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ORIGINAL ARTICLE

Translational science in the science of reading: A case study

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Abstract

This study explores the perceived effectiveness of an open educational reading programme for primary school pupils with specific learning difficulties (SpLD) such as dyslexia. The programme, implemented by experienced teaching assistants (TAs), encompassed multiple aspects of reading, including phonics, sight word reading, reading fluency, vocabulary development and comprehension strategies, addressing the diverse needs of students with SpLD. Past observational studies have shown a disconnect between recommended reading practices and actual teaching approaches, often leading to a neglect of crucial skills like vocabulary, reading fluency and reading comprehension instruction for this student population. The current study aimed to bridge this research-to-practice gap, involving educators in programme development to ensure its effectiveness and practicality. Findings from interviews with five TAs indicate a strong need for comprehensive programmes that integrate various reading skills. The open educational reading programme received positive feedback from TAs, highlighting its role in engaging students and supporting active participation. This research underscores the significance of translating scientific insights into practical, transformative educational resources, emphasising the critical role of public engagement in advancing reading education. Additionally, this study emphasises the imperative of developing educator-oriented programmes that are research-based and easily accessible, thereby enhancing the practical application of scientific knowledge.

KEYWORDS
dyslexia, learning difficulties, open educational resource, reading intervention

Key points

- Teaching assistants found the open educational reading programme effective in supporting reading development for primary students with specific learning difficulties (SpLD).
- The reading programme aimed to bridge the gap between research and classroom practices, focussing on teaching comprehensive reading skills.
- Teaching assistants reported improved student engagement and reading skills, particularly valuing the programme's structure and adaptability.
- Challenges included time constraints and the need for customisation of lesson content to different reading levels.
- Open Educational Resources (OER) are emphasized as essential tools for advancing equitable education at a global scale to support struggling readers.

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INTRODUCTION

Translational science refers to the critical process of turning basic scientific research into real-world applications (Rubio et al., 2010). In the world of education, translational science serves as a critical bridge connecting empirical research findings to their practical application in educational settings, particularly in the context of teaching reading to students with specific learning difficulties (SpLD; Solari et al., 2020). Despite significant strides made in understanding the science of reading, a persistent gap continues to hinder the effective translation of evidence-based practices into the daily instructional experiences of students with SpLD (Fien et al., 2021; Petscher et al., 2020). The disconnect between research findings and their application in classrooms remains a formidable challenge, requiring innovative solutions to ensure that evidence-based practices are implemented effectively.

Solari et al.'s (2020) work underscores the need for a robust framework of translational science in the field of reading education. This framework not only emphasises the progression of research from basic understanding (T1) through clinical trials (T2) but also extends to the critical stages of clinical implementation (T3) and public engagement studies (T4). While research in the field of reading education has predominantly focused on T1–T2 studies, it is imperative to recognise that true translational success demands comprehensive evidence gathered from T3 and T4 stages.

Additionally, Komesidou and Hogan (2023) propose a school-specific version of the generic implementation framework based on Moullin et al.'s (2015) framework to address the challenge of using research evidence in school practice, particularly for students with learning difficulties. This comprehensive framework covers all core concepts of implementation science involving the process of implementation, domains and determinants, implementation strategies, and evaluation. This framework emphasises the importance of structured implementation processes, including stages such as development, communication, exploration, preparation, implementation and maintenance, to ensure the successful integration of innovations.

To this end, the objectives of public engagement should extend beyond knowledge enhancement to the transformation of behaviour and decision-making (Solari et al., 2020). It is this transformative potential that can catalyse translation of research-to-practice. Thus, the focus of our study was to create a reading programme based on recommended practices for students with SpLD, engage with educators during the development of the programme, and gather feedback from educators after their implementation of the programme to measure the perceived effectiveness and feasibility of implementing the reading programme.

Research-to-practice gap

Learning to read is one of the most fundamental skills in which students need to gain proficiency, to improve their life and career outcomes. Pupils who fail to read effectively are at a higher risk of dropping out of school (Fall & Roberts, 2012), incarceration (Cassidy et al., 2021), unemployment (Aro et al., 2019) or being diagnosed with mental health problems during adulthood (Aro et al., 2019). While this is not entirely a causal relationship, the societal and economic cost of students failing to read effectively appears considerable. It could negatively impact the future labour force, while increasing Government spending on prisons, healthcare and other social services. Thus, Government policies such as the Special Education Needs and Disabilities Code of Practice (DfE, 2015) accentuate the need to implement evidence-based practices that enhance the educational outcomes of pupils at risk of reading failure.

Students who demonstrate persistent difficulties in reading despite adequate instruction (and in the absence of sensory, behavioural and cognitive disabilities) are generally diagnosed with SpLD such as dyslexia. Students with SpLD may struggle with reading words, reading connected text fluently, understanding the meaning of text, and/or exhibit a discernible deficit in their vocabulary knowledge (for example, Catts et al., 2003; Cirino et al., 2013; Daniel & Barth, 2023; Leach et al., 2004). For instance, Leach et al. (2004) observed that in their sample of Year 4 and 5 pupils with reading difficulties, 42% performed below average in word reading skills, 18% were below average in reading comprehension assessments, and 40% scored below average in word reading and comprehension.

Given that students may have deficits in multiple reading domains, the current recommendation in the field is to design interventions that target all areas of reading that the child struggles with (see DfE, 2023; Vaughn, Gersten, et al., 2022). These recommendations also align with theoretical frameworks of how individuals learn to read and understand text. Theoretical frameworks such as the simple view of reading (Gough & Tunmer, 1986) and the verbal efficiency theory (Perfetti, 1985) presume that reading is a complex task requiring multiple skills, and deficits in any one area of reading are associated with poor reading comprehension. Both theoretical models (Gough & Tunmer, 1986; Perfetti, 1985) emphasise the importance of foundational skills, such as word reading, for comprehending text. However, not all poor word readers have deficits in comprehension, and not all students who struggle to comprehend grade-level text have inadequate word reading skills.

However, these recommendations are rarely observed in instructional practice. For instance, observational studies have highlighted a misalignment

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between evidence-based practices and actual teaching approaches for students with SpLD (Swanson, 2008). In a synthesis of 24 observational studies, Swanson (2008) reported that teachers rarely used the explicit instructional framework for teaching reading. There was also a lack of phonics instruction, vocabulary and reading fluency instruction was rarely observed, and the process of teaching students to understand the meaning of text was generally low-quality, with limited time spent on teaching comprehension skills. In another study exploring teachers' self-report of instructional practices of teaching reading to students with SpLD, teachers self-reported implementing various commercially packaged programmes that have little to no evidence supporting their effectiveness in improving reading outcomes for SpLD (Daniel & Lemons, 2018). Another study reported educators mostly relying on non-evidence-based resources such as Pinterest (65%) or Teacherspayteachers (30%) as the most common online resource to plan literacy instruction (Beach, 2020).

Given the current research-to-practice gap, there is increasing demand for research evidence to inform policy and teaching approaches (Boaz & Davies, 2019). In England, the Education Endowment Foundation (EEF) established the EEF Teaching and Learning Toolkit to gather promising teaching approaches and give guidance to teachers, which is similar to the What Works Clearinghouse (WWC) established by the Institute of Education Sciences (IES) in the US. The EEF Teaching and Learning Toolkit reports the cost, strength of evidence, and impact of teaching approaches and software by summarising existing research evidence. The IES regularly publishes practice guides that provide practical recommendations based on rigorous research evidence and offer actionable strategies that educators can use in their classrooms (for example, Vaughn, Gersten, et al., 2022). While these practice guides and learning toolkits are exceptional resources for disseminating evidence-based practices, they lack interactivity between developers and users because of the one-way nature of the dissemination. According to Solari et al. (2020), researchers are expected to adopt interactive engagement methods, such as collaborative projects with practitioners, as well as creative media to enhance public involvement.

Why open educational resources matter

Open educational resources (OER) encompass freely accessible learning resources that are available to all users. This unrestricted access to educational resources can enable educators to incorporate evidence-based practices to support reading growth in students with SpLD. Developing and sharing comprehensive resources can enable educators to implement best practices in their instructional approaches and narrow the research-to-practice gap (Atkinson et al., 2020).

OER can also be a tool that promotes collaboration and knowledge sharing among educators and researchers. The open licences associated with OER can allow educators to adapt and modify resources to suit their specific teaching contexts, thus encouraging customisation and innovation (Atkins et al., 2007). This collaborative process of remixing and revising OER can foster the dynamic exchange of ideas and insights between practitioners and researchers. OER can also facilitate a more seamless translation of research findings into actionable strategies (Jensen & Kimmons, 2022).

Additionally, OER can play a role in supporting continuous professional development for educators by offering the most up-to-date research on evidence-based pedagogical practices (Zhang, 2023). More importantly, given the emphasis on openness in learning resources, OER has the potential to promote equity in education through providing open access to a wealth of educational materials to teachers across the globe. For instance, the majority of reading programmes are developed in Western countries and the price tag on these programmes may not be accessible to educators in developing or emerging economies. Thus, not only does OER have the potential to bridge the research-to-practice gap, but to do so on a global scale.

Purpose of this study

Within the context of our school engagement initiative, our primary objective was to investigate the perspectives of teaching assistants (TAs) who are actively involved in instructing students with reading difficulties or SpLD in primary school settings. Specifically, we aimed to understand how TAs perceive and implement an open educational reading programme designed to integrate evidence-based reading instructional practices, as recommended by Solari et al. (2020).

To achieve this objective, we engaged in a collaborative effort with educators, seeking a comprehensive understanding of their specific requirements. Our focus was on the development of a tailored reading programme that would not only captivate and engage pupils with SpLD but would also be firmly grounded in evidence-based reading instructional practices. Subsequently, we granted educators access to a 10-week, all-encompassing reading programme, designed to provide robust support.

Following the educators' implementation of the reading programme, we conducted in-depth interviews with educators to gain insights into their perspectives regarding OER's potential to effectively facilitate the application of evidence-based practices. Additionally, we sought to understand how OER contributes to the enhancement of students' reading skills under their tutelage.

We explored the following research question: how do teaching assistants perceive the utility and effectiveness of the open educational reading programme

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in supporting primary school pupils with reading difficulties?

METHODS

As part of our engagement with schools, we conducted semi-structured interviews to explore TAs' experiences when working with and supporting primary school students with reading difficulties or those identified with SpLD. Sessions were conducted at various primary schools in England.

Participants

A total of five TAs from three different primary schools in England participated in our study. The sample consisted of female participants who identified as white and had more than a decade of experience as TAs, specialising in supporting students with special educational needs.

OER programme development

We first engaged with participating educators to understand topics their students with SpLD may be engaging with in their mainstream classroom. Next, based on past studies and practice guides (for example, Daniel et al., 2023; Vaughn, Gersten, et al., 2022), we developed a reading programme that was designed for small group instruction for Year 3 and 4 pupils with SpLD (Daniel, 2022). The reading programme targeted all areas of reading, such as phonics, sight word reading, reading fluency, vocabulary development and reading comprehension strategies. These lessons were based on theoretical frameworks on how students learn to read (for example, Gough & Tunmer, 1986; Kintsch, 1988), our understanding of the reading domains in which children struggle to read (for example, Daniel & Barth, 2023) and past intervention work on how to improve reading outcomes for struggling readers (for example, Daniel et al., 2022; Vaughn, Grills, et al., 2022). Furthermore, our intervention was grounded in evidence-based pedagogical practices to support reading growth in students with SpLD, such as explicit instruction (Archer & Hughes, 2011).

We also wanted to ensure that these lessons were implemented with fidelity and were feasible for educators to implement. Thus, for each lesson plan for the student, we also created scripted teacher manuals that provided explicit guidelines on how to implement the lesson, suggested statements to be used verbatim, methods to check for mastery, suggestions for corrective feedback, and access to extension activities for students who struggle to master the lesson objective. To address the diversity of reading proficiency levels among students with SpLD, we developed a series of structured extension activities based on the Phrase Progression approach. These activities were designed to offer additional practice and opportunities for students with poor reading fluency skills. For example, one activity involves incremental reading of phrases, progressively increasing in complexity and length, to build students' reading fluency at their own pace. These activities are detailed in our provided extension materials, ensuring that students receive the necessary practice to improve their reading fluency effectively.

To assess the effectiveness of the lessons, we also created curriculum-based assessments that allowed teachers to conduct assessment at the end of every 10 lessons. The aim of these assessments was to provide educators with objective data points to assess the effectiveness of the programme and also monitor their students' reading growth. The curriculum-based assessments encompassed the skills and knowledge that students acquired during the lessons. For example, students were presented with sentences (such as *'Millions of plots watch videos on YouTube'*) and asked to determine if they made sense. If a sentence was nonsensical, they corrected it (for example, changing *'plots'* to *'people'*). Additionally, we assessed vocabulary knowledge of explicitly taught words by having students match words to their meanings using a provided word bank. Students also read a passage of comparable difficulty and length (measured using Lexile Levels) and answered multiple-choice comprehension questions. Lastly, students read a series of sight words and recorded their accuracy and speed, evaluating their proficiency with these previously taught words.

After the development of these lessons, we provided teachers with a brief (30- to 45-min) overview of the lessons, access to student copies of the lessons and teacher manuals to help them in implementing the lessons. After a period of five months, we contacted the educators and asked them for feedback on the open educational reading programme. Each focus group session was between 40 and 60 min.

Data collection

The primary investigator, who developed the OER, conducted all interviews. The investigator contacted each of the TAs after they had received and implemented the OER with their pupils. Two of the interviews were conducted in the participants' school and one was conducted over Zoom. All interviews were audio-recorded.

To minimise personal bias and ensure consistency, the interviewer diligently adhered to a predetermined interview protocol, putting in considerable effort to maintain objectivity throughout the interview process.

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Data analysis

The primary investigator took deliberate measures to ensure the objectivity of the data analysis process. Recognising the potential impact of personal biases, the primary investigator consciously refrained from participating in the data analysis process and the writing of the results section. By maintaining distance, the primary investigator aimed to uphold the integrity and impartiality of the findings, allowing for an unbiased interpretation of the data. First, a research assistant transcribed all interview data. Next, two researchers were assigned as primary coders, working independently on the analysis of the interview data. Both researchers conducted thematic analysis (Braun & Clarke, 2006) of the interview data.

RESULTS

An initial baseline reading assessment for all children entering the year group was discussed by all five of the interviewees. These assessments were used to understand the reading ability of each child and to assess whether any reading interventions would be of benefit. Each of the TAs described termly progress assessments that were used for all school children to monitor reading progress. For example:

> I generally do their reading assessment. So, I will do something called a Schonell reading score and that gives me a reading level, a reading age, and from there, depending on what scores they've got, I then sorta look at where the levels are and go on to see what children maybe need further assessments for different interventions.
>
> (TA1)

> Yeah, usually there's, there's something that you do at the start and again at the end [of the term].
>
> (TA2)

Each TA then discussed the support offered to identified students, including a number of informal approaches as well as purchased intervention schemes. This support is based on the identification of need from their reading assessments. Two of the TAs discussed daily reading with identified students, including asking lots of questions throughout to ensure comprehension. This questioning strategy when reading with students was mentioned by a third of TAs as an approach used to ensure understanding; for example, *'We ask them questions so they understand stuff'* (TA2).

Another strategy adopted by two of the TAs was to ask students to search for and highlight key vocabulary. The participants also identified vocabulary they thought the readers might find challenging in a text in advance, to work through with the students before reading the full text:

> We have some vocab[ulary] that they might find difficult … and we break the words down and build them back up. And they've already looked at them and processed them … before they read the text.
>
> (TA4)

In addition to these approaches adopted by TAs when working with identified students, a wide range of purchased programmes were discussed as having been used by each school during the time the TA had been working there. These reading programmes were selected by the school, which for some schools followed a discussion including all staff, and for other schools only involved teachers:

> It's always been teacher-led … we support the students through what the teachers tell us to do.
>
> (TA1)

> There'd be … a budget set and then we just decide what programme we're going to implement and buy into. It's discussed with all the staff … we just make the decision as a staff.
>
> (TA3)

The current focus on phonics in the school was linked by the TAs with the Year 1 phonics screening assessment. However, concerns were raised that this phonics focus was negatively impacting students' reading fluency: *'What we find is that when you focus on the phonics sometimes, the sounds, your fluency drops off'* (TA5).

TAs generally perceived that the resource kept the students engaged in their work, and they indicated that the variety of lessons and having a specific focus, as well as the increasing difficulty, helped to keep the students motivated throughout the programme, as the following quotations show:

> They've gotta think about what they're reading [not just passively read].
>
> (TA2)

> They all, especially when they're in a small group, they all really do try.
>
> (TA2)

> They're enjoying it and they're asking questions and they're saying, 'oh it's this one next' so they're pushing onto the next one.
>
> (TA1)

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> [Moving from one task to another] kept them engaged [because] there was not time for them to start getting bored.
>
> (TA2)

In particular, TAs also reported that the competitive nature of the timed tasks in the lessons also made the students more engaged in the lesson which they perceive as a *'positive influence'*:

> It's the timed one that gets them going.
>
> (TA5)

> It does work, and they're looking at each other, and they're like 'right, right, right, go' and it, it, I think it is a bit competitive.
>
> (TA4)

As well as engaging in the programme, the TAs perceived that students were enjoying taking part in it. In particular, the students seemed to enjoy the different topics of the task and they *'enjoyed reading about people we don't know anything about'* (TA5). Other comments included: *'Generally, I feel like they're enjoying it and they're excited'* (TA1) and *'I do like it and I think the children have enjoyed doing it, I would say'* (TA4).

TAs also believed that students were improving in the skills targeted by the lessons, and that these skills were also being transferred to other areas outside of the supplemental teaching:

> I definitely see progress in his questioning things cause he'll stop and ask questions um, about the text he's reading across whatever intervention I'm doing.
>
> (TA1)

> They were able to sort of say, we've got footballers in our school, are they famous just because they play football? And they could see the difference.
>
> (TA2)

> Reading, it has improved … [it] definitely has improved.
>
> (TA4)

The simplicity of the scheme for those implementing it was discussed as being beneficial by all participants, particularly referring to the required materials all being included. In the words of two participants, *'Having it all prepared for you, it definitely does help'* (TA4); *'You're not then, going around, looking for questions to match the text, or phonics to go with it'* (TA5).

Three interviewees also described positive elements of the reading programme that extended beyond interacting with those students directly taking part, offering new ideas and techniques for TAs to use when working across the classroom: *'It [the reading programme] gives me new ideas for putting things in place … different strategies, and just different ideas I can do with other students'* (TA3).

The teachers' handbook was also very positively received as being simple to use and helping the TAs to deliver the lesson. Particularly during the earlier sessions when getting used to the scheme, the handbook was found to be simple to use and offered reassurance on how to approach each activity:

> It helps me to deliver the lesson … I'll go through and I read the lesson beforehand and if need be, I can drop into that resource if I need to sort of check what's coming up next … I make sure I'm delivering it correctly and I'm saying what needs to be said … So, it's useful for me to have to dip into, yes.
>
> (TA3)

While TAs did perceive the resource as useful and easy to implement, they also discussed some difficulties that they experienced while using it. For example, TAs' experiences differed depending on the number of students they were using the programme with. TA1 had only two students in their group and discussed how because *'it's just the two of them as well, it's just a nice little group. Um, you know they haven't got a big class or a big group to try and compete with, it's just focused on them'*.

In contrast to this, TA2 had 10 students in their group and had to move around the students to 'pick up' on who needed more support, so there was no one-on-one instruction taking place. While they reported that they had managed, they did suggest that *'there should be a limit on the number of children'*, and TA3 reported that they would *'look to have a smaller group'* in the future. This highlights how TAs could possibly struggle with implementing the programme if there are too many children in the remedial instructional sessions.

Another area of difficulty that TAs identified was that they were using the resource with students of different reading skill levels. TA1 in particular described working with *'two students who are quite far apart in themselves'* and that '*the reading fluency level between the two students was the difficulty'*. TA2 also said that for some of their students the words were *'a little bit easy'*. Therefore, this suggests that the programme should perhaps be used with groups of students working at a similar level, so they can all benefit at a similar pace.

The main issue that TAs discussed, however, was not related to the content of the programme, but rather finding the time to implement it. While TA1 liked that the sessions themselves contained *'snappy activities'* that were *'not long winded'*, all participants stated that they had experienced difficulties in fitting the sessions into their daily school timetable, as the following quotations show:

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> The time slot I've got, I've got to move my timetable around a little bit to fit this in …
>
> (TA1)

> I suppose it's just the time limit, isn't it?
>
> (TA3)

> My only, I won't say complaint that's not the right word, but is the timing.
>
> (TA5)

This suggests that, while this free resource is useful for TAs, they would perhaps benefit more generally if they had more time to support students with SpLD with the school's schedule.

TAs generally indicated that they would benefit from having access to an OER to support students with SpLD, and that they found this resource to be beneficial, as these comments demonstrate:

> It's a free resource, I think that's a massive thing.
>
> (TA1)

> It's something I'd be happy to use.
>
> (TA4)

> I don't think it needs a lot of work, no. Um, I think it was easy to use. Um, I think most of it was pitched really well.
>
> (TA2)

Interviewer: Do you think you will benefit from sort of similar programmes that are open educational resources, that have some evidence to support them, are research-based?

TA4: Yeah. Yeah, yeah.

TA5: Yeah. Yeah.

However, while they did like the reading programme, they offered some suggestions for how it could be improved in the future. One idea that was put forward was that there should be different versions pitched at different reading ability levels. TA1 stated that their main difficulty was that one of their students is *'so far behind the other'*, suggesting that they may have benefited from lessons targeted at their different ability levels. Other participants indicated that it would be helpful if the programme was aimed at a certain year group or performance level of the students, as shown by these statements:

> You could have it set for a set year group. I think it probably offers a lot to a teacher who is already doing a lot to be able to just say, right they fit within this.
>
> (TA2)

Interviewer: So do you think, would it be beneficial to have lessons assigned to a certain, uh, difficulty a child has?

TA3: Yes, absolutely.

It was also suggested that it may be helpful if TAs were able to customise the programme in some ways to meet the specific needs of their students. TA4 and TA5 indicated that they would benefit from having an element of *'teacher judgement'* and *'customisation'* so they could *'work it how [they] think it goes with that child'*. Therefore, while TAs appeared to like the structure of the programme, future practice may benefit from having an element of adaptability.

DISCUSSION

The purpose of this study was to utilise the generic implementation framework (Komesidou & Hogan, 2023) and the translational science framework (Rubio et al., 2010) to document the process of bridging the research-to-practice gap in reading instruction for primary school pupils with SpLD. We engaged with educators and utilised evidence-based practices (for example, Daniel et al., 2023; Vaughn, Gersten et al., 2022) to develop a comprehensive remedial reading programme, had educators implement the reading programme and then conducted focus group interviews to understand educators' perspectives on the programme. The data presented in this study provide significant insights into the current practices used by TAs to support students with SpLD, as well as their perceptions of using an open educational reading programme for this purpose. The findings reveal important considerations for future research and practice in supporting students with SpLD using OER.

Regarding current practices, the focus of supplemental instruction provided by TAs was primarily on phonics. Participants noted that there has been an increasing emphasis on phonics instruction, possibly influenced by the phonics screening assessments. However, TAs expressed concerns that a sole focus on phonics can lead to the neglect of other areas of reading development, such as fluency and comprehension. They recognised the importance of incorporating vocabulary and comprehension strategies alongside phonics instruction. These

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findings highlight the need for programmes to encompass a broader range of reading skills, rather than solely relying on phonics-based instruction for students with special educational needs.

Another key aspect identified in the interviews was the practice of progress monitoring. All participants reported using some form of summative assessment, typically conducted at the start and end of the academic year or each term. However, the frequency and methods of monitoring varied among schools. While regular assessments were employed, the intervals between assessments did not allow for more frequent data-based decision-making. This suggests a potential gap in providing timely feedback and adjusting instructional strategies based on students' progress. Implementing more frequent and ongoing progress monitoring could enable educators to make more informed decisions on a weekly or monthly basis (see Lemons et al., 2014).

TAs perceived the open educational reading programme positively, noting that it effectively engaged students and motivated them to actively participate in their reading work. The variety of lessons, specific focus and increasing difficulty were identified as factors that contributed to student engagement. The competitive nature of timed tasks was also mentioned as a positive influence on student engagement. TAs reported that students enjoyed participating in the programme and perceived improvements in their targeted reading skills. They also observed that these skills were being transferred to other areas outside the programme, indicating the potential for broader impact.

The TAs expressed favourable perceptions of the open educational reading programme itself, highlighting its versatility and usefulness. They appreciated the teacher manual provided with the programme, as it outlined clear instructions for each lesson. TAs found the resource easy to use and praised its compatibility with their teaching approach. The availability of a comprehensive manual was particularly valued as it allowed for easy reference and facilitated continuity in case of TA absence. TAs also recognised the resource's accessibility, suggesting that anyone could follow the instructions, which further emphasises its practicality.

Regarding programme content, TAs appreciated the structure and content of the resource, finding it easy to implement. They highlighted the benefits of the diverse topics covered in the lessons, which helped maintain student engagement. However, TAs also noted that the transition between the vocabulary and comprehension sections could be challenging for students, as the difficulty level increased abruptly. Suggestions were made to teach key words from the text before reading and to ensure a smoother transition between sections to optimise student learning. The overall positive reception of the programme's content emphasises its potential value in supporting students with SpLD.

Nevertheless, TAs encountered challenges in implementing the lessons. The number of students in the group influenced the level of individualised attention and support that could be provided. TAs with smaller groups found it easier to focus on individual student needs, while those with larger groups faced difficulties in addressing each student's requirements effectively. It was suggested that limiting group sizes or creating groups of students with similar ability levels could enhance the programme's impact. Additionally, TAs highlighted time constraints as a significant challenge in implementing the programme. While they appreciated the concise and focused nature of the lessons, finding suitable time slots within their timetables remained a common hurdle. Increasing the time available for supporting students with SpLD emerged as a potential area for improvement.

The findings from our research question have implications for future research and practice in using OER to support students with SpLD. TAs expressed an overall positive perception of using OER, acknowledging its benefits and their own desire to support students' progress effectively. However, they provided suggestions for improvement, including developing different versions of the resource tailored to different ability levels or year groups. Customisation options were also desired to accommodate individual student needs. Furthermore, TAs highlighted the need for additional time during school hours to be dedicated to supporting students with SpLD.

Limitations

This study's findings, while insightful, are constrained by several limitations. The small sample size of five TAs from a limited number of schools restricts the generalisability of the results. Additionally, the potential for bias due to the focus group facilitator being the OER developer cannot be entirely discounted, despite efforts to mitigate this through open discussion and independent data analysis. The reliance on self-reported data may also introduce recall or social desirability bias. Finally, while this study offers valuable perspectives on TAs' perceptions, it does not directly measure the impact of OER on student reading outcomes, and further investigation is warranted.

Future of OER for supporting students with SpLD

As highlighted in the Solari et al. (2020) article, it is crucial for researchers to bridge the research-to-practice gap between scientific findings and their practical implementation. The interviews conducted in this study provide evidence of a somewhat successful translation, as TAs were able to adapt and implement the reading programme to support their students' reading-related growth. This underscores the importance of developing

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educational resources that are customisable and can be tailored to the specific contexts and requirements of teachers and students.

It is important to note that the OER we developed only had the CC-BY-NC (free to share and adapt, requires attribution, and may not be used for commercial purpose) copyright. Given the feedback we received on the benefits of educators being able to adopt OER to suit their students' needs, we caution future researchers and content developers to rethink the ND (no derivatives) licence which restricts remixing and building upon OER. This will ensure that teachers have full autonomy to adapt and utilise programmes effectively. We suggest that content developers provide OER under more permissive licences that allow for adaptation and customisation. This would empower teachers to personalise the materials and cater to the diverse learning profiles of their students. For instance, past empirical research has demonstrated that students who struggle with reading-related tasks vary in their levels of proficiency in different reading domains (Daniel & Barth, 2023), and that a standardised reading programme may not be effective in improving the reading outcomes of all students with SpLD (Daniel et al., 2022).

In addition, funding agencies have a pivotal role in promoting the use of OER and open science in educational research. As researchers receive funding from taxpayers, it is imperative that researchers make their content open and freely available to foster transparency, accountability and wider dissemination of valuable educational resources. By adopting an open science approach, researchers can leverage taxpayer-funded research to create a repository of freely accessible materials that can benefit teachers, students and the educational community as a whole.

Drawing parallels to the programming world, the advent of platforms such as R (R Core Team, 2021) has revolutionised access to data analysis software. The availability of open-source packages and libraries has empowered individuals to build on existing platforms and develop innovative solutions without the need for expensive proprietary software. Similarly, in the educational context, the adoption of OER can democratise access to high-quality educational materials, encourage collaboration and drive innovation. In conclusion, this study's findings highlight the importance of translational science, that is, translating scientific knowledge into meaningful and comprehensive resources that support evidence-based practices, and that can be adaptable and accessible to educators around the world.

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CONFLICT OF INTEREST STATEMENT

The authors report there are no competing interests to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The undertaking of this project was categorised as an engagement and impact endeavour, thereby qualifying for an exemption from ethical review under the Research Ethics and Governance guidelines established by Durham University. In adherence to the terms of our agreement with our educational collaborators, we provided them with a copy of this manuscript for their review and feedback. The manuscript has been examined by the participating educational institutions, and approval for its content was granted prior to submission for peer review.

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