language Arts*, 2011). Students typically learn to interpret, synthesize, and evaluate a wide range of literature including print such as novels, non-fiction literature, poems and plays as well as non-print communication such as video or internet (*Middle School English Language Arts*, 2011).

The challenge in developing middle school language arts instruction for students with

moderate and severe developmental disabilities is that they may have few skills to engage with text. Some experts propose a comprehensive approach to literacy for students with severe disabilities (Erickson, Clendon, Abraham, Roy, & Van de Carr, 2005; Erickson, Koppenhaver, Yoder, & Nance, 1997; Hedrick, Katims, & Carr, 1999). A comprehensive literacy approach includes instruction in a variety of word identification strategies, vocabulary development, comprehension, fluency, writing, and opportunities to independently read and/or explore a wide array of self-selected texts (Erickson et al., 2005). In applying this goal to instruction of middle grade students, a comprehensive approach to middle school ELA would address the major state standards vocabulary and their definitions, comprehension of text, use of figurative language, writing, and research (*Middle School English Language Arts*, 2011).

In contrast, most efficacy research with students with severe disabilities has not used a comprehensive approach. Instead, it has focused on teaching sight words (Browder, Ahlgrim-Delzell, Spooner, Mims, & Baker, 2009). What these studies have shown is that teaching sight words using a constant time delay is an effective procedure for students

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with moderate to severe disabilities. Time delay strategies might be applicable to broader content. For example, McDonnell, Johnson, Polychronis, and Riesen, (2002) used time delay to provide embedded instruction. In this study middle school students were taught to read and define words drawn from the vocabulary list in the food and nutrition class. In contrast, to only teach middle school vocabulary and definitions would be too narrowly focused given the breadth of most state standards for this age level middle school standards in ELA assume that students have obtained basic comprehension of text and are ready to demonstrate higher level comprehension skills. In addition to communication and reading, middle school standards also address writing and research skills, all across a wide range of literature in many genres (www.ncte.org/standards).

Since most students with significant disabilities are not fluent readers, one way to provide instruction on higher level comprehension is to focus on listening comprehension through the use of read alouds or shared stories. Shared stories have been shown to increase scores on measures of vocabulary, and comprehension (Browder, Mims, Spooner, Ahlgrim-Delzell, & Lee, 2008; Browder, Trela, & Jimenez, 2007). There are a handful of studies using shared stories with students with severe disabilities. For example, Skotko, Koppenhaver, and Erickson (2004) investigated the use of shared stories to increase meaningful communication via the use of augmentative communication, vocalizations, and attention to the book. Participants included girls with Rett Syndrome with no intentional communication and their mothers. Results showed the students' communication and engagement with the literacy materials increased. Although this study gave the students opportunities to participate in literature, and increase communication skills, the focus of this study was meaningful communication as opposed to early literacy skills. Additionally, the study lacked a systematic format when teaching, making it hard to replicate.

Browder et al. (2007) used a shared stories method with middle school students with

moderate and severe developmental disabilities. Three teachers received training on how to conduct literacy lessons using adapted books, and a planning template that included word and sound study, text awareness, and comprehension, while progressing through the story using a task analytic approach. Using a planning template and the task analytic approach provided structure and consistency to the literacy lesson. A key element in this study was the use of adapted novels. Using grade appropriate novels that had been adapted allowed students to access the content of their peers. Each novel used in the study was read and then rewritten, to capture the main idea of each chapter in a much shorter form (i.e., a 25 page chapter condensed to five pages). Text was retyped using *Writing With Symbols* (2000). This allowed students to glean meaning from symbols used even when they could not read the text. Results indicated that students increased their participation, independence in book awareness, listening comprehension, and other early literacy skills using literature appropriate to their middle school grade level. Also, students became familiar with various characteristics of culture and adolescent topics such as growing up and personal accountability. Although results showed that students with moderate to severe disabilities could learn a routine for engaging with text and answering comprehension questions, the study did not address other components of literacy like research and writing.

Recently, Mims, Browder, and Spooner (2010) used a read aloud approach to teach higher level comprehension questions to a group of students with moderate to severe disabilities. The researchers used a modified system of least prompts (i.e., reread, model, physical prompts) to teach knowledge, application, synthesis, analysis, and sequencing comprehension questions during a shared story of an adapted book. Results indicated that all four students met mastery criteria of 8 out of 10 questions correctly answered and maintained their knowledge, often increasing correct answers to 10 out of 10 comprehension questions. Although results were positive, this study only addressed comprehension and did not provide access to a variety of genres.

As previously noted, a comprehensive approach to literacy instruction that links to grade level standards must include written expression. Unfortunately, writing instruction for students with developmental disabilities has been scant, even though both assistive technology and other technological tools are available (Joseph & Konrad, 2009). For students with developmental disabilities, written language is a significant tool that can promote language, communication, and reading development (Sturm & Koppenhaver, 2000). Katims (2000) suggests that teachers can encourage written communication by the use of writing journals, whereby each student is provided a notebook with the student's name printed on the front cover. To date, there are almost no studies on teaching students with moderate and severe developmental disabilities to compose written expression. An exception is the dissertation by Trela (2008) who used graphic organizers to allow students to select the content of their writing. In a multiple probe across participants design, students learned to use I Write NOW strategy ("I think that . . ." Why do I think that? Tell **Reasons**: If; Then; Explain, . . . Did you Name your topic? Did you **Order** your steps? Did you **Wrap** it up & re-state topic?) to write opinion paragraphs. Specifically, Trela investigated the effects of the strategy instruction on the number of opinion paragraph components chosen correctly in response to an adapted writing prompt. The writing strategy was directly linked to a modified high school writing content standard (e.g., composing an opinion paragraph instead of an opinion essay). Results indicated a functional relationship between the strategy instruction and components that were chosen correctly.

In addition to vocabulary, comprehension, and written expression, it is also important to teach students how to conduct research. The development of research skills is crucial not only because it is specific to standards in ELA, but also because research skills are embedded in many of the other standards in ELA. Currently, there are no published studies that evaluate methods for teaching research skills to students with significant disabilities. Given the lack of research, it is reasonable to apply the strategies that we know work (e.g., systematic instruction) with this population of students.

Another challenge that must be overcome in order to more fully address the standards involves finding ways to expand the content used to include different genres (e.g., biographies, poetry) for students with moderate to severe disabilities. In middle school, students are expected to interpret a variety of literary genres. Mims, Hudson, and Browder (2012) used a modified system of least prompts and grade level adapted biographies to increase text dependent listening comprehension. In this study, a series of "wh" questions were embedded into the reading of adapted biographies. Four middle grade students with significant cognitive disability and autism participated with all students demonstrating increased listening comprehension. In addition, three of the students generalized skills to novel biographies. To date, this is the only study on teaching biographies and no studies exist on teaching plays or poetry to students with developmental disabilities. One study was found on teaching poetry to students with mild disabilities (Staudt, 2009), where a combination of intensive word study and repeated readings proved successful for improved reading fluency, word recognition, and comprehension skills.

The paucity of research using a comprehensive approach to teaching ELA (i.e., research, reading, communication, vocabulary, poetry, plays) to students with developmental disabilities has left practitioners struggling to identify ways to teach this content area. With increasing pressures to provide meaningful instruction of grade level content and assess students on such content, teachers are in need of research based practices to guide instruction.

The purpose of this study was to expand the research base related to using a comprehensive literacy approach that would include vocabulary development, comprehension, writing, and research across an array of grade appropriate content. Specifically, the research question was: What is the effect of a treatment package that included the use of response prompting procedures, direct instruction strategies, graphic organizers, individualized response options, and adapted grade level content on student's demonstration of targeted English-language Arts skills.

TABLE 1

Student Characteristics

<i>School</i>	<i>Student</i>	<i>Disability</i>	<i>Cognitive</i>	<i>Adaptive Behavior</i>
School 1	SC	AU	Loiter R-44	ABAS-47
	TR	AU	DAS-unable to test with accuracy	ABAS-II-40
	LG	AU	Loiter R-40	Vineland-51
School 2	CB	Mild ID	WISC-47	Vineland-63
	GL	Moderate ID	WISC-40	Vineland-49
	SA	Moderate ID	Leiter-44	Vineland-56
School 3	MN	Moderate ID	WISC-48	Vineland-57
	CM	Moderate ID	Stanford-Binet-40	Vineland-36
School 4	AR	AU	WISC-47	SIB-R-49
	TH	AU	Leiter-47	ABAS-44
	RD	AU	DAS-51	ABAS-68
School 5	TM	AU	Leiter-65	Vineland-59
	SK	AU	Loiter-unable to test	Vineland-35
	DG	AU	Leiter-61	Vineland-68

Note. AU = Autism, ID = Intellectual Disability.

Method

Participants and Setting

Students. Participants included 15 middle school students with moderate developmental disabilities, including autism in a large urban school district. Ten of the students were male and five were female. Selection criteria of the participants for the study included (a) a diagnosis of a moderate or severe intellectual disability, and/or autism, (b) participation in the North Carolina EXTEND 1 alternate assessment, and (c) enrollment in a middle school. Based on these criteria, each teacher was asked to select three students who would benefit from this intervention. Based on teacher input, each student was assigned to one of three symbolic communication levels (i.e., Beginning with symbols, Moving forward with symbols, or Going far with symbols). Each symbolic level corresponded to a specific response option, each with differing levels of support, to be used during the intervention. Response options included (a) words only, (b) words with symbol support (i.e., *Writing With Symbols*), or (c) words with photo support or labeled objects when possible. Student characteristics are included in Table 1.

Teachers. Five middle school teachers of self-contained classrooms for students with

moderate to severe disabilities, including autism, and who were the regularly assigned teachers for ELA instruction participated in the study. The teachers had varying levels of education and experience in teaching special education (i.e., three teachers with master’s degrees, two teachers with bachelor’s degrees; years of experience ranged from 2–15 years). Teachers were identified by the school district to participate in the study.

Setting. The setting included self-contained classrooms for students with moderate to severe disabilities, including autism during literacy instruction. Classrooms were located in middle schools across the school district.

Materials

The foundation for the ELA curriculum was created with consultation from a middle school ELA content expert. This expert provided guidance in the selection of grade appropriate content and in the development of the scope and sequence of skills taught. As is typical for middle school curriculum, materials were organized into four themed units. The theme of Unit 1 was “Change”. All content used in Unit 1 related to this theme. Unit 1 included selected fiction (i.e., *Holes* by Loius Sachar), non-fiction (i.e., *We Beat the Streets*:

How a friendship pact led to success by Drs. Sampson Davis, George Jenkins, and Rameck Hunt), poetry (*Still I Rise* by Maya Angelou) and a research piece (i.e., *Change* by Tracie-Lynn Zakas). All previously published literature was condensed and adapted using controlled text, poetry and original literature did not require adaptations to the text; *Writing With Symbols* (2000) was used with all literature to add symbol support.

In addition to grade appropriate content, Unit 1 included eight scripted lessons. Each lesson targeted skills that can be aligned to middle school grade level standards. All lessons were reviewed by a special education and alignment expert. The lessons in Unit 1 were reviewed to determine the strength of the content alignment (objectives to standards and activities to objectives), the extent to which evidence based practices were used when teaching skills, whether or not principles of universal design for learning were been applied and, the extent to which performance alignment existed.

Response options were developed for students communicating at each of the symbolic levels (i.e., Beginning with symbols, Moving forward with symbols, or Going far with symbols). For example, students at the Beginning with symbols level (i.e., beginning to use pictures or other symbols to communicate within a limited vocabulary) might require words with photo support to respond to questions. Response options included words only, words with symbol support and words with photo support or labeled objects.

Student materials consisted of adapted literature discussed above and a writing journal specific to each unit. Like the response options, the writing journal was also created to meet the needs of a continuum of student abilities. Students could complete their journals by writing traditional print, circling words with symbol support, circling words with photo support or pasting symbols or photos to create the written product.

Teacher materials included scripted lesson plans, (five lesson plans related to the fiction piece, one related to a non-fiction piece, one related to a poem or play, and one related to research) adapted books identical to the student versions, student response options, vocabulary cards, and a prompting script for

each of the story comprehension and story elements. The lengthier fictional and non-fiction literature were provided in a three ring binder and had multiple chapters that paralleled the original text. Shorter pieces such as poetry and research pieces were simply laminated for durability and included with the scripted lesson plans. Teacher materials also included anticipatory set materials, graphic organizers (e.g., t-chart, sequence organizer), and a **Know-Want to Know-How** will I find information-What I Learned (KWHL) chart used in research lessons.

Dependent Measures

The dependent measure was a pretest and a posttest that was developed for Unit One. The pre- and posttest measures were based on the scripted lessons, and target skills for middle school ELA. Additionally, the pre/posttest contained a similar format as the daily scripted lesson the special education teachers implemented. Specifically, both pre- and post-test measures consisted of vocabulary words, and definitions (ranging from five to 15, depending on the symbolic level of communication at the time they entered the curriculum); 12 comprehension questions on familiar text (i.e., prediction, literal recall, inferential, sequence, main character, setting, problem, solving the problem, main idea, and application); 12 comprehension questions on unfamiliar text (i.e., prediction, literal recall, inferential, sequence of events, main character, setting, problem, solving the problem, main idea, and application); one question regarding the use of figurative language in a poetry passage (i.e., identify the simile); one question relating to comprehension of a poetry passage (author's intent); four questions relating to research skills (i.e., main topic, what do we know, want to know, how can we find out); and a writing component (i.e., open ended writing about a specific topic, create an opinion statement, back up opinion with first fact, back up opinion with second fact). Response options were provided for each question in the same format that they participated in the curriculum (i.e., either a word format, picture symbol format, or photo format).

The posttest measure was administered after completion of the eight lessons in the unit

to assess the student's retention of knowledge of the ELA target skills. The pre- and posttest were given in a one to one format by a research assistant, with materials being presented for each item (i.e., vocabulary cards and definitions; chapter one from the fictional novel used in unit one; chapter one from an unfamiliar adapted novel; a novel poem; novel literature to base research questions on; student response options). Unfamiliar content was used in the assessment to check for generalization of the skills to new text. The research assistant followed explicit directions for each item on the assessment. A score of - was assigned when an error or no response occurred, and a score of + was assigned for all independent correct responses (unprompted correct). For example on the item, "In the story *Outsiders*, who was the youngest of the three boys?" if a student answered "Ponyboy," a score of + was assigned full credit. In the writing category, possible scores ranged from zero to three (zero = no response, one = scribbles/points to the page, two = adds more detail/pointing to words, and three = writes or circles correct answer).

Procedure

Unit 1 consisted of eight lessons. Teachers were instructed to teach each lesson for five school days. Although there was some variation in the order of comprehension questions, lessons one through six were implemented routinely with review of vocabulary words occurring first, read aloud of the literature, including comprehension occurring second, story grammar occurring third, and finally, students completed a writing task. Lesson seven focused on poetry, and also began with vocabulary and moved to the read aloud, including comprehension. In addition, the poetry lesson included figurative language (e.g., simile), author's intent, and again, ended with a writing activity. Lesson eight focused on gaining research skills. This lesson began with a read aloud that followed the theme "Change". During Lesson eight target research skills included selection of the main topic of an informational piece, selection of a research topic, and completion of a KWHL chart (i.e., What do you **Know**, What do you

want to know, **How** can we find out, What did you **Learn**).

Part One: unit vocabulary. Students were assigned vocabulary words based on their symbolic level (i.e., beginning with symbols: five words, moving forward with symbols: 10 words, going far with symbols: 15 words). Words were presented in an array of four. The first round of the vocabulary lesson began with a zero second time delay with the teacher saying and then touching the target word. The student imitated the model. The teacher confirmed correct responses, gave all students a turn, and shuffled cards after individual responses. The teacher encouraged incidental learning by prompting all students to watch as peers took a turn finding the words.

During the second round of time delay, the teacher told the students that they were to point to the named words but not to guess. The teacher presented the vocabulary in arrays of four. The word was named and four seconds was given for a response to occur. If an error or no response, the teacher redirected the student to the correct answer. The teacher confirmed correct responses, gave all students a turn, shuffled the cards after individual responses, and if needed, prompted all students to watch as peers read the words.

During the definitions component, the teacher told the students that they were to find the words, labeled picture symbol or labeled photograph that corresponded with the definition. The definitions were taught in the same fashion as vocabulary words; the first round began with a zero second time delay with the teacher saying the definition while touching the target word. The student imitated the model. The teacher confirmed correct responses, gave all students a turn, and shuffled cards after individual responses. After a complete zero delay round, a delay round was provided. In the delay round the teacher gave the definition and asked the student to point to the word (e.g., Which word means clear, odorless liquid?). The teacher waited four seconds for a student response. If error or no response, the teacher redirected the student to the correct response. Correct responses received specific praise (e.g., Yes, water. Water is a clear, odorless liquid).

Part Two: read aloud and comprehension of text. This portion began with the introduction of the adapted chapter, some background information provided by the teacher and then, an opportunity to make a prediction. The teacher then read a chapter of the adapted novel (e.g., *Holes*), stopping at predetermined points in the lesson to ask question.

When asking literal recall questions, the teacher presented choice options, named the answers, and waited four seconds for an answer. If error or no response within four seconds, the teacher followed a system of least-to-most prompts as follows: (a) re-reading the key script, (b) re-reading and pointing to the correct answer, and (c) physically guiding the student's hand to the correct answer. Inferential questions were also included as part of the lesson. The same format was used during this section as was used in literal recall. All correct responses were confirmed, and all students had a turn to answer at least one question.

Two and three-step sequences were also taught. The teacher read the target text, and then placed the first picture on the board at the appropriate time. After placing the second or third picture on the board, the teacher explained that the sentences were in the order that they occurred in the story. Next, the teacher presented the sequence options and then asked which one happened first, next, or last. If error or no response occurred within four seconds, then least-to-most prompting sequence was used. All correct responses were confirmed by the teacher, and each student was given a turn to sequence the events.

At a predetermined point in the chapter (e.g., after an important paragraph, or after the entire chapter) the teacher defined what a main idea was, and then asked students what the main idea was in the passage. Options were then presented and named by the teacher. If error or no response within four seconds, the teacher followed a least-to-most prompt sequence. Correct answers were confirmed, and each student was given a turn to answer the main idea question.

During the application component, the teacher made reference to "connecting" text from story (i.e., In the story, Stanley had to dig many holes. Here is a picture of Stanley digging. Show me another picture of someone digging). The teacher asked the application

question and then presented the choice options. However, the teacher did not name them. If an error or no response occurred within four seconds, a least-to-most prompting system was followed (i.e., verbal, model, physical). The teacher confirmed correct responses and gave each student a turn to answer the application question.

Part Three: story elements. While most of the comprehension questions were embedded in the read aloud of the text, the teacher did additional instruction on story elements after the reading. The teacher followed a script to help students find the main character. The script included stating the rule, giving examples, and asking students what a main character was. A brisk but appropriate pace was maintained. The teacher called out a person's name (e.g., Zero) and students were asked to identify each person as a "main character" or "not a main character". If errors occurred, appropriate procedures were followed which consisted of verbally stating the main character(s). The teacher confirmed correct responses. Finally, the teacher reasked, "What is a main character?" Students who were verbal were encouraged to repeat the rule with the teacher and others used a voice output device. This process was followed for the remaining story elements: setting, problem, and solving the problem.

Part Four: writing. During the writing section, the teacher followed a script to introduce an "opinion." First, the teacher reviewed the definition for opinion and asked students to repeat the definition. Next, a passage from the current chapter (e.g., a paragraph from *Holes*) was read. After reading a passage, each student was given a writing journal and asked to form an opinion. The writing journal provided a prewritten sentence (e.g., "I like _____ in the story.") and three to four response options (e.g., Stanley, judge, great-grandfather). Students could complete the opinion sentence by writing in one of the response options, circling a response, or touching a response for a teacher to circle or cut out and paste in the blank line. If errors or no response within 5 s, the teacher modeled forming an opinion and had students repeat it (e.g., "I like Stanley. Who do you like?"). Correct responses were confirmed, and each stu-

dent's opinion was acknowledged by being read out loud by the teacher.

Next, the teacher explained to the students that they were going to back up their opinion with a fact from the story. The teacher reviewed each student's opinion and presented facts from the story using photos, picture symbols, and words, depending on the level of the student. Then students were asked to choose a fact to back up their opinion. If correct, the student received praise. If the fact did not relate to the opinion, the teacher explained why and modeled a correct option. The student was then asked to repeat the model.

Poetry passage. In week seven of the lesson sequence, poetry was used instead of the novel. As in lessons one through six, the lesson began with a review of the vocabulary words and their definitions. The teacher then read the poem (e.g., *Still, I Rise*) to the students. Students were asked to identify the main idea, the mood, a simile, and the author's intent of the poem. Students were also asked two literal recall questions based on the poem. When there was no student response a least-to-most prompting sequence was used that included: (a) rereading relevant sections of the poem, (b) rereading the exact line that contained the answer, and (c) modeling the response.

Research. Lesson eight, the research lesson, consisted of the teacher reading aloud a short nonfiction passage (i.e., *Change*) to the students. Students were first asked to determine the main topic of the nonfiction piece. The teacher followed a script similar to the scripts for story elements. The teacher would provide a topic and the students would respond by saying "Main topic" or "Not a main topic". In addition, as students categorized the topics given by the teacher, students used a t-chart as a graphic organizer. Topics were placed under "Main topic" or "Not a main topic". Students were then asked to complete a KWHL chart by identifying what they know, what they want to know, how they will learn, and what they learned. The teacher used scripted instruction to guide students through each section of the KWHL chart. Response options were provided for each section to assist students in answering the questions. When beginning each section, the teacher modeled the first response (e.g., For the K section, the

teacher might say "We know that a butterfly starts out as a caterpillar.").

Procedural Fidelity

Content was validated through consultation with an English/Language Arts expert. Procedural fidelity data were collected weekly by a member of the research team using a checklist of the lesson components. A + was given for a step implemented correctly, a - was given if the step was not needed or applicable, and a zero was given if the step was performed incorrectly or forgotten. Procedural fidelity was determined by dividing the number of each observed behavior by the number of opportunities to emit that behavior, multiplied by 100 (Billingsley, White, & Munson, 1980). Mean procedural agreement was 93% (87–97%).

Inter-Observer Agreement

Inter-observer agreement data were collected on procedural fidelity 33% of all sessions. Inter-observer agreement data were also obtained for pretesting. Agreement was calculated by using the point-by-point method in which the number of observer agreements was divided by the number of agreements plus disagreements multiplied by 100. Mean inter-observer agreement for procedural fidelity was 92% (91–93%), and 100% for the pretest.

Research Design

A one-group, nonrandomized, pre-posttest design was implemented. This was chosen because it has the ability to show improvements from pretest to posttest although it has many threats to internal validity (e.g., history, maturation, regression toward the mean, and testing). The design was used to guide development of this pilot curriculum.

Data Analysis

Differences in scores from pre to posttest were calculated with a nonparametric, related samples test (i.e., The Wilcoxon Signed Rank Test). The ESs for significant differences were determined with Cohen's *d*. Mean values are presented with their standard deviations (see Table 2). The accepted level of confidence was $p < .05$.

TABLE 2

Differences in Percentages of Scores from Pre to Posttest for Unit 1 (N = 15)

Literacy Category	Mean Scores (\pm SD)				<i>p</i> -value
	Pre	Post	ES		
Vocabulary	41.18 (28.87)	77.77 (27.01)	1.31	.005*	
Comprehension (Familiar Text)	41.67 (30.20)	66.66 (23.36)	.93	.017*	
Comprehension (Unfamiliar Text)	42.22 (28.07)	56.11 (24.90)	.52	.068	
Poetry	33.33 (36.19)	50.0 (32.73)	.48	.190	
Research	33.33 (33.63)	46.67 (33.89)	.40	.234	
Writing	39.55 (21.74)	51.14 (29.52)	.45	.050	

Note. ES = Effect Size; * $p < .05$

Results

A one-group, nonrandomized, pre-posttest design was implemented. One group of students was observed to evaluate the effectiveness of a treatment package consisting of systematic and direct instruction on acquisition of literacy skills aligned with middle school literacy standards for students with moderate to severe disabilities. Data were scored and entered into SPSS for analyses. The Wilcoxon Signed Ranks Test was used to evaluate the difference between the pre-posttest scores for Unit One to assess the improvement of content knowledge. Results are organized by literacy categories: (a) vocabulary, (b) comprehension, (c) familiar text, (d) unfamiliar text, (e) poetry, (f) research, and (g) writing (see Table 2). Significant gains were noted for vocabulary ($d = 1.31$, $p = .005$), and comprehension of familiar text ($d = .93$, $p = .017$). Although not statistically significant, moderate gains were made for comprehension of unfamiliar text ($d = .52$), poetry ($d = .48$), research ($d = .40$), and writing ($d = .45$).

Discussion

The purpose of this study was to develop and evaluate the use of a treatment package that included systematic and direct instruction on acquisition of literacy skills aligned with middle school ELA standards for students with moderate to severe developmental disabilities. Specifically, the focus was on whether systematic and direct instruction provided with content that is aligned with the middle school

ELA core curriculum had an effect on acquisition of vocabulary (and their simplified definitions), comprehension of familiar text and unfamiliar text, poetry, research, and writing skills for students with moderate to severe disabilities, including autism and intellectual disability. Prior to the use of the treatment package, all students demonstrated difficulty in each of these categories addressed in the intervention. Students' mean percentage of correct responses on the pretest was 38.33%. After intervention, students' mean percentage of correct responses increased to 62.47%. There is partial support for the package improving literacy skills for students (e.g., significant gains made in vocabulary and comprehension of familiar text); although, only moderate gains were noted for comprehension of unfamiliar text, poetry, research, and writing.

To date, this is the first study to use a comprehensive approach to teaching grade aligned ELA content to students with moderate and severe developmental disabilities. As opposed to prior studies that also targeted grade aligned content with this population (Browder et al., 2007; Mims et al., 2010; Skotko et al., 2004; Trela, 2008), this is the first study to go beyond just isolated skills within the English Language Arts standards. This study provided a first look at how teachers can implement a comprehensive approach, using best practices (i.e., systematic and direct instruction), for teaching ELA using a theme based approach, as seen in many middle school general education classrooms,

to students with moderate and severe developmental disabilities. This study serves as a beginning step regarding aligned grade level ELA content for students with moderate and severe developmental disabilities, which holds promise for future instruction and content for this population, but limitations and future research are noted.

Practical Limitations and Suggestions for Future Research

The findings from this study can be used to support previous studies that students with moderate to severe disabilities can acquire literacy skills (Erickson, Clendon, Abraham, Roy, & Van de Carr, 2005; Erickson, Koppenhaver, Yoder, & Nance, 1997; Hedrick, Katims, & Carr, 1999). In addition, this study makes it possible to extend the limited literature base that incorporates systematic instruction aligned with content standards (e.g., Browder, Trela, & Jimenez, 2007; Flores & Ganz, 2007; Trela, 2008) in several ways. The curriculum adaptations and the use of a variety of response options created access for students who previously did not have a meaningful way of receiving the middle school ELA content. This study also added to the sparse research related to secondary level students with moderate to severe developmental disabilities, especially research targeting academic skills that are aligned with each of the content standards: reading, math, and science (Browder, et al, 2007; Browder et al, 2005; Courtade, Spooner, & Browder, 2007). The results of this study can be interpreted to include partial support of systematic and direct instruction to teach middle school aligned ELA content standards for middle school students with moderate to severe disabilities.

Several limitations may have affected the overall interpretation of this study. First, as with any one-group, nonrandomized, pre-posttest design, the small number of student participants, plus the lack of a comparison group, limit the generalizability of the results. This design was possibly subject to such threats to validity as history (events occurring between pretest and posttest), maturation (changes in the participants that would have occurred anyway), regression toward the mean (the tendency of extremes to revert to-

ward averages), and testing (the learning effect on the posttest of having taken the pretest).

Another possible limitation may be due to a few participating students' severe health issues. These health issues caused their inability to attend school during each of the instructional sessions. Greater results may have been seen if consistency in attendance were seen.

A third limitation may be the students' first exposure to extended periods of academic work. Students were expected to remain seated and focus their attention for 45 minutes to one hour each day. This proved daunting for many of the students who participated in the study.

Finally, although significant gains in comprehension of familiar text were noted, gains in comprehension of unfamiliar text showed moderate effects and were nonsignificant. This suggests that students were able to answer questions when following a predictable routine of familiar text instruction, but less likely to generalize these skills to new text. However, it is anticipated that students will increase these skills during the implementation of subsequent units.

Future research is needed to verify these results and document external validity across larger, randomized samples with a comparison group. Additionally, future research should consider a formal measure of social validity after the intervention of Unit 1. However, it is important to note that the study (the completion of all four units) is not yet completed, and social validity measures will be collected at the end of the study. Social validity will assist the researchers in estimating the importance, satisfaction, and effectiveness of the study (Kennedy, 2002). Social validity will be measured by using a questionnaire to obtain teachers' perceptions on the goals, procedures, and outcomes of the intervention. Students will also be surveyed to indicate their perception as participants in the intervention.

A final suggestion for future research would be to use these lessons during instruction of students with intellectual disabilities in the general education setting. Using a model of Universal Design for Learning (Center for Applied Special Technology [CAST], 1998) and principals of Inclusive Practices, in particular parallel teaching methods (Friend & Cook,

2007), student with disabilities could have access to and participation with the same instructional goals as their typically developing peers. The method of delivery may be different, but by using the principles of direct and systematic instruction with the students with severe disabilities, they would have the opportunity to participate meaningfully in the truly age and grade appropriate academic instruction.

Implications for Practice

The results of this study provide teachers with a method to teach grade aligned ELA standards to students with moderate and severe disabilities. By using a comprehensive approach to instruction on vocabulary, comprehension, poetry, research, and writing skills, teachers can provide an instructional format similar to those who teach ELA in general education. Many general middle school educators use a theme based or integrated unit approach, which is known to be a hallmark of middle school curriculum to teaching skills (Beane, 2002; Beane, n.d.). Teachers of students with moderate to severe disabilities can provide similar instruction by selecting a theme (e.g., Change) and literature that aligns with that theme, including fiction, non-fiction, poetry, and plays. Using this literature the teacher can target the above skills that are aligned to grade level content, but working toward and alternate achievement. Lessons can be developed reflecting a systematic approach to target grade aligned skills in ELA. For example, before beginning the reading for the day the teacher might provide quick massed trial instruction using constant time delay to teach targeted vocabulary that the students will hear during the reading of an adapted grade level text. Additionally, comprehension questions can be developed ahead of the lesson with corresponding response options (in a format appropriate for the student; e.g., picture, photo, word). Finally, a follow up writing journal can be developed where the student expresses their opinion about the main characters decisions throughout the text by filling in prewritten sentences with words, pictures, or photos to create a permanent product.

Conclusion

Although the federal government is currently in the process of changing No Child Left Behind (NCLB, 2002), the opportunities for students with moderate and severe disabilities to learn academics continues to be important for access to the general curriculum required by IDEA (2004). Also, gains made in academics for students with severe disabilities during this study and others (e.g., Browder et al., 2008; Erickson et al., 1997; Flores & Ganz, 2007; Mims et al., 2009; Skotko et al., 2004; Trela, 2008). This study contributes to the existing literature and adds promise that students with more severe disabilities and autism can gain meaning from text with systematic and direct instruction of aligned instruction with content standards. Additionally, this study extends the existing literature by providing a systematic approach to teach grade aligned middle school ELA content.

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