

Common Purpose, Uncommon Results: A Literacy Collaboration for a Preschooler with Down Syndrome

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Abstract

This paper describes a single-case study that focused on an intervention to teach sight words to a preschool student with Down syndrome through a collaborative approach in which responsibility for design and implementation was shared by the child's parents and her early childhood special education teacher. The intervention was consciously tailored in response to available research regarding the neurodevelopmental profile of children with Down syndrome. The aim of the intervention was focused on challenging deficit perspectives in special education and highlighting the importance of parent-teacher partnerships. Results indicated positive literacy outcomes, with the student retaining 14 of 22 (63%) sight words introduced as part of the intervention. Recommendations for future literacy interventions for children with Down syndrome and increased home-school collaboration are discussed.

Keywords: home-school collaboration, parent-teacher partnership, Down syndrome, early literacy, preschool

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“As an educator, I have always valued my children’s education. But, I knew my daughter’s path would look a little different than my son’s. I knew my involvement in her education would be essential. I expected more than just volunteering in her class once a week. I expected true collaboration and working with her teachers for a common purpose – to help Emily become the best she can be.” –Parent & Co-author

Just prior to the beginning of the 21st century, the National Association for the Education of Young Children (NAEYC) collaborated with the International Reading Association (IRA) to present a position paper on reading and writing in early childhood. The statement emphasized the need for reading instruction in the early years and the importance of individualized reading instruction that responds to each student's developmental needs (NAEYC & IRA, 1998). Despite these guiding statements for early childhood educators and policy-makers, the data from the most recent National Assessment of Educational Progress (NAEP; 2015) showed poor success rates on national reading achievement. The NAEP reported that only 36% of fourth-grade students are reading at or above the “proficient achievement” level. Also alarming, the 2015 NAEP report found only 12% of fourth grade students with disabilities are reading at or above proficiency

(NAEP, 2015). This dim outlook on reading achievement illustrates a clear need for improved individualized interventions in early childhood, specifically for children with disabilities.

This case study focuses specifically on a reading intervention for a child with Down syndrome. Trisomy 21-nondusjuncture is the most common form of Down syndrome in which an individual is born with three copies of the 21st chromosome, resulting in a total of 47 chromosomes in each of the individual's cells (National Down Syndrome Society, n.d.). The presence of this extra chromosome often leads to difficulties in areas of learning, which can lead to delays in skill acquisition (Down Syndrome Education International, 2017). However, reading is a potential area of academic strength for children with Down syndrome (Appleton, Buckley & MacDonald, 2002). Relatedly, research has shown that students with Down syndrome can acquire sight words at a rate that is higher than expected (Byrne, MacDonald & Buckley, 2002) and at speed naming rates comparable to cognitive-same aged peers (Ypsilanti, Grouios, Zikouli, & Hatzinikolaou, 2006).

In early childhood education, literacy instruction is primarily focused on pre-reading skills such as awareness of print, exposure to print, and learning letters and their associated sounds. In addition to a focus on pre-reading skills, the intervention was designed with the purpose of highlighting the importance of parent participation in planning services and supports in special education. Numerous studies have shown a correlation between the involvement of parents in interventions and improved student progress (Flynn, 2007; Henderson & Mapp, 2002; Topor, Keane, Shelton & Calkins, 2010). It is also important to note that research on parent involvement has influenced disability policy and in 2004, the Individuals with Disabilities Education Improvement Act (IDEA) stated:

“The education of children with disabilities can be made more effective by strengthening the role and responsibility of parents and ensuring that families of such children have meaningful opportunities to participate in the education of their children at school and at home...” (IDEA, 2004).

Given connections between parental involvement and a child's reading development, suggesting a partnership between the teachers and parents of children with Down syndrome may contribute to their reading success is no exception (Senechal & Young, 2008; Ricci, 2011). Studies indicate that parents of children with Down syndrome believe their children are interested in reading and that reading is an important academic goal (Al Otaiba, Lewis, Whalon, Dyrland, & McKenzie, 2009; Ricci, 2011; Ricci & Osipova, 2012). Indeed, these families often advocate specifically for their child's literacy instruction (Fidler, Lawson, & Hodapp, 2003) and they set high expectations in the area of reading development (Ricci & Osipova, 2012). Ricci & Osipova (2012) have urged educators to “build upon this knowledge and build home/school partnerships with families to support the reading progress of children with Down syndrome in their classrooms” (p. 128).

Such ideal partnerships, however, face difficulties within a system where the achievement of students with different abilities is viewed through the lens of deficiency. For one, special education services and supports are only provided to students who are found eligible, determined by displaying a deficit or delay. Also, the legalese of special education law is framed around the

remediation of such delays and lacks encouragement to support the areas of strength that children with disabilities have. Contrary to a deficit perspective, there is a growing body of literature that rejects disability as a limitation (Annamma, Connor, & Ferri, 2015; Colker, 2013; Collins, 2013). There is also support that disability has both biological and social roots which require careful consideration of the individual. As Anastasiou, Kauffman, and Michail (2016) state, “There is great diversity in types and degrees of disability, and this diversity makes generalization inappropriate” (p.5). Drawing from this literature, the intervention described in this paper adds support to a perspective shift away from deficit, rights-based planning and instead, to strengths-based, student-centered planning to provide services and supports beyond what is required by special education law. Further, research on the neurodevelopmental profile of students with Down syndrome guided many design decisions; however, careful consideration was given to individual preferences and interests of the student. As such, what follows is a description of the jointly planned effort to implement a reading intervention program, provided over a six-month period in both home and school, meant to contribute to the success for a preschool child with Down syndrome.

Method

Participant

Emily (pseudonym) was diagnosed with Trisomy 21-nondisjunction prenatally. At the time the intervention began, Emily was 5-years-old and was enrolled in an early childhood special education preschool that offered a reverse inclusion classroom environment, enrolling students without disabilities as “model” students. It was her second consecutive year in this preschool program with the same teacher. She was receiving preschool as a special education service under the eligibility category of “developmental delay” at the time of intervention. Emily had received speech and language therapy prior to the intervention both within the local school context and in the community. Her baseline early literacy skills were observed prior to the intervention start date. She was able to recognize her name from a list of twelve names and identify seven capital letters and four lower-case letters in isolation in both the home and school environments. Her expressive language ability, as measured by PLS-5 Preschool Language Scale (5th ed.) demonstrated an age-equivalency level of three years, one month.

Design

The available research related to the neurodevelopmental profile of children with Down syndrome provided guidance on how to best customize a literacy-based intervention. Children with Down syndrome appear to do better on spatio-sequential tasks (Frenkel & Bourdin, 2009; Laws, 2002; Vicari, Bellucci & Carlesimo, 2005). These tasks, Frenkel and Bourdin (2009) describe, highlight the relative strength of non-verbal short-term memory as well as a storage capacity in individuals with Down syndrome that is comparable to peers of the same developmental age. Further, visual memory and visual discrimination are also comparable to same age peers (Appleton, Buckley, & MacDonald, 2002). Based on these neurodevelopmental characteristics, Emily’s parent and teacher chose the identification of sight words as an appropriate target intervention task.

Once the use of sight words was determined to be a potential strength for children with Down syndrome, a review of additional research guided tailored accommodations to the intervention. Specifically, adjustments were made to a) the sight words selected for use; b) the number of

exposures of each word per session and over time; c) appropriate length of time to wait for verbal response; and d) methods for responding to incorrect responses. The impact and implications of the decisions to make these adjustments is discussed following the results.

Sessions

Protocols for sessions were co-written by the teacher and parent to assure session consistency of procedures and use of common language between home and school (see Figure 1). Each session occurred within a ten-minute time span and included a review, practice, and activity component. A model session using the protocol was video recorded and reviewed throughout the intervention to ensure continued quality of the sessions over time. Sessions were expected to occur three times a week both at home and in school for a total of six sessions every seven days and the intervention was implemented for six months. Home sessions were parent-directed, although they occasionally included Emily's older brother who followed directives from a parent. School sessions were teacher-directed and occurred in the early childhood special education classroom setting Emily was attending daily.

Before beginning the session	Pre-assessment	<i>For all 5 WORD FLASHCARDS, prompt: “What word is this?”</i>
		Within 3 seconds, If answered, place a + sign in the “no prompt required” box.
		If unanswered, at 3 seconds, ask again, “What word is this?”
		Within 6 seconds, if answered, place a + sign in the “prompted after 3 seconds” box
		If unanswered, at 6 seconds, ask again, “What word is this?”
		Within 10 seconds, if answered, place a + sign in the “prompted after 6 seconds” box
		If unanswered, say the word aloud and mark a - sign in the final box
During the session	Practice	Using DATA SHEET 2 and two words marked with a – (unidentified) from previous step
		For both WORD FLASHCARDS prompt: “(Student), we are going to work on your sight words together.”
		“This word is (WORD). Can you say it after me?” “(WORD)” Can prompt: “Your turn to say it.” <i>Place a tally in column 3 for exposure</i>
		“Great. Now let’s say it together three times.” (while pointing at flashcard together)
		Let’s look at the letters in this word (Show WORD). <i>Place a tally in column 3 for exposure</i>
		Review letters in WORD (Include saying the letter, repeating the letter out loud and/or saying the letters together)
	Activity	<p>“Let’s have some fun building your two words.”</p> <p>Once parts are out, present the words again.</p> <p>“Here is WORD 1 and here is WORD 2.” <i>Place tally in respective column 3 for each word for exposure</i></p> <p>Complete building tasks noting in column 2 for student interaction and completion.</p> <p><i>Tasks are completed for both words and within 6 minutes.</i></p> <p>Note: Cleaning up can be completed when the session is over rather than immediately after activity.</p>
	Practice	“You worked really hard today! Let’s practice our words again.” <i>Do not tally exposure from review session.</i>
		For both WORD FLASHCARDS prompt: “This word is (WORD). Can you say it after me?” “(WORD)” Can prompt: “Your turn to say it”
		“Great. Now let’s say it together three times.” (while pointing at flashcard together)
“Sight word time is so fun. Thanks for playing. Let’s clean up.”		

Figure 1. Script of sight word sessions.

Data collected from sessions were used to measure current progress and to guide word selection as well as a method to observe patterns of word identification that could contribute to understanding Emily's progress and inform future interventions. Data collection sheets (see Figure 2) were maintained during each session by parent or teacher so information about the subject's achievements and progress with the sight words would be communicated between home and school daily. This data included the retention of words Emily correctly identified in previous sessions as well as tracked the introduction of new words, recorded the length of time until a correct response, and documented exposures. "Correct identification" was defined as the subject saying the word in less than ten seconds from when it was first presented. "Retention" was defined as the correct identification of a word over six consecutive sessions. "Discontinuation" of a word was defined as a word that was not correctly identified within the exposure limit. An "exposure" was defined as the sight word being visually presented either before or during the session. The exposure limit was set at fifty exposures. Sight word flashcards were divided into the following categories: "Words I Am Learning", "Words I Will Learn", and "Words I Already Know"—a format used by others to teach sight words (Vanalst, 2013). Five words were included in the "Words I Am Learning" category. Each time a word was moved into the "Words I Already Know", a new word from the "Words I Will Learn" replaced it. Data collected from sessions was used to measure current progress and to guide word selection as well as a method to observe patterns of word retention and/or discontinuation that could contribute to understanding Emily's progress and inform future interventions.

Before Session				
Date: _____				
Location: (Home or School) _____				
Instructor: _____				
WORDS I AM LEARNING	No prompt required	Prompted after 3 seconds	Prompted after 6 seconds	Correct answer (+) Other answer (—)
During Session				
Hands-on activity used in session: _____				
Note: Word must have been removed from sight and presented again to count as column 4 tally.				
WORDS USED	Record engagement: Working on letters & Hands-on Activity	Notes about practice or activity	# of times teacher/parent presented word in session	

Figure 2. Data collection sheets for sight word sessions.

Multisensory activities were chosen to allow for hands-on practice in spelling the sight words. All of the activities contained a common exploratory component in that they required touch interaction with the materials. This exploratory element was added to the intervention based on the positive results yielded from a 2012 study examining the acquisition of sight words utilizing a multisensory approach (Phillips & Feng, 2012). The activities were created with the intent that they could be changed and adapted throughout the study to maintain student interest and motivation and each activity was something Emily had demonstrated a preference or interest for. Activities included, but were not limited to, letter magnets, wiki sticks, dry-erase markers and a white board, connectable blocks labeled with letters, and paper shapes that formed letters.

Two identical program bags (one for home and one for school) were used for sight word sessions. Printing Emily's name and the words "Sight Word Bag" in her favorite color individualized each bag according to her preferences. The bags were used to organize materials, create a sense of consistency between home and school sessions, and increase Emily's ownership and motivation during the intervention. The program bags contained three items: 1) thirty sight words in flashcard format, 2) five hands-on activities, and 3) the scripted protocol and data collection sheets.

Results

Over the course of 188 days (approximately six months), Emily participated in a total of 91 intervention sessions. She retained 14 out of 22 (64%) introduced sight words at a rate of .52 words per week. Figure 3 displays a visual of the time between the first correct identification of a word and retention/discontinuation. For example, the word "for" was used twelve times before correct identification. Then the word was intermittently correctly identified over its next seven sessions. Finally, the word was correctly identified six consecutive times, warranting retention. As another example, the word "and" was correctly identified in the fifth session it was used but was not correctly identified six consecutive times before reaching the exposure limit; therefore, it was discontinued.

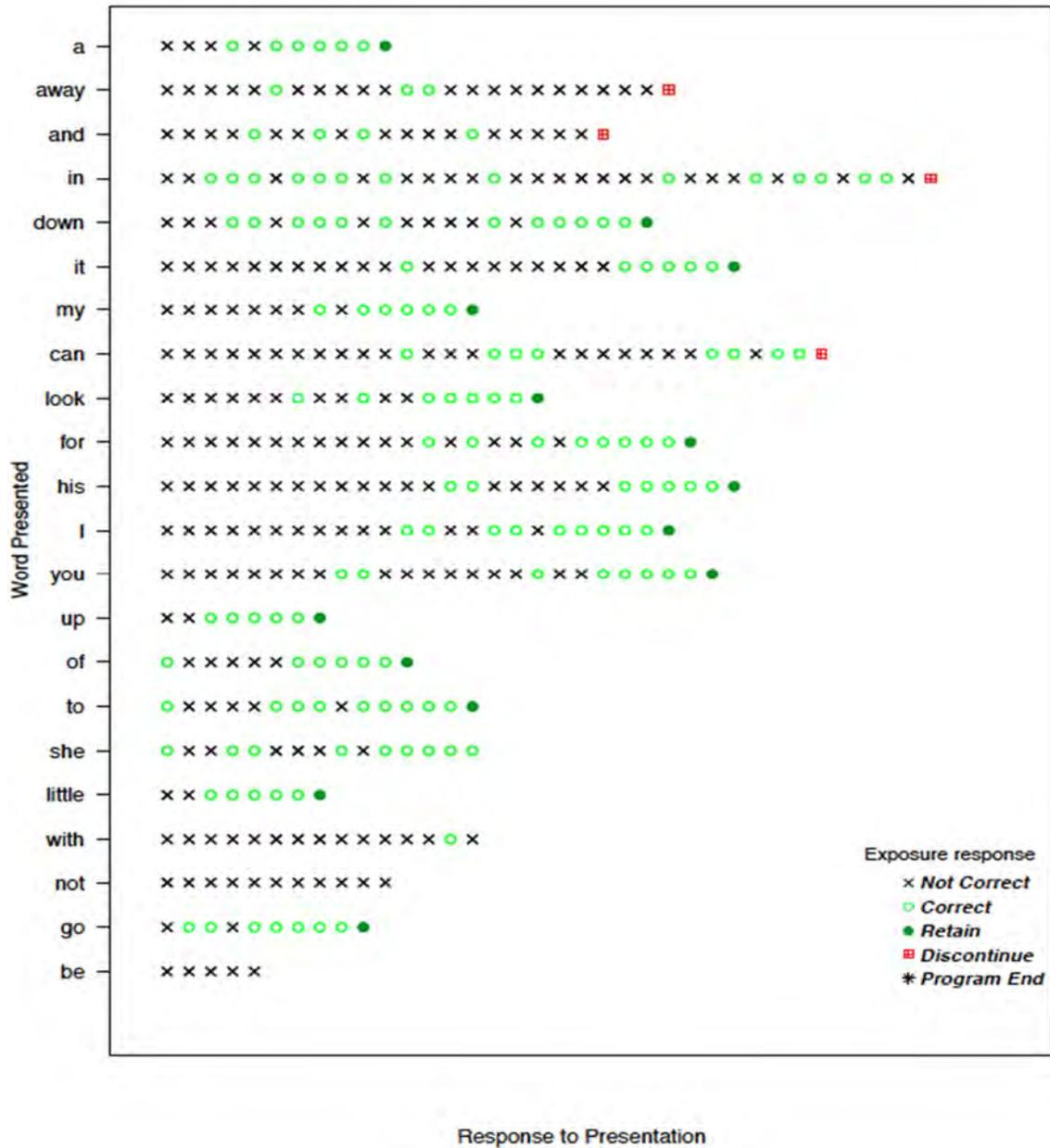


Figure 3. Exposures prior to retention/discontinuation

Table 1 displays data specific to the words Emily retained during the intervention period. Of note, the number of exposures may exceed the number of sessions given that the word could be exposed multiple times per session. For example, “for” was used in twenty-five sessions prior to retention (see Figure 3) but it was exposed a total of thirty times during those sessions (Table 1). On average, Emily correctly identified sight words for the first time after 11 exposures and retained words after an average of 26 exposures. Additionally, out of 121 total correct identifications of words that were retained, 26% of the exposures (n=31) were correctly identified only when she was given more than three seconds. This suggests preschoolers with Down syndrome may need to be permitted lengthened response time during speed-naming tasks, practice, and assessment. Table 1 also displays the number of times a retained word was used in the activity by setting, averaging three uses for both home and school settings.

Table 1
Retained sight words by exposures and setting

	Retained Words				
	Exposures		Settings		
	Exposures before correct identification	Exposures prior to retention	# of uses in home sessions	# of uses in school sessions	
a	4	15	a	3	0
down	4	20	down	2	3
it	17	44	it	5	5
my	14	22	my	2	3
look	5	28	look	3	4
for	17	30	for	5	3
his	28	48	his	8	4
I	20	33	I	4	6
up	5	9	up	2	0
of	11	15	of	1	3
to	12	32	to	3	5
she	10	37	she	5	3
little	4	12	little	3	0
go	4	12	go	2	1
Average:	11	26	Average:	3	3

Table 2 displays data specific to words discontinued during the intervention period. On average, Emily still correctly identified these sight words for the first time after 11 exposures; however, she did not then retain the words prior to reaching the set exposure limit. Table 2 also displays

the number of times a discontinued word was used in a session, averaging six uses in the home setting and four at school.

Table 2
Discontinued sight words by exposures and setting

Discontinued Words			
	Exposures	Setting	
	Exposures before correct identification	# of uses in home sessions	# of uses in school sessions
away	14	8	2
and	4	6	4
in	8	9	4
can	0	6	6
you	16	6	6
with	45	8	4
not	0	1	4
be	0	3	2
Average:	11	6	4

Six months after the program’s end, a follow-up assessment revealed Emily could still identify each of the 14 words she had retained during the intervention. Additionally at the end of her kindergarten year—one year after the program’s end—she correctly identified each of the 14 words retained during the intervention and had added an additional 17 words by using the same model with words required from the kindergarten curriculum expectations for a total of 31 known sight words.

Discussion and Implications

This intervention surpassed expectations and offers promise for follow-up studies using a similar commitment to home/school collaboration and encouragement to better customize learning based on individual students. It emphasizes students as capable and family-teacher partnerships and participation as valuable with a necessary, important focus on improving academic achievement for students with different abilities.

Records of sight word acquisition have shown that students with Down syndrome can learn sight words at the same rate as their typically developing peers; a few even outpace their peers (Appleton, Buckley & MacDonald, 2002). One of the key reasons for the success of sight word instruction is its ability to leverage particular strengths within the neurodevelopmental profile of children with Down syndrome (Dehghan, Yadegan, Shirazi, & Kazemnejad, 2004). While this study did not compare Emily’s rate of sight word acquisition to her peers, we can assess the rate of word retention compared to expectations for same-aged peers. In kindergarten, if children are

expected to learn a total of 20 sight words, as is common practice in the county schools in which Emily attends, this represents an expected trajectory of .56 words per week (based on an average of 36 weeks in a typical public school year) or, one word every other week. Emily's rate of word retention in this intervention was .52, or, approximately one word every other week. At a continued rate of .52, Emily would be expected to obtain 18.72 words by the end of her kindergarten year, a number almost equal to the 20 word expectation. If those words were in addition to the 14 words retained from preschool, this would represent a total 60% higher than the kindergarten expectation. These projections were confirmed: at the end of her kindergarten year, Emily exceeded the kindergarten expectation of 20 words with a total of 31 retained words. The finding suggests that structured, intensive intervention can help prepare students with disabilities to be kindergarten ready in the area of pre-reading skills.

Another key finding is related to the wait time allotted for Emily to correctly identify a word. In kindergarten assessments, it is common practice to provide approximately three seconds to identify the sight word shown to a student. However, in Emily's case, 26% of the words she was exposed to were correctly identified only when she was given more than three seconds. This suggests preschoolers with Down syndrome may need to be permitted lengthened response time during speed-naming tasks, practice, and assessment.

Finally, this intervention was meant to operate not just within the technical structure of a project, but also within Emily's social relationships and network (Wenger, 2010). While the authors recognize Peter McLaren's assertion that, "the ability to read and write in no way ensures that literate persons will achieve an accurate or 'deep' political understanding of the world and their place within it" (McLaren, 1992), the authors found that the Emily's progress in sight word recognition did in fact yield changes in her identity. Gee (2004) writes that identities within educational institutions are often a root cause of diminished expectations. Throughout the intervention period, Emily identified her sight word sessions as a positive experience and always appeared to look forward to sessions. She began self-identifying as a "reader" and would confidently demonstrate knowledge of the words in her "Words I Already Know" deck of cards to all willing listeners. Declaring herself a "reader" will be important to Emily's understanding of her place within the world and believing in her own abilities, challenging current diminished institutional expectations, and defining future expectations others may have.

Limitations

This intervention suggests isolated sessions focusing on sight word instruction had a positive outcome for Emily. There are, however, limitations that affect the transferability of the intervention itself to other students if demographic variables impacted progress. Emily's parents are both highly educated and the school she attended at the time was privileged with resources and supports congruent to an upper middle-class environment. Also, data was only collected by the teacher and parents, which may have created biases in data collection despite several consistency measures put in place. It is important to make the caveat this intervention was not intended as a widely used protocol. It was, instead, intended to add to the literature related to the importance of parent-teacher partnerships in the design and implementation of academic interventions for children with disabilities. In this regard, the results suggest this is an informative exemplar for other students, parents, and educators.

Conclusion

Teachers are consistently challenged to engage in innovative practices and expand possibilities for parent involvement in student learning. Future intervention designs and implementation of meaningful intervention require a fundamental shift in two ways. First, interventions for students with disabilities should be developed with a focus on their academic strengths to produce progress with an end goal of over-achievement rather than focusing on a student's deficits to produce progress with the goal of baseline remediation. In Emily's case, this meant identifying her strengths using the learning profile of children with Down syndrome to target areas of possible individual academic success. Second, parents and educational institutions should approach learning as a co-constructed shared responsibility. This focus on literacy intervention in more than one context (home and school), where teachers and parents were simultaneous partners in design and implementation was associated with positive outcomes.

Emily recently finished her kindergarten year in an unforgettable event: she stood in front of 19 of her peers and their families and read a book she authored and illustrated, titled "My Dad." She read with equal amounts of confidence and fluency in comparison to her classroom peers amongst an audience teary with pride and support. At the outset of this sight word collaboration, the authors set the joint goal that Emily would be a reader. Together, the authors created a specific and individualized plan based on Emily's strengths. Together, the authors worked diligently and consistently. Together, the authors helped Emily become a reader. With a common purpose, the authors yielded uncommon results and hopefully changed the path of Emily's future by helping her – and those that are involved in her educational planning – see that anything is possible.

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