# Teacher Experience, Text Access, and Adolescents with Significant Disabilities

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## Abstract

This study examined the effects of seven weeks of daily access to a library of age respectful, beginning level texts, the *Start-to-Finish Literacy Starters*® (*STFLS*®) on the literacy skills of 43 adolescents with moderate to severe intellectual disabilities. Twenty-six of the students had teachers who participated in a prior study using three of the *STFLS* books with 40 companion lessons. The remaining 17 students had teachers with no prior experience. All students made statistically significant literacy gains with meaningful within group effect sizes. While there were no significant between group differences, the effect of daily access to STFLS for students whose teachers participated in the previous study was higher than it was for students whose teachers had no prior experience. Results suggest that adolescents with significant disabilities benefit from daily access to age and ability appropriate books, but the benefit is even greater when teachers have used similar books instructionally.

*Keywords:* adolescents, moderate to severe intellectual disabilities, comprehensive literacy instruction, Start-to-Finish Literacy Starters®

# Reading and Students with Significant Disabilities

The ability to read and write is important because it allows access to information, education, and leisure (Downing, 2005), yet learning to read and write can be a challenge for students with significant disabilities. For example, one survey of the literacy skills of nearly 50,000 school-aged students with significant disabilities from 18 states (Towles-Reeves, et al., 2012) revealed that only 4% of students with significant disabilities could read fluently with critical understanding. A more recent survey suggests that only 30% can read even beginning level text with understanding (Erickson & Geist, 2016). These low numbers signal a need for change in literacy instruction provided to students with significant disabilities.

There is substantial evidence to suggest that literacy instruction for all students must be comprehensive (e.g., Pressley & Allington, 2014), meaning that everyday instruction must address word reading, written language comprehension, and fluency. In recent years, there have been numerous calls for students with significant disabilities to have access to comprehensive literacy instruction (Allor, Mathes, Roberts, Cheatham, & Champlin, 2010; Erickson, 2017); however, there is a lack of published research available to guide efforts to provide comprehensive instruction to students with significant disabilities. A recent review of research yielded only 19 studies focused on literacy instruction for adolescents with significant disabilities (Roberts, Leko, Wilkerson, 2013). Twelve of those studies focused exclusively on sight word instruction, and an additional four addressed the meaning of the individual words. Only one addressed comprehension of words in connected text. In that study (Browder, Trela, & Jimenez, 2007), researchers simplified the reading level of grade level texts by shortening the text, adding picture symbols on a word-by-word basis, and adding a repeated story line. The remaining studies used modified newspapers or grocery lists (5 studies) and flash cards with target words written on them (10 studies). In all cases, the range of reading materials was extremely restricted and did not represent the range of literature and information texts that are made available to students without disabilities in their comprehensive reading programs (Roberts, Leko, Wilkerson, 2013).

Unfortunately, adolescent students with significant disabilities, and more specifically, moderateto-severe intellectual disabilities, have very limited access to literature that allows them to apply and improve their literacy skills (Kliewer, Biklen, & Kasa-Hendrickson, 2006). One reason for this is the discrepancy between their chronological age and reading ability (Erickson & Koppenhaver, 1995; Shurr & Taber-Doughty, 2012). Most adolescents with significant disabilities read with comprehension below a second grade level (Erickson & Geist, 2016), and most texts at that level are written for younger children without intellectual disabilities. Consequently, these texts are not focused on content that is important or topics that are interesting and inviting to adolescents (Shurr & Taber-Doughty, 2012).

# Self-Directed Reading: Benefits and Challenges

Regular and sustained access to self-selected texts can improve student reading performance (Krashen, 2011). In fact, increasing the amount of time struggling readers spend independently reading texts they select can help accelerate their reading development (Allington, 2012). Furthermore, student access to a wide range of books and personal choice in selecting books to read are two of the most effective ways to improve student reading motivation and comprehension (Guthrie & Humenick, 2004).

Regular and sustained access to self-selected texts is important to students at all levels of reading, even before students are able to read text at all. For these emergent readers, self-directed independent interaction with books provides the opportunity to apply and practice the book handling skills and print knowledge that they are learning during instruction (Owaki & Goodman, 2002). After students learn to read, engaging in self-directed independent reading can lead to improvements in a variety of reading skills including fluency, word recognition, prosodic reading, vocabulary, and listening comprehension (Cunningham & Stanovich, 1990, 1991; Hedrick & Cunningham, 1995; Kuhn, 2005).

Having the opportunity to independently explore books and/or read texts is an important component of emergent and conventional literacy instruction (Allington, 2012; A. Cunningham, 2005; Erickson, 2017). Providing this opportunity requires a library of diverse texts that are suited to the reading abilities of students and address topics that are interesting and enticing to them. Due to the mismatch between their chronological age and reading ability, adolescents with significant disabilities rarely have access to a diverse library of texts at their reading level that are written on topics of interest to them.

In 2004, Don Johnston, Incorporated released the library of *Start-to-Finish Literacy Starters*® (*STFLS*®) to address this problem. The 54 books in the *STFLS* collection cover an assortment of topics intended to capture the interest of adolescents with moderate to severe intellectual disabilities. The books include literature and information texts focused on academic content as well as topics such as independence, sports, high school life, and being part of a family. To control text complexity, the authors considered qualitative and quantitative factors including book length, vocabulary, word choice, sentence constructions, number of sentences included on each page, and use of photographs to illustrate the texts (Erickson, Musselwhite, & Ziolkowski, 2002). This library includes a variety of text types and topics needed to accommodate the fluctuating interests of students (Erickson, 2017).

## Self-Directed Reading and Students with Significant Disabilities

Providing access to a diverse library of books and opportunities for self-directed reading may be

a new practice for teachers of adolescents with significant disabilities. The research is certainly replete with studies focused on sight word instruction (Browder, Wakeman, Spooner, Ahlgrin-Delzell, & Algozzine, 2006), but lacking in guidance regarding fluency, vocabulary or reading comprehension instruction for this group of students (Al Otaiba & Hosp, 2004; Coyne, Pisha, Dalton, Zeph, Cook, & Smith, 2012; Roberts, Leko, Wilkerson, 2013). Yet, recent studies suggest that students with significant disabilities can learn to read with comprehension when they receive instruction over an extended period of time that targets a variety of skills in a comprehensive way (e.g., Allor, et al., 2010). Unfortunately, few teachers of students with significant disabilities are prepared to provide the range of instruction required for successful, comprehensive reading instruction (Copeland, Keefe, Calhoon, Tanner, & Park, 2011). Fortunately, teacher preparation combined with continuing education focused on current evidence-based strategies can have a direct impact on teacher preparedness and student outcomes (Connor et.al, 2014; Piatsa, Connor, Fishman & Morrison, 2009).

One approach to preparing teachers and keeping their instructional knowledge current is professional development. Effective professional development is multifaceted and fairly intensive, which means it is often costly. However, professional development can lead to positive outcomes when teachers believe the instructional strategies they are learning will be effective, and when they feel that the professional development will improve their ability to help their students learn (Connor et al., 2014).

## Model Lessons as a Form of Professional Development

Prior to the current study, several of the teachers at this research site participated in a separate study that involved 8 weeks of instruction using 3 of the *STFLS* texts and 40 companion literacy lessons. The study targeted comprehensive instruction through the use of 12 word study lessons (i.e., word wall, vocabulary), 15 comprehension lessons, and 13 writing activities. Rather than focusing on mastery, the lessons focused on helping students apply the skills they were learning in a variety of reading and writing activities with increased independence expected over time. As such, these teachers had an opportunity to use model lessons to engage in a more comprehensive approach to literacy instruction than they had before. Importantly, the teachers did not receive professional development. They received the books and the 40 prescriptive lessons. The researchers then investigated how the teachers used materials and what impact they had on students. The results of the initial study suggested that teachers were effective at adopting the new instructional approach and students' literacy skills increased (see Hatch & Erickson, 2009). This led to the question driving the current study: would this previous experience with comprehensive instruction provide added benefit when students in the current study were provided with access to the SFTLS library for self-directed reading?

# Outcomes and Benefits of the *STFLS* Library

The results of this study have the potential to promote a variety of outcomes and benefits for students with significant disabilities and their teachers. For example, the *STFLS* library has the potential to provide students with significant disabilities with increased access to the age and ability appropriate books required to benefit from self-directed reading (Allington, 2012; Guthrie & Humenick, 2004). The improved literacy outcomes that can result will then provide increased access to information, education, and leisure (Downing, 2005). While finding interesting books at beginning reading levels for adolescents is difficult, the issue is compounded when students have physical challenges that make manipulating a traditional book difficult if not impossible.

Computers, tablets and assistive technology can support students in accessing texts. Electronic texts afford the benefits of independent access to books through various means including swiping a screen, clicking a switch use, or eye gaze (Erickson, 2017). During the current study, the *STFLS* texts were available in paperback and electronic formats. Students who had difficulty manipulating a book or simply preferred computer access could read electronic texts by clicking a mouse or using the scanning option with a switch to turn the pages. The electronic texts could be read silently; however, students could also listen to them via high-quality, professional narration. All of the books also included high quality photographs featuring adolescents, including those with disabilities. The multiple and flexible formats of the books in the *STLFS* library had the benefit of providing students with significant disabilities access to a diverse library of age and ability appropriate books, which has the potential to improve literacy and life outcomes.

# Target Audience and Relevance

The current study was inspired by the large number of adolescents with significant disabilities, particularly those with moderate to severe intellectual disabilities, who cannot yet read connected text with comprehension. Teachers, clinicians, assistive technology providers, and families who interact with these students in school, the community, and at home may find this information useful. This information may also be of interest to administrators, curriculum coordinators, coaches, and media specialists who all make purchasing decisions that impact student access to age and ability appropriate text. The primary research questions addressed in this study were: (a) Does daily access to age respectful and ability appropriate texts result in literacy gains for adolescents with moderate to severe intellectual disabilities; and (b) Do adolescents with moderate to severe intellectual disabilities make greater gains when daily access to age respectful and ability appropriate books is provided by teachers who have previously used similar books with companion literacy lessons?

# Method

### Teacher Participants

This study employed a pretest/posttest, quasi-experimental nested design. The aim was to determine the benefits of providing adolescent emergent readers with moderate to severe intellectual disability with daily access to the *STFLS* library. Nine certified special education teachers from a single, public separate school volunteered to participate in the study. Four of these teachers participated in an investigation of three of the STFLS books with 40 companion lessons in the spring preceding the current study. Five other teacher volunteers did not participate in the previous study and therefore did not have prior experience with S*TFLS* books or the companion lessons. These five teachers had an average of 12.6 years of teaching experience (2, 4, 19, 25, & 26 years). The four teachers with prior *STFLS* experience had an average of 18.5 years of teaching experience (3, 4, 24, & 30 years). Note that each group included at least 1 teacher who had taught for 4 years or less and 2 teachers who had taught for 24 years or more.

### Student Participants

**Table 1:** *Student Participant Demographic Information*

|  | Teachers' Experience with STFLS and Model Lessons | |
|---|---|---|
|  | No Prior Experience | 40 Lessons |
| Male | 15 | 19 |
| Female | 2 | 7 |
| Free or Reduced Lunch | 53% | 69% |
| **Race/Ethnicity** |  |  |
| African American | 23% | 38% |
| Asian | 0% | 8% |
| Caucasian | 65% | 46% |
| Latino | 6% | 8% |
| Multi-racial | 6% | 0% |
| **Special Education Eligibility** |  |  |
| Autism | 47% | 35% |
| Moderate Intellectual Disability | 18% | 38% |
| Severe/Profound Intellectual Disability | 12% | 4% |
| Multiple Disabilities | 23% | 23% |

Forty-three students between the ages of 12 and 21 participated in the study. All had a documented intellectual disability in the moderate to severe/profound range as measured by a standardized IQ test. Because intellectual disabilities often coexist with other conditions, a number of student participants had accompanying communication, motor, and/or sensory impairments. Table 1 provides additional demographic information regarding student participants. Of the 17 students in classrooms with teachers who did not have prior experience, 10 participated in the previous research. Of the 26 students in classrooms of teachers with prior experience, 21 participated in the previous research and 5 did not.

Because the reading technology used in the study had a universal design, all students in the classrooms of volunteering teachers were welcomed and encouraged to participate. The resulting range of students with a variety of eligibility categories added to the external validity of the study by representing the range of students typically found in self-contained special education classrooms for individuals with moderate to severe intellectual disabilities.

### Assessment Instruments
Each teacher completed pre- and post-intervention interviews that focused on professional experience, the amount and types of books available to students in their classroom libraries, the frequency and type of literacy instructional activities in their classes, and how often students engaged in self-selected reading.

Researchers administered the Universally Accessible Emergent Literacy Battery (UAELB; Erickson et al., 2005) to all students before and after the intervention. Student participants who were able to read also completed Level 1 of the Gates-MacGinitie Reading Test - Fourth Edition (GMRT®) (MacGinitie, MacGinitie, Dreyer & Hughes, 2000). The first author or a trained research assistant who had experience with students with disabilities administered all assessments to students individually in a quiet room selected by the school.

The UAELB was used to assess the emergent literacy skills of all student participants. The UAELB specifically measures: concepts about print, writing, alphabet identification, and phonological awareness (i.e., initial sound identification, rhyme identification, and phoneme blending). The UAELB demonstrated adequate internal consistency reliability in prior studies ($r = .83 - .87$) and slightly lower but adequate internal consistency reliability in the current study ($r = .77 - .83$). Investigation of the subtests of the UAELB in the current study revealed that most participants knew all or almost all of the letters of the alphabet. That isolated subtest resulted in ceiling scores that are difficult to interpret. Further, the alphabet knowledge subtest was poorly correlated with the other components of the assessment. As such, the total score on the UAELB reported herein was the total raw score on all items excluding the letter identification items.

The UAELB was selected for this study because it supports multiple response modes including pointing, partner assisted scanning, and yes/no responses. The UAELB does not require verbal responses or the ability to physically point. Raw scores were used to measure gains from pretest to posttest with a total of 42 points possible. With the exception of the writing sample, which was scored on a scale from 1 – 5 (uncontrolled scribbling to conventional letters with phonemic spelling), correct responses earned 1 point and error responses were scored as 0.

The GMRT is a reliable and valid test of early conventional reading skills (Hirsch, 2007; MacGinitie et al., 2000). The GMRT measures word identification and text comprehension, but does not rely on wh- comprehension questions and does not require oral reading. Instead, it requires students to identify the word that best matches a picture (word identification) and the picture that best matches short segments of paragraph-length texts (text comprehension). As with the UAELB, if a student did not have the motor control to point to the desired response, students completed the assessment using partner assisted scanning. Due to the brief intervention period and reports in the literature of the GMRT being used as a criterion-referenced test (Hirsch, 2007), raw rather than standard scores were used to calculate gains from pretest to posttest. Correct responses received a score of 1 and incorrect responses were scored as 0.

### Inter-Rater Reliability

Since the GMRT and the UAELB were administered individually, two researchers scored students' responses during test administration for 15% of the 86 administrations of the UAELB (6 pretests and 7 posttests). The researcher administering the assessment to the student recorded student responses on the protocol per the directions provided by the test developers. The second researcher sat at the same table, observed, and simultaneously yet independently recorded the student's responses. Inter-rater reliability ranged from 90 to 100% agreement, with an average of 95.8%. For the GMRT, inter-rater reliability was calculated for 20% of the 10 test administrations (1 pretest and 1 posttest) and ranged from 98 to 100% agreement with an average of 99%. Following calculation of inter-rater reliability, the raters discussed discrepancies, and a final decision was determined based on consensus.

### Procedures

For approximately 7 weeks (31 school days), teacher participants were asked to make the *STFLS* books available to their students for at least 30 minutes each day during teacher-directed instruction, self-selected reading, or a combination of the two. Because the *STFLS* books were available in both paperback and electronic formats, teachers were asked to read the Literacy Starter Guide that accompanied the library to become familiar with the software and learn how to customize access for individual students. Specific instructions included making the reading technology and paperback books accessible to students during unstructured class times and for any specified self-selected reading time. Additionally, teachers were encouraged to use the

*STFLS* materials during literacy instruction, but unlike the previous study, no suggested or pre-scribed lesson plans were provided.

### Data Collection Methods and Instruments

To track the instructional use of books, teachers kept a log of the texts they used during literacy lessons. Teachers were also asked to provide the researcher with copies of any lesson plans or instructional materials they created. For example, a teacher book log might show that a class read the book *Not Until You're 16* (Stemach, 2006) to predict the ending (purpose for reading) on a Monday. In addition, the teacher might provide the chart students completed while engaged in the lesson. The researcher collected teacher book logs at the end of every 2nd week of the intervention.

### Treatment Fidelity

Fidelity of implementation at a rate of 30 or more minutes of book access daily was tracked through the teacher logs, which were collected and analyzed bi-weekly. In addition, each class-room was observed at least twice while the *STFLS* books were being used.

# Results

Scores for all participants combined and by group are presented in Table 2. As a single group, the 43 participants improved their scores on the UAELB from pretest to posttest. This data met the requirements to run a paired samples t-test (e.g., the data were normally distributed). The t-test indicated that the pretest to posttest gains were statistically significant, $t(42) = -3.794$, p < .001, $d = .60$. Separately, students in the two groups also improved their scores from pretest to posttest on the UAELB. However, the scores were not normally distributed (i.e., a plot of scores did not look like a typical bell curve). Therefore, a non-parametric Wilcoxon ranked sums test was used instead of a t-test for the next analysis. The Wilcoxon ranked sums test revealed statistically significant differences between pre- and posttest scores for the group whose teachers had no prior experience, $z = -1.764$, p = .002, with a moderate effect ($r = .42$), but the median ranked score on the UAELB remained stable from pretest to posttest ($Md = 13.0$). A Wilcoxon ranked sums test also revealed significant gains from pretest to posttest on the UAELB for students in the classes with teachers with experience with STFLS, $z = -2.736$, $p = .002$ with a moderate effect ($r = .54$). However, for the group with teachers with experience, median ranked scores increased from pretest ($Md = 17.0$) to posttest ($Md = 21.5$) on the UAELB.

To test for differences between the two groups at posttest, we had to first check for significant differences at pretest. It was clear that the pretest scores for students in the classes of teachers with experience with *STFLS* were higher than the pretest scores for students in the classes of teachers without experience. A Mann-Whitney U test indicated that these differences were sta-tistically significant ($U = 113.50$, $p = .003$). This required us to take pretest scores into account

when comparing posttest scores. To accomplish this, differences between the groups at posttest were calculated using an ANCOVA to control for pretest UAELB scores.

**Table 2: *Student Pre- and Posttest Mean Scores (Standard Deviations) Combined and by Group***

|  | Universally Accessible Emergent Literacy Battery | |
| --- | --- | --- |
|  | Pretest | Posttest |
| All Participants (*n* = 43) | 17.42 (9.38) | 20.21 (10.56) |
| **Groups** |  |  |
| Teachers with previous experience (*n* = 26) | 19.88 (9.37) | 23.35 (10.54) |
| Teachers with no previous experience (*n* = 17) | 13.65 (8.29) | 15.41 (8.87) |

As a first step in conducting the ANCOVA, pretest scores were subjected to a reliability correction. This process helped adjust for pretest error measurement that results from non-equivalent group designs such as the one used in the current study. This process involves adjusting each participant's pretest score for unreliability by an amount that is proportional to the reliability of the measure. Using Cronbach's Alpha as a measure of reliability ($\alpha$ = .818 and .791 for the treatment and control groups respectively), pretest scores were adjusted with resulting adjusted scores used in the subsequent ANCOVA.

The results of the ANCOVA indicate that the covariate, pretest UAELB, was significantly related to the participants' posttest scores $F(1, 40)$ = 130.834, p < .001, r = .87. In other words, the higher posttest scores for students in the classes of teachers with experience with *STFLS* were influenced by the fact that they had higher scores at pretest. After controlling for pretest performance, there were no significant differences between the scores of the two groups at posttest $F(1, 40)$ = .072, *p* = .789, *r* = .0016.

Five of the students in the classes of teachers with prior experience were reported to be beginning level readers at the onset of the study. As such, these students also completed the GMRT at both pretest (*M* = 37.4) and posttest (*M* = 44.2). A paired samples t-test confirmed that this gain was statistically significant, $t(4)$ = 2.146, *p* = .049, d = .47. This suggests that access to age and ability appropriate texts delivered by teachers who had experience with the *STFLS* books and related lessons had a moderate effect for students who were reading at an early conventional reading level.

All teachers provided students with the required 30 minutes of access to the *STFLS* books on each day of the study. However, inspection of the teacher book logs showed some differences in the frequency of literacy lessons and the total number of different books used between the

two groups of teachers during their teacher-directed instruction. The group of teachers with no prior experience used the *STFLS* books in instruction an average of 2.8 times per week as compared to the teachers with prior experience who used the books in instruction an average of 3.2 times per week. The mean number of different books used in instruction across the 7-week study was 5.4 for the teachers with no prior experience and 10.5 for teachers with prior experience.

Teacher interviews indicated some important changes in beliefs regarding instruction. Prior to the onset of the study, two of the four teachers with no prior experience reported that their students would destroy books if they were available without adult supervision. At the conclusion of the study, these teachers made books continuously accessible to their students for free independent reading. Three of the nine teachers reported that they felt participation in the study had improved their teaching and made them feel empowered. Additionally, six of the nine teachers said that they were now committed to continuing the practice of providing regular literacy instruction and commented that they now viewed literacy instruction as necessary and critical for their students. Finally, all teacher participants reported providing text comprehension lessons at least two times a week.

## Discussion

Findings from the current study add to the evidence base that individuals with significant disabilities, specifically those with moderate to severe intellectual disability, can improve their literacy skills, even in a short period of time, when provided with appropriate instruction and reading materials. As a group, the 43 adolescents who participated in this study made significant gains when given 31 days of ongoing access to age and ability appropriate texts, as measured by the UAELB. In addition, students whose teachers had experience with three of the *STFLS* books and companion lessons targeting word study, comprehension, and writing experienced a stronger effect from the intervention than students whose teachers were unfamiliar with the texts and model lessons.

The differences in student outcomes across the two groups may be the result of numerous factors. For example, there were differences in teacher use of the books. Lesson logs revealed that teachers with prior experience used a greater variety of the *STFLS* books and used them slightly more frequently in teacher-directed instruction (3.2 times as compared to 2.8 times per week). While all teachers consistently made a variety of books available for self-directed reading, the additional use of a variety of books during teacher-directed instruction may have contributed to the improved outcomes for students whose teachers had prior experience with the SFTLS books and lessons.

The literature on incorporating instructional changes into practice, such as using the *STFLS* texts as part of teacher-directed instruction, indicates that teachers are more likely to do this when

they feel that these practices help them improve their students' outcomes (Connor et. al, 2014). The feeling of self-efficacy, or more explicitly, the belief teachers have in their own ability to deliver instruction that will make a difference for their students, is also a critical and motivating factor (Brady et. al, 2009; Carlisle, Cortina, & Katz, 2011; Connor, et. al, 2014). These beliefs were reflected in several of the teacher interviews at the conclusion of the study. For example, three of the nine teachers reported that they felt participation in the study helped them become better teachers and made them feel empowered. Additionally, six of the nine teachers said that they now viewed literacy instruction as necessary and critical for their students. These teachers reported a commitment to providing regular literacy instruction after the conclusion of the study.

The teachers in this study with previous experience had already become accustomed to delivering comprehensive instruction aligned with the *STFLS* texts during the earlier study and seeing their students' response. While no lesson plans were provided during this study, teachers could use their knowledge of the previous lessons to develop similar lessons for the additional books. The more frequent use of *STFLS* texts during instruction suggests that they were able to modify their practice without intensive or expensive training, but based on effective models they used in their own classrooms.

### *Limitations*

There are several limitations to this study. These include the brevity of the intervention, the small sample size and unequal number of students in each group, the higher mean pretest performance of students in the group with teachers who had previous experience with STFLS, and ceiling effects of the UAELB, including the need to exclude the alphabet subtest from the total score on that measure. The first of these, overall length of the intervention, was constrained by limited resources. More time would surely have magnified the effect of the teachers' prior experience if that, in fact, was one of the factors that led to better outcomes for the group of students in the classes of teachers who had prior experience.

The small sample size and unequal number of student participants in each group decreased the overall statistical power of the investigation. The small sample in the group of students with teachers who did not have prior experience resulted in a pretest distribution that was not normally distributed, which impacted decisions regarding statistical analysis. Larger and equal groups would have provided the statistical power necessary to detect group differences that effect sizes suggest may exist.

In addition to the need to exclude the alphabet subtest, the fact that four students earned scores of 39 or more of a possible 42 points on the UAELB presents a further limitation. There was very little room for growth on this measure, which placed limits on the gains from pretest to posttest for the group. While the growth of these students was captured on the GMRT (they made significant gains), the tests for group differences and group effect sizes were based solely on the

results of the UAELB. Having a single measure that captured the full range of pre- and posttest abilities of all participants would have been more effective in capturing true group differences.

Another limitation was the conscious decision to increase the external validity of the intervention by giving teachers the option to make books accessible to their students for 30 minutes each day through self-selected reading, teacher-directed instruction, or a combination of the two. This made it impossible to track the exact combination of exposure each student had or the amount of time specifically allocated for self-selected reading. Furthermore, the teacher reading logs indicated the titles of books used during teacher-directed instruction, but the quality of these lessons was not measured systematically. Finally, no measures were employed to capture how enthusiastically teachers encouraged their students to engage in self-selected reading on a day-to-day basis. More information in any of these areas would have allowed us to better explain the difference in gains between groups.

The higher mean pretest performance of students in the group with teachers who had previous experience may very well have been an artifact of the initial experience almost all of the students in that group (21 of 26) had with comprehensive literacy instruction in the spring prior to the current study. In contrast, 10 of the 17 students in the group with teachers who had no prior experience had been part of the study the prior spring. We took these differences into account by using the ANCOVA procedures, but future work might include randomization procedures that would reduce these differences.

### Implications
There are two primary implications from this study. First, it is important to help teachers find good books to use instructionally with adolescents with significant disabilities. These include literature and information texts written at ability-appropriate levels about a variety of topics that are interesting to adolescents. Books must also be physically accessible for all students. In this study, the S*TFLS* library was used, but teachers may also want to investigate additional text sources including websites such as tarheelreader.org, an open-source library of books for beginning readers of all ages. The second implication from this study is that teachers can benefit from prescriptive lessons that teach them how to use a collection of books effectively without requiring lessons for every book. This potential to provide models that support long term implementation is worthy of further investigation as the field works to identify effective approaches to professional development and teacher support.

## Declarations

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