Using an assessment decision tree to align students' reading needs to support in secondary

school

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Abstract

Purpose. A decision tree was developed to support secondary school settings in identifying reading needs and aligning these needs with appropriate support and interventions. The purpose of this narrative review is to track the development of this tool, outline the practical context that motivated the tool, its grounding in research, how it was developed, and whether it was feasible, acceptable and effective when embedded in school practice. *Method*. The decision tree was developed through a collaboration between a researcher (the first author), representatives from a charity (including the second author) and teachers from a socially deprived geographical area on the northwest coast of England (including the third author). The manuscript draws on insights from the authors and data from a survey and meeting notes.

Results. We provide a narrative account of the development of the decision tree tool and summarise qualitative analyses of data emerging from a survey and meeting notes. Analyses revealed that the decision tree is feasible, acceptable and effective for use in secondary schools. Areas for future development were also suggested.

Conclusions. The implications of these findings will be discussed in relation to the existing evidence and approaches to implementation science and research-practice partnerships. We will also discuss the potential for scale up beyond the geographic region for which the decision tree was developed.

Keywords: assessment, decision tree, norm-referenced assessment, reading, literacy

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Language and literacy research often has clear implications for educational practice but there can be a disconnect between research and practice. There is growing interest in addressing this disconnect through collaborations between researchers and practitioners. For example, a recent special issue on this topic brings together studies illustrating how researchers and practitioners can work together successfully to conduct research (Dixon, McGeown, & Ricketts, 2022). The special issue shows that such collaboration can take many forms, with researchers seeking advice from practitioners, teachers taking an active role in constructing research, and research being embedded in educational contexts. What emerges is a clear message that language and literacy research benefits from practitioner input and as researchers work harder to engage practitioners, there are many lessons to be learned. For example, early involvement seems to be key (Snowling et al., 2022). Emerging research explores how to establish relationships and effective ways of working from the outset of projects (e.g. Alonzo et al., 2022), 'research-practice partnerships' (for a review, see Sjölund, Lindvall, Larsson, & Ryve, 2022) that enable research with research-practice co-production at its core (e.g. McGeown, Oxley, Ricketts, & Shapiro, 2022). There is also a clear role for 'translational' or 'implementation' science (Komesidou et al., 2022; Solari et al., 2020) that translates existing bodies of research for practice (e.g. Castles, Rastle, & Nation, 2018) or investigates how research tools or findings can be implemented in educational practice (e.g. Komesidou et al., 2022; Miles, McFadden, Colenbrander, & Ehri, 2022).

In this paper, we describe a research-practice partnership that emerged in Blackpool, a seaside town in the UK, and how this partnership led to the development of a decision tree for identifying the reading needs of secondary school students and aligning these needs

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with appropriate support and interventions. The first, second and third authors were all members of the Blackpool Key Stage 3 Literacy Project. The second author represented the charity overseeing this project, providing strategic oversight and project management. The third author taught in a Blackpool secondary school where she was the Key Stage 3 Literacy Project lead and was responsible for professional development on special educational needs within the school. The Blackpool Key Stage 3 Literacy Project team also included an experienced teacher and headteacher as chair, and teachers from each of the Blackpool secondary schools. The first author acted as a critical friend in the team, bringing expertise in conducting research on language and literacy in children (Ricketts, Bishop, Pimperton, & Nation, 2011; Ricketts, Nation, & Bishop, 2007) and adolescents (Ricketts, Dawson, Taylor, Lervåg, & Hulme, 2020; van der Kleij, Burgess, Ricketts, & Shapiro, 2022a), developing normreferenced (or 'diagnostic') reading assessments (e.g. Forum for Research in Literacy and Language, 2012) and many years of professional development provision for teachers on how to use such assessments. In what follows, we describe how we worked with schools in the Blackpool Key Stage 3 Literacy Project to establish a shared understanding of reading, develop the decision tree and evaluate it as a tool for identifying reading needs, and work to consider how to align needs with appropriate support and interventions.

Establishing a shared understanding of reading

The first step was to establish a shared understanding of reading based on the Simple View of Reading (Gough & Tunmer, 1986), which provides a useful theoretical framework for empirical research and assessment work. The Simple View of reading emphasises the importance of proficient word reading and language comprehension for reading success. It is clear that a child who cannot read words, or 'access print', is not a successful reader. However, being able to read words does not guarantee reading success; the messages

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conveyed by text must also be understood. In other words, both word reading and language comprehension are necessary for successful reading, and neither on its own is sufficient. Figure 1 depicts the Simple View of Reading in multidimensional space, which is useful as it allows us to think about how individuals will vary in reading. Often, word reading and language comprehension correlate such that individuals range from the bottom left corner (low word reading, low language comprehension) to the top right corner (high word reading, high language comprehension). However, these two sets of skills can dissociate, with some individuals experiencing specific word reading needs and others specific comprehension needs. For the classroom, conceptualising the Simple View of Reading like this can be useful as each student in the class will fall somewhere in this multidimensional space. Those in the top right quadrant are not a cause for concern. Those in the other three quadrants have word reading or language comprehension needs, or both. More information about the Simple View of Reading can be found in a UK Education Endowment Foundation Supplement by the first author¹ (see also Castles et al., 2018; Nation, 2019).

¹Can be downloaded from:

https://educationendowmentfoundation.org.uk/public/files/Publications/Literacy/Simple_View_of_ Reading.pdf



Figure 1. The Simple View of Reading, after Gough and Tunmer (1986)

In emphasising the most crucial processes for reading, the Simple View of Reading is simple. Though this is not to say that learning to read is simple, or that the reading process is simple. Indeed, reading is an extremely complex process that draws on a wide range of knowledge and skills. The Reading Comprehension House (Hogan, Bridges, Justice, & Cain, 2011) unpicks word reading and language comprehension.² The 'bricks' that underpin word reading are decoding, word recognition and fluency, and supporting those are phonological awareness and print knowledge. The 'bricks' that underpin language comprehension are inferencing, comprehension monitoring and text structure, and supporting those are vocabulary and grammar and syntax.

² The Reading Comprehension House is used in the Education Endowment Foundation guidance 'Improving Literacy in Key Stage 2': https://educationendowmentfoundation.org.uk/education-evidence/guidance-reports/literacy-ks2

Of course, there are many factors beyond word reading and language comprehension that are important for ensuring reading success. Some relate to the reader (e.g. background knowledge, purpose, motivation, reading experience, memory), and others to the text (e.g. topic, complexity of vocabulary, length). One issue with both the Simple View of Reading and Reading Comprehension House, is that word reading and language comprehension are considered to be independent, and vocabulary knowledge usually to be a part of the language comprehension component. However, knowledge of words also underpins word reading (Taylor, Duff, Woollams, Monaghan, & Ricketts, 2015). Once an individual can read, their representations of words can include not only their spoken forms and meanings (that support spoken language comprehension), but also their visual forms. This knowledge supports word reading i.e. going from visual forms to meaning or spoken forms. This same knowledge base also underpins the way that vocabulary knowledge allows us to piece together what is heard or read so that it can be understood. This notion is articulated in the Reading Systems Framework (Perfetti & Stafura, 2014), which also emphasises the importance of background knowledge (e.g. topic knowledge) for reading success. In summary, the Simple View of Reading doesn't capture all of the complexities of reading. However, it is still an extremely useful tool for establishing needs and aligning these needs to support. In a series of workshops and meetings, the first author covered the theory above, and presented research on reading and vocabulary in Key Stage 3 (the first three years of secondary school in the UK; age 11-14) from the Vocabulary and Reading in Secondary Schools (Ricketts et al., 2020) and Reading and Vocabulary (van der Kleij et al., 2022a; van der Kleij, Burgess, Ricketts, & Shapiro, 2022b) projects. Key findings were emphasised, including the wide variation in reading and vocabulary that will be encountered in

mainstream classrooms, and that a substantial group of students will face challenges that limit access to the curriculum.

Developing a decision tree for identifying need

In addition to establishing a shared understanding of reading, the Blackpool Key Stage 3 Literacy Project team workshops and meetings were also about sharing best practice and experiences of working in the different school contexts, focusing on how reading needs are identified and supported. As part of the project, all schools were using the same groupadministered reading assessment with all pupils in Key Stage 3. This assessment was primarily introduced to evaluate the impact of school-wide (or universal, Wave 1) practices that had been developed and introduced as part of the project. However, this assessment can also be used as a screening tool, establishing the range of reading abilities in a sample, and identifying children with reading needs. It provides norm-referenced scores that indicate whether a particular student is reading below the average range for their age (Breadmore & Carroll, 2021). These scores can be used to establish whether a student has substantial reading needs that will limit their ability to access curriculum materials and identified an unexpectedly high number of children with reading needs in Blackpool. This high level of reading need in Blackpool motivated the first author's involvement in the project: to establish what to do next to support these students. Having established a shared understanding of reading, a series of workshops and meetings allowed the team (authors, teachers, special educational needs coordinators) to develop capacity. This was an iterative approach, with the first and second authors working with the Blackpool schools to understand their priorities and how research and evidence could be embedded in their policies and practices. It was also a constructive process, with all team members contributing to sessions and discussions.

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What emerged from discussions was a need to work with schools to develop capacity in assessment so that schools could identify needs with more confidence and precision, align these needs with support, and evaluate the impact of this support. Our first priority was to ensure that all children who had been identified by the group-administered task actually had a reading need. Group assessments make large scale assessment feasible for schools. However, they tend to be completed in silence, which places constraints on the mode of assessment. For example, responses are often multiple choice, which leaves them open to guessing, and it is not always possible to ensure that students are engaged and attentive when completing the tasks. As with any assessment tool, performance is driven by more than just the target set of knowledge and skills. In this case, the assessment could underestimate reading ability for some students, with low scores reflecting inattention or lack of engagement rather than reading needs. There was therefore a concern that the group-administered assessment might unwittingly misidentify reading needs, triggering reading-related support where it wasn't needed, and wasting precious resources. Therefore, the first purpose of our approach was to collect additional information to rule out students who don't show low reading scores when the assessments are completed 1:1 with an adult. The second purpose of our approach was to add precision to information about reading need, specifying the type of support required.

A decision tree was decided as the best course of action to confirm and specify students' reading needs (Koon, Petscher, & Foorman, 2014). Decision trees are support tools that outline how decisions lead to different outcomes. In our case decision making was based on diagnostic assessments, and outcomes indicated targeted interventions. A simplified schematic of our approach is included as Figure 2 below. If the answer to the first question "does assessment suggest a reading need" is no, this indicates that a reading intervention is not needed for this student, no further action is required and 'quality first teaching' should continue as usual. If the answer is yes, the practitioner can move down the nodes of the tree to specify whether the reading need relates to word reading or comprehension or both. If a reading comprehension need is indicated, then further assessment of spoken language is recommended to establish whether the comprehension support or intervention should focus on spoken language comprehension. For example, a vocabulary assessment could be used to see whether vocabulary knowledge should be a priority for intervention.



Figure 2. A decision tree for identifying reading needs and aligning them to support and

interventions

The decision tree that was used in our project is available on the Open Science Framework (<u>https://osf.io/kbf2d/</u>). This approach was heavily informed by practices adopted in one of the schools, led by the third author but reflected differing priorities and levels of resource and capacity across eight Blackpool secondary schools and the Pupil Referral Unit (an educational setting for students who can't attend mainstream school). It also included guidance around norm-referenced scores, incorporated the norm-referenced assessments that were available to the schools and used the Simple View of Reading to align reading needs with support. The decision tree encourages schools to follow a set of steps that involve using individually-administered assessments to answer questions about need. Using the full decision tree enables schools to establish whether there is a word reading need and a reading comprehension need so that they can classify students in relation to the four quadrants of the Simple View (see Figure 1). However, schools can just use parts of the tree, depending on resources and priorities.

The first author provided schools with training and support on the decision tree and how to use it alongside individually-administered standardised assessments to specify pupil needs. Training comprised two sessions lasting 60-90 minutes each. One session was for the literacy leads in each school (teachers with senior leadership responsibilities), and the other was for the special educational needs coordinators working in each school. These sessions were followed by meetings with individual schools and the Pupil Referral Unit, approximately one week later, where the feasibility and acceptability of the decision tree was discussed, and schools were given individualised support on how the decision tree could be embedded in their context. Seven months later, a survey was administered to schools, asking about: (i) uptake; (ii) implementation (feasibility, acceptability); (iii) changes in practice; and (iv) suggestions for future development. In what follows, we summarise responses to these survey questions, supplementing with information from meeting notes where relevant. Of the eight Blackpool secondary schools and one Pupil Referral Unit in the project, five responded to our survey.

Uptake of the decision tree

Four of the five schools who responded to our survey were still using the decision tree seven months after initial implementation. Additional meeting notes indicated that one further provider, the Pupil Referral Unit, was using the decision tree during their induction process when children arrived from mainstream provision. In all cases, the school Special Educational Needs Co-ordinator was involved in the use of the decision tree, either through direct implementation, or, in one case, through outcome data sharing. Additional members of staff who were involved in the usage of the decision tree were assistant Special Educational Needs Co-ordinators, Literacy Leads (teachers with senior leadership team responsibilities) and Higher Level Teaching Assistants (HTLAs).

Implementation of the decision tree: feasibility and acceptability

When asked about the advantages of the decision tree, practitioners identified it as a useful guidance tool once initial assessment had been carried out *'Provides guidance on what to do post [initial reading test]'; 'Clear and purposeful diagram to assist team in diagnosing appropriate next steps'.* The tool also provided evidence to support interventions *'a clear rationale for providing intervention at the point of need'.*

No challenges were identified in relation to the tool itself, however issues were raised about implementation and later intervention. The first challenge was around staff capacity, especially in the realms of conducting timely one to one assessments 'As we struggle with... capacity, we can't undertake all the testing we want to'; 'Capacity to deliver / time taken for screening.' Another challenge was the use of a *data driven* approach, with one practitioner mentioning that teachers' pedagogical knowledge should be used in combination with the tool 'Data can conceal and the decision tree shouldn't be used in isolation from teacher observations. The data alone shouldn't diagnose next steps'. Indeed, the narrative around 'next steps' was clear; while the decision tree can identify students (and the tools suggested can create a 'reader profile'), it is up to schools themselves to decide upon which intervention to use and how and when to conduct this 'What are the best bets for specific interventions after assessment the "so what do we do".

Changes in practice

Practitioners were asked about changes needed to support implementation of the decision tree, and any guidance or training necessary. The use of the decision tree led to some schools changing practice, although only two of the five schools responded to this question so results must interpreted with caution. While one practitioner reported better knowledge of standardised assessments of reading comprehension and vocabulary, as being *'More in tune'* with them, the other reported better use of data to identify and group students *'more robust data scrutiny and screening supports reading need and intelligent grouping of students ensures wave 2 and 3 interventions are pitched and targeted with increased accuracy.'*

Suggestions for future development

We asked practitioners about any changes that they feel are necessary to support implementation in their schools. In terms of identifying children who may benefit from additional support, one school suggested a more 'efficient method' could be useful, however no specific suggestions of what this would entail were provided. Another school suggested more children should be screened early in the school year '*build capacity to screen larger* numbers of students requiring wave 3 intervention in half term 1'. However, this challenge may be more of an issue with the school's capacity, rather than the decision tree itself. Indeed, another practitioner identified '*More time available for one to one and small group intervention'*, as a change needed for effective implementation. While there is little that can be done externally with regards to staff capacity and ability to carry out one-to-one assessments, some suggestions schools made about future development of the decision tree may be feasible, such as providing additional information about intervention '*Extending the decision tree to provide suggestions of interventions';* '*More support with identifying cohorts and* [*sic*] *what the assessments lead to'*. Clear guidance could also be given around when children should be reviewed following intervention '*We could give more of an indication of when interventions should be reviewed';* '*We need regular assessment to inform whether the interventions are working.*'

Future scale ups should include more training for school staff. This training should begin with the foundations of literacy research 'understanding of the simple view of reading'; 'Acronyms need to be de-mystified', and the testing process 'Training/guidance on how to deliver each of the named tests and the rationale for choosing each test.' Training should also be provided around the interpretation of assessment data 'Understanding of how data can be scrutinised and drilled down into to ensure interventions are targeted at the point of need at ks3'; 'Training/guidance on how to interpret test results'.

Aligning need with support

The decision tree workshops and meetings revealed that the next step should focus on interventions and support, and this resonates with survey findings above. It was clear that schools wanted guidance on 'what to do' once reading needs had been identified. However, responding to this request is complicated by lack of evidence. It is not clear how best to intervene to promote reading for secondary pupils (Paul & Clarke, 2016), particularly word reading, though there has been some success in promoting reading comprehension (Clarke, Paul, Smith, Snowling, & Hulme, 2017; Vaughn et al., 2013). In the absence of a stronger evidence base, it did not seem appropriate to recommend that schools change what they were doing but rather develop a framework for scrutinising and evaluating what they were doing, with reference to the evidence that was available (e.g. Carroll et al., 2017; Quigley & Coleman, 2018). The next steps were also guided by the importance of focusing not only on what is *effective*, but also what is *feasible* in the school contexts, and *acceptable* to educational practitioners. Indeed, it doesn't matter how effective an approach might be in idealised conditions, if it can't be embedded in the school environment or accommodated during the school day (feasibility), or isn't acceptable to school staff, it is unlikely to be successful. Therefore, instead of recommending specific strategies and intervention programmes, the next piece of work provided a framework for embedding such support. Schools were encouraged to identify what they were doing, how they were aligning need with support, how they were evaluating the impact of any interventions and support for the student and school. They were also encouraged to adopt an iterative approach to quality assurance and decision making. The session drew on the principles of 'response to intervention' (Fuchs & Fuchs, 2006; Vaughn & Fletcher, 2012). Notably, it emphasised a tiered approach to providing support and intervention, with high quality universal teaching as the starting point (otherwise known as quality first teaching, or Tier 1/Wave 1 support), and the use of careful assessment and monitoring to provide more targeted support in small groups and by more specialized professionals, as needed (Tiers/Waves 2 and 3).

Conclusions

We responded to the needs of secondary school settings in a geographical area of England with high levels of social disadvantage. We developed a decision tree for schools to use when identifying reading needs and aligning these needs with support. Survey findings indicated that most schools were using the decision tree and that it was feasible and acceptable, though respondents noted that it should be combined with teachers' observations, that staff capacity is an issue (e.g. to conduct time consuming 1:1 assessments), and that further training and support for staff would be helpful (on reading research, assessment administration and data interpretation). Although the development of the decision tree was not guided by a formal approach to research practice partnerships or implementation science (Sjölund et al., 2022), principles of these approaches were used throughout the process. For instance, the tree was created from a direct need in Blackpool schools, ensuring the tool was aligned with school priorities in the town (Snow, 2015). Furthermore, by ensuring teachers and researchers had a shared understanding of the process of reading, the research-practitioner collaboration supported professional learning (Ross & Bruce, 2012).

The decision tree has the potential to be scaled up on a national level, however there would be several challenges associated with this. For example, all school settings in this case study were using the same tool as an initial screener, and we cannot assume that this would be widely available for schools nationally. Indeed, the screener is costly, both in terms of finances and time. For scale up, a decision tree should be flexible so that it can be used alongside the assessments chosen by each school. Importantly, the first step of the decision tree should entail a screening process where the reading abilities of all students in a cohort are assessed, followed up by diagnostic assessments that are conducted 1:1 with those

identified by the screener as having reading needs. These diagnostic assessments should confirm that there is a reading need, be reliable and valid, and distinguish between word reading and reading comprehension needs (Gough & Tunmer, 1986). Ideally, further diagnostic assessments should be used to follow up reading comprehension needs and identify targets for intervention as children with reading comprehension difficulties show heterogeneous profiles that require different approaches to intervention (Cain, 2010; Language and Reading Research Consortium, 2017; Nation, Cocksey, Taylor, & Bishop, 2010; Paul & Clarke, 2016). The school settings were also involved in the Blackpool Key Stage 3 Literacy Project, making literacy a strategic priority and benefitting from a strong community of practice. This likely increased uptake of the decision tree and promoted its implementation. At minimum, scale up of the decision tree would require effective professional development and guidance on how to use the tree, which should be freely available for schools alongside the decision tree.

The development of this decision tree foregrounded the importance of working collaboratively with teachers and other non-academic stakeholders in order to improve educational provision for children with reading needs (Dixon et al., 2022). However, existing structural factors can hamper such collaboration. For example, research funders often favour grant proposals that provide a detailed outline of all aspects of the research that will be conducted. For a collaborative project, this means that any work to establish the aims and methodology needs to be undertaken before a funding proposal is submitted. This creates a kind of catch 22 where researchers can't collaborate with non-academic stakeholders until they receive funding and can't receive funding for these projects until they have undertaken some collaboration, which is challenging or even impossible without capacity and funding. We need research funding mechanisms that focus on research-practice collaboration, and

can accommodate the uncertainty that truly collaborative research brings. Such mechanisms should be flexible so that research can be led by academics and universities, but also initiated by practitioners and other non-academic stakeholders.

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