

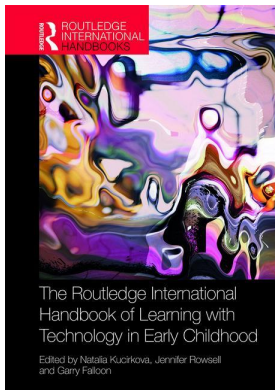
This article was downloaded by: 10.2.97.136

On: 28 Nov 2023

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



## **The Routledge International Handbook of Learning with Technology in Early Childhood**

Natalia Kucirkova, Jennifer Rowsell, Garry Falloon

### **Supporting children's learning at home through smartphone apps for parents**

Publication details

<https://test.routledgehandbooks.com/doi/10.4324/9781315143040-23>

Fiona Jelley, Kathy Sylva, Valeria Ortiz Villalobos

**Published online on: 12 Feb 2019**

**How to cite :-** Fiona Jelley, Kathy Sylva, Valeria Ortiz Villalobos. 12 Feb 2019, *Supporting children's learning at home through smartphone apps for parents from: The Routledge International Handbook of Learning with Technology in Early Childhood* Routledge

Accessed on: 28 Nov 2023

<https://test.routledgehandbooks.com/doi/10.4324/9781315143040-23>

**PLEASE SCROLL DOWN FOR DOCUMENT**

Full terms and conditions of use: <https://test.routledgehandbooks.com/legal-notices/terms>

This Document PDF may be used for research, teaching and private study purposes. Any substantial or systematic reproductions, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The publisher shall not be liable for an loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

# SUPPORTING CHILDREN'S LEARNING AT HOME THROUGH SMARTPHONE APPS FOR PARENTS

*Fiona Jelley, Kathy Sylva and Valeria Ortiz Villalobos*

## **Supporting children's learning at home through smartphone apps for parents**

This chapter begins with an exploration of the powerful means by which families can support their children's development. After a brief review of the literature, it focuses squarely on the development and use of two apps: EasyPeasy and Exploring Books Together (EBT). The apps are used as examples to delineate two different approaches by which smartphones can (1) lead to exciting parent-child play that stretches the child's imagination and concentration, and (2) be used for more 'instructional' support by parents of young readers when reading a school book at home. The first sends videos to parents to provide ideas for 'real-life' parent-child play (in the absence of the phone). The second provides in-the-moment support while listening to the child read at home (with the phone at hand).

### *The home learning environment*

The important contribution of the Home Learning Environment (HLE; Sylva et al., 2010) to children's development, learning, and academic achievement has been documented by a growing body of literature in the field of child development and education (e.g. Burgess et al., 2002; Sénéchal & LeFevre, 2002; LeFevre et al., 2009; Anders et al., 2012). Most widely studied has been the contribution of the HLE to children's early literacy and reading skills (e.g. De Jong & Leseman, 2001; Melhuish et al., 2008; Sénéchal & Young, 2008). Individual differences in the family HLE have been linked to differences in children's vocabulary and emergent literacy skills, such as letter and word identification, knowledge about the alphabet and print-conventions, and phonological awareness (e.g. Storch & Whitehurst, 2001; Burgess et al., 2002; Bracken & Fischel, 2008; Baroody & Diamond, 2012). However, the contribution of the HLE (and parental involvement more generally) is not limited to children's language and literacy development; it is also important for the development of numeracy as well as children's socio-emotional and self-regulation skills (Sammons et al., 2003; Mcwayne et al., 2004; Foster et al., 2005; LeFevre et al., 2009; El Nokali et al., 2010; Kleemans et al., 2012; Huntsinger et al., 2016; Rose et al., 2018).

Furthermore, the HLE has been shown to have a larger impact on children's development and educational attainment than other family factors such as family socioeconomic status

(SES), commonly measured as family income, parental education, and/or parental occupation (see Sylva et al., 2004; Gutman & Feinstein, 2007; Melhuish et al., 2008). However, it is now known that the HLE can act as the link between SES and children's school readiness and subsequent academic attainment (e.g. Davis-Kean, 2005; Foster et al., 2005; Dearing et al., 2006). Therefore, helping parents improve the quality of home learning support has become a vital component of preschool and school programmes, specific interventions, and government initiatives (e.g. Sure Start), especially for children from disadvantaged backgrounds (Hunt et al., 2011).

### ***Supporting parents of preschool children***

Supporting parents with their children's learning at home begins in the early years and continues through the school years. During the preschool years, parents can benefit from help in supporting their child to develop the skills that predict later success at school. The most important of these "school readiness skills" are language and early literacy skills, mathematical skills, and socio-emotional skills such as self-regulation.

'Literacy' programmes and interventions are mainly focused on developing children's oral language and emergent literacy skills such as phonological awareness. Some examples of family literacy programmes are Project EASE in the US (Jordan et al., 2000) and in England, the Making It REAL (Raising Early Achievement in Literacy) programme, originally developed at the University of Sheffield (Hannon et al., 1991; Nutbrown et al., 2005). Many interventions have been carried out across the world that feature shared reading and dialogic reading (Loningan et al., 1999; Hargrave & Sénéchal, 2000; Zevenbergen et al., 2003; Mol et al., 2008; Sénéchal et al., 2008; Huebner & Payne, 2010; Lever & Sénéchal, 2011) in which parent and child read a book together while the parent 'scaffolds' the child's growing competence at reading on their own.

A well-known programme in the UK providing parental support for children's development in the early years is the Peep Learning Together Programme. It helps parents engage with their children's learning through play activities involving games, songs, rhymes, and stories (Evangelou & Sylva, 2003). The programme supports five strands of learning, broadly based on the Early Years Foundation Stage curriculum in England: Personal, Social, and Emotional; Communication and Language; Early Literacy; Early Maths; and Health and Physical Development. The programme has a good evidence base (Evangelou et al., 2007) and is offered to families with children from birth to the year before school entry to help parents foster positive development in all areas.

### ***Supporting parents of school-age children***

Support offered to parents of school-age children often specifically targets the development of language and/or academic school skills such as reading. To support children's reading during the school years, parents can be taught strategies to use when listening to their child read aloud. Two examples of school-age interventions providing support to parents with their children's reading are the SPOKES (Supporting Parents on Kids' Education in School) programme in the UK (Sylva et al., 2008) and the "Words to Go" home literacy programme in the US (Reutzel et al., 2006).

SPOKES is a preventive programme aimed at tackling behaviour and literacy problems at the beginning of school (Sylva et al., 2008). The reading programme in Year 1 (5–6-year-olds) consists of a 10-week intervention designed to teach parents strategies to use while their child

reads with them at home (Sylva et al., 2008). Words to Go offers support to parents with their children's decoding skills. Parents are trained throughout the school year to support decoding in addition to reading aloud techniques. As part of the training, parents are provided with instructional material, such as reading books with scripted lessons to be carried out with children at home (Reutzel et al., 2006). Both programmes have been shown to be effective in improving children's reading (Reutzel et al., 2006; Sylva et al., 2008).

There are other home-based tutoring strategies for parents to provide support to children with identified reading problems. Parents are typically trained to deliver tutoring sessions to their children, which usually last between 15–20 minutes and are repeated up to five times a week (e.g. Powell-Smith et al., 2000; Persampieri et al., 2006; Gortmaker et al., 2007; Kupzy & Daly, 2017).

In the next section, the main modes that have traditionally been used for delivering parental support are summarised in terms of location (i.e. where the training takes place), and means and resources employed (e.g. face-to-face, telephone-based, printed manuals and guides).

### ***Traditional modes for delivering parental support***

Although the theoretical models, techniques, and strategies taught to parents may vary among programmes according to their different aims and targeted ages, the pedagogical resources and methods traditionally employed to train parents are often very similar.

The pedagogy for parent support depends on whether the training is provided in person or through resources that facilitate self-learning, such as instructional guides, videos, or reading material. Face-to-face training sessions are generally carried out at schools or centres and can take the form of one-to-one tutorials (e.g. Gortmaker et al., 2007) or parents' groups or workshops (e.g. Evangelou & Sylva, 2003; Jordan et al., 2000). Teaching methods used in these sessions include group discussions, modelling (by tutors or video support), role playing, practice time with feedback, instructional videos, and question and answer sessions (e.g. Powell-Smith et al., 2000; Sylva et al., 2008; Kupzy & Daly, 2017). These trainings are usually supported by printed material such as manuals, guides, children's reading books, and progress sheets that are given to parents to take home (e.g. Jordan et al., 2000; Evangelou & Sylva, 2003; Reutzel et al., 2006; Sylva et al., 2008).

Home-based training may include printed material, plus home visits and/or telephone calls (e.g. Hannon et al., 1991; Sylva et al., 2008). The length of the training varies according to the programme. Erion (2006) distinguished the following methodological features as quality indicators: training length, availability of written instructions, modelling of treatment, supervised practice, availability of consultation, and monitoring.

### ***Digital media: a new platform to support parents***

Due to the increasing use of technological devices such as smartphones, tablets, and computers by people of all ages (Gray et al., 2017), a new platform for providing support to parents has gained popularity: *technology-based support*. This type of support does not require face-to-face interaction and therefore no specific physical location is required. Digital media offers parents access to mobile apps to engage their children in learning activities (e.g. Vroom, Learning Potential, Bubl Draw, Cookie Next Door), websites providing information, educational resources, and parenting advice on various topics such as literacy (e.g. National Literacy Trust, Reading Rockets, The Oxford Owl), and educational television shows (e.g. Sesame Street, CBeebies, Dora the Explorer).

A number of technology-based programmes have been developed to provide parental support to preschool and school children. READY4K! is a text messaging programme implemented in the US which aims to support parents of preschoolers (4-year-olds) with their children's literacy, mathematics, and socio-emotional development (York & Loeb, 2014). The programme consists of sending weekly text messages over an 8-month period to parents suggesting short, simple activities related to early learning skills to engage in with their children at home. Messages are sent over a period of eight months. A randomised controlled trial (RCT) evaluating the effectiveness of the intervention showed that after taking part in the intervention, parents from the treatment group (receiving the messages) engaged more frequently in home literacy activities with their children than parents from the control group ( $d = .22$  to  $.34$  for a range of literacy outcomes), and were more often involved with the school than parents from the control group ( $d = .13$  to  $.19$  for a range of types of involvement). Furthermore, the increased parental involvement was related to children's literacy gains ( $d = .21$  for alphabet knowledge and  $.34$  for letter recognition; York & Loeb, 2014).

Following a similar design, Kraft and Monti-Nussbaum (2017) conducted a field experiment to evaluate whether sending text messages to parents over the summer could reduce the commonly found "summer reading loss" in which children's reading achievement declines during the summer holidays (Kraft & Monti-Nussbaum, 2017). Text messages contained ideas for specific literacy activities for parents and children to do at home together, and information about the relevance of those activities for children's reading. The results showed positive effects for third and fourth graders on two reading comprehension measures ( $d = .21$  and  $.29$  respectively) but not for first and second graders (Kraft & Monti-Nussbaum, 2017).

Another example of a technology-based intervention fostering children's literacy development is Parents And Children Together (PACT; Mayer et al., 2015). The intervention was aimed at parents of 3–5-year-old children in the US and aimed to increase the amount of time parents read to their children at home using a reading app. The app contained books in English and Spanish, and was accessed on a tablet lent to the participating families for a 6-week period. The intervention made use of behavioural strategies to promote app use among parents. At the beginning of each week, parents were asked to set a goal of how much time they aimed to spend reading to their child (commitment), and if their goal was achieved by the end of the week, they would receive a text message congratulating them (social incentive). Finally, reminders to get involved with reading were sent to parents weekly via text messages. An RCT demonstrated that parents from the treatment group (app + behavioural strategies) read on average 88.3 minutes more than parents in the control group (app only) over the 6-week period ( $d = .92$ ; Mayer et al., 2015).

Interventions aimed to enhance children's socio-emotional development have also included technology devices as the main mode for delivering parental support. Infant-Net is an internet-based adaptation of the Play and Learning Strategies programme (Landry & Smith, 1996) focused on increasing sensitive and responsive parenting and improving child social-emotional behaviour. It is targeted to low-income families and includes parental skills instruction and coaching via online training videos for six months (Baggett et al., 2010). An RCT comparing Infant-Net with basic online parenting resources revealed that children in the treatment group had a greater increase in infant functioning than children in the control group ( $d = .69$ ; Baggett et al., 2010).

From reviewing these studies, a number of conclusions can be drawn. First, the limited literature available on evaluations of technology-based interventions is only recent (mainly from the last 5 years), and comes principally from the United States. Second, technology was mostly used as a means to provide information and remind/encourage parents to become involved with their

children's learning, and not as a resource itself to promote 'joint media engagement' between parents and children. Finally, results from the interventions described in this section suggest that internet- and smartphone-based interventions can be effective in implementing parenting programmes and can reach a wider range of participants at lower cost compared with traditional modes.

In the following sections, two apps developed to support parents with their children's learning at home through play and reading activities are described.

### **EasyPeasy app**

This app for parents of preschool children provides examples of innovative and fun ways parents and children can play together in a way that should promote children's self-regulation, concentration, perseverance, and listening.

The examples consist of a number of video clips of games modelled by real families. Videos are about 1–3 minutes long and include brief text instructions. The app also includes snippets of information on child development and tips on how to interact during the games. Parents are initially invited to access the app through a personalised text message from their child's preschool practitioner or teacher. Once they join, they are able to explore a bank of videos from a personal dashboard and communicate with teachers or practitioners as well as other parents using the app. EasyPeasy sends reminders, encouragement, and tailored prompts to parents to promote regular use and create positive play habits at home. The content of the videos and information provided is aligned with the UK Early Years Foundation Stage (EYFS; Department for Education, 2017) curriculum.

### ***EasyPeasy evaluation***

EasyPeasy was evaluated by a team at the University of Oxford in two small-scale studies (Jelley et al., 2016; Jelley & Sylva, 2018). They studied its use by families living in disadvantaged communities in two English local authorities. In one area, Bournemouth (a coastal town in the UK), an individual-level RCT was carried out in which half the parents were given access to the app for 18 weeks while the remaining families were on a waiting list to receive the app when the trial was over. Staff in the children's centres from which the families were recruited coordinated the delivery of the games via their dashboard, but didn't play a role in face-to-face interaction with the families. In the second trial, conducted in Newham (an East London borough), families were randomised at the centre level (cluster-randomised). Each children's centre had a 'pod coordinator', a member of centre staff, who not only encouraged parents to use the app, but also held face-to-face sessions to demonstrate the games to families. The two evaluations had different designs but led to very similar conclusions about the benefits of parental use of the app on children's development.

In Bournemouth, a two-armed RCT was carried out in eight children's centres. A total of 144 families with a child aged 2–6 years were recruited and individually randomised to intervention or waiting list control group. Parents completed pre- and post-test measures on parenting self-efficacy and parenting stress, and rated their child's self-regulation. Parents in the intervention group had access to the app for 18 weeks. At post-test, after controlling for pre-test, child's age and gender, and the children's centre, there were significant differences in favour of the intervention group on parent-reported child cognitive self-regulation (Hedges'  $g = .44$ ) and parents' self-efficacy regarding discipline and boundaries ( $g = .51$ ) (Jelley et al., 2016).

In Newham, the effects of EasyPeasy on parents and children were found to be very similar. A cluster design was adopted in this site, which allowed for recruitment to the intervention to

include all the families in a centre (in contrast to Bournemouth in which the intervention and control families came from the same centre). Eight children's centres were involved in the trial and recruited a total of 302 eligible families. The centres were then randomised to intervention or matched control group. Parents completed the same measures as described above, that is, rating their child's self-regulation and their own parenting self-efficacy and parenting stress. Following examination of potential clustering effects, analyses showed that the intervention group had significantly higher scores than the control group on two of the measures: parent-reported children's cognitive self-regulation ( $g = .35$ ) and parental sense of control ( $g = .26$ ) (Jelley & Sylva, 2018).

### ***Parents' experiences using EasyPeasy***

As part of EasyPeasy's work with families, parents posted comments in the app itself. The following anonymised comments were taken from an internal EasyPeasy report (Li, 2018), and demonstrate that the app was useful for parents and children, particularly in four different aspects: (1) building and strengthening relationships; (2) fostering parenting skills; (3) building children's developmental skills and knowledge; and (4) encouraging parents' and children's engagement in enjoyable educational activities.

### ***Building and strengthening relationships***

Since the games are designed to be played by parents and children together, using the app provides opportunities for families to spend time together doing fun activities, which in turn can encourage positive parent-child interactions and help create stronger bonds. As one parent said, "*This was a great tool for bonding with my son from an early age (. . .) My son at 1 would shout if I did it unacceptably. I recommend this as it really does build and strengthen bonds*". Another example of the potential of the app for getting families together is seen in the following quote: "*My little boy got the whole family involved in this one (. . .) He even roped in daddy on the guitar and mummy on keyboard and his sister on ukulele, fun game, will be playing again*". The app games were a tool not only for sharing with members of the immediate family but also with members of the extended family (e.g. "*She's taught her cousins how to play and uses every opportunity to play this when she can*"; "*Loves doing this at grandma's as she loves laughing at grandma's response to the noise metal spoons make in colanders*"), and even with friends. As one of the parents stated, the games were useful not only for families to interact with their children but also for children to interact with adults and peers in general, "*It helped X interact with people*".

Furthermore, the games seemed to enhance parent-child communication. For example, as one mother expressed, "*This was really good, my daughter talked about what makes her angry and sad (. . .) But she said she gets better quickly if you leave her alone for a little bit. Which is very good to know*". Similarly, another parent referring to the same game said, "*(. . .) we used and learn new vocabulary, so surprised how well my daughter can read emotions, much better than myself*". Thus, playing the games appeared to be revealing for some parents, who learnt new things about their children by playing and communicating with them, which in turns leads to a better understanding of each other, and ultimately to a stronger parent-child relationship.

### ***Fostering parenting skills***

The games appeared to be a great context for parents to make use of positive parenting skills such as giving praise (e.g. "*I've tried this with my goddaughter she loved the challenge (. . .) I gave her*

lots of positive encouragement and praise as we played the game”) or allowing the child to take the lead (e.g. “We made musical gingerbread men (. . .). Really successful (. . .) giving them leadership was really appreciated I think. Great idea for building confidence”). It also provided parents with new ideas to teach children about different matters and so develop new parenting skills. For example, one parent found the game of organising the laundry clothes together as an opportunity to discuss an important matter, “My daughter loves putting the washing into the machine & the detergent & I use it as an opportunity to discuss safety. She understands that we only touch these things together & never alone. She also feels empowered through helping”. Another parent found the same activity very useful for another purpose, “It’s so simple and such a good idea to explain to them about why and how we do things but in the hustle and bustle of family life and trying to get things done I sometimes don’t do that – so it has been a good prompt for me to do that!”. Some other examples showing parents’ new skills include supporting vocabulary development (e.g. “I’ve made a role play with the sock to try and encourage him to say the correct vocabulary”), and explaining the meaning of time (e.g. “What a fantastic idea to explain your child the meaning of one minute!”).

### **Building children’s skills and knowledge**

Among the parents’ comments, multiple examples were found referring to children’s acquisition of new skills and knowledge through the games. This is not surprising since the main aim of EasyPeasy is to foster children’s skills, especially self-regulation, concentration, persistence, and listening.

Sorting objects according to specific characteristics, such as colour, constitutes a good example of a skill fostered by the games (e.g. “He picks up one ball at a time, call out its colour, then place it on its respective colour pile”; “My daughter knew exactly what to do here. She helps me regularly sorting her own and her baby sister’s clothes into different piles and switching on the machine”). One child even went further and created a new classification for sorting the clothes (other than colour suggested by the game), “when we started to put the clothes into the coloured and white piles she started doing really well and got it right most of the time. But then she realised that my clothes and her clothes were mostly white (light coloured) and that Daddy and her Brothers clothes were mostly dark and she switched her piles into the ‘girls pile and boys pile’”. In these examples children are not only developing the ability to classify objects in a flexible way, but also learning about colours and expanding their vocabulary.

Several games targeted children’s listening and imitation skills. Playing the games was good practice for children to get better in these skills. For example, one parent commented, “She even began tapping out a short pattern for dad to copy on the pots and pans. Noisy but great to encourage keen listening skills”. It also fosters concentration since children have to pay attention in order to be able to imitate either a sound or an action (e.g. “Did this with my daughter & she copies really well & understands the difference in speeds & volume. She listens well & watched intently to copy”; “(. . .)when I described what I was doing my little one managed to copy without seeing me every time!”).

Parents also reported their children becoming more patient (e.g. waiting for 4 minutes to eat a strawberry instead of 1 minute as suggested by the game), and developing prosocial behaviours such as sharing and taking turns (e.g. “(. . .) I was surprised that she quickly wanted to share leading, taking turns. I expected her to want to be the leader”; “Last night he played pass with his father using his favourite toy (the London bus) that he never shares with anyone!”).

### **Encouraging parents’ and children’s engagement in enjoyable educational activities**

Parents’ shared experiences of playing the different games showed that both parents and children enjoyed the time they spent together (e.g. “Wow! I can’t believe how much fun this was as it developed



*and how clever my little girl actually is*”; “*This activity is X’s favourite so much so that she plays it with her siblings and even on her own. The smile on her face when she finds each treasure is so heart-warming and can see the look of success at the end that she tells everyone in the house*”; “*Me and my son loved this game*”). Children really engaged with the games and were motivated to keep playing, some families even extended the games to make them more challenging (e.g. “(. . .) *he found 1 minute easy to wait. We tried 2 mins, he distracted himself by counting and singing. He then asked to do 4 minutes, that was really hard for him*”), or to make it more interesting for the child (e.g. “*We’ve adjusted the game to what he enjoys – adding 100 multicoloured playpen balls in the bathtub when he takes his bath*”). Children’s motivation to get other people involved in playing the games also demonstrates their enjoyment and engagement with the games. Finally, the large number of comments posted by parents evidenced their motivation to keep playing and extending the games.

These findings extend those from the randomised controlled trials described in the previous section by including parents’ experiences playing the games and perceptions about the usefulness of the app. The findings shed light on the mechanisms through which the app is able to foster children’s development and suggest new possible outcomes to be evaluated in future studies.

### Exploring Books Together (EBT) app

Although a large number of apps intended for children’s use are available, very few offer exclusive parental instruction on how to listen to and support their child reading books at home. Exploring Books Together (EBT) is a prototype mobile app developed at the University of Oxford to support parents with their child’s reading of school books at home, targeting Reception (age 5), Year 1, and Year 2 children and their parents. It provided guidance for parental support of children’s reading of specific school books sent home by the teacher.

In order to promote children’s reading at home, children in the UK take a book home each day to read with their parents. Parents are asked to read the book (or part of it) with their child, complete a reading record/log reporting the child’s progress as well as any relevant comment, and return it to the school teacher. However, this activity is frequently perceived by busy parents, or those who are reluctant readers themselves, as a challenging activity. Parents do not necessarily do it every day, they are often not sure how to use the reading record or what they are supposed to do to help their child, and sometimes the lack of motivation and confidence in their role can affect the reading task. EBT was developed in an effort to transform this frequently challenging task into a more motivating, educational, and exciting activity for both children and parents by providing a new platform (mobile app) to support parents’ interactions with their children when reading school books together. The EBT app aimed to support parents by creating an interactive interface in which reading guidance could be directly linked to the content on specific pages of school books.

The app included two main elements: (1) guidance on what the parent might say or do on each page of the book, and (2) a reading record/communication link with the child’s teacher. The guidance was tailored to named books sent home with the child. During a reading session, the child read a copy of the book (printed or eBook), while the parent followed the reading page by page with the app on their mobile phone. Prompts related to the book appeared on the mobile screen with guidance to scaffold the child’s learning. Parents could choose the intensity of support desired by selecting how many ‘tips’ were required during the reading session (i.e. ‘Just a few’, ‘A few more’, or ‘Quite a lot’).

The tips consisted of a variety of features that the parent could choose to use during the reading session. The features included: new words (for pointing out potentially tricky or unfamiliar words); audio cues (to listen to certain words read aloud); questions related to understanding

(suggested questions about the plot); talking points (suggested themes for initiating discussions); and follow-up activities (suggestions of fun activities to do after reading the book). The reading record allowed the parent to tick whether the child had read on a particular day and which pages. Further multiple choice questions about the reading session were optional for the parent to answer. These questions included the duration of the session, whether the child enjoyed the book, how easy the book was for the child, what the child was able to do (e.g. sound out and blend words, understand the story), and the option to add a comment.

### ***Field-test study***

A research team at the University of Oxford led a field-test study of the prototype EBT app. The aim of this exploratory study was to identify the potential benefits (or drawbacks) of using the app to (1) enhance parents' ability to support their children's reading (i.e. planning and motivation for reading, confidence, and skills); (2) engage children with reading; and (3) facilitate home-school communication.

This qualitative study included 32 parents of children in Reception, Year 1, or Year 2 of primary schools in Oxfordshire. A total of six schools participated in the study. Parents ranged in terms of socioeconomic status and language background. However, the majority were native English speakers or had fluent English proficiency. Data were collected through a one-to-one semi-structured interview carried out with each of the participating parents on the telephone. To start using the app, parents were provided with a link to open it in their mobile device's browser, an instruction card, and a copy of the relevant print book for their child to read.

Results of the field-test study showed that parents' perceptions of their experiences using the app were mostly positive. The app appeared to be helpful, especially for providing resources (such as prompts, audio cues, discussion points) to transform a regular reading session (mainly focused on reading the text in the book) into a longer, richer, and more enjoyable learning experience. For example, one of the parents expressed, "*I don't normally ask questions and I was so surprised that he could talk about the story. We were so much more engaged with the reading*".

Although some parents already felt very confident in their ability to support their child, they recognised the app's potential to support parents who "*struggle to know what to do*", who are less experienced in reading or are non-native English speakers, and parents who find it difficult to engage their child with reading books. Interestingly, three parents whose children had attention difficulties or special needs found the app particularly helpful and reported that it "*changed their reading experiences*".

In the following sections, the main findings regarding the capability of the app to enhance (1) parents' ability to support their children's reading; (2) children's engagement with reading; and (3) home-school communication are discussed.

### ***Capacity to support children's reading***

The app included two features involving prompts: 'Understanding questions' (specific questions related to features in the story) and 'Talking points' (suggested points of discussion related to the story). These two features seemed to be helpful for parents, particularly for discussing and extending the reading sessions, as one of the parents stated, "*It made us talk for longer about the book which was really helpful*".

Furthermore, parents found it useful in identifying skills and potential areas of improvement in their children (e.g. "*Really good to have the questions to prompt me to check X does understand what he's reading, whereas I might just have read the book and not followed things up*"), or as another parent

said, it was helpful “to consolidate his knowledge”. For some parents it was both revealing and satisfying to discover what their children could and couldn’t do (e.g. “He hadn’t read between the lines so it was good to discover this”; “When I asked the questions he knew what he’d read”).

Supporting children’s phonics skills can be challenging for some parents. The ‘Audio cues’ feature of the app (words read aloud) was reported to be a useful tool in this respect, for example, for checking the pronunciation of difficult words. It also seemed to help in supporting non-native speaker parents who struggled with pronunciation of some words. Moreover, highlighting words in the app inspired a few parents to do extra, spontaneous activities such as word games (e.g. looking for words with the same number of syllables) or engage in deeper discussions about particular themes in the book.

Finally, one of the aims of the app was to help parents develop confidence in their abilities to support their children’s reading. Although most of the parents expressed feeling quite confident supporting their children, for many parents, using the app reinforced their strategies and confidence by confirming they were on the right track (e.g. “We do a lot of the things anyway, it was nice to see that this was good to do”; “You always feel better if you know you’re doing the right thing”).

### **Children’s engagement with reading**

According to the parents, children’s increased engagement with reading was demonstrated by the amount of time they spent reading the book (with the app) together, which was longer than normal (e.g. “He’s one of the youngest in his year [and often struggles to engage for a long time], but with this he was so engaged . . . normally after 5 minutes he wants to stop”; “More in-depth [experience] and engaged much more with the book than normal”). It seemed that the app worked well to engage children who were not ordinarily keen readers. Children’s engagement was also demonstrated by their enjoyment of the reading sessions (e.g. “She was engrossed with the book”; “I don’t normally ask questions and I was so surprised that he could talk about the story and we were so much more engaged with the reading”).

### **Home-school communication**

The traditional reading record is a log book that the child brings home from school along with a reading book. Parents are asked to fill it in with observations regarding any reading that happens at home. The EBT app included a reading record and communication feature that extended the traditional model by gathering more specific information about the child’s frequency of reading and their progress, and of course, by being an electronic means of communication. Parents considered the electronic reading record a valuable tool and a promising means to enhance home-school communication (e.g. “Online or digital reading record would be fantastic”). The majority (18 parents) agreed that they would be more inclined to complete an electronic record than a printed one.

Most of the parents found the electronic reading record a potentially useful resource for three main reasons. First, it was easy to use, and was quicker and more convenient than a paper one (e.g. “It’s open and there in your hand, it’s so convenient – I’d definitely use the reading record more if it was on an app”). The ease of use of the reading record could result in more immediate feedback on the reading session, minimising the chance of forgetting key points, which some parents reported to be an issue.

Second, including prompts in the reading record made it easier to complete, as some parents expressed feeling confused about exactly what they should share in the traditional reading record (e.g. “It was good that it asked specific questions – I’m not always sure what type of things to

write”; “I struggle to know what or how much to include and know what the teachers are doing too”). Third, its potential to enhance home–school communication made it a very appealing app feature (e.g. “I really like having dialogue from school”; “This would be great and useful to see the school dialogue”).

Lastly, some parents suggested extending the electronic reading record by (1) allowing other family members, such as grandparents, to share their feedback, (2) including children’s comments, (3) showing progress over time, for example by keeping track of books read, and (4) giving children rewards or incentives for goals achieved.

### **Future directions for EBT**

Although the majority of parents found the app useful and enjoyed using it to read with their child, for a few parents using the app was more of a hindrance than a help, and for others, it just didn’t make any difference. Those who thought it didn’t make any difference said it was because they already did what the app suggested (e.g. “I wasn’t being provided with anything extra or things I wouldn’t have ordinarily done”). Thus, motivated and skilled parents pose a new challenge for the app developers on how to offer them support that goes beyond what they normally do.

A few parents perceived the app to be more of a hindrance. This was mainly because they felt it was a distraction for the child (e.g. “Using the app was distracting for my son – he was more interested in the app than the book”) or that it was too difficult to keep track of the book and the app simultaneously, which made them feel somehow ‘disjointed’ with the child (e.g. “It didn’t engage me with his reading as it felt like we were doing separate things which was frustrating and put me off”). However, strategies could be employed to solve this, for example, one of the parents showed the child the app before starting to read so it didn’t disrupt the reading.

Despite the few negative experiences, the overall perception of the usefulness of the app was positive. For the majority of parents, using the app enhanced their reading sessions. It encouraged many parents to go beyond the text and engaged both children and parents in deeper discussions related to the book, and even in extended activities that were directly triggered by the app prompts. Furthermore, the app appeared to help increase children’s interest and concentration.

This qualitative study shows promising results for the use of apps to support parents with their children’s reading at home. Parents’ participation in the study demonstrated a willingness to incorporate technology into their children’s learning and an openness to new alternatives to what has been done traditionally. However, parents’ positions regarding technology were paradoxical. While some parents recognised the major role of technology and its potential benefits (e.g. “Technology will be a big part of his life so supporting him is so important”), others were worried about the amount of time parents and children are currently exposed to technology (“Parents spend too long already looking at their phones”; “I like to limit how much technology use my child has”).

Finally, in order to achieve the goals any learning device has, its purposes and instructions on how to use it must be clear for the users. Furthermore, positive results are only possible to the extent that parents are involved and committed to using the devices. As one parent stated when referring to the reading record, “It would be fantastic to have this on an app. However, it’s only as good as the people involved, if they take the time to leave an entry”.

### **Conclusion**

With widespread access to the internet, inviting and exciting interfaces, and user-friendly designs, smartphone apps offer a practical tool for parents to receive support with their children’s learning – at a time and place most convenient for them. This seems especially true for

today's 'busy parent' for whom face-to-face workshops can be difficult to schedule, or the 'shy parent' who finds group meetings challenging. Moreover, the type of app support illustrated in this chapter is the kind that encourages parents' and children's joint engagement in fun learning activities, rather than the child's (or parents') own engagement in 'screen time'. This is important since it is through rich adult-child interactions and parental scaffolding that change is most likely to be triggered. Although more research is needed, results from the EasyPeasy evaluation, as well as parents' experiences using both apps, demonstrate the potential of well-designed smartphone apps to foster children's skills. Therefore, we argue that technological resources can serve educational purposes and enhance children's learning through enjoyable experiences with parents at home.

### Acknowledgements

We are grateful to the Sutton Trust who supported the evaluation of the EasyPeasy parent app, and also Character Counts who made the parents' views on their use of the app at home with their children available. Drs. Arjette Karemaker and Charlotte Clancy contributed to the interview study of Exploring Books Together and we are grateful for their insights. A big vote of thanks must go to the many parents who used the apps to extend their children's learning through just having fun!

### References

- Anders, Y., Rossbach, H.G., Weinert, S., Ebert, S., Kuger, S., Lehl, S. and von Maurice, J. (2012) Home and preschool learning environments and their relations to the development of early numeracy skills. *Early Childhood Research Quarterly* 27 (2), 231–244.
- Baggett, K.M., Davis, B., Feil, E.G., Sheeber, L.L., Landry, S.H., Carta, J.J. and Leve, C. (2010) Technologies for expanding the reach of evidence-based interventions: Preliminary results for promoting social-emotional development in early childhood. *Topics in Early Childhood Special Education* 29 (4), 226–238.
- Baroody, A.E. and Diamond, K.E. (2012) Links among home literacy environment, literacy interest, and emergent literacy skills in preschoolers at risk for reading difficulties. *Topics in Early Childhood Special Education* 32 (2), 78–87.
- Bracken, S.S. and Fischel, J.E. (2008) Family reading behaviour and early literacy skills in preschool children from low-income backgrounds. *Early Education and Development* 19 (1), 45–67.
- Burgess, S., Hecht, S. and Lonigan, C. (2002) Relations of the home literacy environment (HLE) to the development of reading-related abilities: A one-year longitudinal study. *Reading Research Quarterly* 37 (4), 408–426.
- Davis-Kean, P.E. (2005) The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology* 19 (2), 294–304.
- Dearing, E., Kreider, H., Simpkins, S. and Weiss, H.B. (2006) Family involvement in school and low-income children's literacy: Longitudinal associations between and within families. *Journal of Educational Psychology* 98 (4), 653–664.
- De Jong, P.F. and Leseman, P.P. (2001) Lasting effects of home literacy on reading achievement in school. *Journal of School Psychology* 39 (5), 389–414.
- Department for Education. (2017) *Statutory framework for the early years foundation stage*. London: Department for Education.
- El Nokali, N.E., Bachman, H.J. and Votruba-Drzal, E. (2010) Parent involvement and children's academic and social development in elementary school. *Child Development* 81 (3), 988–1005.
- Erion, J. (2006) Parent tutoring: A meta-analysis. *Education and Treatment of Children* 29 (1), 79–106.
- Evangelou, M., Brooks, G. and Smith, S. (2007) The Birth to School Study: Evidence on the effectiveness of PEEP, an early intervention for children at risk of educational under-achievement. *Oxford Review of Education* 33 (5), 581–609.

- Evangelou, M. and Sylva, K. (2003) *The effects of the Peers Early Education Partnership (PEEP) on children's developmental progress*. Department for Education and Skills Research Brief No. RB489.
- Foster, M.A., Lambert, R., Abbott-shim, M., Mccarty, F. and Franze, S. (2005) A model of home learning environment and social risk factors in relation to children's emergent literacy and social outcomes. *Early Childhood Research Quarterly* 20, 13–36.
- Gortmaker, V.J., Daly, E.J., McCurdy, M., Persampieri, M.J. and Hergenrader, M. (2007) Improving reading outcomes for children with learning disabilities: Using brief experimental analysis to develop parent-tutoring interventions. *Journal of Applied Behavior Analysis* 40 (2), 203–221.
- Gray, C., Dunn, J., Moffett, P. and Mitchell, D. (2017) *Mobile devices in Early Learning*. Research Report Stranmillis University College. Retrieved October 02, 2017 from [www.stran.ac.uk/media/media,756133,en.pdf](http://www.stran.ac.uk/media/media,756133,en.pdf).
- Gutman, L.M. and Feinstein, L. (2007) *Parenting behaviours and children's development from infancy to early childhood: Changes, continuities, and contributions*. Centre for Research on the Wider Benefits of Learning Research Report No. 22. Retrieved 18 November 2018, from <http://discovery.ucl.ac.uk/10005976/1/Morrison2006Parenting.pdf>
- Hannon, P., Weinberger, J. and Nutbrown, C. (1991) A study of work with parents to promote early literacy development, *Research Papers in Education* 6 (2), 77–97.
- Hargrave, A. and Sénéchal, M. (2000) A book reading intervention with preschool children who have limited vocabularies: The benefits of regular reading and dialogic reading. *Early Childhood Research Quarterly* 15 (1), 75–90.
- Huebner, C.E. and Payne, K. (2010) Home support for emergent literacy: Follow-up of a community-based implementation of dialogic reading. *Journal of Applied Developmental Psychology* 31 (3), 195–201.
- Hunt, S., Virgo, S., Klett-Davies, M., Page, A. and Apps, J. (2011) *Provider influence on the early home learning environment (EHLE)*. Department for Education Research Report DFE-RR142.
- Huntsinger, C.S., Jose, P.E. and Luo, Z. (2016) Parental facilitation of early mathematics and reading skills and knowledge through encouragement of home-based activities. *Early Childhood Research Quarterly* 37, 1–15.
- Jelley, F., Sylva, K. and Karemaker, A. (2016) *EasyPeasy parenting app: Findings from an efficacy trial on parent engagement and school readiness skills*. London: The Sutton Trust.
- Jelley, F. and Sylva, K. (2018) *EasyPeasy evaluation in Newham: Findings from the Sutton Trust Parental Engagement Fund (PEF) project*. London: The Sutton Trust.
- Jordan, G.E., Snow, C.E. and Porche, M.V. (2000) Project EASE: The effect of a family literacy project on kindergarten students' early literacy skills. *Reading Research Quarterly* 35 (4), 524–546.
- Kleemans, T., Peeters, M., Segers, E. and Verhoeven, L. (2012) Child and home predictors of early numeracy skills in kindergarten. *Early Childhood Research Quarterly* 27 (3), 471–477.
- Kraft, M.A. and Monti-Nussbaum, M. (2017) Can schools enable parents to prevent summer learning loss? A text-messaging field experiment to promote literacy skills. *The ANNALS of the American Academy of Political and Social Science* 674 (1), 85–112.
- Kupzy, S.S. and Daly, E.J. (2017) Teachers engaging parents as reading tutors. *Contemporary School Psychology* 21 (2), 140–151.
- Landry, S. and Smith, K. (1996) *Playing and learning strategies – I*. Houston, TX: University of Texas – Houston Health Science Center.
- LeFevre, J., Skwarchuk, S., Smith-Chant, B., Fast, L., Kamawar, D. and Bisanz, J. (2009) Home numeracy experiences and children's math performance in the early school years. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement* 41 (2), 55.
- Lever, R. and Sénéchal, M. (2011) Discussing stories: On how a dialogic reading intervention improves kindergartners' oral narrative construction. *Journal of Experimental Child Psychology* 108 (1), 1–24.
- Li, R. (2018) *A summary of parent feedback using the EasyPeasy App between 2016 and 2018*. Unpublished document: Character Counts.
- Lonigan, C.J., Anthony, J.L., Bloomfield, B.G., Dyer, S.M. and Samwel, C.S. (1999) Effects of two shared-reading interventions on emergent literacy skills of at-risk preschoolers. *Journal of Early Intervention* 22 (4), 306–322.
- Mayer, S.E., Kalil, A., Oreopoulos, P. and Gallegos, S. (2015) *Using behavioral insights to increase parental engagement: The parents and children together (PACT) intervention* (No. w21602). National Bureau of Economic Research.
- McWayne, C., Fantuzzo, J., Cohen, H.L. and Sekino, Y. (2004) A multivariate examination of parent involvement and the social and academic competencies of urban kindergarten children. *Psychology in the Schools* 41 (3), 363–377.

- Melhuish, E.C., Phan, M.B., Sylva, K., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2008) Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues* 64 (1), 95–114.
- Mol, S.E., Bus, A.G., De Jong, M.T. and Smeets, D.J. (2008) Added value of dialogic parent – child book readings: A meta-analysis. *Early Education and Development* 19 (1), 7–26.
- Nutbrown, C., Hannon, P. and Morgan, A. (2005) *Early literacy work with families: Policy, practice and research*. London: Sage.
- Persampieri, M., Gortmaker, V., Daly, E.J., Sheridan, S.M. and McCurdy, M. (2006) Promoting parent use of empirically supported reading interventions: Two experimental investigations of child outcomes. *Behavioral Interventions* 21 (1), 31–57.
- Powell-Smith, K.A., Shinn, M.R., Stoner, G. and Good, R.H. (2000) *School Psychology Review*, 29, 5–27.
- Reutzel, D.R., Fawson, P.C. and Smith, J.A. (2006) Words to go! Evaluating a first-grade parent involvement program for “making” words at home. *Reading Research and Instruction* 45, 119–159.
- Rose, E., Lehl, S., Ebert, S. and Weinert, S. (2018) Long-term relations between children’s language, the home literacy environment, and socioemotional development from ages 3 to 8. *Early Education and Development* 29 (3), 342–356.
- Sammons, Sylva, Melhuish, Siraj-Blatchford, Taggart and Elliot (2003) *Measuring the impact of pre-school on children’s social/behavioural development over the pre-school period* (Technical paper 8b). London: Institute of Education, University of London.
- Sénéchal, M. and LeFevre, J.A. (2002) Parental involvement in the development of children’s reading skill: A five-year longitudinal study. *Child Development* 73 (2), 445–460.
- Sénéchal, M., Pagan, S., Lever, R. and Ouellette, G.P. (2008) Relations among the frequency of shared reading and 4-year-old children’s vocabulary, morphological and syntax comprehension, and narrative skills. *Early Education and Development* 19 (1), 27–44.
- Sénéchal, M. and Young, L. (2008) The effect of family literacy interventions on children’s acquisition of reading from kindergarten to grade 3: A meta-analytic review. *Review of Educational Research* 78 (4), 880–907.
- Storch, S.A. and Whitehurst, G.J. (2001) The role of family and home in the literacy development of children from low-income backgrounds. *New Directions for Child and Adolescent Development* 2001 (92), 53–72.
- Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2004) *The Effective Provision of Pre-School Education (EPPE) project: Final report*. London: DfES/Institute of Education, University of London.
- Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2010) *Early childhood matters*. Evidence from the Effective Pre-school and Primary Education project. Abingdon: Routledge.
- Sylva, K., Scott, S., Totsika, V., Ereky-Stevens, K. and Crook, C. (2008) Training parents to help their children read: A randomized control trial. *British Journal of Educational Psychology* 78, 435–455.
- York, B.N. and Loeb, S. (2014) *One step at a time: The effects of an early literacy text messaging program for parents of preschoolers*. (No. w20659). National Bureau of Economic Research.
- Zevenbergen, A., Whitehurst, G. and Zevenbergen, J. (2003) Effects of a shared-reading intervention on the inclusion of evaluative devices in narratives of children from low-income families. *Journal of Applied Developmental Psychology* 24 (1), 1–15.