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Assessing the range and evidence-base of interventions in a cluster of schools

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Abstract

The last decade has seen an increased focus through policy and research for schools to move towards an evidence-informed practice. Although some practitioners now access the external research evidence when deciding which interventions to adopt in their school, research suggests many still do not. Instead, approaches to teaching and learning are often informed by trends and the opinions and experiences of practitioners. Little is known about what intervention programmes/approaches are used in schools and whether they are evidence-based. We conducted this study to assess the range and evidence of interventions used in a school cluster in Wales, which comprised two secondary schools, seven primary schools and one special school. Using questionnaires, we evidenced 242 interventions. Following screening, we included 138 of these in the analysis and categorised them according to the 'SEN Areas of Need'. We then conducted a rapid systematic review of the literature for these interventions and found that 30% had some evidence of positive impact on pupil outcomes, 67% had no published evidence, and 3% had causal evidence to suggest they were

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ineffective. One year later, we conducted a follow-up study to assess if schools' knowledge of the evidence for the interventions, presented through a summary report, had an impact on their provision. Our data suggest that the reports had very little impact on existing provision, and some schools continued to use the same interventions. The limitations of this study and directions for the cluster, policy and research are discussed.

KEYWORDS

evidence-base, evidence-informed practice, interventions, review, schools

Context and implications

Rationale for this study

There are many reported barriers to evidence-use that prevent schools from using the external evidence when making decisions about provision. This study provides new information on the range and evidence-base of interventions in use in a school cluster.

Why the new findings matter

The findings suggest that schools adopt a large number of interventions that have a very limited evidence-base, with few having evidence of causal-effect. The results suggest that when presented with summary reports of evidence, not all schools use this information to make informed decisions. The results, will be used to inform cluster provision and help move them towards a more evidence-informed approach to improving provision.

Implications for Governments, education funders and the research community

Governments, education funders and the research community should use these findings as a starting point for creating a robust and relevant repository to help schools identify more effective interventions and to develop the external evidence-base and to inform future collaborative research projects.

INTRODUCTION

The last decade has seen significant changes in national education policy designed to promote more evidence-informed approaches to teaching and learning in schools (Coldwell et al., 2017; Donaldson, 2015; Department for Education [DfE], 2010, 2016a, 2016b; Institute

for Effective Education, 2019; Organisation for Economic Co-operation and Development [OECD], 2014, 2017). An example of this is the development of the self-improving education system in England (Hargreaves, 2010), and the promotion of schools as learning organisations in Wales (Kools et al., 2018). These policies were introduced as a means to developing best practice and improving standards of teaching, through the use of external research and teacher enquiry. Within these models teachers are viewed as 'knowledge workers', actively building their knowledge, expertise and capacity, through enquiry and collaborating within school, with other schools and the wider research community (see Brown & Greany, 2018; DfE, 2010, 2016a, 2016b; Kools et al., 2018, 2020; Welsh Government, 2015a, 2015b). The intended outcome is an education system in which schools and teachers are closely aligned with research findings and evidence, and the use of research in schools to improve provision becomes a cultural norm (Brown & Greany, 2018; Godfrey, 2014, 2017; Godfrey & Handscomb, 2019). However, the ways in which this can be achieved have not yet been clearly defined in the literature (Godfrey & Brown, 2018).

There is a growing impetus for schools to access and apply external research evidence to improve the quality of teaching and the outcomes learners achieve (Gorard, 2020; Slavin, 2020). In this study, we consider external research evidence to be evidence derived from the external research community, and more commonly created by academic researchers. This evidence includes peer-reviewed and published primary studies, and reviews such as meta-analyses or evidence syntheses. The rationale for using research evidence to improve the quality of provision in schools has attracted steady support over recent years (e.g., Goldacre, 2013; Slavin, 2008; Slavin, 2020). Through use of external research evidence, a greater number of schools should be able to make more informed decisions, identify strategies and promising programmes that may be effective in their context and, ultimately, improve educational outcomes for pupils (e.g., Brown et al., 2017; Cooper et al., 2009; Godfrey, 2014; Nelson & O'Beirne, 2014). However, there is currently very little evidence to suggest that the uptake of more evidence-informed approaches has a positive impact on pupil outcomes (Gorard, 2020).

There are many common and interrelated challenges associated with embedding research evidence in schools. In 2003, Hemsley-Brown and Sharp (2003) reported results from a systematic review which found that there is a lack of time and capacity for teachers to engage with research; underdeveloped research literacy skills within the profession; negative attitudes and opinions of research evidence; and a lack of accessible, relevant and usable evidence. Since this review, several other reviews and investigations have found that the same barriers continue to persist (see Cain, 2016; Gorard, 2020; Hemsley-Brown & Sharp, 2003; Van Schaik et al., 2018; Walker et al., 2019).

If external research evidence is to be used to improve teaching practices and provision, then it is essential that there is high quality evidence available that is of practical use (Van Schaik et al., 2018; Walker et al., 2019). However, there is little agreement about what constitutes high-quality evidence in education. Many researchers place evidence derived from randomised controlled trials (RCTs) at the top of an evidence hierarchy, claiming it to be the gold standard of research (e.g., Goldacre, 2013; Slavin, 2008). However, others express concern about the overreliance of RCTs, which neglect to address the multiple and complex contextual issues associated with schools, and with the pupils and teachers within it (e.g., Hammersley, 2009, 2015; Thomas, 2016, 2021). Empirical evidence derived from experimental research can provide information about what programmes have the greatest chance of working ('what works'), but it is argued that teachers need more than this information to make sense of what will work in their context. Importantly, teachers also need to know if a programme or teaching approach will be effective for pupils in their school and, specifically, how they can get the approach to work in their setting to gain maximum impact with available resources. A systematic review by Connolly et al. (2018) of all RCTs conducted in education

from 1980 to 2016 also found that two thirds of RCTs neglect to address some of the pertinent factors such as implementation and causal process. It is, therefore, unsurprising that some teachers perceive some research evidence to be of little practical use (Van Schaik et al., 2018). Arguably, through greater use of mixed methods approaches, researchers can determine the likely impact, causal process, the factors that impede or enhance implementation, and the acceptability and suitability of programmes and teaching approaches (Nutley et al., 2013).

If teachers are to use the external research evidence, then the evidence must be usable and trustworthy (Van Schaik et al., 2018). For example, despite limited research literacy skills, teachers should be able to draw conclusions from the results, apply this to the classroom, and have confidence in the findings. There is a proliferation of research evidence in education, and often popular programmes and teaching approaches have large bodies of evidence that is fragmented and difficult to access. Even when the evidence is available, research reports are often ambiguous and contradictory (Broekkamp & van Hout-Wolters, 2007). For many teachers, this makes evaluating the evidence challenging, time consuming and often inconclusive. Without the necessary research literacy skills or time to fully understand and evaluate the validity, reliability and integrity of the evidence, it becomes difficult to determine the likely impact of a programme. This may lead to school leaders—and policy makers more widely—choosing programmes that are based on weak causal evidence from methodologically flawed research (See, 2018). It is therefore necessary for researchers to invest time ensuring the research design and methods are transparent and limitations or threats to validity and reliability are clearly communicated (Bryman et al., 2008).

The ability to critically examine the design and execution of research is important for determining the trustworthiness of findings and understanding what counts as high-quality and low-quality evidence (Gorard et al., 2020). This is particularly relevant when synthesising or reviewing a body of evidence. According to Gorard et al. (2020) it is common for reviewers of research to neglect to attend to the quality and commensurability of studies, when reviewing or aggregating the results. This often leads to untrustworthy research findings and misleading conclusions drawn by educators who lack the research training in how to identify important methodological weaknesses in research outputs, even when presented in summary format via more trusted evidence repositories. There are many systems used for evaluating the quality of research. The Grading of Recommendations Assessment, Development, and Evaluation approach (GRADE) is one of the more popular systems, mandated by the Cochrane Collaboration (Movsisyan et al., 2018). The GRADE system rates the quality of evidence from high to low based on study design, limitations, inconsistency of results, indirectness of evidence, imprecision and reporting of bias (Balslem et al., 2011). Gorard (2014) has also developed a system that evaluates the trustworthiness of research based on design, scale, attrition, quality of data or measurement quality, fidelity, validity and integrity. It is recommended that researchers now routinely employ evidence 'sieves' such as these to evaluate the quality of research findings, particularly when producing summaries of findings for teachers. The routine adoption of more robust assessment systems will ensure decision makers have access to meaningful and representative research outputs that will enable them to identify strategies and interventions that are more likely to have a positive causal impact on learner outcomes and, conversely, to avoid approaches that lack sufficient evidence of positive causal impact.

Over recent years important steps have been taken to identify the key facilitators that enable evidence uptake and mobilisation in schools (Cooper et al., 2009; Gorard et al., 2020; Nelson & Campbell, 2017; Schaik et al., 2018; Slavin, 2017), including: the availability of a range of high-quality and comprehensive evidence that evaluates a broad range of teaching approaches and programmes; the translation of evidence into accessible, teacher-friendly

reviews; the need for greater cooperation and collaboration between researchers, teachers and policy makers; the need for schools to build organisational structures and foster cultures that support teacher enquiry and the use of research and evidence; and the need for schools to be incentivised to adopt evidence-based programmes. Notably, findings from a recent review by Gorard et al. (2020), demonstrate that very little empirical evidence exists that supports the facilitators of evidence use. However, evidence suggests that although simply disseminating more accessible and practical summaries of evidence alone might improve users' knowledge, it does not seem to be an effective strategy for impacting practice.

There have been efforts from governments and researchers over recent years to improve the mobilisation of research evidence to improve outcomes for learners. A significant initiative by the UK government in 2010 was to commence funding 'what works' centres such as the Education Endowment Foundation (EEF) and the Early Intervention Foundation (EIF), intended to be trusted and accessible sources of what works evidence for school leaders and educators. An essential resource from the EEF is the Teaching and Learning Toolkit (<https://educationendowmentfoundation.org.uk/evidence-summaries/teaching-learning-toolkit/>; Higgins et al., 2016). The aim of the toolkit is to provide schools with evidence-based summaries of the most effective teaching strategies and programmes, including information on set-up and implementation costs. Teachers can now also engage with educational research and find best practices methods through a variety of informal online groups and Twitter sites, and teacher-led initiatives such as 'ResearchED' (<https://researched.org.uk/>) and through professional organisations such as England's Chartered College of Teaching (<https://chartered.college/>).

Through a range of other national and international educational research repositories such as the What Works Clearinghouse (<https://ies.ed.gov/ncee/wwc/>), and Evidence 4 Impact (<https://www.evidence4impact.org.uk/>), school leaders and teachers now have greater access to research evidence that collates summaries on a wide range of intervention programmes and approaches. However, much of this research has been conducted in primary schools, and there is a more limited evidence-base for educators in secondary schools (DfE, 2017). When Ager and Pyle (2013) sought the views of school leaders in England on their attitudes to accessing evidence for decision making, 67% indicated they consult these types of evidence repositories when deciding how to spend their additional Pupil Premium funding, with nearly half referring to the EEF Toolkit. However, it has been suggested that efforts to engage with research may, in part, also be driven by a desire to satisfy accountability demands from inspection agencies (Brown & Greany, 2018). Brown and Greany (2018) reported more encouraging findings from teacher engagement with research evidence, with 76% of teachers choosing to strongly agree or agree that research plays an important role in informing their practice, and 86% indicating that information from research is useful in helping them apply new classroom approaches.

Despite a growing awareness of the importance of using research evidence to inform practice, and an increase in accessible information about 'what works', recent evidence suggests that evidence from external research is still infrequently used by teachers to inform teaching practice (Nelson et al., 2017). Findings from a series of teacher surveys has suggested that teachers are most likely to use past experiences of what works, and the experiences of colleagues within schools and from other schools, when choosing which teaching approaches to adopt (Nelson et al., 2017; Walker et al., 2019). These findings support previous studies, and suggest that teachers may be informed and influenced by trends, and the opinions and experiences of other teachers within their own and other schools (Greany & Brown, 2017). It would seem that when selecting interventions, school leaders often favour programmes that are popular and compatible with past or current practice, despite the fact that these approaches often have little or no research evidence, demonstrating that they

have a causal impact on improving learner outcomes (Greany & Brown, 2017). Also, some evidence-based programmes may be viewed as incompatible with the school context in which they are to be implemented, and this prevents their adoption by teachers. For example, teachers may perceive interventions to conflict with a school's policies, philosophies and existing programmes or initiatives, and other approaches might be viewed as incompatible with available resources such as school budget, staff availability and available teaching materials (Bumbarger & Perkins, 2008; Forman et al., 2009; Powers et al., 2010).

In addition to planning and delivering whole class instruction, teaching staff are routinely responsible for providing enhanced support to pupils with additional learning needs (ALN) in Wales, special educational needs (SEN) in England and Northern Ireland, and additional support needs (ASN) in Scotland. Pupils requiring this level of enhanced support comprise 22.2% of all pupils in Wales, and 14.9% of the school population in England (DfE, 2019; Welsh Government, 2019). In England, around 12% of pupils with SEN are in primary schools and 10% in secondary schools with a significant number of these pupils possessing a statement of Special Education Need or an Education, Health and Care plan (EHCP). Although enhanced provision for these pupils typically covers supplementary teaching for literacy and numeracy, the most common types of support are provided to pupils with speech, language and communication difficulties; moderate or general learning difficulties; and social, emotional and mental health difficulties (DfE, 2019; Welsh Government, 2019). Moreover, there have been increased pressures to support pupils' mental health problems, which is reflected in recent government policies and guidelines (e.g., Green et al., 2004; Public Health England, 2017; Welsh Government, 2017).

Schools are now expected to provide effective support for pupils with additional needs and/or in need of supplementary teaching (e.g., DfE, 1997, 2016a, 2016b; Welsh Government, 2015b), and this additional support is frequently delivered to small groups of pupils with similar needs and/or to pupils who require more intensive, individualised support (Estyn, 2020). This requirement is now closely linked with the provision of additional funding for schools to support disadvantaged and/or struggling learners (e.g., the Pupil Development Grant [PDG] in Wales and the Pupil Premium funding in England; DfE, 2015; Welsh Government, 2015b), and has led to the growth of the number and variety of interventions available to schools. Some interventions have robust causal evidence, many have preliminary evidence, some are ineffective, and a vast number simply have no evidence (see <https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects>; See & Gorard, 2020). As we have described previously, there is considerable value, and a moral imperative, to use the best available research evidence to identify strategies and interventions that are likely to have the greatest impact on pupil outcomes. This approach also ensures that scarce resources (including staff time and additional catch-up funding for disadvantaged learners) are spent more efficiently, and staff are not burdened with the additional and unnecessary task of implementing unproven or ineffective interventions (Gorard, 2020; Styles & Torgerson, 2018).

Very little information is available about the range and evidence supporting teaching interventions used in schools. Many published papers write about schools' and teachers' engagement with research evidence (e.g., Bell et al., 2010; Coldwell et al., 2017; Nelson et al., 2017; Walker et al., 2019), but few offer insights into the extent that research-evidence is in use in practice and, more specifically, how many interventions used in schools are evidence-based. To date, there has been no systematic attempt to better understand the range and evidence base for interventions that are being used in UK schools.

The following study was conducted with a well-established cluster of schools in Wales to evaluate the range and evidence base for the interventions used across the two secondary schools, seven primary schools and one special school. In the interest of moving

towards a more evidence-informed practice, the cluster of schools had entered into a research partnership with the Regional School Effectiveness and Improvement Service for North Wales (GwE) and the Collaborative Institute for Education Research, Evidence and Impact (CEIREI), Bangor University, to commission this evaluation work alongside other close-to-practice research projects. Throughout this study, the head teachers and senior leaders were closely involved in the development and planning of the research and worked collaboratively with the lead researcher who was embedded within the cluster.

The primary aim of this study was to explore the range of interventions used in the cluster and to assess the evidence base for the interventions, in particular to help identify the interventions and/or programmes that possess evidence of positive causal impact on pupil outcomes. A secondary aim was to investigate whether increased knowledge about the evidence for the interventions used in the cluster, presented through a summary report to school leaders, had an impact on existing provision. The intention of this collaborative research project was to help move the cluster towards a more evidence-informed approach whereby school leaders will be better able to make more informed decisions on school provision by drawing on a more trustworthy summary of the available research evidence. These findings will also provide policy makers with an improved understanding of the range and evidence base of provision in a school cluster and will inform discussions around how best to facilitate evidence-use in schools. The aim of this study was to answer the following questions:

1. What is the range of interventions used across a school cluster?
2. What is the evidence-base for these interventions?
3. How will access to this information impact provision in schools?

METHOD

Design and analysis

In order to get a robust answer to the research questions asked we used mixed methods design incorporating questionnaire, systematic review and qualitative interviews. First, to understand the range of interventions used across a school cluster, data were collected using questionnaires, then categorised and analysed using descriptive statistics. Second, to assess the causal evidence for the interventions, a systematic review of the literature was conducted. Finally, for the follow-up investigation, checklists of interventions were used and interviews were conducted to identify any changes that were made to school provision. Questionnaire data was analysed using descriptive statistics, and the interview data was analysed using thematic analysis, as outlined by Braun and Clarke (2006). For the thematic analysis, the recorded data was transcribed and read twice before salient and interesting comments were coded and converted into themes. The final and main themes are presented in a narrative description.

Ethics

The study was conducted under ethical approval from the School of Education Research Ethics Committee, at Bangor University (18-03). We obtained consent from each participating head teacher. To protect anonymity, identifiable information such as school or head teacher names are not disclosed.

Participants

The participants in this study were a cluster of 10 schools located in an area of high deprivation in an urban area of the United Kingdom. The cluster consists of seven primary schools (six English medium and one Welsh medium), two secondary schools (English medium), and a special needs school (English medium), and represent a typical group of medium to large schools. For each school, the head teacher and a member from the senior leadership team, considered to be most knowledgeable about school provision, were responsible for completing the survey of interventions.

Follow-up investigation

Nine schools took part in the follow-up investigation to assess the impact of the information about the evidence for interventions on school provision. One school withdrew because of a change in leadership. The head teacher and a member from the senior leadership team involved in the primary data collection were responsible for completing it at follow-up.

Data collection methods

We developed a questionnaire to collect information about the interventions currently in use in each school. Because so little is currently known about the range of interventions used in schools, this study intentionally kept the inclusion criteria broad. This decision was guided by a requirement to identify all relevant interventions, regardless of type. The questionnaire included a series of demographic questions, and a question that asked respondents to provide a list of all school-based interventions used in the current academic year. A spreadsheet was provided for participants to input the interventions identified. Alongside each intervention participants were asked to indicate how the intervention was used in the school—for example, universal provision (tier 1), group-based support (tier 2) and/or one-to-one intensive support (tier 3).

Follow-up investigation

To assess the impact of the information about the evidence for interventions on school provision, a checklist of interventions was created for each school. This was a list of all the interventions that were primarily collected from the school. The respondent was asked to place a mark next to the intervention to indicate if the intervention was 'still in use' or 'not in use'. In addition, the head teachers were invited to attend a short one-to-one interview with the first author.

Procedure

We collected data using a multiphase iterative approach that included three phases. This approach allowed the researcher to engage with each data collection phase in a reflexive way, repeating steps to ensure the final data set was comprehensive, and that any newly implemented interventions were not missed. A copy of the questionnaire and spreadsheet were emailed to the head teachers in February 2018. The data were collected across three time points; phase one (May 2018), phase two (June 2018) and phase three (July 2018). To

encourage responses, schools were sent reminder emails before each phase. Throughout the process the researcher met with the head teachers in their termly cluster meetings to support the data collection process and answer any questions on the inclusion criteria for an intervention.

In phase one, respondents were asked to provide a list of all school-based interventions. In phase two, the research question was redefined to remove the ambiguity of the term 'intervention' and to remove any limitations that might have prevented an intervention from being included. Teachers were instead asked to provide an up-to-date list of all school-based 'provision'. In phase three, schools were again asked to provide an updated list of school provision and, in addition, were offered an unstructured meeting with the researcher, to facilitate the process. Three schools participated in a one-to-one meeting with the researcher, in which questions were asked about the practices and programmes used with pupils outside of routine teaching. The final list of interventions was collated at the beginning of July 2018.

In October 2018, schools were provided with simple individualised summary reports. Each report included a table of interventions used by the school and provided a summary of the evidence base that was gathered following a systematic review of available literature (e.g., reports summarised whether there was preliminary, promising or no evidence of causal impact for each intervention).

Follow-up investigation

To assess the impact of the information about the evidence for interventions on school provision we sent a checklist of interventions to each of the head teachers at the end of November 2019. Head teachers were offered the choice of completing and returning the follow-up checklist by email ($n = 2$) or completing with the first author during a one-to-one interview ($n = 2$). Head teachers also received an invite to attend a one-to-one, semi-structured interview with the first author to answer the following question: has greater information about the evidence-base of interventions had an effect on the way you choose school provision?

Screening of the interventions

The total number of interventions collected from the cluster was 242. This included 157 unique interventions and 85 duplicate interventions, across all 10 schools (e.g., Emotional Literacy Support Assistant [ELSA] was a duplicate intervention used in six of the schools).

The interventions used by the schools were initially screened for inclusion in the study according to the inclusion and exclusion criteria, and those that did not meet the criteria for an intervention were removed from the study. These judgements were also independently assessed by another researcher, any discrepancies were discussed, and agreement was reached on 100% of the data.

Definition of a school-based intervention

We could not find a widely accepted single definition for the term 'intervention' in education research nor in the wider school system. For this study we have used a definition derived from the Response to Intervention (RtI) tiered approach (Fletcher & Vaughn, 2009). A school-based intervention is defined as the provision of supplementary support, targeted at addressing deficits in pupil learning and development, when whole class instruction or the typical universal teaching provision is not sufficient (described in the RtI model as tier 1 or

standard provision). Interventions are different from, or additional to the universal standard provision offered by the school or class teacher to all children and are typically delivered to small groups of pupils with similar need (described as tier 2 interventions), or individual pupils with persistent and significant need (described as tier 3 interventions). Interventions are not accommodations (e.g., a change to the classroom environment that gives students equal access to learning), or modifications (changes to what a student is taught or expected to learn).

In accordance with the definition of a school-based intervention, interventions were included if they were delivered in school, during school hours; pupils aged 4–18 years were the recipients; and they were used as small group (tier 2) and/or one-to-one (tier 3) supplementary support that targeted deficits in learning, well-being and/or behaviour.

Interventions were excluded if they were used as universal/whole school provision (tier 1); pupils were not the recipients; they were considered to be an accommodation or modification; they represented teaching staff or school facilities; and/or they were an external service. Figure 1 shows the results from the screening and eligibility process and Table 1 shows examples of interventions that were removed from the study. For a full list of the interventions, excluded see Appendix A.

Categorising the interventions

A total of 138 interventions were included in the final analysis (see Figure 1 and Table 2). This included 70 unique interventions and 68 duplicate interventions (e.g., some of the

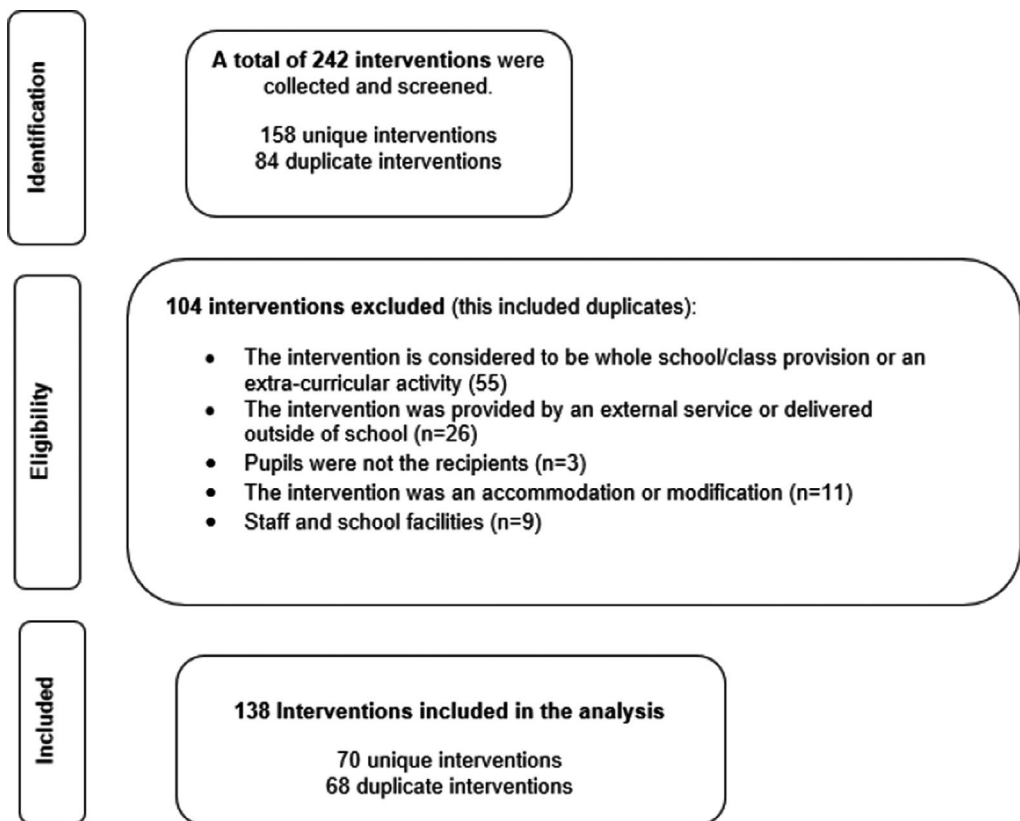


FIGURE 1 Flow diagram displaying the number of interventions included and excluded from the study

TABLE 1 Examples of interventions excluded from the study, following screening

Provision excluded	Reason for exclusion
Personalised timetable	Accommodation or modification
Sensory breaks	Accommodation or modification
Visual timetable	Accommodation or modification
Reduced hours	Accommodation or modification
Behaviour support services	External
Child and Adolescent Mental Health Services	External
Counselling service	External
Educational Psychologist	External
Key worker	Teaching staff
Safe-Guarding Team	Teaching staff
Higher Level Teaching Assistant	Teaching staff
Learning Coach	Teaching staff
Young Carers in Schools Programme	Pupils were not the recipient
Direct instruction	Universal provision
After-school clubs	Universal provision
Social and Emotional Aspect of Learning (SEAL)	Universal provision
Attendance rewards	Universal provision

unique interventions were used by more than one school). In response to the broad range of interventions collected, we decided to adopt the 'areas of need', as defined in the SEN Code of Practice, as a means of broadly categorising the interventions. These areas of need are generally well understood by educators and policy makers throughout the UK, and provide a useful framework for categorisation. The areas of need are: Communication and Interaction; Cognition and Learning; Social, Emotional and Mental Health; and Sensory/Physical (DfE, 2015).

First, we collated interventions into an Excel spreadsheet, then coded and categorised them according to the SEN areas of need. Next, we categorised the interventions into sub-categories according to their instructional focus, which was determined by searching programme websites. The term 'non-specific' was adopted for interventions that did not name a specific programme or include a defined instructional approach (e.g., nurture groups consist of groups of vulnerable learners created without the use of specific protocols or approaches).

RAPID SYSTEMATIC REVIEW OF THE EVIDENCE

We conducted a rapid systematic review of the literature to assess the evidence-base for the interventions. Any interventions defined as non-specific were excluded from the systematic review because research could not be accessed for unnamed programmes and approaches. We can therefore make no comment on the effectiveness of these programmes.

Search strategy

We completed the first search of the literature in 2018. To ensure new studies were included, a second search was completed in 2020. The search strategy relied on three main sources.

TABLE 2 Frequency of interventions in each school organised by SEN 'Areas of Need'

School	No. pupils	No. of pupils with ALN (SEN)		Cognition & learning	Social, emotional & mental health	Communication & interaction
		All				
Primary						
1	702	148	25	12	7	6 ^a
2	480	67	15	8	5	2
3	470	297	16	7	9	0
4	446	191	24	7	11	6 ^a
5	308	68	9	5	3	1
6	183	45	11	5	5	1
7 ^b	478	106	4	–	4	–
Secondary						
1	260	85	15	7	7	1
2	980	379	9	1	8	–
Special needs	137	137	10	3	5	2
Total	4444	1523	138	55	64	19

^aSpeech and language services at the school.

^bWelsh medium school.

First, we completed searches using the following electronic search engines and their included sociological, psychological and educational databases, using the intervention name (e.g., 'Headsprout'):

- Web of Science—Web of Science Core Collection, Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, Emerging Sources Citation Index, Conference Proceedings Citation Index, Book Citation Index.
- EBSCOhost—CINHAL, Library, Information Science & Technology Abstracts and MEDLINE).
- ProQuest—PsycINFO, ProQuest Dissertations & Theses Global, Social Science Premium Collection, Education Collection and ERIC, and Social Science Database.

Based on the preliminary analysis of the availability of the literature, keywords were added to searches to narrow or broaden the results. In addition to primary studies, we also obtained reviews from the searches, and searched reference lists, and if relevant, references were retrieved.

Second, we conducted searches in a range of national and international research websites using the name of the intervention as the search term (e.g., 'Seasons for Growth'): These were the EIF, EEF; The What Works Clearinghouse, administered by The Institute of Educational Sciences (IES) of the US Department of Education; Best Evidence Encyclopaedia, National Registry of Evidence-Based Programs and Practice; The Collaborative for Academic, Social, and Emotional Learning (CASEL); Evidence4impact; The Communication Trust, National Foundation for Educational Research and Blueprints for Violence Prevention Model and Promising Programs, administered by the Center for the Study and Prevention of Violence at the University of Colorado; and The National Registry of Evidence-Based Programs and Practices, administered by the Substance Abuse and Mental Health Services Administration (SAMHSA), a branch of the US Department of

Health and Human Services. Reviews were obtained from the websites, and, where relevant, citations retrieved.

Finally, if very little or no evidence was found for a named intervention, then we searched Google Scholar and programme websites.



Literature selection

In this rapid review, we aimed to identify the causal evidence for each named intervention programme or instructional approach. The review drew upon national and international published research and evidence, all of which were reported or published in English from 2001 onwards. Primarily, research evidence was included if the intervention had a clearly identifiable name (e.g., 'Catch-up Literacy'), the research was based on pupil outcomes (4–18 years) and was undertaken in the school. The studies of particular interest in this review were those that sought to establish a cause-effect relationship and, therefore, only experimental randomised control trials and quasi-experimental studies (non-equivalent groups and no comparison group [pre/post]) were included. Studies were excluded if they were non-empirical, case studies, if the intervention in question was combined with another intervention, not based on pupil outcomes and conducted outside the classroom.



Screening and data extraction

A total of 2596 studies were retrieved following searches. The studies were first screened for relevance by examining the title and abstract and applying the inclusion and exclusion criteria. Once irrelevant and duplicate studies were removed, a total of 168 remained. Studies that were retained were retrieved and the full text was read and assessed for eligibility. The 43 studies that did not meet the inclusion criteria were excluded, leaving 125 included studies. The following data was then extracted from the retained studies: the research design, population, sample size, outcomes, attrition levels, outcome measures used, and any methodological limitations that might threaten validity (e.g., non-equivalent groups, missing data, unsuitable analysis methods and conflicts of interest). Reasons for exclusion as well as the selection process are displayed in Figure 2.

Quality assessment

To judge the quality of group design research, we used the 'sieve' developed by Gorard (2014). Each study was given an individual rating from 0 , which represents a study that adds nothing to our knowledge of social science; to 4 , which represents a robust study. The rating is based on five criteria: study design, scale of study, bias through missing data, quality of data obtained and other threats to validity.

Evidence synthesis and presentation of the results

The results section below contains a narrative of included studies for each intervention, and a summary of the evidence retrieved. As a result of the breadth of evidence identified, we only briefly summarised single-case design studies, and group design research rated 0–1 , in the narrative. The remaining evidence, judged to be of moderate and higher quality according to the 'sieve' ratings (2  and above), was evaluated more extensively in the narrative

and presented as extracted data in an accompanying evidence table, along with study quality ratings.

RESULTS

This section will report on the range of interventions used across the cluster.

A total of 138 interventions were in use across the 10 schools. See Table 2 for the frequency of interventions in each school organised by SEN category. Across the cluster, the percentage of pupils reported as having Additional Learning Needs (ALN) was 34%.

Cognition and learning

There were 55 cognition and learning interventions in use across the cluster. Across the 10 schools, 38 interventions focused on literacy. Nine schools reported offering one or more

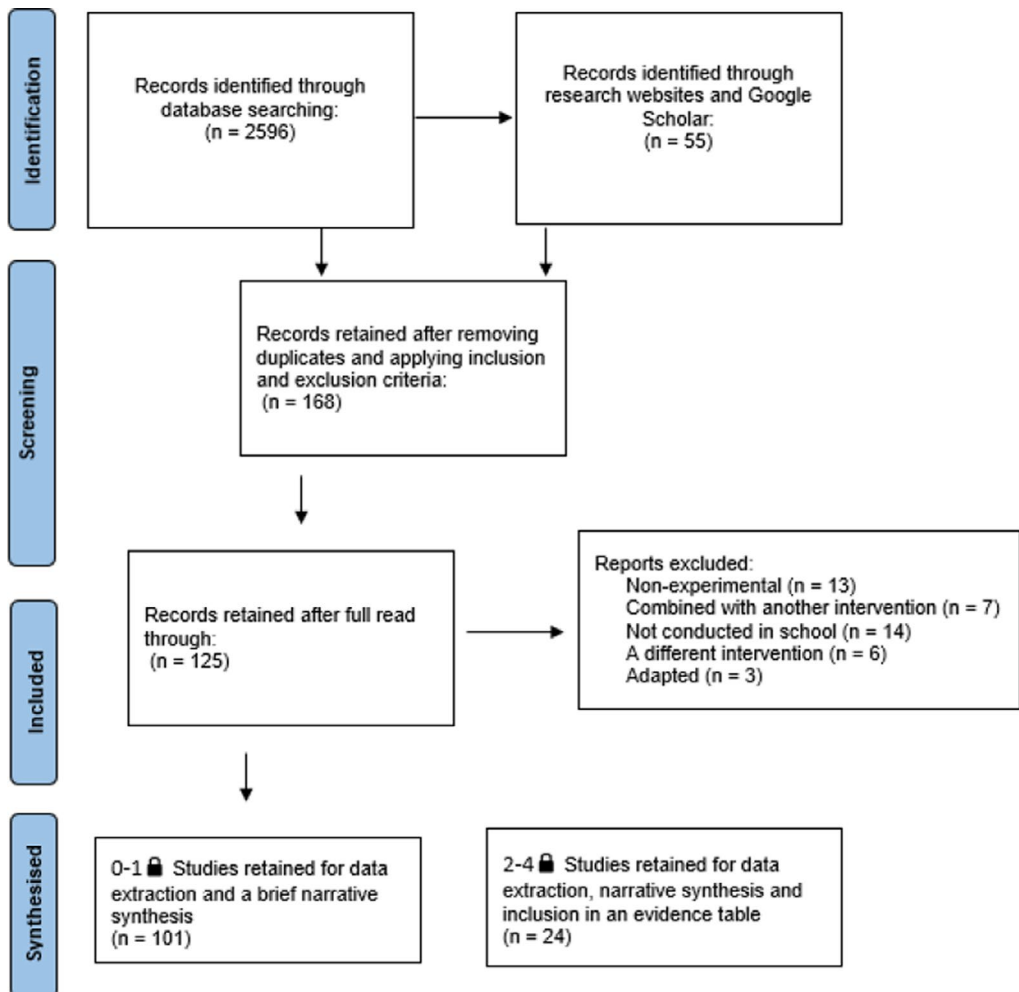


FIGURE 2 Flow diagram illustrating study selection process (adapted from PRISMA diagram—Moher et al., 2009)

literacy intervention. The median number of literacy interventions was 4 (IQR = 2–5). The most common type of literacy programme focused on reading instruction (17), followed by multi-skill literacy programmes, which incorporate reading, writing and oral language instruction in combination (11). The remaining literacy programmes focused on phonics (3), spelling (1) and handwriting (1). Five interventions were defined as ‘non-specific’, and these were used to teach handwriting (1), spelling (1), reading through high frequency word acquisition (1), and general literacy catch-up (2). The most commonly used literacy programmes were Headsprout (used in five schools), Read Write Inc. phonics (used in four schools) and Catch-Up Literacy (used in four schools).

There were 17 numeracy interventions in the cognition and learning category. Eight schools offered one or more numeracy interventions. The median number of interventions was 2 (IQR = 1–2). Fourteen numeracy interventions focused on developing a variety of mathematical skills (multi-skill) and one was devoted to multiplication practice. The remaining two numeracy interventions were ‘non-specific’ and these were used for numeracy catch-up sessions. The most popular numeracy intervention was Say All Fast a Minute Every Day (SAFMEDS), a precision teaching strategy, used by eight schools to improve fluency in basic number skills. Table 3 shows the list of cognition and learning interventions used across the cluster.

Social, emotional and mental health

There were 64 social, emotional and mental health interventions used across the cluster. Ten schools offered one or more interventions in this category. The median number of interventions was 6 (IQR = 5–8). Thirty-four interventions were programme specific (e.g., Incredible Years, Dinosaur school) and included two therapeutic support programmes, two health and well-being programmes, an approach to reduce problem behaviour, and 30 programmes that focused on developing pupils’ social and emotional skills. Nine schools offered one or more programmes that focused on developing pupils’ social and emotional skills. The median number of interventions was 3 (IQR = 2–4.50). The most common programmes used to teach social and emotional skills were Emotional Literacy Support Assistants (ELSA) (used in six schools), followed by Seasons for Growth (used in five schools), and Friends for Life and Forest School (both used in four schools).

Twenty-nine interventions were categorised as ‘non-specific’ (e.g., anger management). All 10 schools offered interventions in the social, emotional and mental health category that were non-specific. The median number of interventions was 3 (IQR = 2–4). The most common non-specific intervention was the nurture group, and there were 10 nurture groups implemented across seven schools. See Table 4 for the list of interventions in this category, used across the cluster.

Communication and interaction

Across the cluster, 19 interventions were categorised as communication and interaction provision. The intervention programmes focused on pupils’ speech and language skills (13), communication skills (1), socialisation and communication skills (1) and listening and attention skills (1). Seven schools offered one or more interventions that focused on communication and interaction difficulties. The remaining three interventions were non-specific. The median number of interventions was 1 (IQR = 0–2). The most commonly used speech and language interventions were Elklan and Picture Exchange Communication system (PECS)

TABLE 3 Cognition and learning interventions used across the cluster

Intervention	Frequency of interventions used in the cluster	Instructional focus
Numeracy		
SAFMEDs (manualised procedure)	8	Multi-skill
Sumdog	2	Multi-skill
RM Easi maths	1	Multi-skill
YIPIYAP Numeracy	1	Multi-skill
Number shark	1	Multi-skill
My Maths	1	Multi-skill
Times Table Rockstars	1	Multiplication
Non-specific		
Numeracy booster group	2	
Literacy		
Accelerated reader	1	Reading
Catch Up Literacy	4	Reading
Headsprout	5	Reading
Reading Educational Assistance Dogs	1	Reading
Reading Rocks	1	Reading
Toe by Toe	3	Reading
Wolf hill	1	Reading
IDL Literacy	1	Multi-skill
Nessy—Dyslexia	1	Multi-skill
Read Write Inc. Phonics	4	Multi-skill
Read Write Inc. Fresh Start	1	Multi-skill
Word Shark	2	Multi-skill
Word wasp	1	Multi-skill
YIPIYAP Literacy	1	Multi-skill
Bugs Reading intervention	1	Reading
Direct Phonics—DP Publishing	2	Phonics
Silly Sounds	1	Phonics
Hand to Spell	1	Spelling
Write from the start, Teodorescu	1	Handwriting
Non-specific		
Targeted handwriting	1	
Precision & high frequency words	1	
Targeted spelling	1	
Literacy booster group	2	
Total no. of interventions	55	

(both used in four schools), and Wellcomm (used in three schools). Table 5 shows the list of communication and interaction interventions used across the cluster.

The following section will report on the research evidence for the named intervention programmes or approaches used by the cluster. The descriptive statistics reported are based on the multiple occurrences of interventions used across the cluster (e.g., ELSA was reported as being used in six schools).


Results from the review of the evidence found that 30% of all interventions in use across the cluster had causal evidence of impact on a pupil outcome; 67% had no evidence; and, 3% had evidence of ineffectiveness. Table 6 displays the descriptive statistics for the causal evidence of the interventions used across the cluster.

Five of the commonly used interventions had causal evidence of effect. Headsprout, Toe by Toe and Narrative Therapy by Beck Shanks each had preliminary evidence, rated low quality (1🔒). SAFMEDS and Friends for Life had promising evidence, rated moderate to high quality (2–4🔒). The remaining programmes, which included Read Write Inc. Phonics, ELSA,


TABLE 4 Social, emotional and mental health interventions used across the cluster

Intervention	Frequency of interventions used in the cluster	Focus
Incredible Years, Dinosaur School	2	Social & emotional skills
Emotional Literacy Support Assistant (ELSA)	6	Social & emotional skills
Forest school	4	Social & emotional skills
Friends for Life	4	Social & emotional skills
Mindfulness in Schools project (MISP), Paws b	1	Social & emotional skills
Rhythm of life	1	Social & emotional skills
Seasons for Growth	5	Social & emotional skills
Talkabout	3	Social & emotional skills
Unearthing box	2	Social & emotional skills
Be Smart, Be Cool, Be Positive	1	Social & emotional skills
Squash the change	1	Social & emotional skills
Time-out	1	Improve behaviour
Drawing and Talking therapy	1	Therapeutic support
Colour Away Your Worries	1	Therapeutic support
Student Assistance programme (SAP)	2	Well-being support
Non-specific		
Five strikes contract	1	
Coastal school	1	
Mentoring	2	
Peer support	2	
Nurture groups	10	
Anger management	4	
Anxiety support	1	
Bereavement	1	
Emotional support	1	
Growth Mind-set	1	
Relaxation	1	
Self-esteem support	2	
Animal assisted therapy (dog)	1	
Play therapy	1	
Total no. of interventions	64	

Note: 'Non-specific' is an intervention that is a non-specific programme or an undefined approach.

Forest School and Seasons for Growth had no evidence available at the time of review; and Catch-Up Literacy had 3  evidence that found it to be ineffective (see Tables 7–9).

Interventions with promising evidence

The following sections will summarise the evidence from the review and will focus on the intervention programmes and instructional approaches that have evidence rated as moderate quality and higher (2 and above ) that show more promising causal impact on pupil outcomes (see Tables 7–9).

Say All Fast Minute Every Day Shuffled (SAFMEDS)

SAFMEDS is a precision teaching strategy that is often used for instruction and assessment (Quigley et al., 2018). This review identified a total of seven studies that demonstrated positive causal impact on pupil outcomes. Four studies used a single-case design. Two studies used a single-subject design with multiple baseline to measure maths fluency with learners in elementary school, with learning difficulties (Casey et al., 2003; Cunningham et al., 2012).

TABLE 5 Communication and interaction interventions used across the cluster

Intervention	Frequency of interventions used in the cluster	Instructional focus
Language for Thinking	1	Speech & language
Social Stories	1	Speech & language
Wellcomm	3	Speech & language
Narrative Therapy Beck Shanks	4	Speech & language
Elklan, Talking Matters	4	Speech & language
Picture Exchange Communication System (PECS)	1	Communication
LEGO-based therapy—Bricks for Autism	1	Social skills & communication
Lola Speaking and Listening	1	Listening & attention
Non-specific		
Speech and language therapy	2	
Social communication group	1	
Total no. of interventions	19	

Note: 'Non-specific' is an intervention that is a non-specific programme or an undefined approach.

TABLE 6 Summary of the causal evidence for interventions used across the cluster



	Promising (2–4 )	Preliminary (0–1 )	No evidence	Ineffective
	Frequency (%)			
All interventions	15 (11)	27 (19)	92 (67)	4 (3)
Cognition & learning	10 (18)	9 (17)	32 (58)	4 (7)
Social, emotional & mental health	4 (6)	11 (17)	49 (77)	–
Communication & interaction	1 (5)	7 (37)	11 (58)	–

TABLE 7 Summary of the causal evidence for the cognition and learning interventions

Intervention	Frequency of interventions used in the cluster	Causal evidence	Quality rating
Numeracy			
SAFMEDs (manualised procedure)	8	Promising	2
Sumdog	2	No evidence	
RM Easi maths	1	No evidence	
YIPIYAP Numeracy	1	No evidence	
Number shark	1	No evidence	
My Maths	1	No evidence	
Times Table Rockstars	1	No evidence	
Non-specific			
Numeracy booster group	2	No evidence	
Literacy			
Accelerated reader	1	Promising	2–3
Catch Up Literacy	4	Ineffective	
Headsprout	5	Preliminary	0–1
Reading Educational Assistance Dogs	1	Preliminary	0–1
Reading Rocks programme	1	No evidence	
Toe by Toe	3	Preliminary	0–1
Wolf hill	1	No evidence	
IDL Literacy	1	No evidence	
Nessy—Dyslexia	1	No evidence	
Read Write Inc. Phonics	4	No evidence	
Read Write Inc. Fresh Start	1	Promising	3
Word Shark	2	No evidence	
Word wasp	1	No evidence	
YIPIYAP Literacy	1	No evidence	
Bugs Reading	1	No evidence	
Direct Phonics—DP Publishing	2	No evidence	
Silly Sounds	1	No evidence	
Hand to Spell	1	No evidence	
Write from the start, Teodorescu	1	No evidence	
Non-specific			
Targeted handwriting	1	No evidence	
Precision & high frequency words	1	No evidence	
Targeted spelling	1	No evidence	
Literacy booster group	2	No evidence	

Two studies used a single-subject design with multiple baselines, of which one measured reading fluency, in a primary school, with typically developing learners (Lambe et al., 2015) and the other language acquisition, in elementary school, with learners that had emotional and behavioural problems (Shue, 2017). One small study employed a single-subject design and randomly assigned students to conditions, to measure the reading fluency of secondary

TABLE 8 Summary of the causal evidence for the social, emotional and mental health interventions

Intervention	Frequency of interventions used in the cluster	Causal evidence	Outcome
Incredible Years, Dinosaur School	2	Preliminary	0–1
Emotional Literacy Support Assistant (ELSA)	6	No evidence	
Forest school	4	No evidence	
Friends for Life	4	Promising	2–4
Mindfulness in Schools project, Paws b	1	Preliminary	0–1
Rhythm of life	1	No evidence	
Seasons for Growth	5	Preliminary	0–1
Talkabout	3	No evidence	
Unearthing box	2	No evidence	
Be Smart, Be Cool, Be Positive	1	No evidence	
Squash the change	1	No evidence	
Time-out	1	Preliminary	0–1
Drawing and Talking therapy	1	No evidence	
Colour Away Your Worries	1	No evidence	
Student Assistance programme (SAP)	2	Preliminary	0–1
Non-specific			
Five strikes contract	1	No evidence	
Coastal school	1	No evidence	
Mentoring	2	No evidence	
Peer support	2	No evidence	
Nurture groups	10	No evidence	
Anger management	4	No evidence	
Anxiety support	1	No evidence	
Bereavement	1	No evidence	
Emotional support	1	No evidence	
Growth mindset	1	No evidence	
Relaxation	1	No evidence	
Self-esteem support	2	No evidence	
Animal assisted therapy (dog)	1	No evidence	
Play therapy	1	No evidence	

pupils (Hughes et al., 2007), and this was rated 0–1 . Another small-scale ($n = 48$) quasi-experimental study with non-equivalent groups measured maths fluency with secondary school learners (Hunter et al., 2016), and this was rated 0–1 .

There was one quasi-experimental study, considered to be moderate quality (2) that found large positive effects on language acquisition (Beverley et al., 2016). Although Beverley et al. (2016) had a medium number of participants, groups were considered non-equivalent and imbalanced (see Table 10).

Each of the studies adds to a causal evidence-base. However, collectively, most of the studies were non-commensurable (measuring different populations and outcomes). Based on the current evidence, the SAFMEDS instructional approach is considered promising. We

TABLE 9 Summary of the causal evidence for the communication and interaction interventions

Intervention	Frequency of interventions used in the cluster	Causal evidence	Outcome
Language for Thinking	1	Preliminary	0–1
Social Stories	1	Preliminary	0–1
Wellcomm	3	No evidence	
Narrative Therapy, Beck Shanks	4	Preliminary	0–1
Elklan, Talking Matters	4	No evidence	
Picture Exchange Communication System	1	Promising	2
Lego based therapy - Bricks for Autism	1	Preliminary	0–1
Lola Speaking and Listening	1	No evidence	
Non-specific			
Speech & Language therapy	2	No evidence	
Social communication group	1	No evidence	

TABLE 10 A summary of the evidence for SAFMEDS

References	Design	Population	Sample	Outcome (ES)	Quality
Beverley et al. (2016)	Quasi - experimental	Grade 7	$n_{\text{intervention}} = 79$ $n_{\text{control}} = 16$	Effective (1.88)	2

would recommend that research should focus on developing more robust and replicated randomised research to strengthen the promising evidence.

Accelerated Reader (Renaissance Learning)

Accelerated Reader (AR) is a computerised reading programme that monitors and manages pupils' reading practices and fosters independent reading. There is a considerable evidence-base for this intervention (What Works Clearinghouse, 2007a, 2007b, 2009a, 2009b, 2010a, 2010b) and this review included 36 studies, although 32 of these are judged to have weaknesses in design that prevents claims of causal effect (0–1). Commonly, the studies used a causal comparative design (ex post facto) with non-equivalent groups. Other studies had no comparison group and measured impact using the Standardized Test for Assessment of Reading (STAR) that is produced and marketed by Renaissance Learning and embedded in the AR programme. Some of this research finds positive effects on pupil outcomes (e.g., McGlenn & Parrish, 2002; Nunnery et al., 2006; Nunnery & Ross, 2007; Rodriguez, 2007; Topping & Fisher, 2003). Notably, some studies show no impact from using AR, and a number report greater gains in the control groups (Huang, 2012; Melton et al., 2004; Pavonetti et al., 2002).

The current study considered four studies to be moderate quality (2–3) and with mixed findings (see Table 11). In a small-scale RCT by Bullock (2005), results from reading fluency and reading comprehension tests using the STAR and Dynamic Indicators of Basic Early Literacy Skills (DIEBELS) found no significant effects. The large quasi-experimental study by Ross et al. (2004) that used only the STAR literacy test also found no effects for

TABLE 11 A summary of the evidence for Accelerated Reader

References	Design	Population	Sample	Outcome (ES)	Quality
Bullock (2005)	RCT	Grade 3–5	<i>n</i> intervention = 55 <i>n</i> control = 59	No effect	2
Ross et al. (2004)	Quasi-experimental	Grade K-5	<i>n</i> intervention = 615 <i>n</i> control = 442	Effective for grade K-3 (0.71, 0.36, 0.25, 0.33); non-significant for grade 4–6 (0.01, 0.11, 0.14)	2
Shannon et al. (2015)	Quasi-experimental	Grade 1–4	<i>n</i> intervention = 189 <i>n</i> control = 157	Effective (0.38)	2
Siddiqui et al. (2016)	RCT	Year 7	<i>n</i> intervention = 166 <i>n</i> control = 183	Effective (0.24)	3

students in grades 4–6 (age 9–12 years) but did find moderate and large positive effects for pupils in grades K–3 (age 5–9 years). Ross et al. (2004) did establish baseline equivalence, but also reported very large attrition rates. Shannon et al. (2015) found significant moderate effects on reading and, although groups were non-equivalent, baseline equivalence was reported. However, the results were obtained using only the STAR assessment tool. The remaining RCT demonstrated small positive effects from using AR on reading ability using the New Group Reading Test (NGRT), and negligible attrition was reported (Siddiqui et al., 2016).

Based on the more robust evidence (2–3🔒) available for AR, it is considered to be a promising intervention.

Read Write Inc. Fresh Start

Read Write Inc. Fresh Start is a catch-up literacy programme that uses a systematic synthetic phonic approach to teach reading skills to learners at the end of primary and the beginning of secondary school. This review found one moderately robust RCT based on Fresh Start (Gorard et al., 2016; 3🔒). The school-led study reported small positive gains in reading comprehension. However, the study also reported some imbalance in the groups, which prevented a higher quality trustworthiness rating (see Table 12). Although Read Write Inc. is considered to be a promising programme, we would recommend future research is focused on replication of the research to strengthen causal claims.

Friends for Life (FRIENDS)

Friends for Life is a mental health programme that can be used to teach emotional resilience and/or to address child and adolescent anxiety and depression. FRIENDS has a substantial international evidence-base and has been recognised by the World Health Organization as an effective tool (see the following reviews: Briesch et al., 2010; Higgins & O'Sullivan, 2015; Maggin & Johnson, 2014). This review included 26 studies, of which 11 were rated low quality (1🔒) due to weaknesses in the research design. For example, one single-case multiple baseline design reported positive changes for pupils with emotional, behavioural and/or anxiety disorders (Schoenfeld & Mathur, 2009). Two further small-scale studies used a pre/post design with no control condition and found positive effects of FRIENDS when used selectively (Cooley et al., 2004; Fjermestad et al., 2020). Another moderate-scale pre-post design and its follow-up study both reported positive effects from universal delivery of FRIENDS (Stallard et al., 2005, 2008). Conversely, two small-scale quasi-experimental studies found no statistically significant effects post intervention, either when used selectively (Mostert & Loxton, 2008) or universally (Rose et al., 2009), although Mostert and Loxton (2008) did report positive effects at follow-up. Finally, four very small-scale RCTs found significant positive effects on measures of anxiety when used universally (Rodgers and Dunsmuir, 2015) and selectively (Bernstein et al., 2005; Liddle & Macmillan, 2010; Siu, 2007).

TABLE 12 A summary of the evidence for Read Write Inc. Fresh Start

References	Design	Population	Sample	Outcome (ES)	Quality
Gorard et al. (2016)	RCT	Year 7	<i>n</i> intervention = 212 <i>n</i> control = 221	Effective (0.24)	3🔒

The current study considered 11 studies to be moderate quality (2 or 3), and the findings suggest that FRIENDS can have a positive effect on measures of anxiety. The first three studies measured the impact of FRIENDS when used with selected participants. Barrett et al. (2001) conducted a quasi-experimental study (2) that revealed significant positive effects between groups on self-ratings of anxiety and outlook. Similarly, a 2 quasi-experimental study by Barrett et al. (2003) reported significant improvements on self-ratings of anxiety and outlook at post intervention and at 6-month follow-up. However, another 3 RCT conducted by Hunt et al. (2009) found no significant effects at 24-month and very little significant improvements at 49-month follow-ups.

A small number of 2–3 studies indicate that FRIENDS has positive impact when delivered as part of a universal provision. Lowry-Webster et al. (2001) conducted an RCT (2) and found significant positive effects on measures of anxiety for all learners in the intervention group, and a significant reduction of anxiety symptoms for at risk students. In a follow-up study, intervention gains were maintained at 12 months (Lowry-Webster et al., 2003; 2). In an RCT judged to be 2 by Barrett and Turner (2001), the impact of teacher-led FRIENDS, psychologist-led FRIENDS and control were compared and the results found that participants in both the intervention groups reported significant decreases in anxiety compared to the control. Similarly, in an RCT (2) by Lock and Barrett (2003), reductions in self-report anxiety were significantly greater for participants in the intervention group at post-intervention and at 12-month follow-up. In follow-up to Lock and Barrett's (2003) RCT, Barrett et al. (2006) found mixed results (2). For example, reductions in anxiety were reported at 12-, 24- and 36-month follow-up for grade 6 but not grade 9. In another 2 study by Barrett et al. (2005), no significant effects between groups on measures of anxiety were found post intervention, but effects were found at 12-month follow-up. In line with the majority of findings, a 3 study by Essau et al. (2012) found significant positive effects on measures of anxiety through a large-scale RCT post intervention, and at 12-month follow-up, although following a Bonferroni adjustment, differences were only detected between the two groups at 12-months follow-up. The quasi-experimental study (2) conducted by Matsumoto and Shimizu (2016) reported significant positive effects on measures of social phobia for girls in the intervention group compared to the control, and on measures of obsessive compulsive disorder. However, no other significant interactions were observed.

In all of the previously mentioned studies, rated 2–3, schools were the unit of randomisation rather than the students. Nevertheless, all of the studies reported baseline equivalence. However, in a number of the studies baseline equivalence was not established (Barrett et al., 2001, 2005, 2006; Lowry-Webster et al., 2001, 2003; Matsumoto & Shimizu, 2016). There were also other methodological weaknesses to consider that are likely to impact findings. For example, there was a lack of reporting on attrition (Barrett et al., 2001; 2003; Barrett & Turner, 2001; Essau et al., 2012) and, when reported, attrition levels were moderate to high (Barrett et al. 2005; Barrett & Turner, 2001; Lowry-Webster et al. 2003); student self-report measures were used exclusively; and all except three studies were conducted by the programme developers (Essau et al., 2012; Hunt et al., 2009; Matsumoto & Shimizu, 2016). Notably, most of the studies neglect to analyse data at the appropriate level and subsequently failed to account for the effects of student clustering within the same classroom/schools, which may compromise the validity of findings (Barrett et al., 2001, 2003, 2005; Barrett & Turner, 2001; Essau et al., 2012; Hunt et al., 2009; Lowry-Webster et al., 2001, 2003; Matsumoto & Shimizu, 2016). It is also important to highlight that in many of the studies that reported positive effects, the implementation of FRIENDS was by mental health professionals (Barrett et al., 2001, 2003, 2005; Essau et al., 2012; Lock & Barrett, 2003; Matsumoto & Shimizu, 2016). A 2 study by Barrett and Turner (2001) indicated that both teachers and mental health professionals can deliver the FRIENDS programme effectively. However, when teachers delivered the programme, results were mixed. For example, primary positive effects on anxiety were reported in three 2 studies in which

teachers delivered the programme (Barrett et al., 2006; Lowry-Webster et al., 2001, 2003) and no impact was found in the remaining 3▣ study (Hunt et al., 2009).

There were a further four large-scale studies included in the review that employed multi-level modelling to analyse the data, and these were rated high quality (4▣). Two RCTs were conducted by Miller et al. (2011). The first RCT targeted pupils with anxiety symptoms and the second took a whole-class approach. The results from both studies found no statistical differences between the intervention and control group on self, teacher and parent-report measures of anxiety. Although the schools were the unit of randomisation and some group imbalance was reported, equivalence was established at baseline. Conversely, Stallard et al. (2014) found significant positive effects on measures of anxiety at 12 months for all students in a health-led FRIENDS (mental health professional delivery) condition compared to school-led FRIENDS (teacher delivery) and in a health-led FRIENDS compared to usual provision. No differences were found between groups on self-reports of depression, nor on the teacher and parent-report measures. To mitigate the effects of randomising at school level, Stallard et al. (2014) balanced the trial groups based on key characteristics. Similarly, in a cluster RCT by Ahlen et al. (2018) no short- or long-term effects of FRIENDS on child, parent and teacher measures of anxiety and depression were found. Again, schools were the unit of randomisation and, although groups were unequal at baseline on two variables, efforts were made to account for the differences. Only minimal attrition was reported post intervention and moderate attrition at follow-up, and this was balanced across groups. Similarly, a recent large-scale cluster RCT commissioned by the EEF (Wigelsworth et al., 2018) randomised classes to conditions, and found no evidence that FRIENDS had a positive overall impact on academic attainment, and no evidence that FRIENDS has a positive impact on student ratings of anxiety and depression and teacher ratings of emotional and behavioural difficulties. Furthermore, group equivalence was established and minimal missing data was reported (Wigelsworth et al., 2018).

Across the 4▣ rated studies, results found that teacher-administered FRIENDS did not have a positive overall impact on levels of anxiety and depression in learners (Ahlen et al., 2018; Miller et al., 2011; Stallard et al., 2014). Results from a study by Stallard et al. (2014) reported similar findings and found positive overall outcomes when FRIENDS was delivered by mental health professionals.

The evidence gathered during this study suggests that Friends for Life is a promising programme that leads to reductions in anxiety. However, some of the research supporting the programme lacks methodological rigour (Higgins & O'Sullivan, 2015; Maggin & Johnson, 2014). Notably, more recent, robustly designed studies have found no-significant effects from the universal and selective implementation of FRIENDS on measures of anxiety, except when delivered by mental health professionals (see Table 13).

Picture Exchange Communication System

The Picture Exchange Communication System (PECS) is a communication programme that is widely used in schools, particularly with children with autism. The current review identified seven studies related to PECS. Four of the studies used single-case multiple-baseline designs (Boesch et al., 2013; Charlop-Christy et al., 2002; Kravits et al., 2002; Tincani et al., 2006), and one was a single-case design (Ganz and Simpson, 2004). All studies report positive effects on spontaneous communication, post intervention.

The remaining two studies were rated as low quality (1▣) due to small sample sizes and lower-quality research designs. One was a pre-post group design, and the other a very small quasi-experimental study (Carr & Felce, 2007). Both studies report positive effects on spontaneous communication, post intervention.

TABLE 13 A summary of the evidence for Friends for Life (FRIENDS)

References	Design	Population	Sample	Outcome (ES)	Quality
Barrett et al. (2001)	Quasi-experimental	7–19 years, <i>M</i> age 12.42, Selective	<i>n</i> intervention = 121 <i>n</i> control = 83	Effective (<i>nr</i>)	2
Barrett and Turner (2001)	RCT	10.75 years, Grade 6, universal Australia	<i>n</i> intervention = 188 & 263 <i>n</i> control = 137	Effective (<i>nr</i>)	2
Barrett et al. (2003)	Quasi-experimental	6–19 years, <i>M</i> age 12.75, Selective, Australia	<i>n</i> intervention = 166 <i>n</i> control = 154	Effective (<i>nr</i>)	2
Barrett et al. (2005)	RCT	Grade 6 & 9, universal, Australia	<i>n</i> intervention = 423 <i>n</i> control = 269	Non-significant, Effective at 12-months (<i>nr</i>)	2
Essau et al. (2012)	RCT	9–12 years, <i>M</i> age 10.91, universal, Germany	<i>n</i> intervention = 302 <i>n</i> control = 336	Effective (<i>nr</i>)	3
Hunt et al. (2009)	RCT	Grade 7, <i>M</i> age 12.05, selective, Australia	<i>n</i> = 228 at 24 months <i>n</i> = 189 at 48 months	Non-significant Very small effect	3
Lock and Barrett (2003)	RCT	Grades 6 & 9, universal, Australia	<i>n</i> intervention = 442 <i>n</i> control = 295	Effective (<i>nr</i>)	2
Barrett et al. (2006)	RCT follow-up	Grades 7 & 10, universal, Australia	<i>n</i> = 669 at 12 months <i>n</i> = 430 at 24 months <i>n</i> = 226 at 36 months	Mixed (0.05, 0.04)	2
Lowry-Webster et al. (2001)	RCT	Grades 5–7, universal, Australia	<i>n</i> intervention = 432 <i>n</i> control = 162	Effective (<i>nr</i>)	2
Lowry-Webster et al. (2003)	RCT follow-up	Grades 5–7, universal, Australia	<i>n</i> intervention = 432 <i>n</i> control = 162	Effective (<i>nr</i>)	2
Matsumoto and Shimizu (2016)	Quasi-experimental	Grade 6, 11–12 years, Universal, South Africa	<i>n</i> intervention = 92 <i>n</i> control = 58	Mixed (0.03, 0.05)	2
Ahlen et al. (2018)	Cluster RCT	Grades 3–4, <i>M</i> age 9.06, universal, Sweden	<i>n</i> intervention = 353 <i>n</i> control = 342	Non-significant	4
Miller et al. (2011)	RCT	Grades 4–6, <i>M</i> age = 10.1, selective, Canada	<i>n</i> intervention = 65 <i>n</i> control = 126	Non-significant	4
As above Miller et al. (2011)	RCT	Grades 4–6, <i>M</i> age 9.8, universal, Canada	<i>n</i> intervention = 141 <i>n</i> control = 112	Non-significant	4

TABLE 13 (Continued)

References	Design	Population	Sample	Outcome (ES)	Quality
Stallard et al. (2014)	Cluster RCT	Year 4 & 5, 9–10 years, Universal, UK	<i>n</i> health-led = 486 <i>n</i> teacher-led = 462 <i>n</i> control = 391	Mixed	4
Wigelsworth et al. (2018)	Cluster RCT	Year 5, universal UK	<i>n</i> intervention = 1476 <i>n</i> control = 1534	Non-significant	4

Note: Only primary outcomes reported in the table, *M* age = mean age, RCT = Randomised Controlled Trial, *n* = effect size not reported.

There was one small RCT rated as moderate quality (2 \square), which found a significant positive effect on rates of communicative initiations with the use of PECS. However, no maintenance effects were reported, nor any significant increase in frequency of speech (Howlin et al., 2007). Despite small group sizes, this study was rated as moderate quality due to the authors' use of multi-level modelling to evaluate findings, and efforts were made to account for group differences (see Table 14).

Picture Exchange Communication system has promising evidence. We would recommend that research focuses on more robust randomised research to strengthen this promising evidence (Flippin et al., 2010; Preston and Carter, 2009).

Intervention programmes and approaches with preliminary evidence of causal effect or evidence of ineffectiveness

The following sections will summarise the evidence for the intervention programmes and instructional approaches that have preliminary evidence of causal impact on a pupil outcome that is rated low quality (studies rated 0–1 \square) and those found to have no positive causal impact. See Tables 7–9 for the interventions that had no peer-reviewed published evidence at the time of this review.

Catch-Up Literacy

Catch-Up Literacy is a structured one-to-one intervention that uses a book based approach to support struggling readers. This review retrieved two studies both commissioned by the EEF and judged to be moderate quality (see Table 15). Rutt (2015) identified small gains in reading following the use of Catch-Up Literacy, but the findings were not statistically significant. The remaining study found no evidence of impact on pupils' reading comprehension scores (Roy et al., 2019). Currently, there is little evidence that Catch-Up Literacy impacts positively on pupils' reading outcomes, and there is a need for more robust randomised research.

Headsprout

Headsprout is a computer-assisted instructional reading programme that uses adaptive, online instruction to teach students reading and comprehension skills. This review found 14 studies that met the inclusion criteria for our review. All but one of the studies reported positive effects on reading skills from using Headsprout. However, much of the research is considered small in scale and as a result did not exceed a quality rating of 1 \square .

Three studies used a single-case multiple baseline design (Clarfield & Stoner, 2005; Cullen et al., 2014; Whitcomb et al., 2011), one was a multiple case series (Grindle et al., 2020), one was a single-case multiple probe design (Hammond & Shannon, 2015), and three were single-case pre-test post-test designs (Herring et al., 2019; Hill & Flores, 2015; Tyler et al.,

TABLE 14 A summary of the evidence for the Picture Exchange Communication System (PECS)

References	Design	Population	Sample	Outcome (ES)	Quality
Howlin et al. (2007)	RCT	<i>M</i> age 6.8 years Autistic	<i>n</i> intervention = 26 <i>n</i> intervention = 30 <i>n</i> control = 28	Effective (nr)	2 \square

TABLE 15 A summary of the evidence for Catch-Up Literacy

References	Design	Population	Sample	Outcome (ES)	Quality
Rutt (2015)	RCT	Year 6 & 7	<i>n</i> intervention = 286 <i>n</i> control = 271	Non-significant (0.12)	3🔒
Roy et al. (2019)	RCT	Year 4 & 5	<i>n</i> intervention = 514 <i>n</i> control = 511	No effect	3🔒

2015b). Three of these studies were conducted with learners with autism (Hill & Flores, 2015; Grindle et al., 2020; Whitcomb et al., 2011); three with learners that had intellectual disabilities (Cullen et al., 2014; Herring et al., 2019; Tyler et al., 2015b); one with mainstream primary-aged learners at risk of reading difficulties (Hammond, 2012); and one study was with learners diagnosed with Attention Deficit Hyperactivity Disorder (Clarfield & Stoner, 2005).

There was one small study by Kreskey and Truscott (2016) that was ranked 0🔒 for methodological quality, based on a causal-comparative design (*ex post facto*) and non-equivalent groups. Contrary to other research in this review, this study reported negative impact from using Headsprout. The remaining studies, rated 1🔒, found positive effects from Headsprout on reading skills. There was one small quasi-experimental study by Watkins et al. (2016) that reported positive effects on the reading skills of mainstream primary-aged pupils, although groups were non-equivalent and imbalanced. Tyler et al. (2015a, 2015b) conducted a small RCT with mainstream primary-aged pupils and found small, medium and large positive effects on pupils' reading skills. However, this study reported high levels of attrition that resulted in non-equivalent groups, which weakens causal claim. A small RCT by Storey et al. (2020) also reported large positive effects on reading skills for mainstream primary-aged pupils at risk of reading failure. The remaining two small RCTs reported positive effects on reading with learners with intellectual disabilities (Ramdoss et al., 2020; Roberts-Tyler et al., 2020).

Collectively, the current research suggests that Headsprout is an effective programme for improving the reading skills of mainstream primary-aged pupils at risk of reading failure, and for learners with intellectual disabilities and/or autism. We recommend there is a need for more robust and replicated research, across different populations to strengthen the evidence base.

The Reading Educational Assistance Dogs (R.E.A.D) programme

R.E.A.D is a charity-based scheme that provides registered therapy dogs to schools, to support children who are reluctant readers. This review found only two group design studies based specifically on the R.E.A.D programme. The two studies that were included in this review found some evidence of impact on pupils' reading skills (Le Roux et al., 2014, 2015). However, these studies were rated low quality (1🔒) as a result of small samples and poor design. Notably, a previous review by Hall et al. (2016) found 27 studies of 'children reading to dogs' (non-specified programmes) and reported that reading to dogs may have beneficial effects on the reading environment and, subsequently, improved reading outcomes. However, much of the evidence in that review was rated low quality and R.E.A.D. was considered to have only preliminary evidence of short-term impact (Hall et al., 2016). We recommend a need for more robust and replicated research to develop the evidence base.

Toe by Toe

Toe by Toe is a structured phonics-based reading manual for anyone who finds reading difficult. There is very little evidence for this intervention. This review found two group design

studies and both were rated low quality (0–1🔒). Although both studies reported some positive effects on pupils' reading skills, they were very small scale and with weak designs. Therefore, there is currently no available evidence to suggest that Toe by Toe is an effective intervention and we would recommend more robust research is needed to develop the evidence base.

Incredible Years, Dinosaur School

The Incredible Years (IY), Dina Dinosaur's Social Skills and Problem Solving Curriculum (IY Dinosaur School) is a classroom prevention curriculum that uses dinosaur-themed materials and puppets to strengthen students' social and emotional skills. Although the IY series of intervention programmes have been the focus of a significant and sustained research programme, there is little research on the Dinosaur School Curriculum (Pidano & Allan, 2015). This review included two studies that were low quality (0–1🔒). The first small pre-post pilot study by Hutchings et al. (2004) reported significant positive effects on measures of mental health, and non-significant gains on ratings of self-control. In a more recent small quasi-experimental study by Hutchings et al. (2012), no positive effects were found. Currently, there is very little causal evidence available for the IY Dinosaur School programme, and we recommend more robust research is required to develop this evidence base.

Mindfulness in Schools Project, Paws b

Paws b is a school-based mindfulness curriculum for children aged 7–11 years. This review included two studies that were both rated low quality (0–1🔒). The first very small-scale RCT by Thomas and Atkinson (2016) found significant effects from the intervention on intentional functioning at post intervention and follow up. Another small-scale quasi-experimental study by Vickery and Dorjee (2016) revealed significant, large effects from the intervention on self-report measures of emotional affect at follow-up, but no effect on parent-report measures. Currently, there is a limited evidence base for Paws b, and we recommend more robust research is required to develop this evidence base.

Season for Growth

Seasons for Growth is a manualised grief education programme for children and young people (aged 6–18 years) who have experienced significant loss due to death or family breakdown. The programme promotes the normalisation of grief within the school setting. The current review identified only one single-case multiple baseline design study by Riley (2012) with 12 participants that reported positive effects on pupils' emotional health and coping behaviours. Consequently, it is not possible to draw conclusions about the effectiveness of this intervention and more robust research is needed.

Time-out

Time-out is a behaviour change technique that can be used in multiple settings to decrease the frequency of a target behaviour using a function-based approach. This review found one study. Donaldson and Vollmer (2011) conducted a single-case reversal design and found that time-out procedures were effective at reducing problem behaviour. A review conducted

by Vegas et al. (2007) did find several single-case design studies that showed Time-out as effective when dealing with attention-maintained behaviour. However, each of these studies were conducted over 20 years ago and thus outside of the date range specified for this review.

Time-out has promising findings from single-case design studies, and we would recommend more robust research designs and replication with larger numbers of participants to further strengthen its evidence base.

Student Assistance Program

The Student Assistance Programme (SAP) is a comprehensive model of primary prevention and early intervention that utilises learning activities and support groups for vulnerable students across all key stages. This review found only one causal comparative design (ex post facto) study by Biddle et al. (2014) which was rated low quality (1🔒). Even though these findings from Biddle et al. (2014) were somewhat positive, there is currently insufficient evidence of the causal impact of SAP on learner outcomes; we recommend more robust research is required to develop this evidence base.

Language for Thinking

A classroom resource that provides a clear structure to assist school staff in developing children's language from the concrete to the abstract. This review found only one low-quality pre-post small-scale study (1🔒), which reported positive effects on pupil outcomes. Currently, conclusions about the effectiveness of this resource cannot be drawn from the evidence; we recommend more robust research is required to develop this evidence base.

Social Stories

Social Stories are individualised short stories that help children and adolescents with autism spectrum disorders to better understand social situations. The current study identified 13 studies. All except one study by Malmberg et al. (2015) reported positive impact on problematic and social behaviours. All studies employed a single-case multiple baseline design (Beh-Pajooch et al., 2011; Chan and O'Reilly, 2008; Chan et al., 2011; da Silva et al., 2020; Delano and Snell, 2006; Hanrahan et al., 2020; Kim et al., 2014; Malmberg et al., 2015; O'Connor & Hayes, 2019; Sansosti & Powell-Smith, 2006; Schneider and Goldstein, 2009; Srijia et al., 2019; Thompson & Johnston, 2013).

Each of the studies adds to the causal evidence; however, we recommend more robust randomised research is required to develop this evidence base.

A Narrative Intervention by Becky Shanks

Narrative interventions help to develop learners' speaking and listening skills through the telling or retelling of stories that have specific language-related features. There is a substantial evidence-base for narrative interventions; however, in most of the literature it is not clear which intervention is being used. A search of the literature found two reviews of non-programme-specific narrative interventions. Petersen (2011) reviewed nine studies and

reported moderate to large positive effects, and Favot et al. (2020) reported moderate positive effects across 24 studies. In both reviews the evidence-base was considered to be low quality due to small sample sizes and lack of robust experimental designs.

This review found only one study evaluating Becky Shanks's narrative intervention, conducted by the author (Davies et al., 2004). Although the study reported positive effects from the intervention, the study was rated low quality as a result of the small sample, the use of a pre-post design and a conflict of interest (1▣).

Currently, conclusions about the effectiveness of this intervention cannot be drawn from the evidence and we recommend more robust research is required to develop this evidence base.

LEGO®-Based Therapy

LEGO-Based Therapy is a social development programme that uses LEGO activities to support the development of a wide range of social skills within a group setting. Three studies were selected for this review and all reported positive effects on the social interactions of ASD students that used the intervention. There were two single-case design studies, of which one was a single-case reversal design (Hu et al., 2018) and the other a single-case multiple-baseline study (Levy & Dunsmuir, 2020). The final study was a small-scale, pre-post (Andras, 2012), which was rated low quality (0–1▣) due to its small scale and lack of a control comparison group. Due to this limited evidence base, it is currently not possible to draw any conclusions about the effectiveness of LEGO-Based Therapy, and we recommend more robust research is required to develop this evidence base.

RESULTS FROM THE FOLLOW-UP INVESTIGATION

This section will report the results from the follow-up study that was conducted 1 year later. The follow-up aimed to investigate whether increased knowledge about the evidence for the interventions used in the cluster, presented through a summary report to school leaders, had an effect on existing provision. The data from the completed checklists and interviews are presented.

Follow-up data was received from four schools. Three of the schools (two primary and one special needs school) made no changes to their provision and continued to use the same interventions that were identified during the initial screening process. The remaining primary school (referred to as X) made changes to their provision and discontinued use of three interventions. Two of the discontinued interventions had no evidence, and one had evidence of ineffectiveness. School X continued to use other interventions with no causal evidence, and ceased use of an intervention with promising evidence. Since the primary data collection, the same school had also adopted a new intervention with no causal evidence. See Table 16 for a list of the interventions in use in school X.

Three head teachers participated in the interviews. They were asked whether access to additional information about the evidence-base of interventions currently used in their school, had an effect on the way they select interventions and programmes as part of school provision. Two main themes were identified.

Theme 1: Compatibility and impact

Most of the head teachers spoke about cost and effectiveness/impact as important factors when choosing or adjusting provision. One head teacher talked about using the information

TABLE 16 Interventions in use in primary school X at follow-up

Interventions previously identified in the school	Causal evidence	In use	Not in use
SAFMEDS	Promising	x	
Headsprout	Preliminary	x	
Catch Up Literacy	Ineffective		x
Read Write Inc. Phonics	No evidence	x	
Seasons for Growth	Preliminary	x	
Friends for Life	Promising		x
Be Smart, Be Cool, Be Positive	No evidence	x	
Emotional Literacy Support Assistant (ELSA)	No evidence	x	
Reading Rocks	No evidence		x
Peer support	No evidence		x
Narrative Therapy Beck Shanks	Preliminary	x	
Elklan, Talking Matters	No evidence	x	
Sumdog	No evidence	x	
My Maths	No evidence	x	
Times Table Rockstars	No evidence	x	
Talkabout ^a	No evidence	x	

^aA recently adopted intervention.

about causal-impact for the interventions, and cost, to make changes to the school's provision. Other compatibility factors mentioned were the effective use of teachers' time and the ability to use interventions and teaching approaches at home alongside their compatibility with existing school systems and approaches. However, all the head teachers cited the cost of some programmes as being a prohibitive factor. The head teacher who made some changes to provision following the presentation of the summary reports of evidence, indicated that the school had continued to use interventions because of their compatibility with the school and its teaching practice. For example, interventions could be used at home.

Yeah, hugely. So as a school, we've started looking at research for various areas, and what the research says. For the interventions, we've now got an impact intervention costs for everything to do with literacy, and maths, that will be done in wellbeing, too. So the interventions that we currently use have been costed down to the pupil, cost per pupil, and time versus cost, and the effect and evidence, size of those interventions. Anything that was either to higher cost or ineffective has been pulled. And the money has been transferred, and the time of the teaching assistance has been transferred into one that does work or have an impact.

Very few interventions have disappeared completely, partly due to the fact that we've streamlined it a while ago. Some are being used, partly, but most of those interventions that were on the list have continued and will continue to go forward. We don't have homework per se, My Maths is done as a weekly homework based on the topic that they've been doing in school that week, or that two weeks. Sum Dog and TT Rockstars are there for them to use at home should they wish.

What it's made me really look at is cost and impact? Because, if I take Catch-Up reading the cost of a teaching assistant to run that was about £20,000, and the impact was no better than the Headsprout programme, which basically costs hardly anything, and it can be disseminated wider across the school.

And it's also made me really think about... there's lots of companies always trying to push things, always trying to push this intervention and this and it's just about that whole taking a step back, looking at the impact and looking at the cost.

Theme 2: Greater awareness of the evidence

All three head teachers referred to a greater awareness of the need to assess the impact of interventions. Two referred to having developed a greater awareness of the evidence for interventions and programmes following their engagement with the current study, and spoke about using the evidence to improve the quality of decision making.

It's just made me really think about interventions and look more at what other programmes are out there that have a broader evidence base. I think it's just made me more aware of looking at the evidence.

We have very much more awareness of interventions having an evidence base. So we would look to that first. We really do think now before we even send somebody on training for something. Has this got evidence behind it? Is it proven to be worthwhile to do in school? Previously we would send somebody on a course, after it had come out on an email. We'd send somebody along, we'd do the intervention because somebody said other teachers came back and liked it, and that was it, really. I think we do think an awful lot more about the worthwhileness of things now, definitely. Yeah.

DISCUSSION

Very little is known about the range of intervention programmes and approaches used in schools, or the evidence supporting them. Several published studies report on teachers and senior leaders' engagement with and use of research (e.g., Coldwell et al., 2017; Nelson et al., 2017; Walker et al., 2019). To our knowledge, this study was the first systematic attempt to assess the range of interventions used in a large school cluster in the UK, and to establish which of these programmes and instructional approaches have evidence of causal impact on pupil outcomes.

Our results found that 138 interventions were in use across the 10 schools and this number was judged to be high. However, the school cluster in this study is in an area of high deprivation and reported a higher number of ALN pupils than typically reported elsewhere in the UK (DfE, 2019; Welsh Government, 2019). Our results suggest that schools are using a large number of interventions. The use of a large number of interventions has obvious implications on school budgets and staff time. Additionally, the use of many interventions in one setting impacts significantly on the likelihood any one intervention will be implemented with fidelity.

In this review we categorised the interventions into three main SEN areas of need—cognition and learning; social, emotional and mental health; and communication and

interaction—which reflects the most common types of support reported by the Welsh Government (2019). There were 55 interventions in the cognition and learning category, 64 interventions in the social, emotional and mental health category (and a little under half of these were programmes to teach social skills and emotional resilience) and 19 interventions in the communication and interaction category.

Although this distribution of interventions according to SEN category in part reflects the focus of school funding on provision for teaching and learning approaches and learners' well-being, the relatively small number of interventions focused on improving learners' communication is notable, but might just reflect the paucity of available provision in this area. The notable feature of this research is the large number of interventions in use across the cluster (138) consisting of 70 unique programmes and/or approaches. The two schools with the highest number of interventions (24 and 25) each have speech and language provision which might, in part, explain the need for additional interventions. The school with the fewest interventions (4) is a Welsh medium school, which may reflect the paucity of resources and interventions available in the Welsh language and an urgent need to develop Welsh medium interventions across all intervention areas. The two secondary schools have fewer interventions than many of the primary schools, which may suggest, as did reports from the DfE (2017) that there is a more limited evidence-base for educators in secondary schools. An important feature of the findings is the lack of relationship between the number of ALN pupils in each school and the number of interventions employed, and the high number of social, emotional and mental health interventions used in some schools. It is likely that the high number of interventions recorded in some schools is the indirect result of cumulative additional funding designed to help disadvantaged pupils 'catch up'.

Within the context of our focused review, we also found that many of these interventions lacked robust empirical support. The results from our review showed that only 30% (42) of interventions used across the cluster had positive evidence of impact on pupil outcomes. However, of these, only 11% (15) had evidence of effectiveness that was rated moderate to high quality and considered promising, and 19% (27) had preliminary evidence, rated low quality and in need of more research evidence. Notably, only FRIENDS and Accelerated Reader had high quality replicated evidence. The results also showed that 67% (92) of all interventions used across the cluster had no published evidence at the time of this review. The remaining 3% of interventions were shown to be ineffective. Furthermore, a large number of the interventions, in the social, emotional and mental health category were non-specific and as a result had no evidence. For example, most of the schools implemented nurture groups and did not implement a specific programme or follow a defined nurture approach or protocol. Obviously, we could not make any assessment of the effectiveness of these approaches.

This is the first study to empirically report the evidence base for the interventions used in a cluster of schools, and the results suggest that a small number of these interventions have causal evidence for positive impact on pupil outcomes. The findings from our study supports findings by Gorard et al. (2020) and suggest that even when presented with summary reports of the evidence, not all schools use this information to make more informed decisions about school provision. Instead of accessing external evidence, it is common for teachers to turn to anecdotal evidence, including advice from colleagues and to programmes that are compatible with current practice as opposed to those with the stronger evidence of positive impact on learner outcomes (Brown & Greany, 2018; Nelson et al., 2017; Walker et al., 2019). Our data also suggest that even if school leaders are interested in reviewing the evidence of interventions, generally there is a paucity of robust education intervention research and much more resources and energy will be required to build robust evidence across almost every area of education. Previous research has reported that barriers to evidence-into-use include lack of time, underdeveloped research skills, negative attitudes and opinions of evidence,

and a lack of relevant, accessible and usable evidence may be preventing teachers from using the external evidence (Cain, 2016; Gorard, 2020; Hemsley-Brown & Sharp, 2003; Van Schaik et al., 2018; Walker et al., 2019). The findings from this study support previous findings, and further suggest that the lack of an open source evidence base for academic and well-being interventions is likely to be a contributing factor leading to the accumulation of numerous interventions and strategies, many of which lack a strong evidence base.

Limitations

This review has some limitations that should be considered when interpreting the results. First, although the study selection criteria and search strategy allowed for the capture of causal evidence it cannot be assumed that all the available evidence was included. As a result of resource constraints and inclusion criteria our review is not exhaustive, and we recognise that some research might not be included. We would recommend that future research could extend the review process to be more expansive. This review also chose to exclude the grey literature and, whilst the first author was aware of the negative effects of publication bias, it was felt from a preliminary scan that the grey literature would not improve the quality of the results. Also, resource constraints prevented a second reviewer carrying out an independent screening of a sample of papers.

It is also important to highlight that this paper is not advocating any of the programmes or approaches included in this review, or rejecting the interventions with little to no evidence. Our aim is to objectively present the available evidence to the participating schools and inform the wider education system of the need to consider the quality of the research evidence when considering school interventions.

Implications for the school cluster

We hope the findings from this study will inform provision and enable the schools to move towards a more evidence-informed approach to provision which is informed by the availability of higher quality research evidence. Doing so, will help to ensure scarce resources are spent more efficiently on fewer interventions with a stronger evidence base for impact on pupil outcomes. When undertaking reviews such as this, schools might also consider using approaches from health economics such as Programme Budgeting Marginal Analysis (PMBA) to further evaluate and refine the range of interventions in terms of need, resource implication, cost effectiveness and social validity. For schools that choose to continue to use programmes and approaches that lack evidence, we would encourage them to start the process of evaluation of impact. This could be achieved initially through the use of school-level data, action research projects or through more involved collaborative research projects with higher education institutions.

Implications for policy

The outcomes of this study support previous findings by Schaik et al. (2018) and indicate that government agencies need to work more closely with schools and researchers to ensure a greater number of robust and relevant studies are conducted to strengthen the existing evidence-base for interventions. Policy makers and researchers should work together with funders to create an open access database of evaluation findings for commonly used interventions and programmes.

Directions for research

Evidence from this review provides some insight into the programmes that would most benefit investigation. Conclusions drawn from a review by Schaik et al. (2018) and Gorard et al. (2020) report that more collaborations and partnerships between researchers and teachers are necessary to facilitate more effective evidence-use in schools. We suggest that the findings from this study could be used to inform future collaborative projects to ensure researchers work more closely with schools to develop a more robust and relevant evidence-base for interventions. What we have attempted to do here within the constraints of this project, is to develop a rapid review process for examining the evidence-base for interventions. Researchers should now consider replicating the current study in other regions across the UK to begin to create a database of the most commonly used programmes and approaches. In addition, and in agreement with Gorard et al. (2020), our results indicate that more empirical research needs to be conducted to understand the best way to facilitate use of the external evidence in schools, by decision makers, to inform provision.

CONCLUSIONS

The present study provides important new information on the range and evidence-base of interventions in use in a cluster of schools. The findings from this review suggest that many schools adopt a large number of interventions that presently have a limited evidence-base, with very few having evidence of positive causal impact on learner outcomes. The results from this study can be used to inform provision at school level and help the schools and cluster move towards a more evidence-informed approach. Governments, education funders and the research community should use these findings as a starting point for creating a robust and relevant repository to help schools identify more effective interventions and to develop the external evidence-base and to inform future collaborative research projects.

CONFLICT OF INTEREST

There are no conflicts of interest to declare.

ETHICAL APPROVAL

The study was conducted under ethical approval and consent was obtained from all participants.

DATA AVAILABILITY STATEMENT

Derived data supporting the findings of this study are available from the corresponding author on request.

REFERENCES

- Ager, R., & Pyle, K. (2013). *NFER teacher voice omnibus march 2013 survey: Spending priorities for the pupil premium*. NFER.
- Balshem, H., Helfand, M., Schünemann, H. J., Oxman, A. D., Kunz, R., Brozek, J., Vist, G. E., Falck-Ytter, Y., Meerpohl, J., & Norris, S. (2011). GRADE guidelines: 3. Rating the quality of evidence. *Journal of Clinical Epidemiology*, 64(4), 401–406. <https://doi.org/10.1016/j.jclinepi.2010.07.015>
- Bell, M., Cordingley, P., Isham, C., & Davis, R. (2010). Report of professional practitioner use of research review: Practitioner engagement in and/or with research. Coventry: CUREE, GTCE, LSIS & NTRP. <http://www.curee.co.uk/node/2303>

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Broekkamp, H., & van Hout-Wolters, B. (2007). The gap between educational research and practice: A literature review, symposium, and questionnaire. *Educational Research and Evaluation*, 13(3), 203–220. <https://doi.org/10.1080/13803610701626127>
- Brown, C., & Greany, T. (2018). The evidence-informed school system in England: Where should school leaders be focusing their efforts? *Leadership and Policy in Schools*, 17(1), 115–137. <https://doi.org/10.1080/15700763.2016.1270330>
- Brown, C., Schildkamp, K., & Hubers, M. D. (2017). Combining the best of two worlds: A conceptual proposal for evidence-informed school improvement. *Educational Research*, 59(2), 154–172. <https://doi.org/10.1080/00131881.2017.1304327>
- Bumbarger, B., & Perkins, D. (2008). After randomised trials: Issues related to dissemination of evidence-based interventions. *Journal of Children's Services*, 3(2), 55–64. <https://doi.org/10.1108/17466660200800012>
- Bryman, A., Becker, S., & Sempik, J. (2008). Quality criteria for quantitative, qualitative and mixed methods research: A view from social policy. *International Journal of Social Research Methodology*, 11(4), 261–276. <https://doi.org/10.1080/13645570701401644>
- Cain, T. (2016). Research utilisation and the struggle for the teacher's soul: A narrative review. *European Journal of Teacher Education*, 39(5), 616–629. <https://doi.org/10.1080/02619768.2016.1252912>
- Coldwell, M., Greany, T., Higgins, S., Brown, C., Maxwell, B., Stiell, B., & Burns, H. (2017). *Evidence-informed teaching: an evaluation of progress in England*. Research Report. Department for Education. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/625007/Evidence-informed_teaching_-_an_evaluation_of_progress_in_England.pdf
- Connolly, P., Keenan, C., & Urbanska, K. (2018). The trials of evidence-based practice in education: A systematic review of randomised controlled trials in education research 1980–2016. *Educational Research*, 60(3), 276–291. <https://doi.org/10.1080/00131881.2018.1493353>
- Cooper, A., Levin, B., & Campbell, C. (2009). The growing (but still limited) importance of evidence in education policy and practice. *Journal of Educational Change*, 10(2–3), 159–171. <https://doi.org/10.1007/s10833-009-9107-0>
- Department for Education Excellence (1997). *Excellence for all children: Meeting Special Educational Needs*. London: HMSO.
- Department for Education (2010). *The importance of teaching*. Department for Education.
- Department for Education (2015). *Supporting the attainment of disadvantaged pupils: Briefing for school leaders*. Department for Education (2016a). *Educational excellence everywhere*. 9230, London.
- Department for Education (2016b). *Educational Excellence Everywhere*. Assessment of Impact. DFE00086-2016, London: Department for Education.
- Department for Education (2017). *SEN support: Research evidence on effective approaches and examples of current practice in good and outstanding schools and colleges*. Department for Education.
- Department for Education (2019). *Special Educational Needs in England 2019*.
- Donaldson, G. (2015). *Successful futures: Independent Review of Curriculum and Assessment Arrangements in Wales*. <https://gov.wales/sites/default/files/publications/2018-03/successful-futures.pdf> [Accessed 30 July 2021] Education Endowment Foundation (undated) *Teaching and Learning Toolkit*. <https://educationendowmentfoundation.org.uk/resources/teaching-learningtoolkit>
- Estyn (2020). *Effective school support for disadvantaged and vulnerable pupils – case studies of good practice*. Cardiff: Estyn. [Online]. https://www.estyn.gov.wales/system/files/2021-08/Effective%2520school%2520support%2520for%2520disadvantaged%2520and%2520vulnerable%2520pupils%2520en_0.pdf
- Fletcher, J. M., & Vaughn, S. (2009). Response to intervention: Preventing and remediating academic difficulties. *Child Development Perspectives*, 3(1), 30–37. <https://doi.org/10.1111/j.1750-8606.2008.00072.x>
- Forman, S. G., Olin, S. S., Hoagwood, K. E., Crowe, M., & Saka, N. (2009). Evidence-based interventions in schools: Developers' views of implementation barriers and facilitators. *School Mental Health*, 1(1), 26. <https://doi.org/10.1007/s12310-008-9002-5>
- Godfrey, D. (2014). Creating a research culture—lessons from other schools. *SecEd*, 2014. <https://doi.org/10.12968/sece.2014.3.2085>
- Godfrey, D. (2017). What is the proposed role of research evidence in England's 'self-improving' school system? *Oxford Review of Education*, 43(4), 433–446. <https://doi.org/10.1080/03054985.2017.1329718>
- Godfrey, D., & Brown, C. (2018). How effective is the research and development ecosystem for England's schools? *London Review of Education*, 16(1), 137–153. <https://doi.org/10.18546/LRE.16.1.12>
- Godfrey, D., & Handscomb, G. (2019). Evidence use, research-engaged schools and the concept of an ecosystem. In D. Godfrey & C. Brown (Eds.), *An ecosystem for research-engaged schools* (pp. 4–21). Routledge.
- Goldacre, B. (2013). Building evidence into education. http://dera.ioe.ac.uk/17530/7/ben%20goldacre%20paper_Redacted.pdf
- Gorard, S. (2014). A proposal for judging the trustworthiness of research findings. *Radical Statistics*, 110, 47–59.

- Gorard, S. (2020). *Getting evidence into education: Evaluating the routes to policy and practice* (Eds). Routledge.
- Gorard, S., See, B. H., & Siddiqui, N. (2020). What is the evidence on the best way to get evidence into use in education? *Review of Education*, 8(2), 570–610. <https://doi.org/10.1002/rev3.3200>
- Greany, T., & Brown, C. (2017). The Evidence Informed School System in England: Where should school leaders be focusing their efforts? *International Journal of Education Policy and Leadership*, 17, 1–23.
- Green, H., McGinnity, A., Meltzer, H., Ford, T., & Goodman, R. (2004). Mental Health of Children and Young People in Great Britain, 2004. Report No.: 1403986371. Office for National Statistics, 2005.
- Hammersley, M. (2009). *What is evidence for evidence-based practice?* (pp. 101–111). Brill Sense.
- Hammersley, M. (2015). Against 'gold standards' in research: On the problem of assessment criteria. *Was heißt hier eigentlich 'Evidenz'*. www.degeval.de/fileadmin/users/Arbeitskreise
- Hargreaves, D. H. (2010). *Creating a self-improving school system*. National College for School Leadership.
- Hemsley-Brown, J., & Sharp, C. (2003). The use of research to improve professional practice: A systematic review of the literature. *Oxford Review of Education*, 29(4), 449–471. <https://doi.org/10.1080/0305498032000153025>
- Higgins, S., Katsipataki, M., Villanueva-Aguilera, A. B., Coleman, R., Henderson, P., Major, L. E., & Mason, D. (2016). The Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit. Institute for Effective Education (2019). *Engaging with evidence*. Institute for Effective Education.
- Kools, M., Pont, B., Gouedard, P., Rodriguez, T., Stoll, L. & George, B. (2018). Schools as learning organisations in Wales: A detailed analysis. In *Developing schools as learning organisations in Wales* (pp. 10–23). OECD Publishing. <https://doi.org/10.1787/9789264307193-7-en>
- Kools, M., Stoll, L., George, B., Steijn, B., Bekkers, V., & Gouédard, P. (2020). The school as a learning organisation: The concept and its measurement. *European Journal of Education*, 55(1), 24–42. <https://doi.org/10.1111/ejed.12383>
- Movsisyan, A., Dennis, J., Rehfuess, E., Grant, S., & Montgomery, P. (2018). Rating the quality of a body of evidence on the effectiveness of health and social interventions: A systematic review and mapping of evidence domains. *Research Synthesis Methods*, 9(2), 224–242. <https://doi.org/10.1002/jrsm.1290>
- Nelson, J., & O'Beirne, C. (2014). *Using evidence in the classroom: What works and why?*. NFER. <http://dera.ioe.ac.uk/id/eprint/27753>
- Nelson, J., & Campbell, C. (2017). Evidence-informed practice in education: Meanings and applications. *Educational Research*, 59(2), 127–135. <https://doi.org/10.1080/00131881.2017.1314115>
- Nelson, J., Mehta, P., Sharples, J., & Davey, C. (2017). *Measuring Teachers' Research Engagement: Findings from a pilot study*. EEF. https://educationendowmentfoundation.org.uk/public/files/Evaluation/Research_Use
- Nutley, S. M., Powell, A. E., & Davies, H. T. O. (2013). What counts as good evidence. https://researchrepository.standrews.ac.uk/bitstream/handle/10023/3518/What_Counts_as_Good_Evidence_published_version.pdf?sequence=1
- OECD (2014). *Improving schools in Wales: An OECD perspective*. <https://www.oecd.org/education/Improving-schools-in-Wales.pdf>
- OECD (2017). *The Welsh education reform journey: A rapid policy assessment*. OECD.
- Powers, J. D., Bowen, N. K., & Bowen, G. L. (2010). Evidence-based programs in school settings: Barriers and recent advances. *Journal of Evidence-Based Social Work*, 7(4), 313–331. <https://doi.org/10.1080/15433710903256807>
- Public Health England (2017). *Secondary school staff get mental health 'first aid' training*. <https://www.gov.uk/government/news/secondary-school-staff-get-mental-health-first-aid-training>
- See, B. H. (2018). 'Evaluating the evidence in evidence-based policy and practice: Examples from systematic reviews of literature. *Research in Education*, 102(1), 37–61.
- See, B. H., & Gorard, S. (2020). Effective classroom instructions for primary literacy: A critical review of the causal evidence. *International Journal of Educational Research*, 102, 101577. <https://doi.org/10.1016/j.ijer.2020.101577>
- Slavin, R. E. (2008). Evidence-based reform in education: What will it take? *European Educational Research Journal*, 7(1), 124–128. <https://doi.org/10.2304/eeerj.2008.7.1.124>
- Slavin, R. E. (2017). Evidence-based reform in education. *Journal of Education for Students Placed at Risk*, 22(3), 178–184. <https://doi.org/10.1080/10824669.2017.1334560>
- Slavin, R. E. (2020). How evidence-based reform will transform research and practice in education. *Educational Psychologist*, 55(1), 21–31. <https://doi.org/10.1080/00461520.2019.1611432>
- Styles, B., & Torgerson, C. (2018). Randomised controlled trials (RCTs) in education research—methodological debates, questions, challenges. *Educational Research*, 60(3), 255–264. <https://doi.org/10.1080/00131881.2018.1500194>
- Thomas, G. (2016). After the gold rush: Questioning the “gold standard” and reappraising the status of experiment and randomized controlled trials in education. *Harvard Educational Review*, 86(3), 390–411. <https://doi.org/10.17763/1943-5045-86.3.390>
- Thomas, G. (2021). Experiment's persistent failure in education inquiry, and why it keeps failing. *British Educational Research Journal*, 47(3), 501–519. <https://doi.org/10.1002/berj.3660>

- Van Schaik, P., Volman, M., Admiraal, W., & Schenke, W. (2018). Barriers and conditions for teachers' utilisation of academic knowledge. *International Journal of Educational Research*, 90, 50–63. <https://doi.org/10.1016/j.ijer.2018.05.003>
- Walker, M., Nelson, J., Bradshaw, S., & Brown, C. (2019). *Teachers' engagement with research: what do we know? A research briefing*. Education Endowment Foundation. https://educationendowmentfoundation.org.uk/public/files/Evaluation/Teachers_engagement_with_research_Research_Brief_JK.pdf
- Welsh Government (2015a). *Successful futures: Independent review of curriculum and assessment arrangements in Wales*. Welsh Government.
- Welsh Government (2015b). *Making best use of the Pupil Deprivation Grant funding*. Welsh Government. <http://learning.gov.wales/resources/browse-all/pdg-what-really-works/?lang=en>
- Welsh Government (2017). Written statement—providing for the emotional and mental health needs of young people in school. <http://gov.wales/about/cabinet/cabinetstatements/2017/mentalhealthneeds/?lang=en>
- Welsh Government. (2019). <https://gov.wales/sites/default/files/statistics-and-research/2019-07/school-census-results-2019-764.pdf>

REFERENCES FROM THE SYSTEMATIC REVIEW

Accelerated Reader

Catch-Up Literacy

Friends for Life

Headsprout

Incredible Years, Dinosaur School

Language for Thinking

Lego-Based Therapy

MISProject Paws b

A Narrative Intervention by Becky Shanks

Picture Exchange Communication System (PECS)

The Reading Educational Assistance Dogs (R.E.A.D) programme

Read Write Inc. Fresh Start

SAFMEDS

Seasons for Growth

Social Stories

Student Assistance Program (SAP)

Time-out

Toe by Toe

- Brem, S. K., Husman, J., & Duggan, M. A. (2005). Findings from a three-year study of Reading Renaissance in a Title I urban elementary school. *Academic Exchange Quarterly*, 9(3), 355–359.
- Brown, K. L. (2010). *The impact of accelerated reader (AR) program on students' MCT reading scores*. Available from Social Science Premium Collection. (889926355; ED522354). <http://ezproxy.bangor.ac.uk/login?url=https://www.proquest.com/dissertations-theses/impact-accelerated-reader-ar-program-on-students/docview/889926355/se-2?accountid=14874>
- Bryant, W. E. (2008). Effect of the Accelerated Reader program on academic achievement (Doctoral dissertation, Northcentral University). *Dissertation Abstracts International*, 69(02A), 90–443.
- Bullock, J. C. (2005). Effects of the Accelerated Reader on the reading performance of third, fourth, and fifth-grade students in one western Oregon elementary school (Doctoral dissertation, University of Oregon). *Dissertation Abstracts International*, 66(07A), 56–2529.
- Chase, E., Goodin, P., & Nichols, W. R. (2010). Evaluation of the accelerated reader program in Chesapeake, VA, public schools. *ERS Spectrum*, 28(1), 25–32.
- Friesen, C. (2004). *Improving reading in grade three students*. Renaissance Learning.
- Griffin, T. F. (2000). A causal comparative study on the effects of Accelerated Reader (Doctoral dissertation, University of North Carolina at Charlotte). *Dissertation Abstracts International*, 61(08A), 99–3106.
- Hagerman, T. E. (2003). A quasi-experimental study on the effects of Accelerated Reader at middle school (Doctoral dissertation, University of Oregon). *Dissertation Abstracts International*, 64(06A), 124–2027.
- Hart, S. S. (2007). Accelerated Reader in a primary school: An evaluation of time spent on classroom implementation and student achievement (Doctoral dissertation, Capella University). *Dissertation Abstracts International*, 68(04A), 122–1384.

- Holloway, A. (2007). The effects of Accelerated Reader on the attitudes and reading habits of first grade students in a mid-southern state (Doctoral dissertation, Union University). *Dissertation Abstracts International*, 68(11A), 108–4610.
- Holmes, C. T., & Brown, C. L. (2003). *A controlled evaluation of a total school improvement process, School Renaissance*. University of Georgia, Department of Educational Administration.
- Huang, S. (2012). A mixed method study of the effectiveness of the accelerated reader program on middle school students' reading achievement and motivation. *Reading Horizons*, 51(3), 229–246.
- Hunter, T. A. (2013). The effect of accelerated reader on reading scores in a rural school district. Walden University. <https://search-proquest-com.ezproxy.bangor.ac.uk/dissertations-theses/effect-accelerated-reader-on-reading-scores-rural/docview/1697500399/se-2?accountid=14874>
- Johnson, R. A., & Howard, C. A. (2003). The effects of the accelerated reader program on the reading comprehension of pupils in grades three, four, and five. *The Reading Matrix: An International Online Journal*, 3(3), <https://www.proquest.com/scholarly-journals/effects-accelerated-reader-program-on-reading/docview/85631356/se-2?accountid=14874>
- Kohel, P. R. (2003). Using Accelerated Reader: Its impact on the reading levels and Delaware state testing scores of 10th grade students in Delaware's Milford High School (Doctoral dissertation, Wilmington College). *Dissertation Abstracts International*, 63(10A), 106–3507.
- Mallette, M. H., Henk, W. A., & Melnick, S. A. (2004). The influence of accelerated reader on the affective literacy orientations of intermediate grade students. *Journal of Literacy Research*, 36(1), 73–84.
- Melton, C. M., Smothers, B. C., Anderson, E., Fulton, R., Replogle, W. H., & Thomas, L. (2004). A study of the effects of the accelerated reader program on fifth grade students' reading achievement growth. *Reading Improvement*, 41(1), 18–23.
- McGlinn, J. M., & Parrish, A. (2002). Accelerating ESL students' reading progress with Accelerated Reader. *Reading Horizons*, 42(3), 175–189.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med*, 6(7), e1000097.
- Nichols, J. S. (2013). Accelerated Reader and its effect on fifth-grade students' reading comprehension. Available from ERIC. (1697491793; ED553041). <https://search-proquest-com.ezproxy.bangor.ac.uk/dissertations-theses/accelerated-reader-effect-on-fifth-grade-students/docview/1697491793/se-2?accountid=14874>
- Nunnery, J. A., & Ross, S. M. (2007). The effects of the school renaissance program on student achievement in reading and mathematics. *Research in the Schools*, 14(1), 40–59.
- Nunnery, J. A., Ross, S. M., & Goldfeder, E. (2003). *The effect of School Renaissance on TAAS scores in the McKinney ISD*. Center for Research in Educational Policy.
- Nunnery, J. A., Ross, S. M., & McDonald, A. (2006). A randomized experimental evaluation of the impact of Accelerated Reader/Reading Renaissance implementation on reading achievement in grades 3 to 6. *Journal of Education for Students Placed at Risk*, 11(1), 1–18. https://doi.org/10.1207/s15327671espr1101_1
- Ostrom, J. (2007). A study of reading achievement of students participating in the Accelerated Reader program
- Pavonetti, L. M., Brimmer, K. M., & Ciplewski, J. F. (2002). Accelerated Reader: What are the lasting effects on the habits of middle school students exposed to Accelerated Reader in elementary grades? *Journal of Adolescent & Adult Literacy*, 46(4), 300–311.
- Putman, S. M. (2005). Computer-based reading technology in the classroom: The affective influence of performance contingent point accumulation on 4th grade students. *Reading Research & Instruction*, 45(1), 19–38.
- Rodriguez, S. (2007). The accelerated reader programs' relationship to student achievement on the English-language Arts California standards test. *The Reading Matrix: An International Online Journal*, 7(3), 191–205.
- Ross, S. M., Nunnery, J., & Goldfeder, E. (2004). *A randomized experiment on the effects of Accelerated Reader/Reading Renaissance in an urban school district: Preliminary evaluation report*. The University of Memphis, Center for Research in Educational Policy.
- Ross, S., & Nunnery, J. (2005). *The effects of School Renaissance on student achievement in two Mississippi school districts: A longitudinal quasi-experimental study*. Center for Research in Educational Policy and Education Innovations.
- Rudd, P., & Wade, P. (2006). *Evaluation of "Renaissance Learning" Mathematics and Reading Programs in UK Specialist and Feeder Schools*. Final Report, 2006. National Foundation for Educational Research.
- Samuels, S. J., Lewis, M., Wu, Y., Reininger, J., & Murphy, A. (2003). *Accelerated Reader vs. non-Accelerated Reader: How students using the Accelerated Reader outperformed the control condition in a tightly controlled experimental study*. The University of Minnesota, Department of Education Psychology.
- Topping, K. J., & Fisher, A. M. (2001). *Accelerated Reader: UK Pilot, 1999-2000*. Summary Report.
- Topping, K. J., & Fisher, A. M. (2003). Computerised formative assessment of reading comprehension: Field trials in the U.K. *Journal of Research in Reading*, 26(3), 267–279.
- Shannon, L. C., Styers, M. K., Wilkerson, S. B., & Peery, E. (2015). Computer-assisted learning in elementary reading: A randomized control trial. *Computers in the Schools*, 32(1), 20–34.

- Siddiqui, N., Gorard, S., & See, B. H. (2016). Accelerated Reader as a literacy catch-up intervention during primary to secondary school transition phase. *Educational Review*, 68(2), 139–154. <https://doi.org/10.1080/00131911.2015.1067883>
- What Works Clearinghouse (2007a). *Accelerated Reader: WWC Intervention Report*. ERIC. <https://search-proquest-com.ezproxy.bangor.ac.uk/reports/accelerated-reader-reading-renaissance-what-works/docview/62020030/se-2?accountid=14874>
- What Works Clearinghouse. (2007b). *Accelerated Reader: WWC intervention report*, IES. <https://search-proquest-com.ezproxy.bangor.ac.uk/reports/accelerated-reader-reading-renaissance-what-works/docview/62020030/se-2?accountid=14874>
- What Works Clearinghouse (2009a). *Accelerated Reader: WWC Intervention Report*. <https://search-proquest-com.ezproxy.bangor.ac.uk/reports/accelerated-reader-what-works-clearinghouse/docview/61823212/se-2?accountid=14874>
- What Works Clearinghouse (2009b). *Accelerated reader: WWC intervention report*. IES, ERIC. <https://search-proquest-com.ezproxy.bangor.ac.uk/reports/accelerated-reader-what-works-clearinghouse/docview/61823212/se-2?accountid=14874>
- What Works Clearinghouse (2010a). *Accelerated Reader: WWC Intervention Report*. ERIC, <https://search-proquest-com.ezproxy.bangor.ac.uk/reports/accelerated-reader-tm-what-works-clearinghouse/docview/754911655/se-2?accountid=1487>
- What Works Clearinghouse. (2010b). *Accelerated reader: WWC intervention report*, IES, <https://search-proquest-com.ezproxy.bangor.ac.uk/reports/accelerated-reader-tm-what-works-clearinghouse/docview/754911655/se-2?accountid=14874>
- Roy, P., Rutt, S., Buchanan, E., Rennie, C., Martin, K., & Walker, F. (2019). *Catch Up Literacy Evaluation report and executive summary*. https://educationendowmentfoundation.org.uk/public/files/Projects/Evaluation_Reports/Catch_Up_Literacy.pdf
- Rutt. (2015). *Catch Up Literacy Evaluation Report and Executive Summary*. https://educationendowmentfoundation.org.uk/public/files/Projects/Evaluation_Reports/EEF_Project_Report_CatchUpLiteracy.pdf
- Ahlen, J., Hursti, T., Tanner, L., Tokay, Z., & Ghaderi, A. (2018). Prevention of anxiety and depression in Swedish school children: A cluster-randomized effectiveness study. *Prevention Science*, 19(2), 147–158.
- Barrett, P. M., Farrell, L. J., Ollendick, T. H., & Dadds, M. (2006). Long-term outcomes of an Australian universal prevention trial of anxiety and depression symptoms in children and youth: An evaluation of the friends program. *Journal of Clinical Child and Adolescent Psychology*, 35(3), 403–411. https://doi.org/10.1207/s15374424jccp3503_5
- Barrett, P. M., Lock, S., & Farrell, L. J. (2005). Developmental differences in universal preventive intervention for child anxiety. *Clinical Child Psychology & Psychiatry*, 10, 539–555. <https://doi.org/10.1177/1359104505056317>
- Barrett, P. M., Sonderegger, R., & Sonderegger, N. L. (2001). Evaluation of an anxiety-prevention and positive-coping program (FRIENDS) for children and adolescents of non-English-speaking background. *Behaviour Change*, 18(2), 78–91.
- Barrett, P. M., Sonderegger, R., & Xenos, S. (2003). Using FRIENDS to combat anxiety and adjustment problems among young migrants to Australia: A national trial. *Clinical Child Psychology and Psychiatry*, 8(2), 241–260.
- Barrett, P. M., & Turner, C. (2001). Prevention of anxiety symptoms in primary school children: Preliminary results from a universal school-based trial. *British Journal of Clinical Psychology*, 40, 399–410.
- Bernstein, G. A., Layne, A. E., Egan, E. A., & Tennison, D. M. (2005). School-based interventions for anxious children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 44(11), 1118–1127.
- Briesch, A. M., Hagermoser Sanetti, L. M., & Briesch, J. M. (2010). Reducing the prevalence of anxiety in children and adolescents: An evaluation of the evidence base for the FRIENDS for Life Program. *School Mental Health*, 2(4), 155–165. <https://doi.org/10.1007/s12310-010-9042-5>
- Cooley, M. R., Boyd, R. C., & Grados, J. J. (2004). Feasibility of an anxiety preventive intervention for community violence exposed African-American children. *Journal of Primary Prevention*, 25(1), 105–123.
- Essau, C. A., Conrath, J., Sasagawa, S., & Ollendick, T. H. (2012). Prevention of anxiety symptoms in children: Results from a universal school-based trial. *Behavior Therapy*, 43(2), 450–464. <http://10.1016/j.beth.2011.08.003>
- Fjermestad, K. W., Wergeland, G. J., Rogde, A., Bjaastad, J. F., Heiervang, E., & Haugland, B. S. M. (2020). School-based targeted prevention compared to specialist mental health treatment for youth anxiety. *Child and Adolescent Mental Health*, 25(2), 102–109. <https://doi.org/10.1111/camh.12366>
- Gallegos, J., Linan-Thompson, S., Stark, K., & Ruvalcaba, N. (2013). Preventing childhood anxiety and depression: Testing the effectiveness of a school based program in Mexico. *Psicología Educativa*, 19(1), 37–44.
- Higgins, E., & O'Sullivan, S. (2015). “What Works”: Systematic review of the “FRIENDS for Life” programme as a universal school-based intervention programme for the prevention of child and youth anxiety. *Educational Psychology in Practice*, 31(4), 424–438.

- Hunt, C., Andrews, G., Sakashita, C., Crino, R., & Erskine, A. (2009). Randomized controlled trial of an early intervention programme for adolescent anxiety disorders. *Australian & New Zealand Journal of Psychiatry*, 43(4), 300–304.
- Liddle, I., & Macmillan, S. (2010). Evaluating the FRIENDS programme in a Scottish setting. *Educational Psychology in Practice*, 26(1), 53–67.
- Lock, S., & Barrett, P. M. (2003). A longitudinal study of developmental differences in universal preventive intervention for child anxiety. *Behaviour Change*, 20, 183–199.
- Lowry-Webster, H. M., Barrett, P. M., & Dadds, M. R. (2001). A universal prevention trial of anxiety and depressive symptomatology in childhood: Preliminary data from an Australian study. *Behaviour Change*, 18(1), 36–50.
- Lowry-Webster, H. M., Barrett, P. M., & Lock, S. (2003). A universal prevention trial of anxiety symptomatology during childhood: Results at 1-year follow-up. *Behaviour Change*, 20(1), 25–43.
- Maggin, D. M., & Johnson, A. H. (2014). A meta-analytic evaluation of the FRIENDS program for preventing anxiety in student populations. *Education and Treatment of Children*, 277–306.
- Matsumoto, Y., & Shimizu, E. (2016). The FRIENDS Cognitive Behavioral Program in Japanese schools: An examination of the treatment effects. *School Psychology International*, 37(4), 397–409. <https://doi.org/10.1177/0143034316649639>
- Miller, L. D., Laye-Gindhu, A., Bennett, J. L., Liu, Y., Gold, S., March, J. S., Olson, B. F., & Waechter, V. E. (2011). An effectiveness study of a culturally enriched school-based CBT anxiety prevention program. *Journal of Clinical Child & Adolescent Psychology*, 40(4), 618–629.
- Mostert, J., & Loxton, H. (2008). Exploring the effectiveness of the FRIENDS program in reducing anxiety symptoms among South African children. *Behaviour Change*, 25(2), 85–96. <https://doi.org/10.1375/bech.25.2.85>
- St-Onge, J. R., Stephenson, R., & Senthil Kumar, B. (2017). Validation of the FRIENDS anxiety prevention program for children in Canada. *Canadian Journal of Community Mental Health*, 35(3), 25–40.
- Rodgers, A., & Dunsmuir, S. (2015). A controlled evaluation of the 'FRIENDS for Life' emotional resiliency programme on overall anxiety levels, anxiety subtype levels and school adjustment. *Child and Adolescent Mental Health*, 20(1), 13–19.
- Rose, H., Miller, L., & Martinez, Y. (2009). "FRIENDS for life": The results of a resilience-building, anxiety-prevention program in a Canadian elementary school. *Professional School Counseling*, 12(6), 2156759X0901200612.
- Schoenfeld, N. A., & Mathur, S. R. (2009). Effects of cognitive-behavioral intervention on the school performance of students with emotional or behavioral disorders and anxiety. *Behavioral Disorders*, 34(4), 184–195.
- Siu, A. F. (2007). Using FRIENDS to combat internalizing problems among primary school children in Hong Kong. *Journal of Evidence-Based Psychotherapies*, 7(1), 11.
- Stallard, P., Simpson, N., Anderson, S., Carter, T., Osborn, C., & Bush, S. (2005). An evaluation of the FRIENDS programme: A cognitive behavior therapy intervention to promote emotional resilience. *Archives of Disease in Childhood*, 90, 1016–1019.
- Stallard, P., Simpson, N., Anderson, S., & Goddard, M. (2008). The FRIENDS emotional health prevention programme: 12 month follow-up of a universal UK school based trial. *European Journal of Child and Adolescent Psychiatry*, 17, 283–289.
- Stallard, P., Skryabina, E., Taylor, G., Phillips, R., Daniels, H., Anderson, R., & Simpson, N. (2014). Classroom-based cognitive behaviour therapy (FRIENDS): A cluster randomised controlled trial to Prevent Anxiety in Children through Education in Schools (PACES). *The Lancet Psychiatry*, 1(3), 185–192. [https://doi.org/10.1016/S2215-0366\(14\)70244-5](https://doi.org/10.1016/S2215-0366(14)70244-5)
- Wiglesworth et al. (2018). *FRIENDS for life Evaluation report and executive summary*. https://educationendowmentfoundation.org.uk/public/files/Projects/Evaluation_Reports/FRIENDS.pdf
- Clarfield, J., & Stoner, G. (2005). The effects of computerized reading instruction on the academic performance of students identified with ADHD. *School Psychology Review*, 34(2), 246–254.
- Cullen, J. M., Alber-Morgan, S. R., Schnell, S. T., & Wheaton, J. E. (2014). Improving reading skills of students with disabilities using Headsprout comprehension. *Remedial and Special Education*, 35(6), 356–365.
- Grindle, C., Kurzeja, O., Tyler, E., Saville, M., Hughes, J. C., Hastings, R. P., & Brown, F. J. (2020). Teaching children with autism reading comprehension skills using online reading instruction: Preliminary evaluation of Headsprout reading comprehension®. *Journal of International Special Needs Education*, 23(1), 1–12.
- Hammond, S. S. (2012). *The effects of the Headsprout early reading program on the literacy skills and on-task behavior of at-risk urban kindergarten students*. The Ohio State University.
- Herring, E., Grindle, C., & Kovshoff, H. (2019). Teaching early reading skills to children with severe intellectual disabilities using Headsprout Early Reading. *Journal of Applied Research in Intellectual Disabilities*, 32(5), 1138–1148.
- Hill, D. A., & Flores, M. M. (2015). A preliminary investigation of the benefits of computer-aided instruction in reading decoding for students with autism spectrum disorder and other developmental disabilities. *Journal of the American Academy of Special Education Professionals*, 72, 82.

- Kreskey, D. D., & Truscott, S. D. (2016). Is computer-aided instruction an effective tier-one intervention for kindergarten students at risk for reading failure in an applied setting? *Contemporary School Psychology, 20*(2), 142–151.
- Ramdoss, S. T., Harbison, A. L., & Lee, K. E. (2020). Computer-assisted instruction appears to improve reading skills in students with intellectual disabilities, despite challenges with research design to establish efficacy. *Evidence-Based Communication Assessment and Intervention, 14*(4), 189–192.
- Rigney, A. M., Hixson, M. D., & Drevon, D. D. (2020). Headsprout: A systematic review of the evidence. *Journal of Behavioral Education, 29*(1), 153–167.
- Roberts-Tyler, E. J., Hughes, J. C., & Hastings, R. P. (2020). Evaluating a computer-based reading programme with children with Intellectual Disabilities: feasibility and pilot research. *Journal of Research in Special Educational Needs, 20*(1), 14–26. <https://doi.org/10.1111/1471-3802.12458>
- Storey, C., McDowell, C., & Leslie, J. C. (2017). Evaluating the efficacy of the Headsprout® reading program with children who have spent time in care. *Behavioral Interventions, 32*(3), 285–293.
- Storey, C., McDowell, C., & Leslie, J. C. (2020). Headsprout Early Reading for specific literacy difficulty: A comparison study. *Journal of Behavioral Education, 29*(3), 619–633.
- Tyler, E. J., Hughes, J. C., Beverley, M., & Hastings, R. P. (2015a). Improving early reading skills for beginning readers using an online programme as supplementary instruction. *European Journal of Psychology of Education, 30*(3), 281–294.
- Tyler, E. J., Hughes, J. C., Wilson, M. M., Beverley, M., Hastings, R. P., & Williams, B. M. (2015b). Teaching early reading skills to children with intellectual and developmental disabilities using computer-delivered instruction: A pilot study. *Journal of International Special Needs Education, 18*(1), 1–11.
- Watkins, R. C., Hulson-Jones, A., Tyler, E., Beverley, M., Carl Hughes, J., & Hastings, R. P. (2016). Evaluation of an online reading programme to improve pupils' reading skills in primary schools: Outcomes from two implementation studies. *Cylchgrawn Addysg Cymru/Wales Journal of Education, 18*(2), 81–104.
- Whitcomb, S. A., Bass, J. D., & Luiselli, J. K. (2011). Effects of a computer-based early reading program (Headsprout®) on word list and text reading skills in a student with autism. *Journal of Developmental and Physical Disabilities, 23*(6), 491–499.
- Hutchings, J., Bywater, T., Gridley, N., Whitaker, C. J., Martin-Forbes, P., & Gruffydd, S. (2012). The incredible years therapeutic social and emotional skills programme: A pilot study. *School Psychology International, 33*(3), 285–293.
- Hutchings, J., Lane, E., Owen, R. E., & Gwyn, R. (2004). The introduction of the Webster-Stratton classroom dinosaur school programme in Gwynedd, North Wales: A pilot study. *Educational and Child Psychology, 21*(4), 4–15.
- Pidano, A. E., & Allen, A. R. (2015). The incredible years series: A review of the independent research base. *Journal of Child and Family Studies, 24*(7), 1898–1916.
- Benner, G. J., Ralston, N. C., & Feuerborn, L. (2012). The effect of the language for thinking program on the cognitive processing and social adjustment of students with emotional and behavioral disorders. *Preventing School Failure: Alternative Education for Children and Youth, 56*(1), 47–54.
- Andras, M. (2012). The value of LEGO® therapy in promoting social interaction in primary-aged children with autism. *Good Autism Practice, 13*(2), 17–24.
- Hu, X., Zheng, Q., & Lee, G. T. (2018). Using peer-mediated LEGO® play intervention to improve social interactions for Chinese children with autism in an inclusive setting. *Journal of Autism and Developmental Disorders, 48*(7), 2444–2457.
- Levy, J., & Dunsmuir, S. (2020). Lego therapy: Building social skills for adolescents with an autism spectrum disorder. *Educational and Child Psychology, 37*(1), 58–83.
- Narzisi, A., Sesso, G., Berloffo, S., Fantozzi, P., Muccio, R., Valente, E., Viglione, V., Villafranca, A., Milone, A., & Masi, G. (2021). Could You Give Me the Blue Brick? LEGO®-Based Therapy as a social development program for children with autism spectrum disorder: A systematic review. *Brain Sciences, 11*(6), 702.
- Carsley, D., Khoury, B., & Heath, N. L. (2018). Effectiveness of mindfulness interventions for mental health in schools: A comprehensive meta-analysis. *Mindfulness, 9*(3), 693–707.
- Thomas, G., & Atkinson, C. (2016). Measuring the effectiveness of a mindfulness-based intervention for children's attentional functioning. *Educational & Child Psychology, 33*(1), 51–64.
- Vickery, C. E., & Dorjee, D. (2016). Mindfulness training in primary schools decreases negative affect and increases meta-cognition in children. *Frontiers in Psychology, 6*, 2025.
- Davies, P., Shanks, B., & Davies, K. (2004). Improving narrative skills in young children with delayed language development. *Educational Review, 56*(3), 271–286.
- Petersen, D. B. (2011). A systematic review of narrative-based language intervention with children who have language impairment. *Communication Disorders Quarterly, 32*(4), 207–220.
- Favot, K., Carter, M., & Stephenson, J. (2020). The effects of oral narrative intervention on the narratives of children with language disorder: A systematic literature review. *Journal of Developmental and Physical Disabilities, 1*–48.

- Boesch, M. C., Wendt, O., Subramanian, A., & Hsu, N. (2013). Comparative efficacy of the Picture Exchange Communication System (PECS) versus a speech-generating device: Effects on requesting skills. *Research in Autism Spectrum Disorders, 7*(3), 480–493.
- Carr, D., & Felce, J. (2007). The effects of PECS teaching to Phase III on the communicative interactions between children with autism and their teachers. *Journal of Autism and Developmental Disorders, 37*(4), 724–737.
- Charlop-Christy, M. H., Carpenter, M., Le, L., LeBlanc, L. A., & Kellet, K. (2002). Using the picture exchange communication system (PECS) with children with autism: Assessment of PECS acquisition, speech, social-communicative behavior, and problem behavior. *Journal of Applied Behavior Analysis, 35*(3), 213–231.
- Flippin, M., Reszka, S., & Watson, L. R. (2010). Effectiveness of the Picture Exchange Communication System (PECS) on communication and speech for children with autism spectrum disorders: A meta-analysis. *American Journal of Speech-Language Pathology, 19*, 178–195.
- Ganz, J. B., & Simpson, R. L. (2004). Effects on communicative requesting and speech development of the picture exchange communication system in children with characteristics of autism. *Journal of Autism and Developmental Disorders, 34*(4), 395–409.
- Howlin, P., Gordon, R. K., Pasco, G., Wade, A., & Charman, T. (2007). The effectiveness of Picture Exchange Communication System (PECS) training for teachers of children with autism: a pragmatic, group randomised controlled trial. *Journal of Child Psychology and Psychiatry, 48*(5), 473–481.
- Kravits, T. R., Kamps, D. M., Kemmerer, K., & Potucek, J. (2002). Brief report: Increasing communication skills for an elementary-aged student with autism using the picture exchange communication system. *Journal of Autism and Developmental Disorders, 32*(3), 225–230.
- Magiati, I., & Howlin, P. (2003). A pilot evaluation study of the Picture Exchange Communication System (PECS) for children with autistic spectrum disorders. *Autism, 7*(3), 297–320.
- Preston, D., & Carter, M. (2009). A review of the efficacy of the picture exchange communication system intervention. *Journal of Autism and Developmental Disorders, 39*(10), 1471–1486.
- Tincani, M., Crozier, S., & Alazetta, L. (2006). The Picture Exchange Communication System: Effects on manding and speech development for school-aged children with autism. *Education and Training in Developmental Disabilities, 177*–184.
- Hall, S. S., Gee, N. R., & Mills, D. S. (2016). Children reading to dogs: A systematic review of the literature. *PLoS One, 11*(2), e0149759.
- Le Roux, M. C., Swartz, L., & Swart, E. (2014). The effect of an animal-assisted reading program on the reading rate, accuracy and comprehension of grade 3 students: A randomized control study. *Child & Youth Care Forum, 43*(6), 655–673.
- Le Roux, M., Swartz, L., & Swart, E. (2015). The effect of an animal-assisted reading programme on word recognition and spelling skills of grade 3 children. *Tydskrif vir Geesteswetenskappe, 55*(2), 289–303.
- Gorard, S., Siddiqui, N., & See, B. H. (2016). An evaluation of Fresh Start as a catch-up intervention: A trial conducted by teachers. *Educational Studies, 42*(1), 98–113.
- Beverley, M., Hughes, J. C., & Hastings, R. P. (2016). Using SAFMEDS to assist language learners to acquire second-language vocabulary. *European Journal of Behavior Analysis, 17*(2), 131–141.
- Byrnes, M. E., Macfarlane, C. A., Young, K. R., & West, R. P. (1990). Using precision teaching to teach minimum competency test skills. *Teaching Exceptional Children, 22*, 58–61. <https://doi.org/10.1177/004005999002200415>
- Casey, J., McLaughlin, T. F., Weber, K. P., & Everson, M. (2003). The effects of five minute practice, unlimited practice, with SAFMED cards on correct and error rate in math facts for two elementary school children with learning disabilities. *International Journal of Special Education, 18*(1), 66–72.
- Cunningham, D., McLaughlin, T. F., & Weber, K. P. (2012). The use and evaluation of verbal prompting with see to say problems and answers and SAFMEDS to teach math facts to a student with learning disabilities. *International Journal of Advances in Psychology, 1*(2), 37–39.
- Greene, I., Mc Tiernan, A., & Holloway, J. (2018). Cross-age peer tutoring and fluency-based instruction to achieve fluency with mathematics computation skills: A randomized controlled trial. *Journal of Behavioral Education, 27*(2), 145–171.
- Hughes, J. C., Beverley, M., & Whitehead, J. (2007). Using precision teaching to increase the fluency of word reading with problem readers. *European Journal of Behavior Analysis, 8*(2), 221–238.
- Hunter, S. H., Beverley, M., Parkinson, J., & Hughes, J. C. (2016). Increasing high school students' maths skills with the use of SAFMEDS class-wide. *European Journal of Behavior Analysis, 17*(2), 154–165.
- Lambe, D., Murphy, C., & Kelly, M. E. (2015). The impact of a precision teaching intervention on the reading fluency of typically developing children. *Behavioral Interventions, 30*(4), 364–377.
- Quigley, S. P., Peterson, S. M., Frieder, J. E., & Peck, K. M. (2018). A review of SAFMEDS: Evidence for procedures, outcomes and directions for future research. *Perspectives on Behavior Science, 41*(1), 283–301.
- Shue, S. (2017). *Vocabulary acquisition and behavior outcomes for students with EBD: Flashcard usage and instructional delivery* (Doctoral dissertation. University of Pittsburgh).

- Riley, A. (2012). Exploring the effects of the 'Seasons for Growth' intervention for pupils experiencing change and loss. *Educational and Child Psychology, 29*(3), 38.
- Beh-Pajoo, A., Ahmadi, A., Shokoohi-Yekta, M., & Asgary, A. (2011). The effect of social stories on reduction of challenging behaviours in autistic children. *Procedia-Social and Behavioral Sciences, 15*, 351–355.
- Chan, J. M., & O'Reilly, M. F. (2008). A Social Stories™ intervention package for students with autism in inclusive classroom settings. *Journal of Applied Behavior Analysis, 41*(3), 405–409.
- Chan, J. M., O'Reilly, M. F., Lang, R. B., Boutot, E. A., White, P. J., Pierce, N., & Baker, S. (2011). Evaluation of a Social Stories™ intervention implemented by pre-service teachers for students with autism in general education settings. *Research in Autism Spectrum Disorders, 5*(2), 715–721.
- da Silva, M. C., Arantes, A., & Elias, N. C. (2020). Use of social stories in classroom to children with autism. *Psicologia Em Estudo, 25*, 15. <https://doi.org/10.4025/psicoestud.v25i0.43094>
- Delano, M., & Snell, M. E. (2006). The effects of social stories on the social engagement of children with autism. *Journal of Positive Behavior Interventions, 8*(1), 29–42.
- Hanrahan, R., Smith, E., Johnson, H., Constantin, A., & Brosnan, M. (2020). A pilot randomised control trial of digitally-mediated social stories for children on the autism spectrum. *Journal of Autism and Developmental Disorders, 50*(12), 4243–4257.
- Kim, M. S., Blair, K. S. C., & Lim, K. W. (2014). Using tablet assisted Social Stories™ to improve classroom behavior for adolescents with intellectual disabilities. *Research in Developmental Disabilities, 35*(9), 2241–2251.
- Malmberg, D. B., Charlop, M. H., & Gershfeld, S. J. (2015). A two experiment treatment comparison study: Teaching social skills to children with autism spectrum disorder. *Journal of Developmental and Physical Disabilities, 27*(3), 375–392.
- O'Connor, K. M., & Hayes, B. (2019). A real-world application of Social Stories as an intervention for children with communication and behaviour difficulties. *Emotional and Behavioural Difficulties, 24*(4), 323–338.
- Saad, M. A. E. (2016). The effectiveness of social stories among children and adolescents with autism spectrum disorders: Meta-analysis. *International Journal of Psycho-Educational Sciences, 5*(2), 10.
- Sansosti, F. J., & Powell-Smith, K. A. (2006). Using social stories to improve the social behavior of children with Asperger syndrome. *Journal of Positive Behavior Interventions, 8*(1), 43–57.
- Schneider, N., & Goldstein, H. (2009). Social Stories™ improve the on-task behavior of children with language impairment. *Journal of Early Intervention, 31*(3), 250–264.
- Srija, S. S., Sugi, S., & Srinivasan, D. (2019). Efficacy of social stories in coping with bullying among children with childhood psychiatry conditions: A randomized controlled interventional study. *The Indian Journal of Occupational Therapy, 51*(2), 52.
- Thompson, R. M., & Johnston, S. (2013). Use of social stories to improve self-regulation in children with autism spectrum disorders. *Physical & Occupational Therapy in Pediatrics, 33*(3), 271–284.
- Biddle, V. S., Kern, J. III, Brent, D. A., Thurkettle, M. A., Puskar, K. R., & Sekula, L. K. (2014). Student assistance program outcomes for students at risk for suicide. *The Journal of School Nursing, 30*(3), 173–186.
- Donaldson, J. M., & Vollmer, T. R. (2011). An evaluation and comparison of time-out procedures with and without release contingencies. *Journal of Applied Behavior Analysis, 44*(4), 693–705.
- Vegas, K. C., Jenson, W. R., & Kircher, J. C. (2007). A single-subject meta-analysis of the effectiveness of time-out in reducing disruptive classroom behavior. *Behavioral Disorders, 32*(2), 109–121.
- Wolf, T. L., McLaughlin, T. F., & Williams, R. L. (2006). Time-out interventions and strategies: A brief review and recommendations. *International Journal of Special Education, 21*(3), 22–29. <https://files.eric.ed.gov/fulltext/EJ843616.pdf>
- Jeffes, B. (2016). Raising the reading skills of secondary-age students with severe and persistent reading difficulties: Evaluation of the efficacy and implementation of a phonics-based intervention programme. *Educational Psychology in Practice, 32*(1), 73–84.
- O'Rourke, D., Olshtroon, A., & O'Halloran, C. (2016). The Limerick Reading Initiative: A reading intervention targeted at struggling readers in primary school. *Support for Learning, 31*(2), 148–163.

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APPENDIX A

EXCLUDED INTERVENTIONS

Reason for excluding	Intervention
An accommodation or modification	Alternative playtime English Additional Language support Extended transition Individual Education Plan Managed Moves Personalised timetable Reduced hours Sensory breaks Visual Timetable Inclusion support
Provided by an external service	Barnardos Behaviour support services Behaviour support team CALDS (Child and Adolescent Learning Disability Services) CAMHS (Child and Adolescent Mental Health Services) Counselling services Educational Psychologist Family Engagement Officer Horse riding NWDAS drama workshop Occupational therapy practitioner School liaison officer activities TM Outreach TRAC services V IVA Wrexham FC Youth Offending Team YPB outreach
Staff or school facilities	Access staff Emotional/behavioural facilities First Contact Team Higher Level Teaching Assistant Key workers Learning coaches Non-teaching Assistant HOH Safeguarding Team
Pupils were not the recipients	Young carers in schools Behaviour diary

(Continues)

APPENDIX A (Continued)

Reason for excluding	Intervention
Universal/whole school provision/extra-curricular activity	5x60 sport activities
Universal/whole school provision/extra-curricular activity	After school clubs Pyramid club Good Behaviour game Art club Assembly Big Maths Boys lunch time group Canteen Challenge baby week Choir Creative Curriculum Daily Reading Dogs Trust—cannine welfare Don't touch tell workshops Financial Education First aid Football Club Form period Form tutors Friday Skills Club Friendship groups G2G Lego Heads of house Homework Club Internet Safety Library Lunchtime Clubs Lunchtime games group Music lessons PHSE Pivotal Pop up provision Revision sessions Reward points/praise postcards School nurse School productions SEAL Sex and Relationships Education

APPENDIX A (Continued)

Reason for excluding	Intervention
	Subject staff
	Swimming
	Trips
	Visit to Danger Point
	Walkabout Teacher
	Wellbeing afternoon activities
	Whole school attendance rewards
	Wide curriculum