Literacy and numeracy catch-up strategies

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Contents

Introduction

This paper reviews catch-up strategies and interventions which are intended for low-attaining pupils in literacy or numeracy at the end of key stage 2. This includes interventions which have been trialled with low-attaining year 7 pupils, or interventions which have been trialled and proved successful with younger or older pupils that may be applicable to low-attaining year 7 pupils. Further, this paper only includes programmes where independent analysis has provided an assessment of their effectiveness.

The review is intended to support teachers to make evidence-informed decisions about how they support low-attaining year 7 pupils in the school setting by summarising the evidence on what does and doesn't work.

An important consideration when making decisions about how to support low-attaining year 7 pupils is exactly what it is they are struggling with. Diagnostic assessment[1] can do this. Once decisions about which approaches to use are taken, careful implementation and self-evaluation[2] are important ([Higgins, Katsipataki, & Coleman, 2014)](#).

This review updates the original [Literacy and Numeracy Catch-up Strategies evidence review](#) which was published in 2012, in order to incorporate the latest evidence.

Where possible, the paper will explore the effectiveness of these interventions in terms of effect upon progress made by the pupil over and above what would be expected without such strategies[3][4], what was involved in running these interventions during the trial, the estimated costs involved if delivered in a similar manner to referenced trials[5] and what else should be considered when implementing these interventions. Because this document is a summary of evidence, it is important to consider the information available from individual intervention providers. Links to

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[1] Diagnostic Assessment identifies specific areas of strength and weakness in learning before the teaching or intervention begins. It is important to identify these prior to implementation because pupils may not make good progress; for example, activities may be too hard or too easy, they may have poor prior knowledge, or poor working memory. The diagnostic assessment data can be used to change the teaching approach so that it is more suited to the pupil's needs. Tools such as concept maps can help provide this data ([Education Endowment Foundation, 2017](#)).

[2] Self-evaluation enables schools to determine whether or not an intervention is effective; this saves teachers time by preventing them teaching in methods that are not effective and it also helps to guide forthcoming action by identifying improvements for the future. The EEF offer a DIY evaluation guide for schools ([Education Endowment Foundation, 2017](#)).

[3] The review uses a description which equates effect sizes into a simple description as used by the EEF. This is set out in more detail in annex 1.

[4] Details of why interventions were found to be effective or not are described in the source papers.

[5] This paper has reported costs as calculated in EEF trials. Upfront investment means the cost of some interventions will reduce over time and be lower than those quoted in this review. Costs will also vary if the intervention is implemented differently to the approach taken in the EEF trial.

more information about the interventions herein summarised are also included in this report[6].

This paper also includes a summary of broader principles that have been found to help facilitate the transition of pupils from primary to secondary school.

The review does not include a summary of effective literacy and numeracy teaching in general for year 7 pupils. However, summaries of effective numeracy approaches at KS2 and KS3, and literacy approaches at KS2 can be found at (Education Endowment Foundation, 2017).

Details of the methods used to conduct this evidence review are set out at annex 1.

Definition of low attainment

Low attainment is defined as attainment below age-related expectations in a particular curriculum subject or skill. This paper focuses on low attainment in numeracy and literacy.

At the end of KS2 boys, pupils on free school meals, disadvantaged, SEN pupils, and the ethnic groups Gypsy/Roma, traveller of Irish heritage, Pakistani and Black Caribbean all tend to be the lowest attainers in numeracy and literacy (Department for Education, 2017). Low attainment is often due to complex interactions of a variety of social/demographic factors.

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[6] Some of the trials described in this review implemented the intervention differently to how they were originally intended to be implemented by the developers. These instances are described in the source papers. Full details of how to implement interventions are not included in this review.

Executive summary

There are a variety of different approaches available to support low-attaining year 7 pupils to catch up in literacy, with robust evidence to show if they work or not.

Writing interventions appear to show consistently good results. In particular, where trips are used as topics for pupils to write about. Reading comprehension interventions generally have a positive effect on pupils' attitudes towards reading; computer-based interventions appear effective, and some one-to-one methods have substantial positive results on pupils' literacy progress.

There is however inconsistent evidence around how effective phonics approaches, summer and Saturday schools, and blended interventions are as a catch-up strategy for low-attaining year 7 pupils. Some of the inconsistency is down to limitations in the research methods used when trialing these interventions, so more research would help to clarify if these approaches work. It should however be noted that phonics has been consistently shown as an effective approach for younger readers (aged 4 - 7).

However, much less is known about what works to support low-attaining year 7 pupils catch up with their peers in numeracy.

The few numeracy interventions which have been trialled with year 7 pupils have not proven to be effective. Nevertheless, there is promising evidence from interventions trialled at primary schools which could be applicable to older low-attaining pupils, including one-to-one and group programmes.

A number of the interventions summarised are intended specifically for disadvantaged pupils, including numeracy approaches such as Tutor Trust, and literacy interventions such as Paired Reading and RM Books. Other interventions described in this summary may be appropriate for disadvantaged pupils, however these were the only interventions reviewed here that were targeted at this specific group.

There is evidence to show that transition from primary to secondary school is a time where progress for some pupils can be below what would be expected. It therefore follows that a smooth transition should help facilitate pupils to catch up with their peers. Key principles which appear to facilitate the transition from primary to secondary school include: maintain collaboration before and after transfer; facilitate effective communication; prioritise and invest in school visits and induction programmes; develop practices for particular types of pupils; ensure schools have clear roles and responsibilities that are supported by senior management, and; evaluate what works and disseminate good practice.

Literacy interventions

Phonics literacy interventions

What are they?

Phonics approaches aim to teach pupils the relationship between sound patterns ('phonemes') and the written spelling patterns ('graphemes') which represent them. Phonics emphasises the skills of decoding new words by sounding them out and combining or 'blending' the sound-spelling patterns (Higgins, Katsipataki, & Coleman, 2014).

How effective are they?

Phonics has been shown to be a very effective approach for young readers (4-7 year olds), though it is usually embedded as part of a balanced approach. However, it may not be as suitable for older readers (aged 10 and above) as other approaches such as reading comprehension strategies and meta-cognition and self-regulation (Education Endowment Foundation, 2017).

The evidence on how effective phonics interventions are at helping struggling year 7 pupils catch up is inconsistent. One intervention, Fresh start, involves group or one-to-one sessions with pupils, delivered by teachers over a period of up to 33 weeks. This programme has shown to be moderately effective (Gorard, Siddiqui, & See, 2015a) although it should be noted that in this efficacy trial[7] schools involved in these trials put themselves forward for participation so may not be entirely representative and the trial was run over a reduced period of 22 weeks. Another programme, Butterfly Phonics (Merrell, & Kasim, 2015), involves two one hour group sessions per week, delivered by trained butterfly practitioners. This programme has been trialled by the EEF and shown moderate effectiveness in terms of progress over the school year, but due to problems with small sample sizes in this efficacy trial, no firm conclusions could be drawn. Another programme, Rapid, which involved weekly group sessions delivered by teachers for six weeks at the end of primary school and six weeks at the beginning of secondary school has shown no impact upon pupils' progress in an efficacy trial (King, & Kasim, 2015).

There are examples of programmes which blend phonics with other approaches. These are described later in this paper.

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[7] Efficacy trials involve testing whether interventions work under the best possible conditions.

What are the costs?

The estimated cost of these programmes range from £108[8] up to £205[9] per pupil.

What else should I consider?

Consideration should be given to the age appropriateness of materials when used with older readers. Further, phonics is usually embedded in a broad literacy approach (Education Endowment Foundation, 2017a). Interventions delivered by teaching assistants appear effective, but those delivered by teachers appear more so (Higgins, Katsipataki, & Coleman, 2014). Further, the period at the end of primary and beginning of secondary school may not be the most effective time to conduct an intervention as pupils may be unsettled.

	Frequency of sessions	Delivery Method	Length of intervention	Target Pupils	Estimated cost
Butterfly Phonics	Two one-hour lessons per week	Group sessions with six to eight pupils per group, led by trained Butterfly practitioners working with teaching assistants	10 – 12 weeks	Pupils who did not achieve Level 4 in KS2 SATs or pupils whose reading skills were at least a year behind their age	£108.50 per pupil
Fresh Start	The evidence reported here involved one hour session three times per week	Group and one-to-one sessions depending upon pupil needs	The evidence reported on here is from a 22 week intervention	Pupils who had not achieved Level 4b in English at the end of KS2	£116 per pupil
Rapid Phonics	One and a half hours per week	Group sessions delivered by teachers with experience of teaching children with literacy difficulties	Six weeks in summer term at primary school, and then six weeks in autumn term at secondary school	Pupils who had not achieved Level 4b in English by the end of KS2	£205 per pupil

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[8] Butterfly Phonics
[9] Rapid Phonics

Summer schools and Saturday schools

What are they?

Summer schools are run during the summer holidays and are typically used to help low-attaining pupils to catch up or to prevent the loss of skills or knowledge over summer. These are usually school-length days consisting of literacy lessons or workshops, enrichment activities, and time for recreation. These can be delivered by teachers, volunteers, or professionals in the topic (e.g. authors or poets).

Saturday school programmes work in a similar way, using out of school days to enable low-attaining pupils to catch up in literacy. For example, SHINE is a Saturday school programme that revisits areas in which pupils are struggling through enrichment opportunities. The SHINE programme was run for 25 weeks throughout the year (Menzies et al., 2015).

As summer schools tend to involve literacy and numeracy sessions, this report has summarised these programmes in this section, where it focuses on literacy, and later in the section on numeracy.

How effective are they?

In general, summer schools are beneficial to older struggling readers, with research by the EEF finding a positive effect upon progress can be made (Higgins, Katsipataki & Coleman, 2014).

As a literacy catch-up strategy for pupils about to begin secondary school, less is known about the effectiveness of summer schools. The Future Foundations involved academic lessons in the mornings followed by enrichment activities like sports, arts and cookery in the afternoon. Through an efficacy trial, the programme was found to have positive, low effect upon pupils' progress. Pupils in the programmes have been found to make a slightly higher improvement in reading comprehension and writing skills than children who did not participate (Gorard, Siddiqui & See, 2014a). However, these effects were small and similar to the normal rate of progress over time. The Discover Summer School programme, which consisted of writing and poetry workshops, and enrichment activities , resulted in inconclusive findings through the efficacy trial because the analysis could not rule out other factors being the true cause of effect upon progress (Torgerson & Torgerson, 2014a).

The SHINE Saturday School programme, which aimed to revisit areas in which pupils were struggling through enrichment activities, was also found to have a small effect on literacy competency, although the EEF concluded that due to the small scale of the pilot trial the intervention should be considered as showing promise rather than demonstrating a firm impact.

What are the costs?

The cost of summer school programmes is relatively high, ranging from £870[10] to £1750[11]. This includes costs of resources, activities, salary costs, training, food, and transport.

What else should I consider?

One of the greatest barriers to the success of summer schools is a failure in achieving high levels of attendance. Further, summer schools which appear most successful have a clear academic focus (Education Endowment Foundation, 2017b). Additionally, consideration should be given to the potential of combining this type of intervention with other approaches, particularly as this occurs outside normal school time.

	Frequency of sessions	Delivery Method	Length of intervention	Target Pupils	Estimated cost
Future Foundations	Two 75-minute academic lessons each morning, One for literacy and one for numeracy	Teachers led the delivery of the programme with support of two mentors (one of which was a sixth-former or other student)	4 weeks	The summer school involved a mixed curriculum of numeracy and literacy, as well as enrichment activities. So pupils who had not achieved Level 4 in English and Maths at the end of KS2	£1370 per pupil
SHINE Saturday school	25 weekly sessions per school year	Delivered by teachers, teaching assistants, and peer mentors	25 weeks	Pupils who have not achieved Level 4 at KS2	£870 per pupil
Discover Summer School	Morning writing and poetry workshops. Enrichment activities in	Delivered by story builders from Discover, teachers, volunteers and professional	4 weeks	Pupils who had been predicted to achieve below Level 4b in English by the end of KS2	£1750 per pupil

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[10] SHINE
[11] Discover Summer School

	the afternoons	authors and poets			

Oral language interventions

What are they?

Oral interventions aim to help pupils who are low-attaining in literacy with their pronunciation, discussion skills, and speech. Interventions can be individually focussed or targeted towards a group of pupils.

Several programmes involve elements of oral literacy in combination with other approaches, which are discussed later in this paper.

How effective are they?

The EEF have concluded that this approach can have a low but positive effect upon progress over the year, but these may be more effective in combination with other approaches (Higgins, Katsipataki & Coleman, 2014).

Evidence related to year 7 catch-up strategies comes from two programmes. Talk for Literacy, found a high improvement through an efficacy trial in children's passage comprehension although no improvement was seen in reading, writing, or speaking abilities (Styles & Bradshaw, 2015). Another intervention, Rhythm for Reading, aims to improve reading ability by asking children to read to a rhythm like stamping or chanting (Styles, Clarkson & Fowler, 2014a). Research has found a positive, low effect upon pupils progress through an efficacy trial (Styles, Clarkson & Fowler, 2014), although this may have been down to chance as findings were not statistically significant.

Philosophy for Children is an approach to teaching in which students participate in group dialogues focused on philosophical issues. The Philosophy for Children intervention also had a low, positive effect upon pupils' progress (Gorard, Siddiqui & See, 2015c). Although, it should be noted that these findings relate to pupils in years 4, 5 and 6 but are included here as the interventions may be applicable to older struggling pupils too.

What are the costs?

The costs of group oral interventions are relatively inexpensive, ranging from £16[12] to £56[13] per pupil. Costs mainly consist of teacher training, salaries of specialists, and resource packs.

What else should I consider?

The training and development of teachers is of importance, as is the appropriate use of technology to encourage collaboration between students. These approaches tend to be less effective when not connected to curriculum content currently being studied (Education Endowment Foundation, 2017c).

	Frequency of sessions	Delivery Method	Length of intervention	Target Pupils	Estimated cost
Talk for Literacy	Two sessions per week	Teaching assistants Class size of 3 to 8 pupils	23 weeks	Pupils who had not achieved Level 4 in English at the end of KS2	£29 per pupil
Rhythm for Reading	Weekly 10-minute sessions taken out of normal lessons	Specialists who later train teachers Class size of up to 10 pupils	10 weeks	Pupils who had not achieved Level 4 in English by the end of KS2	£56 per pupil
Philosophy for Children	One session per week (Depending on school preference)	Teachers delivered to the whole class	12 months (January to December)	Whole school	£16 per pupil

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[12] Philosophy for Children
[13] Rhythm for Reading

Reading comprehension interventions

What are they?

Reading comprehension interventions aim to help pupils who are low-attaining in literacy with their reading comprehension, ability, and enjoyment. There are a range of delivery methods. For example, one-to-one interventions which use a teacher, teaching assistant, or an older pupil who reads aloud with the child, corrects any mistakes and asks questions to promote an understanding of the text. Computer-based interventions which involve pupils reading eBooks or eTextbooks online in order to improve pupils understanding of text. Also, extra-curricular interventions which aim to encourage pupils to increase the frequency of their reading, and typically involve events offering a range of books.

How effective are they?

Overall, reading interventions generally have a positive effect on pupils' attitudes towards reading. Further, they appear to have a moderate, positive effect upon general learning (Education Endowment Foundation, 2017d).

There is mixed evidence of the effectiveness of one-to-one reading interventions. One effective intervention, Reach (reading intervention), carried out three 35-minute sessions per week; an efficacy trial found a moderate, positive effect upon pupils' progress over the school year when compared to pupils that did not take part, although the researchers did note some concerns with robustness of the methods so it is possible that schools implementing this intervention in the future would not see the same level of pupil progress. However, reading comprehension itself was not seen to improve, only skills relating to reading like word recognition improved (Sibieta, 2016). One daily one-to-one intervention, Switch-on Reading, found a moderately positive effect upon progress over a year through an efficacy trial (Gorard, Siddiqui & See, 2015b). Paired Reading, which aimed to improve year 7 pupils' reading by pairing them with year 9 pupil reading partners (Lloyd et al., 2015), and TextNow, which involved one-to-one sessions with a coach each weekday (Maxwell et al., 2014), found no evidence that reading comprehension or attitudes towards reading improved at all. Another programme, Catch Up Literacy, provided lower achieving children with two 15-minute sessions per week to improve their literacy attainment. The intervention found a positive, low effect upon pupil progress through an efficacy trial but this may have been down to chance (Rutt, 2015).[14]

Computer-based interventions have been found to be effective. Accelerated Reader involved reading eBooks and eTextbooks to promote text comprehension alongside

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[14] Findings may have occurred due to chance because the research was not able to detect a statistically significant relationship.

playing online quizzes and games to aid learning. The intervention was found, through an efficacy trial, to have a moderately positive effect upon participating pupils progress compared to pupils who did not participate (Siddiqui, Gorard & See, 2016). RM Books, another intervention using eBooks and eTextbooks to improve reading skills, also found a high positive effect on both reading enjoyment and frequency of independent reading. However, pupils who used RM Books more frequently made more progress (Picton & Clark, 2015).

One instance of extra-curricular reading comprehension intervention is the Chatterbooks programme which aims to increase pupils' motivation to read by providing resources to encourage reading for pleasure. It has been found to improve children's attitudes towards reading and was reviewed positively by deliverers in interviews. However, when comparing pre and post reading test results through an efficacy trial, the intervention had a slightly negative impact on pupils' reading ability and was not found to be effective (Styles, Clarkson & Fowler, 2014b).

What are the costs?

Computer-based interventions are relatively inexpensive, for example Accelerated Reader worked out at £9 per pupil, whereas most one-to-one interventions are more expensive at up to £627[15] per pupil.

What else should I consider?

Reading comprehension interventions are likely to work best when used in combination with other approaches.[16] Further, it is important for teachers to assess pupils' needs prior to implementation as it appears less effective when pupils lack particular phonics or vocabulary skills (Higgins, Katsipataki & Coleman, 2014).

	Frequency of sessions	Delivery Method	Length of intervention	Target Pupils	Estimated cost
Switch-on Reading	Daily sessions flexible per school (at least 40 sessions overall)	Teaching assistants and librarians	10 weeks	Children achieving below Level 4 in English by the end of KS2	£627 per pupil
Reach (reading intervention)	Three 35-minute sessions per week with pupils taken	Teaching assistants	20 weeks	Pupils with reading difficulties	£486 per TA

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[15] Switch-on Reading
[16] For example, the EEF find that reading comprehension works well when combined with collaborative- and peer-learning techniques. Blended approaches used as a year 7 catch-up strategy are described later in this paper.

					£275 per pupil
Catch Up Literacy	Two 15-minute sessions per week	Teaching assistants	30 weeks at the transition from primary to secondary school (with a break for summer holidays)	Pupils predicted to achieve below Level 4b in English by the end of KS2	£796 per pupil[17]
Paired Reading	Weekly 20-minute sessions	Peer mentors who were in year 9	16 weeks	All year 7 pupils, in schools where number of pupils eligible for FSM is above average	£10.50 per pupil
TextNow	Daily 20-minute sessions each weekday with pupils expected to read independently for 20 minutes each day further to the intervention sessions.	Volunteer coaches	5 weeks at the end of primary school, 10 weeks at the beginning of secondary school	Pupils unlikely to achieve Level 4a or above in English by the end of KS2	£112 per pupil
RM Books	Flexible	No delivery needed – pupils read the eBooks independently	4 months (ranging from 2 to 8 months)	Decided by individual school, most decided to focus on less confident readers and those eligible for FSM	Flexible
Accelerated Reader	Flexible	Teachers agree goals to be achieved by pupil through independent reading	20 weeks	Pupils who had not achieved Level 4 in English at the end of KS2	£9 per pupil

[17] This paper has reported costs as calculated in EEF trials. Upfront investment means the cost of some interventions will reduce over time and be lower than those quoted in this review. Costs will also vary if the intervention is implemented differently to the approach taken in the EEF trial

Chatterbooks	Saturday mornings once a week (Chatterbooks). Or replacing 15 minutes of a 60 minute session where children read aloud (Chatterbooks Plus)	External trained graduates	7 months	Pupils who had not received a secure Level 4 in English at the end of KS2	£10 to £20 per pupil

Writing interventions

What are they?

Writing interventions include Grammar for writing: an intervention that encourages pupils to improve how their writing communicates with the reader. This is done through making connections between a linguistic feature and the affect it has on the piece of writing, rather than by focusing on grammatical inaccuracies (Torgerson & Torgerson, 2014b). Another intervention, Improving Writing Quality, involves pupils taking part in memorable experiences like local trips. The trips are then used as topics for pupils to write about. Their writing is then supported by Self-Regulated Strategy Development - a guideline to help pupils plan, monitor and evaluate their writing (Torgerson & Torgerson, 2014c).

How effective are they?

Both writing interventions assessed were found to be effective by the EEF. In the Improving Writing Quality intervention, a very high positive effect was seen upon progress over the course of the programme through an efficacy trial (Torgerson & Torgerson, 2014c). The Grammar for Writing intervention was found to have a low, positive effect upon pupils progress, however the evaluation concluded it was likely the result of teaching in small groups as opposed to the intervention per se (Torgerson & Torgerson, 2014b).

What are the costs?

Both writing interventions discussed are relatively inexpensive. Grammar for Writing is £20 per pupil based on 60 pupils receiving the intervention, including the training of two teachers. In the Improving Writing Quality intervention, participating schools received funding from the programme.

What else should I consider?

The size of the group appears to be an important consideration as findings appear more positive when Writing interventions are delivered to small groups rather than as a whole class.

	Frequency of sessions	Delivery Method	Length of intervention	Target Pupils	Estimated cost
Grammar for Writing	15 sessions – flexible over the 4 weeks	Teachers trained by the intervention (3 days of training)	4 weeks	Pupils attaining between Level 3 and Level 4b in English at the end of KS2	£20 per pupil
Improving Writing Quality	Delivered in English lessons	Teachers, in the order set out in the manual, but with some flexibility	Last 6 weeks of year 6 and first term of year 7	Struggling readers in year 6 and 7	£60 per teacher (~£2 per pupil)

Blended literacy interventions

What are they?

Blended interventions are programmes which combine multiple approaches into a coherent package (e.g. phonics and writing).

How effective are they?

Due to the nature of blended interventions it is difficult to provide a meaningful assessment of their effectiveness as a whole. Nevertheless, individual programmes are described below with information about their impact upon pupil outcomes.

The Perry Beeches Coaching Programme is a one-to-one intervention that provides pupils with a coach who supports both their reading and writing. The intervention showed strong evidence of promise through an efficacy trial with a moderate positive effect upon progress for pupils who took part in the programme (Lord et al., 2015).

The Reach Language Comprehension intervention involves meta-cognition, reading comprehension, making inferences from text, writing stories and vocabulary training. This intervention was found to have high effectiveness through an efficacy trial (Sibieta, 2016). It should be noted that the researchers did raise some concerns with robustness of the methods, so it is possible that schools implementing this intervention in the future would not see the same level of pupil progress. Further, reading comprehension itself was not seen to improve, only skills relating to reading like word recognition improved.

Another programme, Response to Intervention, involved a tiered approach to identify the needs of low-achieving pupils. It begins with whole class teaching (tier 1),

followed by small group tuition (tier 2), and then one-to-one tutoring (tier 3). The evidence on Response to intervention is inconclusive, with positive results through an efficacy trial, although due to methodological issues within these studies firm conclusions cannot be drawn about the interventions effectiveness (Gorard, Siddiqui & See, 2014b).

Units of Sound is a computer-based programme designed to help struggling readers with reading and spelling skills (Sheard, Chambers & Elliott, 2015). Tutor Trust provides affordable small group and one-to-one tuition by recruiting university students or recent graduates to provide maths and English tuition in year 6 and 7 (Buchanan et al., 2015). Trials assessing the effectiveness of the Units of Sound and Tutor Trust programmes were compromised and as such no firm conclusions can be drawn from these.

The Vocabulary Enrichment Intervention Full Programme teaches children new words and encourages them to use these in their speaking and writing. There is no evidence that Vocabulary Enrichment Full Intervention Programme has an impact upon pupils' literacy progress (Styles, Stevens, Bradshaw & Clarkson, 2014).

What are the costs?

The variation in how much these interventions cost is large due to the diversity of individual programmes. Some cost £1,400 per pupil[18] whereas others cost £75 per pupil.[19]

What else should I consider?

The evidence from Response to Intervention suggests that it may have been more effective had it been run over the entire academic year as opposed to being used as a shorter catch-up strategy.[20]

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[18] Perry Beeches Coaching Programme
[19] Vocabulary Enrichment Intervention Programme
[20] Response to intervention

	Frequency of sessions	Delivery Method	Length of intervention	Target Pupils	Estimated cost
Response to Intervention	Dependent upon individual pupil needs	Teachers with the support of RTI staff	Dependent upon individual pupil needs	Pupils identified as at risk of not achieving Level 4 in English at KS2	£117 per pupil
Reach (language comprehension)	Three 35 minute sessions per week – pupils taken out of normal lessons	Teaching assistants	20 weeks	Pupils with reading difficulties	£486 per TA
Vocabulary Enrichment Full Intervention Programme	Replacement of pupils usual English lessons	Teachers who had received training on the intervention deliver the intervention to smaller than usual classes	19 weeks	Pupils predicted to achieve Level 4b or below at KS2	£75 per pupil
Units of Sound	One 60 minute session followed by another 30 minute session	Group sessions led by teachers or teaching assistants who had been trained in delivery of the intervention	18 weeks	Pupils who had scored below Level 4 on KS2 SATs	£250 per pupil
Perry Beeches Coaching Programme	The programme was intended to involve five one-hour sessions per fortnight, although this varied in practice	External graduate coaches	Over academic year (year 7)	Pupils who had not achieved Level 4c in English by the end of KS2	£1,400 per pupil
Tutor Trust	15 hours of tuition in year 6 followed by 10 hours in year 7	External university students or recent graduates	Last two terms at primary school and first three terms at secondary school	Pupils at schools in challenging communities or those who are looked-after or eligible	£185 per pupil

				for free school meals	

Numeracy interventions

What are they?

There are a variety of different interventions suitable for pupils struggling with numeracy, including summer school programmes offering a mixed curriculum of numeracy and literacy, specific one-to-one numeracy interventions delivered either in person or remotely over the internet, and some which focus on cognitively challenging talk.

How effective are they?

There is limited evidence exploring the effectiveness of numeracy catch-up interventions specifically for low-attaining year 7 pupils, or those about to enter year 7. What evidence there is relates to two interventions:

The Future Foundations summer school, was found to be relatively expensive and not effective at helping pupils make progress with numeracy (Gorard, Siddiqui & See, 2014a). The Tutor Trust programme provides affordable small group and one-to-one tuition by recruiting university students or recent graduates to provide mathematics and English tuition in year 6 and 7. Research assessing the effectiveness of this intervention was not sufficiently robust to draw firm conclusions, however it did appear to have a small negative effect on pupil progress (Buchanan et al, 2015).

There is however evidence from interventions independently trialled with younger pupils, which may be applicable for year 7 pupils also. One such programme, Catch-Up Numeracy, is a one-to-one intervention consisting of two 15-minute sessions per week that are delivered by teaching assistants. It has received promising results from trials with primary aged children (NFER, 2014). Another programme, Every Child Counts, uses lessons with specially trained teachers to attempt to improve pupils' numeracy attainment. It was trialled with younger pupils but is thought to be applicable to struggling year 7 pupils and has been found to support pupils' progress (Edge Hill University, 2017).

Interventions which aim to focus on cognitively challenging talk (Philosophy for Children) have also found an improvement in numeracy progress (Gorard, Siddiqui & See, 2015c). It should be noted that these findings relate to pupils in years 4, 5 and 6 but are included here as the approach may be applicable to older pupils too.

What are the costs?

These interventions range in cost, from a summer school programme (Future Foundations summer school) which is relatively expensive at £1370 per pupil, to the Philosophy for Children programme which is £16 per pupil.

What else should I consider?

Summer and Saturday schools require high attendance to be most successful, as well as potentially being combined with other interventions.

Researchers argue that the best way to benefit disadvantaged and minority students is to apply the most effective programmes across the whole school (Slavin et al., 2008).

While a detailed summary of the evidence-base on what works or not in general for low-attainers in numeracy is beyond the scope of this review, further information can be found in published reviews (e.g. Dowker., 2004; 2009). Broadly, strategies that have been found to be effective with low-attainers at primary school include:

- Introduction at an early stage: interventions can be more effective if introduced at an early stage (before secondary school), which can help to reduce 'mathematics anxiety' (Dowker, 2004, 2009).

- Individualising the intervention: Dowker (2004) also found that interventions should be individualised, and that interventions that focus on the specific components with which a particular child has difficulty, are likely to be more effective than 'one size fits all' programmes. This highlights the importance of diagnostic assessment.

- Co-operative learning: paired work and group collaboration have been found to have positive effects for low-attainers (Slavin and Lake, 2008; Dowker, 2004).

	Frequency of sessions	Delivery Method	Length of intervention	Target Pupils	Estimated cost
Future Foundations	Two 75-minute academic lessons each morning, one for literacy and	Teachers led the delivery of the programme with support of two mentors (one of which was a sixth-former or other student)	4 weeks	The summer school involved a mixed curriculum of numeracy and literacy, as well as enrichment activities. So pupils who had	£1370 per pupil

				not achieved Level 4 in English and Maths at the end of KS2	
SHINE Saturday School	25 weekly-sessions per school year	Delivered by teachers, teaching assistants, and peer mentors	25 weeks	Pupils who have not achieved Level 4 at KS2	£870 per pupil
Catch-up Numeracy	Two 15-minute sessions per week	Usually delivered by teaching assistants	30 weeks	Pupils in primary school struggling with numeracy, although it may be applicable to older struggling pupils	£130 per pupil
Philosophy for Children	One session per week (Depending on school preference)	Teaches who are trained by intervention Delivered to whole class	12 months (January to December)	Whole school	£16 per pupil
Every Child Counts	Various depending upon element of the Every child counts programme is implemented	A mixture of teacher and/or teaching assistant led, depending upon which element is used	Various depending upon element of the Every child counts programme is implemented	For learners in years 4 to 9 depending upon element of programme used	Not available
Tutor Trust	15 hours of tuition in year 6 followed by 10 hours in year 7	External university students or recent graduates	Last two terms at primary school and first three terms at secondary school	Pupils at schools in challenging communities or those who are looked-after or eligible for free school meals	£185 per pupil

Transfer and transition from primary to secondary school

There is evidence to show that transition from primary to secondary school is a time where progress for some pupils can be below what would be expected (Sutherland et al, 2010). It therefore follows that a smooth transition could help facilitate pupils to catch up with their peers. Further to evidence on catch-up strategies discussed previously, the research points to six general principles to facilitate transitions from primary to secondary school, summarised as follows:

1. **Maintain collaboration before and after transfer**. Evidence shows that collaboration before and after transfer is an important facilitator of effective transfers. DCSF (2008) undertook action research across seven local authorities and 47 primary and secondary maintained schools (including some special schools) to explore what can strengthen transfer and transition practices. The report concludes that effective transfer does not involve one Key Stage 'doing' transfer to the next, but an equal partnership that is professionally developed by all stakeholders. Effective strategies could include:

   - The establishment of cross-phase (i.e. primary and secondary) working processes within and between children's services (DCSF, 2008);
   - Planning schemes of work that promote continuity of curriculum and of teaching and learning styles (DCSF, 2008);
   - The facilitation and support of local cross-phase networking meetings of families of schools to jointly plan for strengthening transfer (DCSF, 2008); and,
   - The planning of bridging units which include joint working between teachers in different Key Stages to promote an understanding of pupils' abilities and levels of knowledge. The work included within the bridging units should be jointly planned to maximise personalisation (Galton et al., 1999, 2003).

2. **Facilitate effective communication**. Effective communication between teachers, parents/carers and pupils is one of the most effective practices for improving transition to both primary and secondary school (Ofsted, 2004; Sanders et al., 2005; Schulting et al., 2005; Bryan et al., 2007; LoCasale-Crouch et al., 2008., Coffey, 2013). This could include:

   - Exchange of information about personal and social factors (Jindal-Snape and Miller, 2008);
   - Visits by teachers to each other's schools which include lesson observations and discussions of the curriculum to develop greater integration and understanding of each other's work (Bryan et al., 2007);

- Organising conferences and forums to enable professional dialogue, the dissemination of research findings and the sharing of good practice (DCSF, 2008);
- Establishing clear systems and structures that facilitate collaboration with partner schools (DCSF, 2008);
- Involving parents/carers in the preparation for transition and developing their understanding of the culture of the new school and what to expect. This includes promoting and enhancing the role of parent/carer partnerships (e.g. through Parent/Carer Advisers) (Greenhough et al., 2007; DCSF, 2008);
- The use of pupil and parent/carer voice systems to monitor and evaluate practice in relation to transfers and transitions (DCSF, 2008);
- Providing parents/carers with sufficient information about transition including what will be expected of their children, so they can help them to prepare (Sanders et al., 2005); and,
- Ensuring that pupils are involved in the transition process at all stages, and are well informed of what to expect in their new school (Schulting et al., 2005; LoCasale-Crouch et al., 2008; DCSF, 2008).

3. **Prioritise and invest in school visits and induction programmes**. Particular attention should be paid to the social needs of pupils to help formation of interpersonal relationships (Coffey, 2013). Evidence shows that school visits and induction programmes can improve social and academic outcomes provided they are well planned and resourced (Galton et al., 2003; DfES, 2005; Schulting et al., 2005; LoCasale-Crouch et al., 2008).

4. **Develop practices for particular types of pupils**. Evidence suggests that transfer and transition experiences differ for different types of pupils and that different support mechanisms for these pupils can help facilitate effective transfer / transition. Effective practice includes (Taverner et al., 2001):

- The identification of 'at risk' pupils and the implementation of specific activities to understand the issues that they may face during transfer. This could include asking pupils what they expect at a new secondary school, what their concerns are, and what their actions would be if faced by particular problems;
- Modifying approaches for pupils with Special Educational Needs (SEN) by consulting educational psychologists (where needed) and planning particular transfer strategies based on informed advice;
- Raising the performance of low-attainers at the end of Key Stage 2 through summer schools; and,
- Identifying drops in attainment during transitions and developing strategies to address these at the start of a new school year.

5. **Ensure schools have clear roles and responsibilities that are supported by senior management.** Effective transition is reliant on a 'whole school' approach where school staff have clear roles and responsibilities, senior staff are engaged and the use of progression data is promoted to monitor effectiveness (Galton et al., 2003; Ofsted, 2004; DfES, 2005; Kirkup et al., 2005).

6. **Evaluate what works and disseminate good practice**. LA's, Schools and MAT's can improve the transfer process when they initiate and facilitate good transition and identify and disseminate examples of good practice (Anderson et al, 2000; Taverner et al., 2001; DCSF, 2008).

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Annex 1. Research methodology

This paper examines catch-up strategies and interventions which are thought to be applicable to pupils who are behind in literacy or numeracy at the end of key stage 2 as a way of enabling them to catch up with their peers.

The paper also includes an assessment of strategies which have been found to be effective at managing the transition of pupils from primary to secondary school.

To achieve this a series of literature searches were conducted in order to return all published evidence that might provide evidence around what does and doesn't work for this cohort. While effort was made to include all relevant literature in the review, it should not be considered a systematic evidence review. As such, it is possible that the search for literature did not capture all relevant evidence.

Online searches resulted in the identification of numerous programmes. However, this paper only includes programmes where independent analysis has provided an assessment of their effectiveness. As such, this paper does not seek to list all programmes available that could be used to support pupils struggling with literacy or numeracy at the end of KS2.

This search therefore included interventions which have been trialled with struggling year 7 pupils, or interventions which have been trialled and proved successful with younger or older pupils that may be applicable to struggling year 7 pupils. This means that evidence which did not attempt to produce robust statistical analysis of an interventions effectiveness upon attainment would be discounted from this review.

Interventions which were independently trialled with this cohort, regardless of whether they were found to work or not have been included in this review. This review also included interventions which were trialled but due to methodological issues lacked the ability to provide firm conclusions around effectiveness.

Interventions which were trialled with older or younger pupils that did not prove to be effective were excluded from the paper.

Further, the search was not constrained to interventions only trialled in the UK.

In May 2012, the Education Endowment Foundation launched a grants round dedicated to literacy catch-up projects for children at the transition from primary to secondary school. As such, this review borrows heavily from the outcomes of these trials and broader work by the EEF, although wider evidence has been sought and incorporated where relevant.

This paper provides an assessment of the effectiveness of summarised interventions. Where possible this has sought to assess effectiveness in terms of progress made by

pupils who took part in the intervention in comparison to those who did not. This has used the EEF approach which equates effect sizes on a scale ranging from 'very low or no effect', 'low', 'moderate'. 'high', and 'very high'. More details of this method is discussed in Higgins et al (2013).

A general assessment of the strength of evidence has also been included, with reference to any specific concerns raised.

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