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How do we best support adolescents with low academic performance and learning disabilities in the era of pandemic learning loss? The importance of intensive learning strategy interventions

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The COVID-19 pandemic put a spotlight on learning loss that teachers of low-performing adolescents, including those with learning disabilities (LD), have confronted for decades. Federal funding offers opportunities for school districts across the country to implement evidence-based interventions that promote outcomes for students with learning difficulties in middle and high schools including those from culturally and linguistically diverse backgrounds. There is a risk, however, of funding weak models of tutoring that prioritize subject-specific "homework help" in contrast to more effective programs. Research directs schools to the use of coherent intervention programs which are built into the school day, integrated into IEPs, facilitated by competent educators, employ a model of explicit-intensive instruction that has the most significant impact on learning outcomes for students with learning difficulties, and prioritize strategies that generalize to multiple content areas. Recommendations are presented for developing Individualized Education Programs for adolescents with LD, which align with the need for challenging, ambitious goals and special education services that are based on an extensive body of research.

KEYWORDS

low academic performance, learning disabilities, pandemic, intensive learning strategy, interventions

Introduction

COVID-19 created a crisis in education and resulted in significant losses in instructional time in the classroom. Despite attempts by educators to maintain their instructional hours and provide quality educational opportunities to maintain educational growth, the full impact of lost classroom instructional time is being realized in lower reading outcomes and significant performance losses in mathematics (Kuhfeld et al., 2022; Kuhfeld and Lewis, 2022; NAEP, 2022; North Carolina Department of Public Instruction Report, 2022; Sparks, 2022). In fact,

Kuhfeld et al. (2022) estimated effect-size losses in elementary reading of 0.17 and 0.10 in middle school reading. Analysis of disaggregated data at the state level (e.g., North Carolina Department of Public Instruction) regarding subgroups shows disproportionate impact on expected growth for Black and Hispanic adolescents in grades 6, 7, and 8, students with disabilities, English learners, migrant students, and rural students. In fact, across almost all demographic areas and subject areas, students in the middle grades were negatively affected by the pandemic.

Barnum (2022), Spector (2021), Dillon (2022), Kuhfeld et al. (2022), Kuhfeld and Lewis (2022), and Sparks (2022) have all come to similar conclusions regarding the serious nature of the effects of COVID on literacy, including notable losses among adolescent students. Moreover, Northwest Evaluation Association (NWEA) researchers (Lewis et al., 2022) concluded that the gap between higher and lower achieving students at the outset of the pandemic widened. While data from the National Assessment of Educational Progress (NAEP, 2022) and Kuhfeld and associates provide significant information related to the effects of the pandemic including factors which may relate to disparate pandemic impacts, the reports do not provide specific recommendations for interventions.

The American rescue plan act response to learning loss

While the analyses of learning loss have been a critical topic of much current investigation and debate and the urgency to address it surely warranted, the American rescue plan act (ARPA) legislation (Public Law 117–2, 2021) and the accompanying Elementary and Secondary Emergency Relief Fund III (ESSERF III) were an unprecedented and swift effort to address the needs of students and families upended by school closures and various kinds of subsequent reopenings in 2020 and 2021. Through the ESSERF III, the ARPA infused $123 billion into schools to support a variety of needs related to technology, facilities and operations, staffing, mental and physical health, and learning loss interventions (DiMarco and Jordan, 2022; Loeb and Barone, 2022). The ESSERF included $28 billion earmarked specifically for learning loss interventions. These nature of these interventions was not clearly defined, but they should be based in evidence of impact. The statute noted intervention examples "such as" summer programs, extended day activities, and after school programs. The legislation also noted that interventions must meet academic, social, emotional needs of students, as well as address subgroups disproportionately impacted by COVID learning loss (e.g., students from low-income homes, students of color, students with disabilities, and culturally and linguistically diverse learners).

Although tutoring is not named as an example of a learning loss intervention, FutureEd estimates that schools have spent approximately $3.1 billion ESSERF dollars on tutoring (DiMarco and Jordan, 2022). Specifically, according to a June 2022 survey, 56% of public schools reported using ESSER funds for "high dosage" tutoring. Another 38% reported using "other tutoring, that is not high-dosage tutoring" (Institute of Educational Sciences, 2022a). Notably, there does not appear to be any consensus definition for "high dosage" or even tutoring.

What we know about tutoring programs for adolescents in need of remediation

Clearly, one of the main challenges in consideration of the potential impact of these tutoring interventions on adolescents with chronic learning difficulties is defining the term, *tutoring* itself. Descriptions of offerings typically provide little insight into what activities actually occur for students. Nickow et al. (2020) defined tutoring, at least in a general way, as small group or individualized instruction by teachers or volunteers focused on augmenting the instruction that students receive in their standard academic day. Notably, computer-based instruction is not included this definition. Tutoring programs almost always focus on improving academic outcomes for students performing below the performance standards established in their school. In their systematic review and meta-analysis, Nickow et al. (2020) reported that literacy tutoring programs are generally effective with a pooled effect size of 0.37. It must be noted, however, that their review of tutoring casts a wide net with programs implemented differently in terms of time of tutoring, choice of curriculum, context, and type of tutor. Perhaps more notable is their reporting on what indicators demonstrated the most impact on student outcomes. Specifically, effect sizes were larger for programs implemented by teachers and paraprofessionals compared to volunteers. The authors also found advantages to programs that took place during the school day. In fact, research supporting the use of tutoring programs to positively impact student outcomes consistently points to key quality indicators including implementation during school hours, facilitation by well-trained educators, and clear application to core academic course standards (Dietrichson et al., 2017; Allensworth and Schwartz, 2020; Nickow et al., 2020).

High dosage tutoring

Although school districts have indicated their use of funding for "high-dosage" tutoring, there again appears to be no established definition for this approach. On January 27, 2022, United States Department of Education (USDOE) Secretary Cardona provided one possible definition for what he referred to as "intensive" tutoring. This type of tutoring should be "at least 30 min per day, 3 days a week, with a well-trained tutor who is providing that child with consistent, intensive support" (US Department of Education, 2022). Thus, there appears to be at least some emerging consensus that "high dosage" tutoring is characterized by intensive learner engagement occurring three or more days a week, preferably within the normal school schedule (Robinson et al., 2021; Patrinos, 2022).

Despite this, results of a December 2022 Institute of Educational Sciences (IES) survey indicated 30% of schools were using what the schools identified as high-dosage tutoring, 27% were providing "standard" tutoring, and 52% were providing "self-paced" tutoring (Institute of Educational Sciences, 2023). Jacobson (2023) reported discouraging evidence related to the use of ESSER funds, noting that students in one location were receiving some sort of tutoring an average of 13 min a week, and that those receiving tutoring were not always those who really needed it. The Washington Post (George, 2023) reported that students were receiving tutoring a median of 29 min of total time, and that outside tutors were being paid up to

$130 per hour with ESSER funds. Moreover, Kraft et al. (2022) reviewed current efforts by school districts to determine the impact and practicality of tutoring programs being employed. Once again, findings pointed to the importance of *dosage*. Effective tutoring was characterized by consistency and intensity during the school day. Many districts, however, are simply attempting online tutoring and using volunteer staff (Institute of Educational Sciences, 2022b; Jacobson, 2023).

Weak models of tutoring

Clearly, whether it's called "high-dosage" or not, research supporting the use of instructional tutoring points to the use of intensive programming offered by well-trained professionals (Allensworth and Schwartz, 2020; Nickow et al., 2020; Patrinos, 2022). In contrast, to intensity of instruction, a historical consideration of tutoring programs for students with learning disabilities (LD) and other vulnerable groups (e.g., culturally and linguistically diverse students) points to models that are more likely to involve a reactive approach like simple daily assignment completion that is practical, but limited in terms of long-term impact (Hock et al., 2001a,b,c). In other words, the current pandemic response to learning loss runs to the risk of being "more of the same" for students with LD, despite evidence of what works.

Whether offered by a volunteer or a teacher, individually or in a small-group, this type of tutoring might be best described as homework help (Hock et al., 2001a,b,c). Assignment-assistance tutoring focuses on the immediate burden of daily life in school like homework to be completed and research papers to be written. Hock et al. (2001a,b,c) critiqued these common models of tutoring for prioritizing the completion of daily tasks over the development of long-term skills. Recognizing that adolescents in middle and high schools have practical needs to complete assignnments and pass classes, Hock et al. (2001a,b,c) developed a model called Strategic Tutoring in which students could receive help with daily tasks, while they are concurrently taught specific learning strategies by special education professionals. Teachers implement the model using research-based tactics associated with principles of explicit instruction, systematically removing levels of support until students developed autonomy with the strategies. Since the 1990s, Hock et al. (1995) have analyzed tutoring programs for students with chronic academic difficulties, recognizing that students without or without IEPs and students considered culturally and linguistically diverse need day-to-day support, but they also need to develop strategies to support their autonomy as learners.

Drifting into weak models of tutoring, which inevitably provide little more than homework help is not going to suffice, particularly for students with learning disabilities. For a generation, there has been a call to implement Specially Designed Instruction integrated in the development of IEPs for culturally and linguistically diverse students with learning disabilities. Carlson (1985) lamented that adolescents with learning disabilities required more than homework help requiring support that was characterized by (1) powerful instruction, (2) long-term impact in student outcomes, and (3) high expectations for student performance and agency. More recently, Boudah and Shankland (2018) contended that Specially Designed Instruction for students who have experienced chronic academic difficulties, is supposed to be characterized by explicit instruction and individualized support; not just accommodations and "extra help." Moreover, in light of the recent Endrew and Douglas (2017) court decision, tutoring that is simply helping with homework might be considered the "bare minimum" and an unacceptable approach to supporting students with LD in particular.

Interventions that improve outcomes for adolescents with learning disabilities and chronic academic difficulties

Students with chronic learning difficulties (e.g., students with LD) require access to comprehensive, research-based interventions to meet the increasing literacy demands of schools and beyond. Moreover, research has suggested that teaching specific evidence-based strategies can improve the performance of all students and particularly those at-risk. A significant research base already exists to inform such services, interventions, and practices. For example, Hattie (2009) seminal study of over 800 meta-analyses, *Visible Learning*, concluded that direct instruction and meta-cognitive strategy instruction, as well as key instructional elements associated with both forms of instruction (i.e., feedback), have moderate and high effects for students with learning disabilities and their non-disabled peers. Additionally, an IES report (Dynarski et al., 2008) suggested that interventions with a focus on explicit and cognitive strategies have significant effects in the prevention of dropout.

Critical to intervention for students with LD is the use of principles of explicit instruction. Explicit instruction includes overt modeling, clarity in learning objectives, and consistent, corrective feedback in response to progress monitoring data. Often, explicit instruction is characterized by the teaching of small, attainable steps toward an end goal with modeling and constructive feedback along the way toward a larger learning goal (e.g., Rosenshine, 1987). Fletcher et al. (2019) emphasized the importance of explicit instruction for students with LD, which involves taking students through a process of guided or controlled practice as the teacher supports the student in development of the skills aligned with grade level expectations. One significant example of the operationalization of explicit and systematic instruction is the learning strategies curriculum developed by University of Kansas Center for Research on Learning.

Based on over four decades of research and development, learning strategies from the *Strategic Instruction Model,* which employs explicit instruction and systematic cognitive strategies, has been validated to teach specific reading, remembering, and writing strategies (as well as other strategies) to low-performing adolescents with or without IEPs, including students considered culturally and linguistically diverse (e.g., Schumaker and Deshler, 2010). A more recent example and further evolution of learning strategies instruction is a program called *Xtreme Reading* (XR), developed as a comprehensive Tier 2 intervention comprising eight foundational reading and motivation strategies including emphasis on vocabulary, decoding, fluency, and reading comprehension skills from the *Strategic Instruction Model* (Schumaker, 2022).

Xtreme Reading is a spiral curriculum that deploys explicit instruction of each strategy, including guided practice, meaningful feedback, and independent practice in generalizing and combining

strategies within and outside school for small groups of students. Explicit instruction plays a critical role in helping all students develop the literacy skills and strategies they need to comprehend text or write at the level required in high school and beyond (Bulgren et al., 2007; Deshler et al., 2007; Dimino, 2007; Lenz et al., 2007; Lowder et al., 2022). *Xtreme Reading* is intended for students with or without IEPs, including those from culturally and linguistically diverse backgrounds, who exhibit poor reading fluency, small sight vocabularies, limited understanding of words and multiple word meanings, limited background and conceptual knowledge, and few strategies that enhance understanding and remembering of oral and written language.

Boudah (2018, 2022a) has recently published evidence of the impact of XR on adolescents whose reading test scores represented multiple-year deficits in reading performance. Gains in comprehension and vocabulary, as well as reading fluency were evidenced in large effect sizes for students with and without LD. In one school year, outcomes of these studies suggested gains in student performance outpaced expected yearly gains; thus, students made progress in "closing the gap" in student performance.

According to Kuhfeld et al. (2022), the effect size for tutoring as an intervention in elementary grades is 0.22 and 0.12 in middle grades. That is, the magnitude of effect (or practical significance) is pretty small. By comparison, the average effect size for XR in three recent middle school studies is 0.981 for comprehension and vocabulary and 1.059 for fluency. See Figure 1.

Considerations for researchers and policy makers

In the Kuhfeld et al. (2022) recent analysis of negative changes in test scores between fall 2019 and 2021 relative to average effect size of various interventions, the authors discovered that interventions such as tutoring, and summer programs produced limited to no effects on reading for middle school students. Further, the authors' analyses raised questions as to whether tutoring, summer programs, and other commonly sought after interventions could make up for COVID learning loss. By contrast, when comparing the effects of XR to those same standardized changes in test scores, Boudah (2018, 2022b) illustrated that XR, as an example of explicit and systematic instruction, can provide a powerful intervention to mitigate learning loss.

While the outcomes of *Xtreme Reading*, as an example of an intensive reading intervention, are perhaps far more promising than tutoring, there is still work to be done in hopes of validating exemplary practices and infusing them into schools so that schools are not defaulting to tutoring or other less effective options for assisting struggling students and those performing below grade level. Translating research into practice has long been an achilles heel in schools (e.g., Merriam, 1986; Malouf and Schiller, 1995), and while that work must continue so that policy makers and school system decision-makers have data by which to make informed decisions without political interference, researchers and school professionals should use progress monitoring data as well as outcome data to measure the on-going effects of interventions to make better informed decisions on how to assist students with and without learning disabilities. Many schools and districts may collect Monitoring Academic Progress data (MAP) or iReady data, for instance, throughout the year, but may not adequately use those data for future instructional decision-making in conjunction with carrying out IEPs.

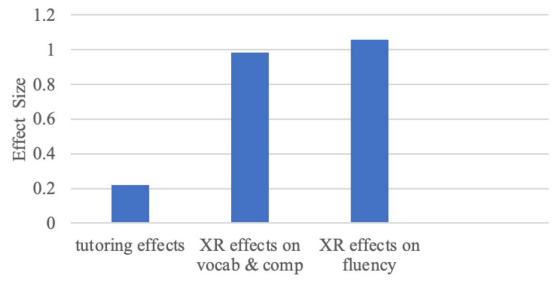

FIGURE 1
Comparison of effect sizes between Tutoring and Xtreme Reading.

As noted earlier, further identification of pandemic losses in growth, specific contextual and demographic factors, and skills analysis of the aspects of mathematics (e.g., number sense, procedural skills) and reading (e.g., fluency, vocabulary) impacted by the pandemic are needed. Such analyses will provide more specific information on not only what interventions to use, but how best to target intervention components for subgroups of students. In addition, future research endeavors might include qualitative case studies of the characteristics of more effective tutoring, whether it be the characteristics put forward by the Secretary of Education (US Department of Education, 2022) or IES (Institute of Educational Sciences, 2022a). Finally, as a natural extension of some of the research cited in this paper, comparison studies of XR and tutoring are warranted. The combined work of researchers and school-based educators is essential, now more than ever, to develop and implement effective post-pandemic interventions for students with and without learning disabilities.

Conclusions and considerations for IEP teams

As indicated previously, the Individualized Education Program must prescribe the specially designed instruction that students with learning disabilities require in order to produce substantial impact on long-term student outcomes. Too often, adolescents with learning disabilities are limited to "extra help" tutoring when they desperately require truly intensive intervention (Carlson, 1985). The fact that students have experienced difficulty for years, does not mean they cannot improve. The authors offer Xtreme Reading as a powerful example of the impact of intensive learning strategy instruction. It is essential that these types of interventions are translated into the development of IEPs for students with learning disabilities. As the Endrew and Douglas (2017) decision would support, IEPs must set challenging and ambitious goals for student outcomes supported by specially designed instruction based in research.

Measurable goals

Access to the general curriculum is essential for long-term school outcomes, but it is critical that IEP goals focus on the skill and strategy

development associated with literacy and general academic coping skills. When developing the IEP, the team must consider how goals build from present level of academic skills and setting demands. Emphasis must be placed on the development of fluency and decoding with higher level texts, reading comprehension strategies, and vocabulary development. Programs like Xtreme Reading explicitly and intensively teach students to develop independence in their use of multi-syllabic decoding skills, strategies for paraphrasing and summarizing text, inferential comprehension, and both word-specific and generative vocabulary strategies. As demonstrated by the XR data provided, students in middle school can make still make substantial progress.

Special education and related services

Perhaps more challenging, when the IEP team develops a program and considers the actual special education to be provided for students with learning disabilities, it is critical that the team has professional knowledge and skills aligned with the research foundation for intensive learning strategy instruction. Teachers must be aware of the research consensus on "what works" for adolescents with learning disabilities. Further, they must have access to the professional development to implement such programming. As Boudah and Shankland (2018) suggest, there is a risk of explicit, intensive instruction fading into the background as emphasis is placed entirely on "access" in the form of accommodations and homework assistance. Research that guides special education intervention for adolescents points clearly to the impact of intensive learning strategy programming, which must engage students through explicit modeling, progress-monitoring, scaffolded/guided practice, ongoing corrective feedback, and generalization (Hattie, 2009).

Conclusion

Schools and districts are pouring millions and millions of dollars into tutoring, in particular, right now in an effort to address the impacts of COVID school closings and various forms of online or hybrid instruction on low student performance. Understandably, tutoring has appeal; a school or district can recruit someone with minimal relevant background and sit them down next to a student whose performance is below a certain level. The school assumes that the adult who knows something will help the student to understand more than they did on their own, and thus improve performance; however, this is simply not an adequate replacement for the impact of effective educators implementing research-validated interventions.

The authors suggest that programs such as XR can potentially provide a powerful intervention to mitigate learning loss. In order to see impactful gains in student reading performance, educators and policy makers cannot assume that just sitting an adult beside a student to help with homework is the solution. For students who are low performing in reading, including many students with learning disabilities and those from culturally and linguistically diverse backgrounds, intensive and extensive intervention such as Xtreme Reading is critical now more than ever.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding authors.

Author contributions

CO'B and DB were the main co-contributors. JL supported the manuscript. AN served in an editorial role. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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