The Impact of Ebooks on the Reading Motivation and Reading Skills of Children and Young People: A study of schools using RM Books

Final report

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National Literacy Trust

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About the National Literacy Trust

We are a national charity dedicated to raising literacy levels in the UK. Our research and analysis make us the leading authority on literacy. We run projects in the poorest communities, campaign to make literacy a priority for politicians and parents, and support schools. Visit www.literacytrust.org.uk to find out more, donate or sign up for a free email newsletter. You can also find us on Facebook and follow us on Twitter.

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Table of contents

Tables and figures

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Key findings

This report outlines findings about the impact of access to an ebooks platform on pupils' reading motivation and skills over the academic year 2014/15. Schools from across the UK provided attitudinal and attainment data before and after running an ebooks project with a group of pupils, and a selection of practitioners and pupils also took part in interviews and focus groups to allow us to explore initial findings in more depth. Key findings include:

- **The average reading progress made over the project period was 8 months. Boys made significantly greater progress over the course of the study than girls**, with boys' reading levels increasing by an average of 8.4 months compared with girls who made an average gain of 7.2 months.

- **Pupils who used RM to read more, made more progress**, with pupils in the high usage group making an average of 8.8 months' progress over the course of the project compared with an average progress of -1.25 months in the low usage group.

- **Enjoyment of reading increased significantly over the course of project activities, particularly with respect to enjoyment of reading using technology**. 59.4% of pupils enjoyed reading either very much or quite a lot before the project began. This rose to 64.1% post-project. 68.1% of pupils enjoyed reading using technology in the pre-project survey; this increased to 74.3% post-project.

- **More pupils thought reading was cool after the project. Fewer said that they found reading difficult or that they could not find things to read that interest them.** There was a 27% increase in the number of pupils who thought that reading was cool over the course of the project, rising from 51.8% before the project to 65.9% after the project. The number of pupils who said that they cannot find things to read that interest them decreased by 37%, from 31.3% to 19.7%. The number who felt that reading was difficult halved over the course of the project, decreasing from 14.8% to 6.8%.

- **Positive attitudinal changes were more pronounced for boys**. There was an 11% increase in the number of boys who enjoyed reading using technology over the course of the project (60.9% pre, 67.9% post); a 25% increase in the number who read daily using technology (30.9% to 38.7%) and a 22% increase in the number who read for an hour or longer using technology. Twice as many boys felt that reading was cool at the end of the project (36.4% pre, 66.5% post) and the percentage that felt reading was difficult almost halved (28.0% pre, 15.9% post).

- **Reading enjoyment increased in particular for boys who started the project with the lowest levels of reading enjoyment**. The percentage of this subgroup who enjoyed reading using technology increased over the course of the project from 49.2% to 64.2%. However, the percentage that enjoyed reading on paper also increased fourfold, from 10.0% at the beginning of the project to 40.0% at the end of the project. Boys from this group also read for longer using technology, with the number reading for more than an hour tripling from 8.1% to 24.5%.

- **Boys who did not enjoy reading at the start of the project also showed pronounced changes in reading attitudes.** The percentage that felt reading was cool increased from 15.8% to 42.1%; conversely, the percentage who felt reading was difficult reduced from 36.8% to 10.5%.

- **Fewer pupils eligible for free school meals felt that reading was difficult for them.** The percentage that felt reading was difficult halved over the course of the project, decreasing from 26.7% pre-project to 12.6% post-project.

- **Older pupils were less likely to say that they couldn't find anything to read that interested them.** The percentage of pupils in KS3 that couldn't find things to read that interested them decreased by more than 10 percentage points, from 37.7% in pre-project surveys to 27.1% post-project.

- **Of the pupils who used RM to read more, fewer said that they read only when they had to, or couldn't find anything to read that interested them.** The percentage of pupils in the 'high usage' category that said they read only when they had to decreased from 28.3% to 10.5%, while the percentage that said that they couldn't find anything to read that interested them decreased from 37.4% to 17.5%.

- **Most pupils preferred reading using technology, but a high proportion didn't have a preference for the format they read on.** Given a choice, nearly half (45.2%) of pupils at the end of the project said they preferred to read using technology, while just over a quarter (27.8 %) said they preferred reading on paper. 1 in 5 (21.2%) said they didn't mind what they read on.

- **84.6%** of practitioners felt that their ebooks project had increased pupils' reading enjoyment and motivation, and **7 in 10** felt it had increased pupils' reading skills.

"…23 of 24 pupils made progress, some rapid and others steady. It has also been vital in encouraging underachieving boys to develop a love of reading. The stigma of 'reading' has been removed and the pupils are actually sharing their experiences with their friends across the school and creating somewhat of a 'reading frenzy' which is fantastic!"

[Teacher's comment]

"I like reading now, it's more simple, it's easier to use – I read a lot more at home even. I'm more comfortable reading online, I'm not sure why. I read at home on my phone, my iPad, my brother's game console… A lot more people should give it a try."

[Pupil's comment]

Introduction

The National Literacy Trust is a national charity dedicated to raising literacy levels in the UK. Our research and analysis make us the leading authority on literacy. We run projects in the poorest communities, campaign to make literacy a priority for politicians and parents, and support schools.

Research shows that one of the most effective ways of helping children to reach their potential is to engage them in reading for enjoyment.[1] Children who read for enjoyment often make more progress in maths, vocabulary and spelling between the ages of 10 and 16 than those who rarely read for enjoyment,[2] and young people who read regularly are significantly more likely to attain a professional or managerial position that those who do not read.[3] We recognise the importance of technology as a tool for supporting literacy through both our research and our programmes.

RM Books is a market-leading ebooks platform designed specifically for schools. The platform includes a range of etextbooks, classics, fiction and non-fiction titles, and ebooks may either be accessed online on any internet-enabled device, or read offline through an app on iOS or Android phones or tablets. In early 2014, RM Books provided funding to allow a study of the impact of ebooks on pupils' reading skills and motivation over the academic year September 2014 to July 2015. Prior to the study, the National Literacy Trust conducted a rapid literature review to explore some of the research available on the role of technology in the literacy lives of young people[4]. This was followed by a brief report on interim findings for the study (January 2015) and an interim report (March 2015). This is the final report.

Background to the study

In recent years, the availability and use of electronic devices such as tablets and smartphones has increased significantly, and the National Literacy Trust is keen to explore how this might impact on children's literacy attitudes. Our annual literacy survey questions thousands of children and young people aged 8 to 16 about their literacy attitudes and behaviours. In 2012, for the first time children reported reading more on computers and other electronic devices than in print form, confirming the central role of technology in young people's literacy lives (**Figure 1**)[5].

Figure 1: Proportion of children reading in print and on electronic devices in 2012

Device	Percentage
Print	61.8%
Tablet	70.2%
Phone	68.8%
Computer	67.1%
Ereader	77.3%

(Source: National Literacy Trust's annual literacy survey 2012; N = 34,910)

[1] Reading for Change: Performance and engagement across countries. OECD (2002, 2009)
[2] Social inequalities in cognitive scores at age 16: The role of reading, A Sullivan and M Brown, Institute of Education, 2013
[3] Apr 2011: Mark Taylor of Nuffield College, Oxford University
[4] Picton, I. (2014). The Impact of Ebooks on the Reading Motivation and Reading Skills of Children and Young People: A rapid literature review, London: National Literacy Trust
[5] Picton, I. (2014). The Impact of Ebooks on the Reading Motivation and Reading Skills of Children and Young People: A rapid literature review, London: National Literacy Trust.

In order to support our work with RM Books in 2014/15, we included some questions relating to technology in our 2014 annual literacy survey.[6] The survey received more than 30,000 responses (30,032) from pupils aged 8 to 16 in schools across the UK, allowing us to place the ebooks study in a broader context. The popularity of reading in this format for young people when not at school may raise questions about its potential for promoting reading within the school environment, something explored further in the ebooks study.

In 2014, **88.6%** of survey respondents reported reading using technology (computer/laptop, tablet, ereader or games console) outside school. Just over 1 in 10 (**11.4%**) said that they read only on paper.

Children were more likely to say that they enjoyed reading using technology (**75.2%**) than reading on paper (**56.7%**, **Figure 2**). Given a choice, **45.4%** said they would rather read this way, compared with **20.2%** who preferred to read on paper. **28.3%** did not mind what format they read on (**Figure 3**).

While **43%** of children and young people read daily outside class both on paper and using technology, nearly twice as many read daily on devices (**42.7%**) as on paper (**23.1%**). In addition, a higher proportion said they read for longer on devices, with nearly a third (**32.5%**) reading for an hour or longer using technology compared with just over a fifth (**20.8%**) who read for an hour or longer on paper.

Reading content by format

Children were also asked about what they read on their devices. Websites were most popular (**84.2%**), marginally ahead of social media (social networks, instant or text messages) at **83.8%**. However, many survey respondents also read fiction, non-fiction and newspapers using technology. Roughly a third said that they read fiction in this way: **39.8%** on tablets, **34.3%** on computers and **30.6%** on smartphones (an average of 34.9% across all three screen types, **Figure 4**).

Reading ebooks tripled between 2010 and 2014 (from **5.6%** to **15.3%**); however, the majority of fiction read by children and young people remained paper-based, with **57.1%** reading fiction on paper. This was also the case

Figure 2: Reading enjoyment by format
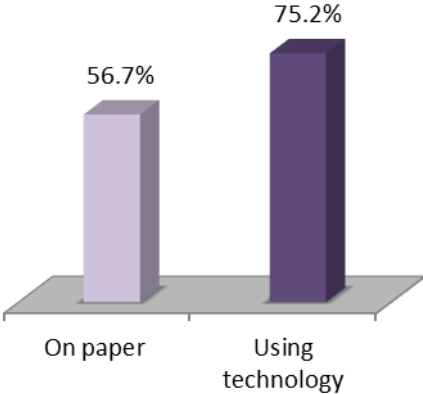
(Source: National Literacy Trust's annual literacy survey 2014; N = 30,032)

Figure 3: Reading preference by format
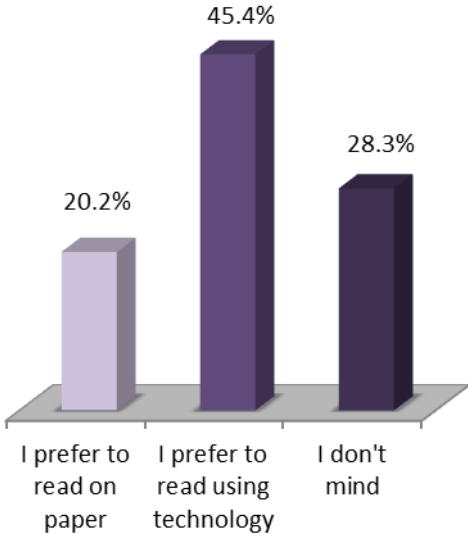
(Source: National Literacy Trust's annual literacy survey 2014; N = 30,032)

Figure 4: What young people read using technology
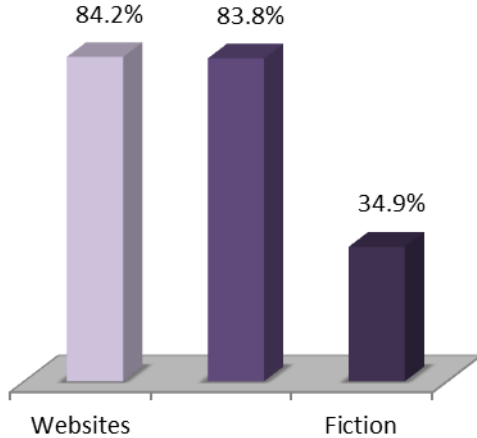
(Source: National Literacy Trust's annual literacy survey 2014; N = 30,032)

with magazines, with most children and young people (**39.0%**) reading magazines in paper form and **24.3%** on screen. However, the pattern was somewhat reversed in relation to reading news. While **26.2%** read a newspaper in paper form outside class, **34.1%** read news on a device. Non-fiction reading was similar across both formats, with **44.6%** reading non-fiction on paper and **42.1**% on screen.

Figure 5: Reading content by format

Fiction — Technology 34.9% / Paper 57.1%
Magazines — Technology 24.3% / Paper 39.0%
Newspapers — Technology 34.1% / Paper 26.2%
Non-fiction — Technology 42.1% / Paper 44.6%

(Source: National Literacy Trust's annual literacy survey 2014; N = 30,032)

Survey results make it clear that technology continues to play an important part in children's and young people's literacy lives. Indeed, recognising the popularity of reading using technology among children and young people at home, many schools are becoming increasingly interested in finding ways to use this to support literacy and learning within the school environment. However, demands on school budgets and staff capacity mean that more evidence of positive impact is needed before most schools would be able to consider investing in a digital library.

Study design

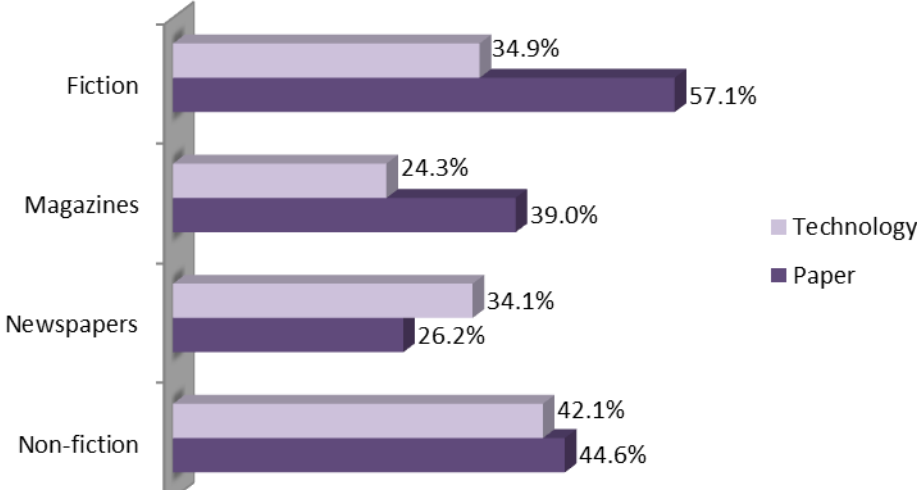The rapid literature review[7] conducted prior to this study indicated that a variety of research studies and reviews have been conducted looking into the impact of ebooks on various aspects of reading, such as comprehension and recall. There has been , and continues to be, great interest in the different types of reading that can be said to occur on paper and on screen (terms such as 'hyper', 'skim' and 'deep' reading have been applied in relation to different reading styles by format). However, at present, while there are some compelling case studies that would appear to suggest that opportunities to read using technology can impact positively on some pupils' reading skills, it is difficult to find large-scale studies that explore the impact of ebooks on reading attitudes, behaviour and attainment across a range of schools and pupil groups in the UK. It was the intention of this study to contribute to the evidence base in this area.

Schools taking part in the study were invited to design their own project in line with the school's literacy priorities and the resources (such as hardware, staff capacity and budget) available to them. In this way, we hoped to capture information regarding the use of ebooks with a variety of pupils and in a range of situations. All schools were asked to provide both attitudinal and attainment data for participating pupils before and after their project.

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[7] Picton, I. (2014). The Impact of Ebooks on the Reading Motivation and Reading Skills of Children and Young People: A rapid literature review, London: National Literacy Trust

School recruitment and retention

Between July 2014 and May 2015, the National Literacy Trust and RM Books used existing channels and networks, such as newsletters and conferences, to invite UK schools to express an interest in being part of the study. More than 250 schools expressed an interest in taking part by completing an online form, and were sent further information to take them to the next stage of participation. Schools that submitted brief details of their proposed project to the National Literacy Trust were then provided with research tools to enable them to survey pupils on reading attitudes, behaviour and confidence, and to track their reading levels before and after involvement in their ebooks project. All schools that facilitated pupil surveys received a report on their results, providing a valuable insight into pupils' reading attitudes. A high proportion of schools were new to using ebooks and received guidance about setting up with RM Books where necessary, including arranging credit and allocating books to pupils.

Unfortunately, a considerable proportion of schools that initially expressed interest in taking part in the study withdrew at an early stage (within the first couple of months). Where it was possible to establish reasons for this, the most commonly cited were technical problems (such as hardware, software or wifi issues) and staff capacity (for example, staff members leaving or being reassigned to other roles within the school). However, more than 70 detailed project plans were received, and pre-project surveys were received from more than 1,000 pupils. A number of additional schools went on to withdraw from the study later in the study period, again, mostly due to challenges of a technical nature or staff capacity (see 'Learning' section, p.35). Despite this, enough schools remained on the study to enable us to gather post-project data for more than 800 pupils, and focus groups conducted at the end of the study period allowed us to gather further qualitative information from children and teachers in schools across the UK.

Implementation of RM Books in participating schools

Schools taking part in the study worked with a variety of pupils and group sizes, ranging from nine to 196 children, with an average of 35 children in each school focus group. Schools ran projects over varied periods of time ranging from 2 months to 8 months. The average project period was 4.2 months.

Many schools chose to run an ebooks project focusing on a specific pupil group, such as less keen and confident readers, pupils eligible for free school meals (FSMs) or more confident readers. Others decided to work across classes or year groups. Some were interested to see whether the broader 'technology' aspect of reading on screen might increase pupils' motivation to read, or if reading online or offline might provide additional reading opportunities for pupils with low access to print books, at school or at home. While many schools mentioned raising attainment as a target outcome, most prioritised ereading for enjoyment, increased enthusiasm for books and more frequent reading.

General findings

- **The average reading progress made over the project period was 8 months**. For schools reporting reading progress in national curriculum sublevels, the average progress made over the same period of time was 1.9 sublevels[8].

- **Boys made significantly greater progress over the course of the study than girls**, with boys increasing by an average of 8.4 months compared with girls who made an average gain of 7.2 months.

- **Pupils who used RM to read more, made more progress**, with pupils in the high usage group making an average of 8.8 months' progress compared with an average progress of -1.25 months in the low usage group.

Schools participating in the study were asked to provide pre and post-project reading attainment data for participating pupils[9] in whichever format the school usually used to record data (for example, reading age in months, national curriculum levels or Accelerated Reader/STAR levels).

We received attainment data for more than 800 pupils from 18 schools, with the majority of data being in the form of reading age in months. The average progress made over the study period was **8 months[10]**. In terms of sublevels, the average progress made over the same period of time was 1.9 sublevels.

Boys made significantly greater progress over the course of the study than girls[11], with boys increasing by an average of **8.4** months compared with girls who made an average gain of **7.2** months. Similarly, pupils who receive FSMs made slightly more progress than their peers who do not receive free meals (**8.1** months vs. **7.8** months[12]), but the difference was not statistically significant.

There were also significant[13] differences in reading age improvements in relation to the level of usage of the ebooks platform over the course of the project. For example, pupils with usage records showing less than one hour of time spent reading ebooks over the course of the project made considerably less progress (-**1.25** months) than those with usage records showing reading time of eight hours or more (**8.8** months).

In addition to attainment data, schools taking part in the study were asked to have pupils complete pre and post-project surveys exploring their reading attitudes and behaviours. National[14] and international research[15] has long recognised the strong association between reading for enjoyment and improved academic performance. For example, recent National

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[8] Expected progress is one level over two academic years (at an average of 1.5 sublevels a year, e.g., one sublevel in Y3 and two s-ls in Y4 to make a level's progress from KS1). Note: National curriculum levels are no longer officially used to measure progress.

[9] All schools were invited to provide data for a control group (a similar group of children, for example, another class in the same year group who weren't offered access to ebooks) however, the amount of data received for controls was unfortunately not sufficient to be included in the study. We hope to address this in a future study.

[10] N = 510, SD = 15.91; NCL: N = 214, SD = 2.1

[11] $t(305) = 1.97$, $p = .049$; Boys: SD = 17.564; Girls: SD = 14.023.

[12] N = 310; FSM: SD = 18.096; non-FSM: SD = 13.125

[13] $F(2) = 13.48$, $p = 0.04$; N = 367; low user: SD = 17.322; high user: SD = 12.444

[14] Institute of Education 2013

Literacy Trust research[16] shows that overall, children and young people who enjoy reading very much are three times as likely to read above the expected level for their age compared with children and young people who do not enjoy reading at all. Similarly, children and young people who read daily outside class are five times as likely to read above the expected level for their age compared with young people who never read outside class (**23.0%** vs. **4.9%).** Overall, nearly 4 in 10 (**37.5%**) of those who never read outside class, read below the level expected for their age.[17]

Surveys questioned pupils about how much they enjoyed reading, how frequently they read independently for enjoyment and for how long they read outside school. Pupils were also invited to comment on their preferences regarding reading formats and to agree or disagree with a variety of statements about reading and reading attitudes.

Pre-project data from reading attitude surveys was available for **1,129** pupils, and post-project data was available for **800** pupils. However, we were particularly interested in matching up by name pupils for whom we had both pre- and post-project attitudinal data, in order to provide a more accurate picture of the impact on pupils than through a cohort-level analysis. Therefore the following findings relate to named pre and post-project data for **468** pupils.

- **Enjoyment of reading increased over the course of the project, particularly with regard to reading using technology.**

Enjoyment in reading increased significantly over the course of project activities.[18] **59.4%** of pupils reported enjoying reading either very much or quite a lot before the project began. This rose to **64.1%** post-project.

Reading enjoyment increased in particular with regard to reading using technology[19]. In the pre-project survey **68.1%** of pupils reported enjoying reading using technology. This increased to **74.3%** post-project. There was also a slight, though non-significant, increase in the number of pupils who enjoy reading on paper between pre and post-test, with **64.4%** of pupils enjoying reading on paper before the project and **66.3%** enjoying reading on paper post-project.

   At the end of the project, more pupils read daily or at least once a week using technology.

There was no significant difference in the number of pupils who either read daily or at least once a week on any format outside class over the course of the project. There were some changes in the frequency with which pupils read using technology outside class over the project period, with a greater percentage of pupils reading both daily (**29.4%** pre, **33.8%** post) or at least once a week (**73.4%** pre, **78.3%** post) at the end of project. However, these differences in reading frequency using technology were also not significant[20].

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[15] OECD (2002) Reading for Change: Performance and Engagement across Countries.
[16] Clark, C. (2015). Children's and Young People's Reading in 2014. Findings from the 2014 National Literacy Trust's annual survey. London: National Literacy Trust.
[17] 2 For more information regarding the relative importance of reading enjoyment, behaviour and attitudes on attainment see our 2011 paper: http://www.literacytrust.org.uk/assets/0001/0025/Attainment_attitudes_behaviour_enjoyment-Final.pdf
[18] $Z = 2.54$, $p = 0.01$
[19] $Z = 1.98$, $p = 0.48$
[20] $Z = 1.66$, $p = 0.91$

By contrast, the frequency with which children read on paper outside class decreased slightly, though not significantly, over the same period of time. **31.3%** of pupils said that they read daily on paper before the project began compared with **27.3%** of pupils at the end of the project. Similarly, the percentage of pupils who read on paper outside class at least once a week decreased from **75.9%** at pre-survey to **74.9%** at post-level.

- **Most pupils preferred reading using technology, but a high proportion did not have a preferred reading format.**

Given a choice, nearly half of pupils said they preferred to read using technology (**45.2%**) at the end of the project, while just over a quarter said they preferred reading on paper (**27.8 %**). However, 1 in 5 (**21.2%**) did not have a preferred reading format.
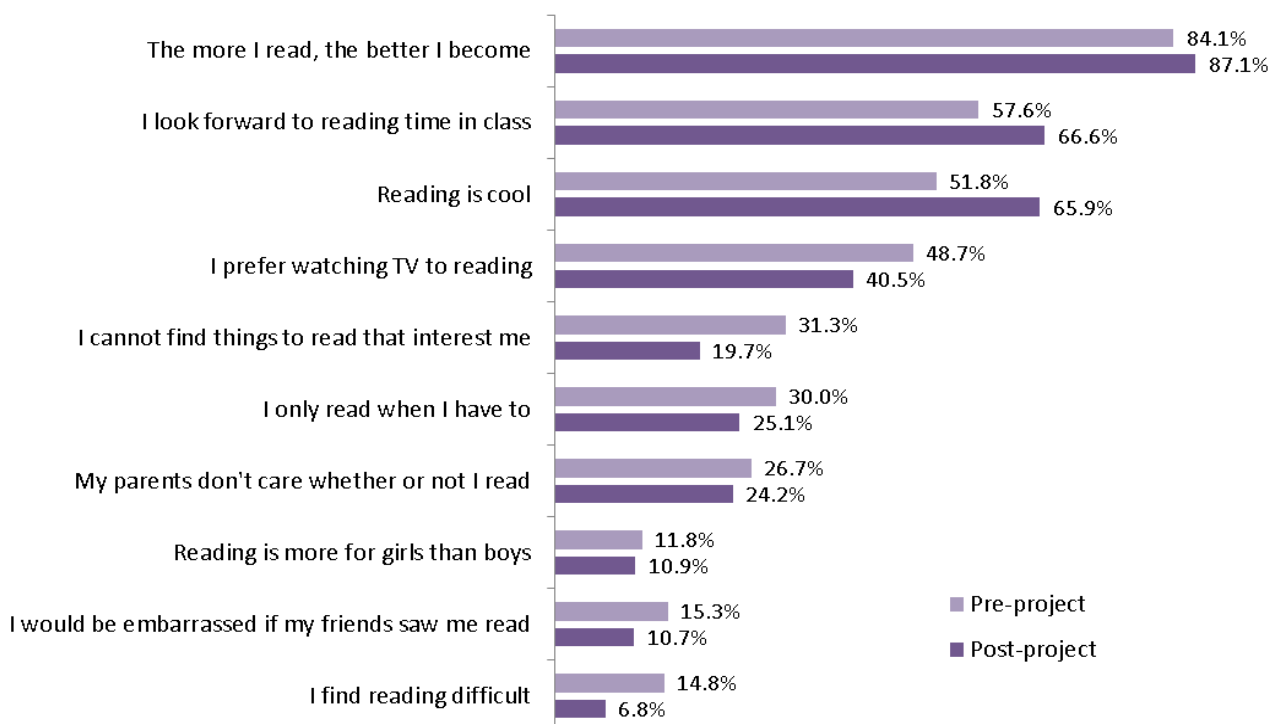
> **I like both and enjoy reading on paper or electronic devices**

- **More pupils thought that reading was cool after the project, and fewer said that they found reading difficult or that they could not find things to read that interest them.**

Not only did more pupils enjoy reading and read more frequently using technology, there were also some changes in how pupils view reading more generally over the course of the project. For example, **Figure 6** shows that over the course of the project there was a 27% increase in the number of pupils who agreed with the statement: "Reading is cool", rising from **51.8%** before the project to **65.9%** after the project. Similarly, more pupils at the end of the project said that they looked forward to reading time in class.

Conversely, the number of pupils who felt that they could not find things to read that interest them decreased by 37%, declining from **31.3%** before the project to **19.7%** after the project. In addition, the number of pupils who thought that reading was difficult halved over the course of the project, decreasing from **14.8%** to **6.8%**.

Figure 6: Reading attitudes pre and post-project

| Statement	Pre-project	Post-project
The more I read, the better I become	84.1%	87.1%
I look forward to reading time in class	57.6%	66.6%
Reading is cool	51.8%	65.9%
I prefer watching TV to reading	48.7%	40.5%
I cannot find things to read that interest me	31.3%	19.7%
I only read when I have to	30.0%	25.1%
My parents don't care whether or not I read	26.7%	24.2%
Reading is more for girls than boys	11.8%	10.9%
I would be embarrassed if my friends saw me read	15.3%	10.7%
I find reading difficult	14.8%	6.8%

Delving deeper into reading using technology: Findings from focus groups

Given that nearly half of the participating pupils say that they prefer reading digitally, why is this the case? To find out, a series of focus groups were organised to allow us to talk to children and young people in more depth about their reading attitudes and behaviours in print and on screen. This enabled us to explore in greater detail some of the qualitative feedback that had come through over the course of the project, and provided further insight into young people's experience of each reading format and how this might influence reading motivation in particular.

The word cloud below (**Figure 7**) indicates the most common themes that came up in the focus groups with children and young people about reading on paper and on screen (larger words are those mentioned most frequently). The most common word used was 'read', indicating perhaps that discussions tended more often to be about reading rather than about reading formats, however, this was closely followed by words referring to formats, such as 'book', 'paper', 'screen', 'iPad', 'tablet' and 'phone'; followed again by comparison words such as 'different', 'prefer' and 'same'.

Figure 7: Focus groups – word cloud
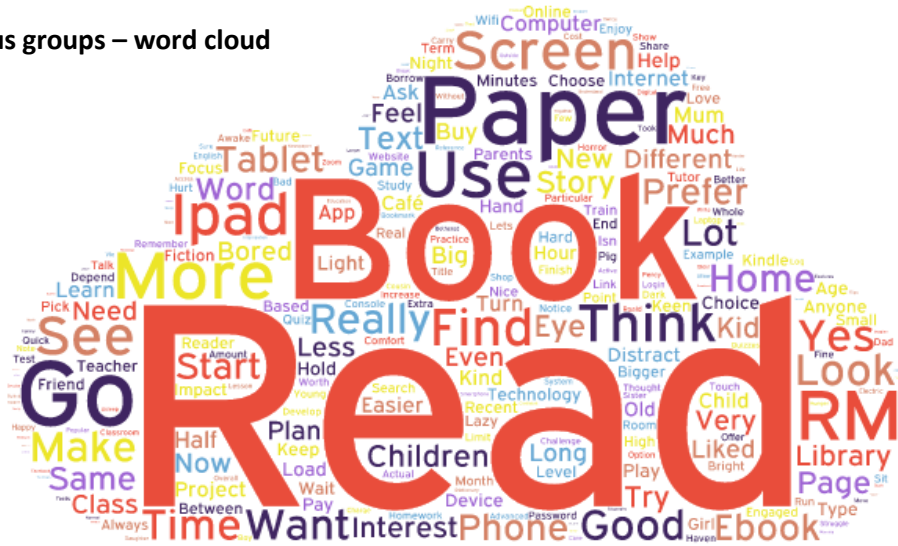
Pupils were asked to consider what they liked and disliked about reading on each format. A selection of typical and representative responses for each question is shown below:

❝ **What do you like about reading on screen?** ❞

- *When you read on paper, it's a bit boring, unless it's something you're really into and you might get into it. - On a tablet, it feels more interesting, it reminds me of when I'm texting someone and I don't like reading so it makes it a bit more interesting*
- *Paper books you can carry them around but now I have an iPad I'm more interested in reading on that*

❝ **What do you like about reading on paper?** ❞

- *On paper, you can touch it*
- *You can hold your book and go back a chapter, if you want to, go back a page – when it's on a screen it's harder to find where you were*
- *…you can imagine it [the story] more visually when you are touching it*
- *…you feel like you're 'in the story'*
- *I like the smell of books*
- *[You] feel a bigger sense of accomplishment if you read a paper book*

Pupils were encouraged to describe what they felt were the specific benefits of each reading format:

> ❝ **Is there anything particularly good about reading on screen?** ❞

> ❝ **Is there anything particularly good about reading on paper?** ❞

- *I make the text bigger, I don't like reading books with small text which is why I don't read a lot of books*
- *You can zoom in… if you struggle with reading*
- *In a book your vision goes, there are so many words, words after words after words, but on a screen you can scroll down how you'd like*
- *The way the screen is lit it can make it easier to read*
- *And you can change the colour of the back*
- *If you're on a screen you just type in your password and you don't have to go anywhere*
- *If you have a dark place … you can dim it or make it brighter so you can read it*

- *You need wifi to be on the device but paper you can read anytime*
- *And also you have to own a device to read on screen*
- *On a long journey… it will depend where you are whether you'll have battery or wifi*
- *I like reading on paper in the night-time because it's more comfortable*
- *It's easier on paper for me, for my eyes*
- *I find paper books a bit more relaxing*

Pupils were also asked about what might make them less motivated to read on a particular format:

> ❝ **Is there anything not so good about reading on screen?** ❞

> ❝ **Is there anything not so good about reading on paper?** ❞

- *With a tablet you might have to wait for it to charge*
- *You have to wait for it to load!*
- *On an ebook you have to type your password in*
- *I have a very bad point – when you're halfway through reading a book it will say 'your session has run out'*
- *That's a good thing! [if it's a school lesson]*

- *I get bored when I'm reading paper books, I don't know why it just seems to drag*
- *When I'm reading a book I can't concentrate, sometimes the words cross over or go blurry*
- *On paper, there's just too many words on the page and it's too long, you get confused*

However, many pupils had no strong feelings about reading format at all:
- *It doesn't matter to me*
- *We get two sessions of reading and I think it would be a good idea to offer a choice – you can either have the iPads or have the books, choose which you prefer*

> **It doesn't really matter to me as long as it's something I am enjoying reading**

Topics such as eye-strain and distractibility caused the most debate between pupils in focus groups, with pupils countering each other's opinions more in relation to these subjects than with any others:

- *When you're on the computer your eyes go funny and start to water if you look at it too much*
- *When you're reading ebooks your eyes start watering like onions!*
- *Sometimes when you look at a screen you can get a headache*
- *Plus if you read on a screen it makes you feel more tired, it makes you feel weary*
- *You can just reduce the brightness if it's too bright – simple!*

- *I think it's better on paper, on a phone you have loads of apps that notify you and on a computer if you get bored you can just go and search for something else or play games and stuff. If you're reading on paper it's more interesting and more engaging*
- *I disagree, you can get distracted by books, people could distract you*
- *…even on paper you can…get distracted by the TV*

In order to explore the subject of eye-strain further, pupils were also asked about wider use of screens outside school. Some pupils felt computer games were less likely to cause eye-strain than some forms of social media, and that the latter was more likely to affect their sleep:

" **What about computer games, do they hurt your eyes?** "
- *There's more going on with a computer game*
- *It can do but the iPad, when you're reading, is in your hand so it's closer than if it's your console – the TV is over there [indicates beyond arm's length], it's further away*

" **…And social media?** "
- *The colour blue keeps you awake; if you're on Facebook that's more likely to keep you up*
- *At night, I think we all do read like, messages*
- *And texts and Snapchat*
- *It annoys me to think I've sent a message and they might reply when I'm asleep so I try and stay awake*

Finally, we asked whether having an additional reading format to choose from might increase reading overall for any pupils. Many expressed positive feelings about having another choice:

" **Do you think you read less, more or about the same when you can read on a screen as well as on paper?** "
- *Less, because if I have something to read on my phone or a tablet I can get distracted and start playing games…if I get distracted on screen I don't go back to reading*
- *I read more, because when I read on my phone I find it easier, but then sometimes I might get distracted with messages*
- *More because when I read on a phone or a tablet I can make it bigger and if it's something that I'm interested in I just continue to read, but I don't like reading on paper that much because there might be loads and loads of pages and the font is small*
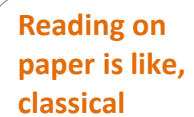
It gives me more choices

- *I read more because some of the stuff I read online I can't get on paper so it gives me more choices*
- *Sometimes when you're reading on a screen you think of another book you want to read straight after and you can just do that*
- *People our age we love using the internet so most of us don't like reading books because it's not on the internet, we prefer ebooks, that's more like the internet*

In summary, positive themes arising for reading using technology among pupils in focus groups often related to practical factors such as the ability to adjust the size and number of words on the screen, and to alter screen brightness and overlay colours to suit personal reading preferences.

Aspects of reading using technology that pupils mentioned liking less mostly related to ebooks' reliance on technology, for example the need for wifi, hardware, batteries and passwords. Pupils also recognised that the devices used to access ebooks had the potential to both help them with, and distract them from, reading. While several mentioned facilities such as the online dictionary allowing readers to instantly look up words that they weren't familiar with, others said that they might receive social media notifications while using a smartphone or tablet, and that, once distracted, they might not return to reading.

Positive themes relating to reading on paper also included practical factors, such as the 'ready to go' nature of paper books, as they don't require devices or batteries. However, sensory themes came up more often, with many pupils mentioning that they found it easier to know where they were in a paper book, and even felt more 'part of the story' when reading in this way.

Reading on paper is like, classical

The less positive aspects of reading on paper that were mentioned most often related to the fixed number of words on the page and small font size.

Overall, most pupils were positive about the additional reading opportunities that were offered by having a choice of formats to read on as part of their ebooks project.

Exploring the impact on particular subgroups of pupils

Initial analyses of pre-project surveys indicated that children from less advantaged backgrounds, boys and older children tended to show more positive attitudes to reading using technology[21], suggesting that digital reading may have the potential to impact positively on some of the traditional indicators of poor literacy performance. We therefore looked at results for these groups again in the post-project surveys.

Reading motivation by gender

- **More boys thought that reading was cool and fewer thought that reading was difficult**

Twice as many boys believed that reading was cool at the end of the project than at the beginning (**66.5%** vs. **36.4%**, **Figure 8**). Conversely, fewer boys read only because they had to (**31.2%** vs. **40.5%**) and the percentage of boys who thought that reading was difficult nearly halved, decreasing from **28.0%** at the beginning to **15.9%** at the end of the project (**Figure 9**). By contrast, there were no such attitudinal changes for girls over the course of the project.
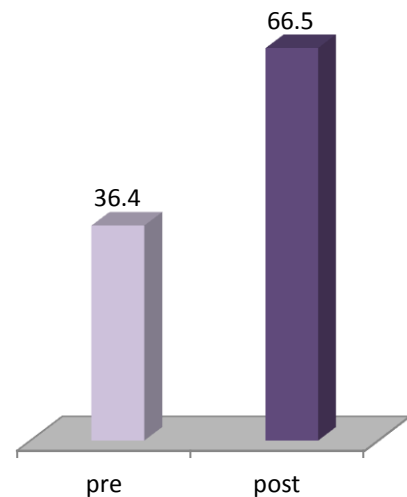
- **More boys enjoyed reading over the course of the project, particularly with respect to reading using technology. Girls continued to enjoy reading more on paper.**

Significantly more boys enjoyed reading after the programme than before.[22] **49.1%** of boys said that they enjoyed reading at the start of the project compared with **56.8%** at the end of the project. In particular, there was an 11% increase in the number of boys who enjoyed reading using technology over the course of the project, rising from **60.9%** before the project to **67.9%** at the end of the project. This increase in enjoyment of reading using technology over time was statistically significant[23]. The rise in reading enjoyment using print was smaller by comparison, with **54.1%** of boys saying that they enjoy reading on paper post-project compared with **50.1%** before the project.

Figure 9: Boys agreeing "Reading is difficult for me"
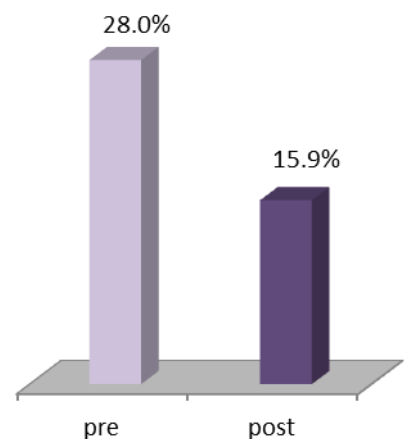
By contrast, there were no significant differences in girls' enjoyment of reading across all formats over the course of the project (**70.6%** pre-project; **68.5%** post-project). Girls' enjoyment of reading on paper stayed stable over the course of the project (**73.0%** pre-project; **73.8%** post-project), while their enjoyment of reading using technology decreased, albeit insignificantly so (**73.5%** pre-project; **68.7%** post-project).

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[21] Picton, I. (2015). *Initial findings from exciting study on the impact of ebooks on children's reading.* Available: http://www.literacytrust.org.uk/news/6402_initial_findings_from_exciting_study_on_the_impact_of_ebooks_on_children_s_reading. Last accessed 04.09.15
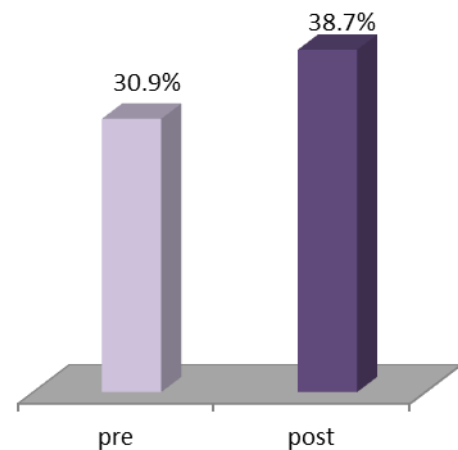[22] Z = 1.97, p = 0.048
[23] Z = 2.25, p = 0.024

Overall, boys were more likely to enjoy reading using technology than paper, while girls were more likely to enjoy reading on paper than reading digitally.

- **More boys read daily using technology at the end of the project**

Figure 10: Boys reading daily using technology

There was a significant difference in the frequency with which boys read outside class using technology over the course of the project[24]. In particular, there was a **25%** increase in the number of boys who read daily using technology, with daily digital reading levels rising from **30.9%** at the beginning of the project to **38.7%** post-project (**Figure 10**). The percentage reading digitally at least once a week also increased marginally from **74.1%** to **76.7%** over the course of the project. Conversely, the percentage of boys reading daily on paper decreased from **26.7%** to **21.0%**, but the percentage reading at least once a week on paper remained stable (**70.1%** pre, **70.7%** post).
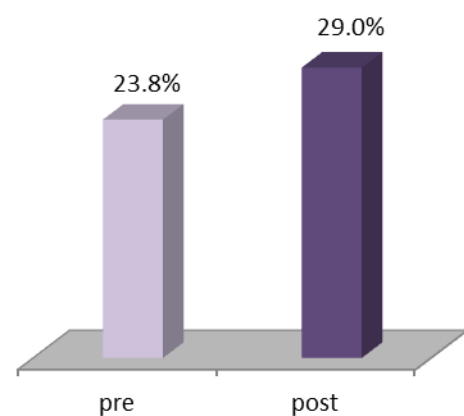
By contrast, the difference in reading frequency using technology over time for girls was just not significant[25]. Overall, while the proportion of girls reading daily using technology remained relatively unchanged over the course of the project (**28.2%** pre-project to **29.3%** post-project), the percentage reading digitally at least once a week increased from **72.9%** to **79.9%**, an increase of more than six percentage points. However, the proportion of girls reading daily on paper decreased slightly from **35.2%** to **33.0%**, as did reading on paper at least once a week, from **80.8%** to **78.7%**.

Overall, at the end of the project more boys than girls said that they read outside class digitally every day (**38.7%** vs. **29.3%**). By contrast, more girls than boys read on paper outside class daily (**33.0%** vs. **21.0%**).

- **Boys also read for longer using technology, while girls read for longer on paper**

Figure 11: Boys reading for one hour or more using technology

There were some significant changes in the length with which boys read using technology over the course of the project[26], with the more boys reading for one hour or longer and fewer reading for only 10 minutes at a time. For example, there was a 22% increase in the number of boys who read for one hour or more using technology over the course of the project, increasing from **23.8%** at the beginning of the project to **29.0%** at the end of the project (**Figure 11**). Conversely, the percentage of boys who read using technology for only 10 minutes at a time decreased from **27.4%** at the beginning to **21.9%** at the end of the project – a decrease of 5.5 percentage points.

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[24] Z = 2.01, p = 0.042
[25] Z = 1.91, p = 0.056
[26] Z = 2.22, p = 0.027

Over the same period, the percentage of boys who read on paper for only 10 minutes (**32.3%** pre-survey vs. **32.4%** post-survey) or for one hour or longer (**16.8%** pre-survey vs. **16.4%** post-survey) had remained stable.

By contrast, the percentage of girls who read on paper for one hour or more increased slightly, though not significantly, over the course of the project, increasing from **29.9%** to **34.1%**. The percentage of girls who read on paper for only 10 minutes remained unchanged (**19.4%** pre-project vs. **19.1%** post-project). There was also no change in the percentage of girls who read using technology for one hour or more (**26.0%** pre-survey vs. **25.3%** post-survey) or the percentage of girls who read using technology for 10 minutes (**24.9%** pre-survey vs. **26.4%** post-survey).

In summary, these findings would appear to indicate that boys in particular benefited from taking part in an ebooks project, as there was a higher percentage of boys enjoying reading using technology, reading daily and reading for longer post-project than before taking part. However, the impact of taking part in an ebooks project was less dramatic for girls, as girls' reading attitudes, frequency and length remained relatively similar before and after the project.

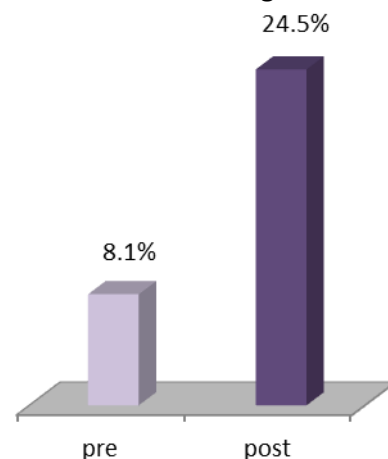**Boys who didn't enjoy reading at the beginning of the project**

- **Boys who didn't enjoy reading at all at the beginning of the project showed increased reading enjoyment, frequency and reading time**

We also found some interesting changes when looking at a further subgroup: that of boys who reported the lowest levels of general reading enjoyment in the pre-project surveys (N = 41)[27]. For this group, reading enjoyment and length of time spent reading increased both in relation to reading on paper and in relation to reading using technology. There were also some changes in how reading was perceived over the course of the project.

In particular, at the beginning of the project, boys who reported the lowest levels of reading enjoyment were nearly five times as likely to say that they enjoyed reading using technology as reading on paper (**49.2%** vs. **10%**). While the percentage of this group who enjoy reading using technology increased towards the end of the project (**64.2%**), the most dramatic change was with regard to the number who said that they enjoyed reading on paper, which increased fourfold from **10.0%** at the beginning of the project to **40.0%** at the end of the project.

Figure 12: Boys who didn't enjoy reading pre-project reading for an hour or more using technology

Similarly, the percentage of boys from this subgroup who read using technology daily nearly tripled over the course of the project, rising from **15.8%** at the beginning to **42.1%** at the end of the project. The percentage who read on paper daily also increased, from 0% at the beginning of the project to 11.1% at the end of the project. Another dramatic change can be seen in relation to time spent reading, with the number of boys who reported reading using technology for more than an hour tripling, from **8.1%** to **24.5%** (**Figure 12**).

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[27] The sample was too small to explore similar differences for girls.

In addition, the percentage of boys that began the project with the lowest level of reading enjoyment who agreed with the statement "reading is cool" almost tripled over the course of the project, increasing from **15.8%** at the beginning to **42.1%** at the end of the project. Conversely, the percentage who agreed that "reading is more for girls than boys" halved over the same time period, decreasing from **31.6%** at the beginning to **15.8%** at the end of the project. The percentage of boys from this subgroup who agreed that "reading is difficult for me" reduced from **36.8%** to **10.5%.**

Finally, at the end of the project all boys in this subgroup said that, given a choice, they would prefer reading using technology.

The focus group discussions also allowed us to examine some of the reasons why, for those that don't enjoy reading, the option to read on screen might hold more appeal than reading on paper. While some pupils felt that content was more of a problem than format for them, others felt that reading on screen might motivate them, or others, to read more:

66   **Does anyone know anyone who doesn't like reading? Do you think**   99
      it makes any difference being able to read on a screen?

- *Yes, because if the text is too small on the computer you can read it* **You can read**
  how you like, make the font bigger **it how you**
- *I just don't find books interesting, I can't find one that interests me* **like, make**
- *Well, I had a friend, he never really reads a paper book… I showed* **the font**
  him some books on a screen… and because he likes animals we
  found a book on kangaroos and he started… reading more and more of the
  ebook
- *I don't really [like reading], but I like the book I'm reading [on screen] right now as it's*
  got facts about drugs. I wouldn't pick up that book and I wouldn't get into it, but on
  screen I would, I like it a lot more on the screen
- *I think you'll find it easier to read on screen and there might be words you don't*
  understand and on the internet you can simplify it
- *You can use the online dictionary*

Reading motivation by socioeconomic background

Although there were interesting changes with regard to boys, particularly for those that didn't enjoy reading at the beginning of the project, the change for pupils from less advantaged backgrounds was less pronounced.

For pupils eligible for free school meals (FSMs; N = 120), enjoyment of reading on devices remained stable (**77.9%** pre, **77.3%** post) while enjoyment of reading on paper decreased (**69.0%** pre, **63.8%** post) over the course of the project. For pupils not eligible for FSMs, enjoyment of reading on devices decreased (**71.6%** pre to **65.4%** post), while enjoyment of reading on paper remained stable (**60.3%** pre to **60.6%** post).

With regard to reading frequency, the percentage of pupils eligible for FSMs reading daily on devices remained stable (**32.1%** pre, **30.2%** post), while the percentage reading daily on paper decreased (**41.7%** pre, **35.8%** post). However, a higher percentage read at least once a week on paper (**73.9%** pre, **79.6%** post), whereas weekly reading on devices remained stable (**78.6%** pre, **79.1%** post). For pupils not eligible for FSMs, the percentage reading daily on devices increased

from **27.7%** to **35.1%**, and weekly from **71.7%** to **78.0%.** The percentage reading on paper daily remained stable (**30.1%** pre, **28.8%** post) as did reading weekly on paper (**75.2%** pre, **74.0%** post).

There was also little change for pupils from all backgrounds with regard to reading time. The percentage of pupils eligible for FSMs that reported reading for an hour or more on devices remained stable (**25.6%** pre, **23.6%** post) as did the percentage reading for an hour or more on paper (**17.5%** pre, **18.5%** post). This was also the case with pupils not eligible for FSMs, as the percentage reading for an hour or more on devices remained stable (26.2% pre, 27.5% post) as did the percentage reading for this length of time on paper (**27.2%** pre, **28.5%** post).

More interesting changes could be seen in this group with regard to reading attitudes (**Figure 13**). For example, while the percentage of pupils that agreed with the statement "I find reading difficult" decreased for pupils from all backgrounds, it decreased only slightly for pupils not eligible for FSMs (**12.1%** pre, **10.3%** post), whereas it halved in relation to pupils eligible for FSMs (**26.7%** pre, **12.6%** post).

Figure 13: Reading attitudes pre and post-project by socioeconomic background
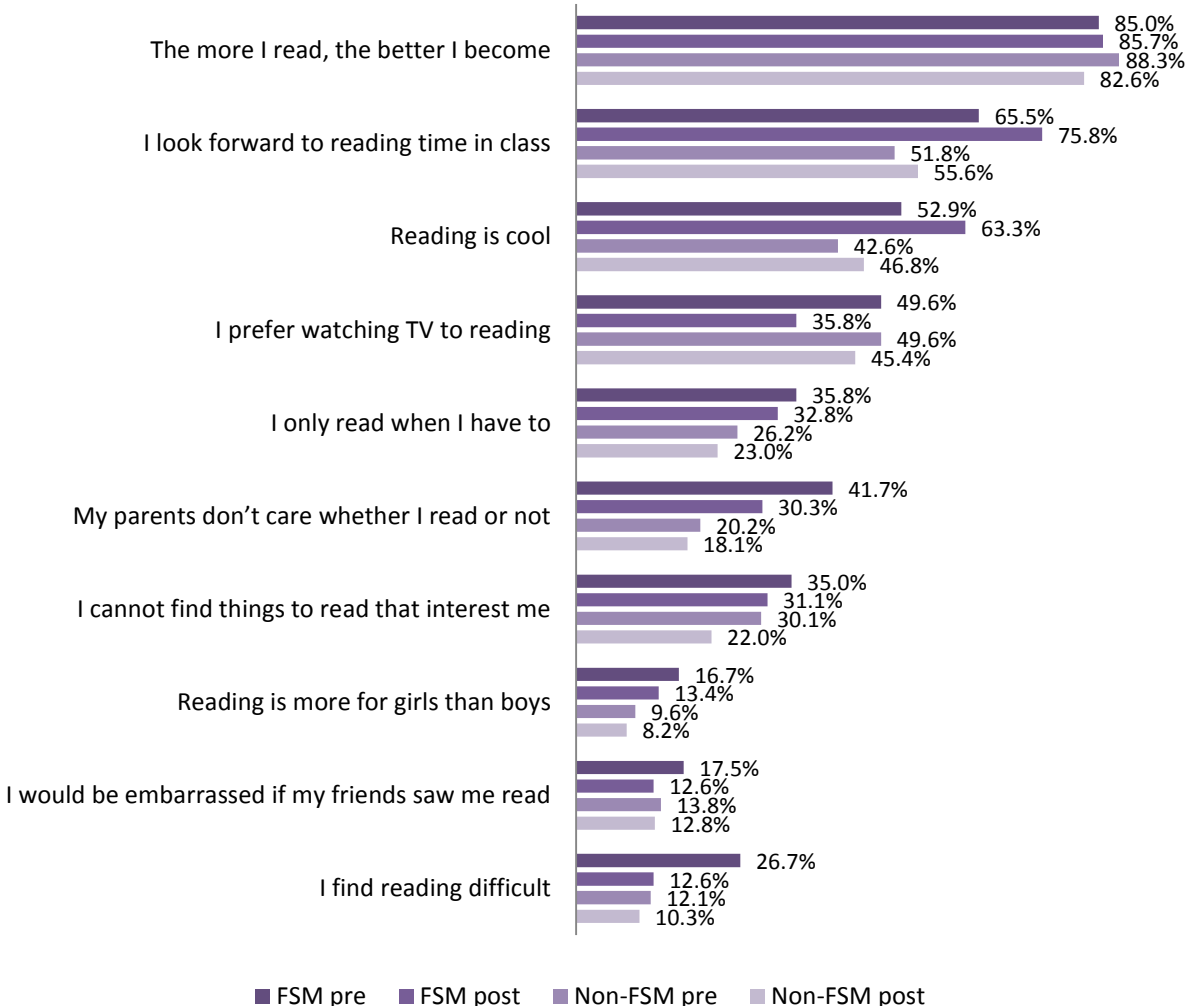
To summarise, survey results for the group of pupils eligible for FSMs did not appear to show dramatic differences in reading enjoyment, frequency or time compared with the group of pupils not eligible for FSMs. The most positive difference could be seen in relation to pupils' self-perception of their reading skills, as fewer than half the percentage of FSM pupils felt reading was difficult at the end of the project.

Reading motivation by age

Exploring changes for pupils from different age groups showed some positive changes, mostly in relation to the older pupils.

The percentage of pupils in Key Stage 2 (KS2; aged 8 to 11) reading daily on devices increased by almost six percentage points (**21.2%** pre, **27.3%** post) and reading weekly on devices also increased slightly (**72.4%** pre, **76.5%** post). On paper, the percentage of this age group reading daily decreased (**41.6%** pre, **33.8%** post) while reading weekly on paper remained stable (**81.8%** pre, **83.8%** post). The percentage of older pupils in Key Stage 3 (KS3; aged 12 to 14) reading daily on devices also increased very slightly (**39.6%** pre, **42.0%** post); however, weekly reading on devices rose by almost six percentage points, from **74.8%** to **80.7%**. The percentage of this age group reading daily on paper remained stable (**18.4%** pre, **18.5%** post) and the percentage of those reading weekly on paper decreased from **69.4%** pre-project to **62.9%** post-project.

Reading time for pupils in KS2 increased slightly for those reading on paper, with the percentage reading for an hour or more increasing from **22.2%** to **28.3%** while the percentage reading for an hour or more using devices remained stable (**19.2%** pre, **18.9%** post). However, for pupils in KS3, the percentage reading for an hour or more on paper decreased marginally (**24.8%** pre, **22.5%** post) whereas the percentage reading for this length of time on devices increased by almost six percentage points, from **32.0%** to **37.7%.** There were also some interesting changes in relation to reading attitudes for the different age groups (see **Figure 14**).

Figure 14: Reading attitudes pre and post-project by age
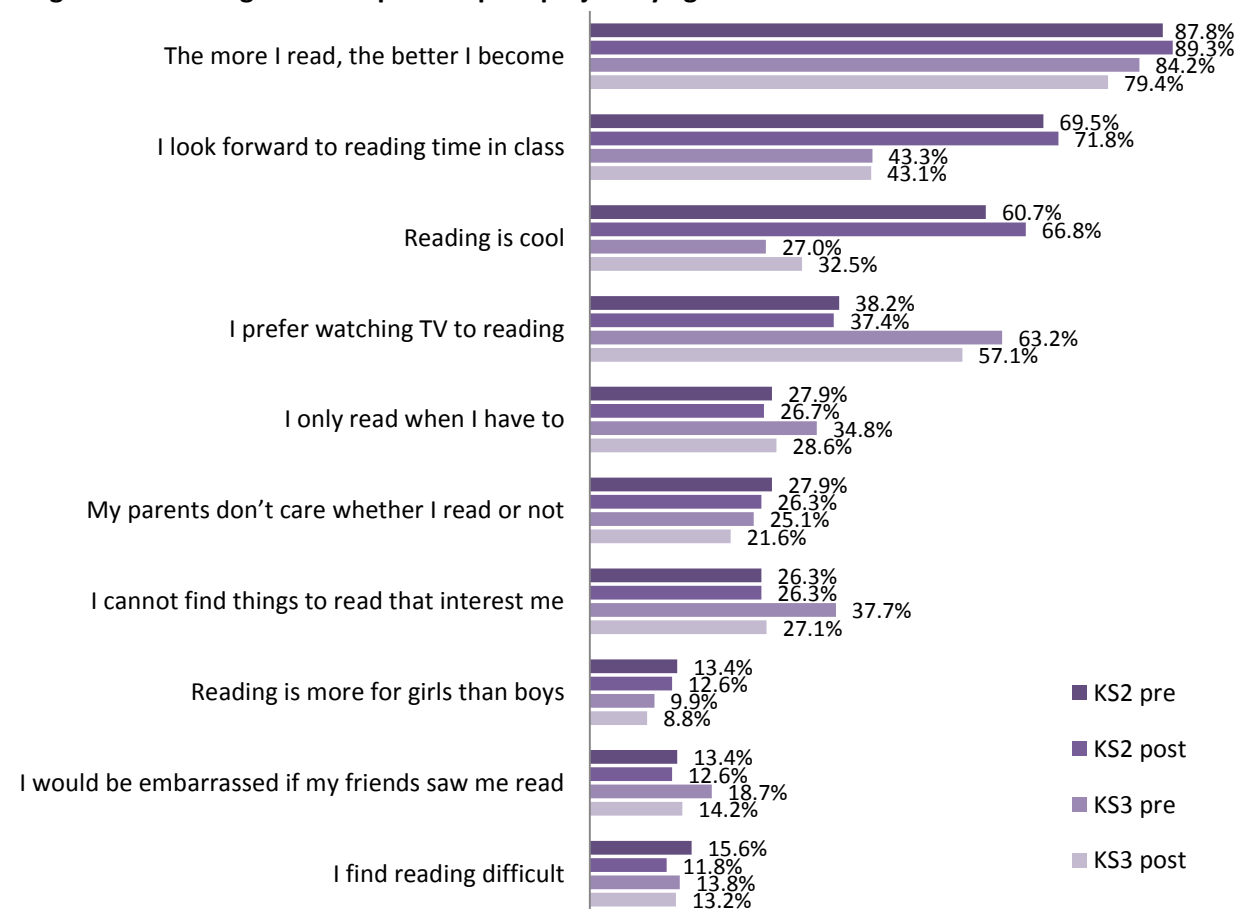
A higher percentage of older pupils felt that reading was cool at the end of the project (**27.0%** pre, **32.5%** post) and a lower percentage said that they only read when they had to (**34.8%** pre, **28.6%** post). In addition, a considerably lower percentage of older pupils said that they couldn't find things to read that interested them (**37.7%** pre, **27.1%** post).

At the end of the project, given the choice, **30.9%** of pupils in KS2 said they would prefer to read on paper and **36.8%** preferred to read using technology, with **24.0%** saying that they didn't mind what format they read on. However, twice as many pupils in KS3 preferred to read using technology than on paper (**56.0%** vs. **23.**9%), with **17.6%** saying that they didn't mind what format they read on.

To summarise, survey results when pupils are grouped by age show some slight, but positive, differences in reading frequency for both younger and older pupils reading using technology; however, at the end of the project only those in the older age group read for longer on devices. There were also more interesting positive changes in reading attitudes in older pupils, and a considerably larger percentage said they preferred to read using technology than on paper.

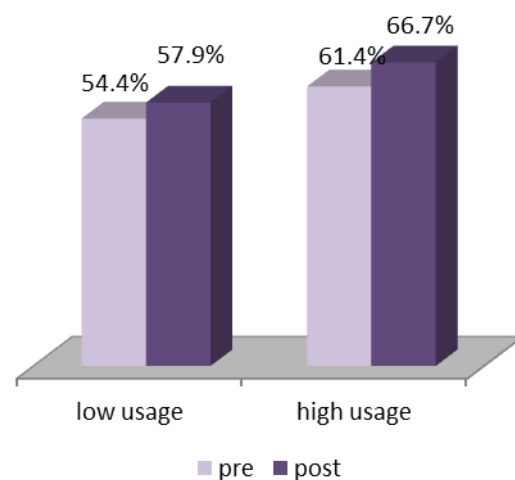### Findings from post-project surveys by usage level

The RM platform allows usage level to be recorded by pupil; it was therefore possible to explore the impact of usage on outcomes. As mentioned previously (see 'Study design', p.9), no specific minimum level of usage was set for schools taking part in this study. However, while some schools chose to run shorter projects, other schools' usage levels were influenced by technical or staffing problems resulting in a longer than anticipated set-up time, and therefore a shorter than intended study period.

Figure 15: Proportion of pupils reporting enjoying reading by usage level

For the group of pupils for whom we had pre and post-project attitudinal and usage data, the number of minutes spent reading over the study period varied from 1 to 3,344 minutes. Pupils were categorised into low (less than one hour) or high usage (more than eight hours).

The engagement with RM Books appeared to have a positive impact on reading enjoyment for both low and high usage groups. However, reading enjoyment increased slightly more in the high than the low usage group. In the low usage group levels increased by 3.5 percentage points, rising from **54.4%** to **57.9%** over the course of the project. In the high usage group it increased by 5.3 percentage points, rising from **61.4%** to **66.7%** over the course of the project.

Attitudinal changes over the course of the project were also generally more pronounced for the high usage group (**Figure 16**). For example, while the percentage of pupils in the low usage group who agreed that reading was cool remained stable (**44.1%** pre, **45.6%** post), a much higher percentage of pupils in the high usage group agreed with this statement at the end of the project (**43.2%** pre, **51.4%** post). The most dramatic changes can be seen in relation to the percentage of pupils in the high usage group that agreed with the statement "I only read when I have to", which decreased from **28.3%** in pre-project surveys to **10.5%** in post-project surveys, and perhaps most notably in the percentage that say they can't find anything to read that interests them, which decreased from **37.4%** in the pre-project surveys to **17.5%** in the post-project surveys.

Practitioner surveys

Many of the changes that took place over the course of the project shown by pupil attitudinal and attainment data were echoed in practitioners' feedback. This was gathered through email and phone contact throughout the course of the project, end-of-project online surveys and one-to-one interviews. Results from online surveys[28] are shown below.

A high percentage of survey respondents felt that the project had positively changed their pupils' enjoyment of reading:

> **Do you think the project has changed the children's enjoyment of reading overall?**

yes, positively	84.6%
yes, negatively	0.0%
no, no change	15.4%
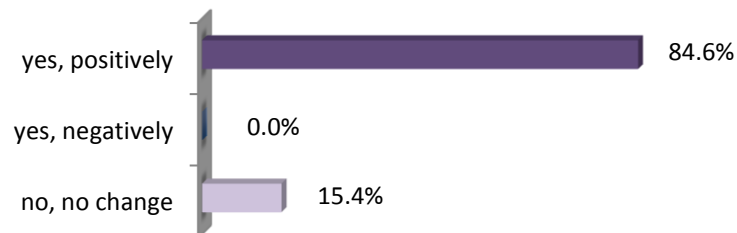
The same percentage felt that the project had a positive impact on reading motivation:

> **Overall, do you think the project has changed the children's motivation to read?**

yes, positively	84.6%
yes, negatively	0.0%
no, no change	15.4%
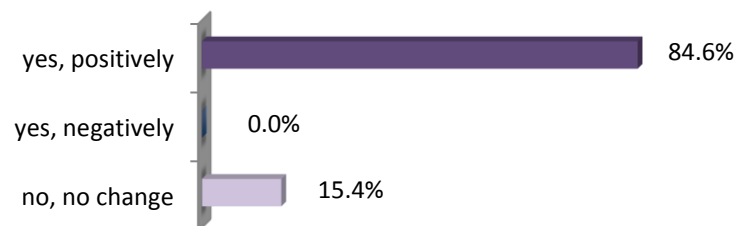
7 in 10 felt the opportunity to read ebooks had a positive impact on their pupils' reading skills, although 3 in 10 did not notice a positive change:

> **Overall, do you think the project has changed the children's reading skills?**

yes, positively	69.2%
yes, negatively	0.0%
no, no change	30.8%
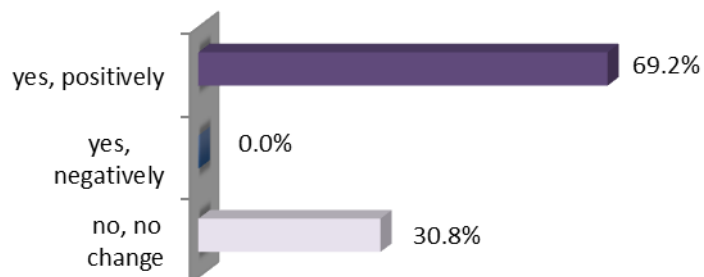
> **Please summarise your ebooks project in one sentence**
> - *Challenging but offered great opportunities*
> - *A brilliant tool for rapid progress*
> - *We used ebooks to look at improving reading of information texts*

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[28] (n=13)

Qualitative feedback from practitioners

Alongside the online surveys, a selection of practitioners (including senior leadership, teachers and librarians) were interviewed in person, by phone or over email. Interviews were conducted with the aim of obtaining a greater insight into practitioners' perspectives on the impact of ebooks on the young people that they work with. They were also intended to gather more detailed information about how the ebooks platform was implemented across a variety of different settings, and to find out more about how schools used ebooks to contribute towards their school's specific literacy priorities. Findings are presented thematically below.

Using peer power and social media to encourage reading in school and at home

A. is the deputy headteacher at a primary academy school in South West England. The school initially decided to offer ebooks to pupils in Year 3 and 4, but later rolled out access to higher ability pupils in Year 2 and Years 5 and 6. The school wanted to offer more opportunities for children to read by supplementing the physical books available, in order to increase reading for enjoyment and to encourage children to talk to each other about their reading. The school knew that several children had poor or no access to wifi or tablets at home, so they put on homework clubs to allow give all pupils the opportunity to read using technology free of cost.

A. has been keen to ensure that families have felt included in the project: *"We've had a parents' evening so they could come in and use our wifi to get set up, a lot of them have smartphones that they can use even if they haven't got a computer. We also put the link to RM Books on our Facebook page - we have a lot of followers so they'll see that."* A. is also considering putting some 'how to' videos for reading ebooks on your games console on the school's Facebook page.

A. explained, *"It's worked really well for the children it's worked really well with - for example, in one of our Year 4 classes, one boy doesn't really like reading or writing, but he loves RM Books, he's all over it – because he loves computers. It's also worked really well in the classroom, so we've decided to put another 6 iPads in, which will allow them all to have much more access. When we started, we'd take the tablets we had out onto hammocks [to increase] the comfort, the enjoyment level."*

One of the keys to the success of the project has been to capitalise on older children's confidence around technology: *"One thing we did is have a 'Reading Elite' in each class, we give them a badge and they're trained to get children on to RM Books – that works really well. I can't manage it all myself, the children do it – it makes life so much easier. It works really well, they're really happy with it. The children have been key to getting teachers and parents subscribed to it. I've some Year 6 [pupils] who've had the technical ability to just get straight on with it; they have tried it out and let me know what they thought of it, and championed it."*

> **We had a 'Reading Elite' in each class, we give them a badge and they're trained to get children on to RM Books – it works really well**

Using ebooks to support less keen or confident readers in the school library setting

M. is a librarian at an East London secondary school and helps to manage a range of reading interventions with groups of pupils (including Accelerated Reader, corporate volunteer reading partners and reading buddies). The school started using the RM platform to provide additional support for a group of 30 pupils across Years 7 and 8 that they felt might benefit particularly from an opportunity to read on screen. They started their project only just within the study period, so were relatively new to using ebooks, but M. felt that they were already seeing great results.

> One of the girls is a very reluctant reader, and she can't take her eyes off it. We said, "Wow, she's reading!"

"They seem to really enjoy it," M said. *"One of the girls is a very reluctant reader - where other children might have read 40 books at this age, she'd read none, and she can't take her eyes off it [reading on screen]. She said: 'I like doing this, I hate reading books – I'd rather be doing this than holding a paper book'. She's using the dictionary, she's been shown how to change the backing and so on. We said, 'Wow, she's reading!'"*

M. asked the pupil, B, to join the interview. B. explained, *"I like reading now, it's more simple, it's easier to use – I read a lot more at home even. I'm more comfortable reading online, I'm not sure why. I read at home on my phone, my iPad, my brother's game console… I'm reading* Soul Shadows *right now, it's good. A lot more people should give it a try."*

> I like reading now – I read a lot more at home even… on my phone, my iPad, my brother's games console…

M. felt the 'cool' factor of technology may have been one of the reasons for this new enthusiasm for reading. *"…because it's online, and she's been picked out for the first group to try it, it makes it special."* M. also felt that reading on screen complemented Accelerated Reader: *"I'm trying to encourage them to go on their AR level, then you can kill two birds with one stone, they still like to do quizzes. When they finish the book they can go down onto a tab and take the quiz straight away."*

Using ebooks to engage girls with reading through increasing choice

J. is a teacher and computing coordinator at a primary school in West London. He explained: *"Our school uses a lot of technology and we're trying to get it embedded into our daily routine. When we heard about the study, we already had an RM Books account but hadn't really used it, and we decided we'd try it out with some of our girls. Going by our data it looked like they might benefit, specifically in Year 3, and we thought with RM Books hopefully they'd be requesting the books they wanted to read and our library would then be a bit more pupil-centric."*

"We started running our ebooks project with 56 pupils, and then opened it up into Year 4 and Year 6 too, so it became a kind of 'Girls' Reading' thing across KS2, then everyone got to choose a book. Next year we want to open it up to boys as well. I have a feeling that for the boys, in the same way as they love audio books, they are much more drawn to technology so that will be really interesting to see."

"At first it did take a while to learn the extra logins (with the nature of our school there are a lot of them!) but once the kids were shown how to do it, they were fine, they just find the books they want – that was kind of why I wanted it. Having gone online to look at the library now, the books are all borrowed so that's good – there's a girl who'd borrowed a book on paper and she also reads it at home online. We're keen to see some flipped learning, we're investing in a VLE, the parents are always asking about homework so the pupils will have reading they can do at home."

"I think it's been good for the lower attainers, it's been good for them to have someone work with them and help them have that choice. For the highers, it's really motivating, it really pushes them, and I mean they're already motivated but it's hard to have too many books for them, the really good readers, to choose from. There's a few in Year 6 who have really taken off with it, constantly have something on the go now."

> **It's been good for the lower attainers… as in intervention support. For the highers, it's really motivating…it's hard to have too many books for them to choose from**

Using ebooks to engage Pupil Premium pupils in reading for enjoyment

M. is Head of English at a secondary school in West Yorkshire. She explained: "*We wanted to trial ebooks with one form, half of whom were eligible for Pupil Premium, to see if it had impact, what impact it had, such as more engagement, making kids happier reading in the morning, it not being a chore… and with which types of students, and see where we went with that. We've paired them with an outstanding form tutor, he has all the iPads ready on the desk on a Tuesday and a Thursday, the big board up with all the new releases, the names of the kids if they've read a book. He's very committed, which I think is really important for next year so we've seen that exemplary, that outstanding practice.*

"One of the things that's paramount with this is that the IT must be in place. If it's not, it's such a pain.. [for schools new to ebooks] …best thing to do is get the class set up, have an admin list ready, and then look at all the features – otherwise the children are waiting to get where they want to be which loses momentum. Once it is set up, it's absolutely fine – bigger picture stuff RM Books is very easy to use."

> **It certainly made me know more about what's out there, in terms of looking at literacy from every angle – it doesn't always have to be paper-based**

"From what I can see, they are more engaged than paper-based reading but that is very soft data, I'm not the class teacher. We plan to roll ebooks out next year by involving half, or maybe the whole, year group as it's worked really well and the team of form tutors are really good. Also we might use the AR lessons with RM too. I think choice always inspires, particularly for teenagers – if you want to encourage that independence of thought."

Attainment data for this school showed that, over a project period of approximately five months, pupils eligible for Pupil Premium made an average of **14** months' progress in reading, whereas pupils not eligible for Pupil Premium made **11** months' progress.

Using ebooks as a school library resource

F. is a teacher and lead practitioner at a Stoke-on-Trent high school. The school does not have a paper library, and the local public library has also recently closed. The headteacher had heard of another local school that had made good progress with the RM system and had already used RM Unify[29], which offers easy access to RM Books, so it made sense to try the RM ebooks platform as a way to bring a library into the school. F. explained:

"Years 7 and 8 have iBook minis, and our objective was to use them alongside Accelerated Reader (AR) to try and bring chronological and reading ages more in line. We know that when pupils struggle to read this can cause problems later on, for example, some go on to struggle with maths exam papers once they get to Year 11 as they may not be able to comprehend the questions.

"We have been using the library book request system, so children can make their own choices. I've worked quite hard to foreground it on the VLE, for example I made an extra front page to highlight the Carnegie longlist, and I know there are some really nice titles about different sportspeople such as cricketers. The only fiddly thing was the passwords really, RM and AR were extra ones to learn, so at first there was a lot of clearing locked passwords but this became easier.

> **In Year 8 we've seen four pupils increase by 11 months, and one pupil in Year 7 went up by 2 years and 10 months…**

"Reading has been generally good, they have reading lesson time during form time and once a fortnight have reading homework. I would say I've noticed more children talking about reading, and for a handful of students we have seen a significant increase in their reading ages over a few months. For example in Year 8 we've seen four4 pupils increase by 11 months, three by 8 months and three by 7 months, and one pupil in Year 7 went up by 2 years and 10 months. Next year we may change things a bit based on this year, focusing more on pupils who start the furthest from their chronological age but encouraging all pupils to read widely anyway."

Using ebooks to support family reading

H. is the deputy headteacher, Nurture Manager and Year 3 teacher at a primary school in South East Wales. The school runs a Reading Cafe (pictured below) to allow parents and children to share reading time together, and this has been so successful that representatives from the Welsh Government have visited to observe the group in action.

The school uses tablets and smartphones to access the RM platform and they also run sessions in the local library for families without internet access at home. In the Reading Cafe, parents start with 30 minutes reading without their children before children join them for shared reading time.

H. explained: *"We started with children in Year 3, but children in Year 2 are also starting to take part. There are usually around eight to 10 parents and children present, but numbers can be as high as 20. The group also gets great support from corporate volunteers."*

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[29] A platform that helps schools to set up and manage data

> **We always practise reading an ebook at home the night before Reading Cafe. The extra reading on screen is good because it means there is just more reading happening. My daughter's reading confidence has increased.**

When we visited, one of the pairs we chatted to was a mum and daughter, B, who was reading a *Winnie the Witch* story on her tablet aloud, with mum helping if there was an unfamiliar word. Mum told me: "*We always practise reading an ebook at home the night before Reading Cafe. Sometimes we practise a slightly more challenging title together at home, and then share something a little easier or more fun when we come to the Cafe.*" B said: "*I like reading on the tablet because you can make the words bigger if you want to.*" Mum said she thought her daughter's reading confidence had increased since she has been coming to the Reading Cafe, and that she likes reading "*a bit more*" than she did before.

Using ebooks to increase independent reading

C. is literacy coordinator and English teacher at a grammar school in Manchester. She describes herself as "*incredibly passionate about literacy and implementing and experimenting with as many solutions as possible to bridge the gap between achievement and attainment*" and is very experienced in using the RM platform to motivate less engaged pupils in reading for enjoyment. She hoped that the fact that pupils would have their own account allowing instant access to ebooks, and wouldn't have to wait for a visit to the library, would encourage more independent reading in her pupil group, which focused particularly on less engaged readers and male pupils. At the end of the project, C told us:

> *So far, the students are loving it and are already reading more. … I'm happy to report that 23 of 24 pupils made progress, some rapid and others steady. It has also been vital in encouraging underachieving boys to develop a love of reading. The stigma of 'reading' has been removed and the pupils are actually sharing their experiences with their friends across the school and creating somewhat of a 'reading frenzy' which is fantastic!"*

Using an ebooks platform across a geographical cluster of schools

A large group of schools in South Lanarkshire joined the study towards the end of the study period, after Easter 2015. Despite having limited time to explore the impact of ebooks on their pupils, several schools reported positive impacts on reading attitudes and attainment. Feedback from a selection of schools in this cluster is shown below:

R. is a teacher in a grammar school in South Lanarkshire. The school planned to use ebooks as part of a competition challenging new pupils to read a target number of books that would stretch their normal reading habits. They also hoped that pupils and families would read together on a more regular basis. R told us:

> *There have been definite benefits to using RM books, such as the search facility: this has been very helpful in helping to match pupils up to books they would enjoy and some made good use of the app on their phones in school and at home.* [At the end of the project] ...*most of the 54 pupils involved, including some of the most reluctant readers, were actively reading at home... and a large percentage reached their target number of books, many exceeding 10.*

Attitudinal results from pupil surveys at this school were very positive, with the percentage of pupils that reported enjoying reading 'very much' increasing from **9.8%** in the pre-project surveys to **20.9%** post-project, while the percentage who said they didn't enjoy reading at all decreased from **13.7%** pre to **4.7%.** Reading frequency also increased, with the percentage of pupils that said they read daily increasing from **9.8%** to **20.9%.** Pupils also read for longer, with the percentage reading for up to an hour increasing from **7.8%** to **18.6%.** Following on from the success of this initial project, R. now plans to introduce the school's seniors to ebooks.

M. is Principal teacher at a primary school in South Lanarkshire. She described her project as follows:

> *Our group consisted of 20 pupils who were identified by their teachers as reluctant readers. Each child read individually for 15 minutes each day using an iPad. The children were enthusiastic and reminded their teachers when it was their turn to take part. The timetable was followed each school day from 11 May until 16 June.*

The school experienced several challenges relating to technology: *"Our only difficulties related to wifi and logging in… which sometimes took quite a long time. Also, the wifi signal would suddenly go down and all readers would then be unable to read until the signal reconnected. This could be quite frustrating."* However, M. noted that the reading attainment of many of the pupils had increased significantly over the project period, stating: *"Some of the results are quite impressive."*

Attainment data was available for 17 of the 20 pupils, and all but two made more progress than expected over the project period. On average the group made **8 months' progress in reading**; three pupils increased their reading level by **6** months, four by **9** months, one by **12** months, one by **15** months and one by **30** months (M. noted that this pupil in particular had also logged on at home to read).

Attitudinal data was also very positive, with the percentage of pupils reporting enjoying reading very much increasing from **10.0%** to **25.0%** over the course of the project, the percentage reading daily doubling from **15.0%** to **30.0%**, and the percentage reading for an hour or more increasing from **0.0%** to **15.0%**. In addition, the percentage of pupils that felt they were 'a reader' increased from **40.0%** in the pre-project surveys to **68.4%** in the post-project surveys.

K. is an English teacher at a high school in South Lanarkshire. The school offered a group of pupils aged 11 to 13 the opportunity to access ebooks at school just before the summer break, and then at home during the holiday, and surveyed reading attitudes before and after the holiday. K. concluded from usage records that pupils were more likely to read ebooks at school than at home, and explained that at school, pupils were able to access ebooks for private reading once a week in class for a 50-minute time slot, or for a 15-minute period four times a week.

As mentioned by another school in the cluster, technology presented some obstacles, however, a comparison of pre and post-project attitudinal surveys showed some positive impacts on reading enjoyment and time spent reading. For example, the percentage of pupils saying they enjoyed reading 'very much' increased from **9.6 %** to **18.3%**, and 21.6% reported reading for an hour or more on a device in the post-project surveys, compared with **8.1%** pre-project. Reading on paper for this length of time also increased from **5.6%** to **7.7%** post-project. The percentage of pupils that said they preferred ebooks increased from **35.7%** to **47.6%**, while the percentage preferring paper books remained stable (**21.4% pre**, **19.1%** post-project).

Several pupils shared what they liked about reading using technology as part of their online surveys. Comments included: "It is more enjoyable", "It makes it funner", "It just gives us a wider range of books", "If you finish a book it takes you two seconds to get another one on screen", "Because I have apps on my phone that I can read whatever I want on" and "It is easier to find what you want to read". However, some pupils still preferred to read on paper, commenting: "I like being able to hold the book and I have enjoyed them since I was young ", "I enjoy reading on paper better" and "It's less distracting".

A considerable number of pupils didn't mind what they read on, saying: "I like both and enjoy reading on paper or electronic devices", "Either way it doesn't bother me, they are just the same", "It doesn't really matter to me as long as it's something I'm enjoying reading" and "I don't mind what I read on as long as I can understand what I'm reading and I enjoy it."

I like both and enjoy reading on paper or electronic devices

Press and publicity

- **September 2014**: Presentation at the Children's Bookseller Conference on the literature review[30] and the study.
- **January 2015**: Interim findings published on the National Literacy Trust website,[31] highlighted in the National Literacy Trust enewsletter and on the National Literacy Trust Twitter feed[32]
- **March 2015:** Interim report provided for RM Books
- **June 2015:** Content on the subject of ebooks in school was provided for *Teach Secondary* article
- **July 2015:** Information about the literature review and study was presented at the UKLA conference
- **August 2015**: comments about reading on screen were included in a *Guardian Online* article[33]

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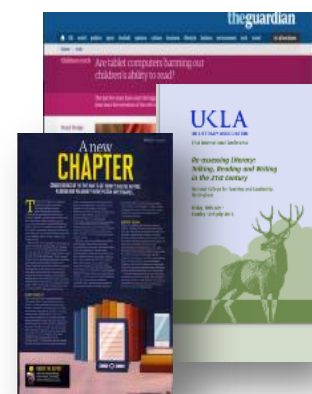
[30] Picton, I. (2014). The Impact of Ebooks on the Reading Motivation and Reading Skills of Children and Young People: A rapid literature review, London: National Literacy Trust
[31] c.60,000 – 100,000 visitors per month
[32] 34,000 followers
[33] http://www.theguardian.com/technology/2015/aug/24/tablets-apps-harm-help-children-read

Learning

As noted in 'School recruitment and retention' (p.10), several challenges occurred over the course of the study that affected the quantity and quality of the data received. Firstly, our intention was to involve around 100 schools in the study. We received more than 250 initial expressions of interest from schools, but as noted, unfortunately fewer than 100 schools responded to follow-up instructions relating to getting started with ebooks and surveying pupils. Where it was possible to establish reasons for the low response rate, the most frequently cited were budget restrictions, technology issues (e.g. limited access to hardware and wifi) and staff capacity.

A considerable number of schools did move to the next stage of the study, however, and we received pre-project attitudinal data from more than 1,000 pupils. A number of schools went on to withdraw at a later stage of the study period (again, most commonly citing developing or ongoing issues around capacity and technology). Furthermore, there was a period of several weeks in the middle of the study during which the RM Books app was unavailable due to delays with an update. This affected schools that were offering pupils access to the platform through the app rather than online. In addition, particularly for schools new to using this ebooks platform, getting pupils set up on the system often took longer than anticipated. These factors reduced the amount of time that schools had available to offer ebooks to pupils by either weeks or months, within the context of an already limited study period.

We were satisfied that enough schools and pupils remained on the study to allow a sufficient amount attitudinal and attainment data to be gathered, but in hindsight, it might have been beneficial if only schools known to have the technology and experience to start and run an ebooks project were included in the study, or, as an alternative, to have factored in a more realistic lead time for new schools to get set up when planning the study design and delivery schedule. A solution for further studies could be to involve only schools with recent experience of using ebooks, and staff members in place who have the knowledge and time needed to run a project without delay. This would help to improve the quality and quantity of data received, ensuring that it related to pupils given a reasonable level of exposure to ebooks.

One further consideration is the quality of titles available on the platform during the study period. Although there were many good-quality titles available for children with a range or reading interests and abilities on the RM Books platform throughout the study, thousands of additional titles by many popular and well-known authors from a major children's book publisher were added just as the study ended (later than had been anticipated). As many schools intended their ebooks project to encourage reading for enjoyment, and in particular to attract less keen and confident readers, it was unfortunate that this larger choice of better-known titles wasn't available within the study period. The disparity between the number of titles available electronically and on paper meant that pupils were often effectively comparing a smaller electronic library with a larger print library. The more limited choice may have had an impact on the reading motivation above and beyond that related to preference for either format. Certainly this was mentioned as a negative aspect of ebooks during ongoing contact with practitioners ("*Some students couldn't find books they wanted to read [they were not available on the RM platform]*") and in some focus group discussions ("*You can search for the books but quite often they're all borrowed...or you type them in and they're not there.")* The increased range of ebooks now available on the platform creates more of a 'level playing field' with the range available in print, which might also make further studies more representative.

Conclusion

Finding ways to help children to enjoy reading more, and motivating them to read more often, has the potential to address longstanding achievement gaps. Children and young people who enjoy reading, and read frequently, are known to be more likely to perform better academically. We know that a high proportion of children and young people enjoy reading using technology, and read on devices frequently in and out of school. We are grateful to have had the opportunity to explore the impact of access to a school-oriented ebooks platform on pupils' reading motivation and skills, particularly in relation to a variety of school settings and with different pupil groups.

As a first study of this comparatively new reading format, it has been extremely interesting to look at the many ways in which schools have offered access to ebooks with the pupils that they work with. Within the many different projects, attitudinal and attainment data appears to indicate that there may indeed be some positive impact in offering ebooks to particular pupils and pupil groups. Gender, age and social background consistently feature as influencing factors in children's literacy achievement; for example, girls generally outperform boys on reading assessments, and children from more advantaged backgrounds tend to outperform those from poorer families. Along with several individual pupils that practitioners told us found a new enthusiasm for reading using this format (in the words of one headteacher: *"…it works really well for the pupils it works really well with"*) data gathered across all schools in this study showed that reading using technology could be a particularly powerful tool in relation to increasing boys' reading motivation.

In addition, the subgroup of boys that did not enjoy reading at all were more likely to report more frequent reading and increased reading time outside school after being offered the chance to read using this ebooks platform. This would suggest that reading using technology may indeed be 'another tool in the toolbox' for schools keen to encourage all children to read for pleasure, but particularly those children that do not enjoy reading in paper form. For some of these pupils (such as B., mentioned in the practitioner interviews section) the impact can be dramatic. The increase in reading enjoyment and frequency over time shown in the pre and post-project surveys would also appear to indicate that positive impact was sustained over the course of the project, rather than the novelty of the new reading format 'wearing off' over time. However, with average project length being just a few months, it is not possible to say for how long the impact might be sustained beyond the life of the project. In addition, without sufficient control data it is not possible to determine how much impact related to the reading format, and how much to the pupils being part of a reading intervention more generally.

On this subject, it is important that the format is not seen as an intervention in itself; as with any reading intervention, many factors are involved in encouraging and supporting less keen or confident readers. Having a tempting range of good-quality titles available is clearly helpful, but the support of a confident and enthusiastic practitioner with the time and experience to help pupils to explore the format fully is invaluable. Practitioner contact indicated that schools with positive results were often those that provided pupils with high levels of support and encouragement alongside the opportunity to read on screen. A good example would be the school in West Yorkshire that described involving *"…an outstanding form tutor. He has all the iPads ready on the desk… the big board up with all the new releases, the names of the kids if they've read a book. He's very committed, which I think is really important …so we've seen that exemplary, that outstanding practice."*

Similar findings were highlighted in a recent OECD report looking at computer use in education, which concluded that: *"…schools and education systems are, on average, not ready to leverage the potential of technology."* [34] Andreas Schleicher, director of the OECD's Directorate of Education and Skills, felt that a more effective use of technology was called for, stating: *"Technology can amplify good teaching but it can't replace poor teaching."* He also noted: *"One of the most disappointing findings of the report is that the socioeconomic divide between students is not narrowed by technology, perhaps even amplified."*

However, another recent OECD report[35] noted that, as with this study, the gender divide did appear to be narrowed by technology, with boys performing better on computer-based than paper-based reading tests. While girls continue to do better in all reading tests, the most recent PISA scores show that: "On average, 15-year-old boys score 4 points higher on the computer-based PISA reading test than on the paper-based reading test. By contrast, 15 year-old girls perform 8 points lower in digital reading than in [the] paper-based reading test, on average." In addition, the gender gap in reading performance was found to be narrower in digital than in print reading for every country that participated in PISA in 2012. On average, girls outperformed boys by 38 points on the paper-based test (the equivalent of nearly one year of schooling) but by just 26 points on the computer-based test.

Researchers suggest that the poorer performance on paper-based tests and better performance on computer-based tests may be explained by boys' familiarity and comfort with computers and computer games, noting: "The more frequently students play one-player video games and collaborative online games, which boys tend to play more than girls, the worse their relative performance on paper-based tests." However, they also observed that: "In computer-based tests, the negative effects of video-gaming may be counterbalanced by its positive effects on students' ability to navigate through digital texts. And students who frequently play computer games will, necessarily, be more at ease – and may even prefer – taking a test on a computer." [36]

As the literacy world adapts to the transformation of reading options offered by ebooks, the choice of reading on paper or screen seems to be increasingly less of an 'either/or' situation for most readers in the age group covered in this study (8 to 16-year-olds), with an ever larger proportion of children and young people saying that they don't mind what they read on. It is of course very important to take into account concerns about the amount of time that children and young people spend in front of screens, however it is equally important to recognise some of the many potential positives of reading using technology for this age group. This is not just with regard to the high percentages that express a preference for reading this way, but also due to the practical ways in which technology can assist those that may struggle with reading, for example offering the option to increase font size and to change overlay colours. Many children and young people in surveys and focus groups named the ability to control the number and size of words on the screen to suit their own preference as the most important benefit of this new reading format.

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[34] *Students, Computers and Learning: Making the Connection*, PISA, OECD Publishing 2015 http://dx.doi.org/10.1787/9789264239555-en

[35] *Education at a Glance 2015: OECD Indicators*, OECD Publishing 2015 http://dx.doi.org/10.1787/eag-2015-en

[36] *The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence,* PISA, OECD Publishing 2015 http://dx.doi.org/10.1787/9789264229945-en

It is also important to recognise the increased reading opportunities that portable electronic devices may offer children and young people. At this time, the age groups of the pupils we've focused on for this study weren't particularly likely to own a dedicated ereader, however they were very likely to have other devices that they can use to access the RM online platform or app. Making ebooks available to pupils on their smartphones, tablets, Chromebooks and games consoles can be a practical way of overcoming some of the potential obstacles to reading, such as limited paper libraries and poor access to ereaders. In addition, offering children and young people the opportunity to use their screen time for reading may not only be a new way to access reading for some children and young people, but also a way of keeping reading relevant for many others, for example, those who are 'always' on devices such as smartphones and games consoles.

I have an app on my phone that I can read whatever I want on

I am always on my iPad so it is a good way of using it

Finally, alongside the potential benefits for pupils, benefits of including some ebooks in the school library for schools may include not only the expansion of the print library without the need for additional shelf space, but also the creation of a more bespoke stock. An ebook library may reflect children's popular requests and usage levels, as pupils can identify and ask for the titles that they most want to read, and conversely less popular titles identified by usage records simply need not be rented again. In addition, offering children more agency in their choice of reading is also known to be one of the most powerful ways to motivate them to read.[37] Several practitioners, recognising this, mentioned that the 'request' feature was one of the most positive benefits of using an ebooks platform.

We look forward to continuing to explore the readers that may benefit most from access to books in ebook format. In the meantime, we hope that this study has made some contribution to the body of research on the use of this relatively new reading format in UK schools, and that it may assist educationalists in making informed choices when considering the potential of ebooks to expand the reading opportunities of the pupils they work with.

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[37] Interesting Choice: The (relative) importance of choice and interest in reader engagement, National Literacy Trust (2008)