Effectiveness of Digital Tools to Support Pupils' Reading in Secondary School:
A Systematised Review

Danlei Chen, University of Edinburgh, UK

Gale Macleod, University of Edinburgh, UK

ABSTRACT

Engagement with reading falls around the age of 11 or 12, and there is widespread concern with levels of literacy amongst adolescents. Most research examines how digital tools facilitate preschoolers' reading or reading motivation outside school. Less research is conducted in the school context, particularly with older pupils. This article reports a systematised review to investigate the effectiveness of digital tools for supporting reading in secondary schools. Two thousand three hundred ninety-six articles were screened with 10 selected for review. The empirical evidence is examined, definitions of effectiveness, and facilitators and barriers are identified. Findings show the evidence base is varied, but robust; digital tools are effective in motivating adolescents' reading interest, and improving their reading skills and test scores; teachers are key facilitators in the process. Findings are in line with research with younger age-groups suggesting the transferability of research across a wide age-range. Implications for practice and suggestions for developing research in this area are identified.

KEYWORDS

Adolescence, Reading Engagement, Reading Motivation, Reading Skills

INTRODUCTION

This article reports a systematised review (Grant & Booth, 2009) of research on the use and effectiveness of digital tools used to enhance secondary pupils' (age 12 - 18) reading. Digital tools with educational features are increasingly popular in the home and in educational contexts in developed contexts (Vaala, Ly & Levine, 2015; Stephen & Edwards, 2017). There are different forms of digital tools, such as games, e-books, digital storybooks and augmented reality books, all of which are used to support children's reading and literacy learning (Beschorner & Hutchison, 2013; Doyle & Woods, 2018).

Many, although not all, eBooks enable readers to interact with the electronic text, for example through hyperlinks, pop-up definitions, read-aloud functions and animated pictures (Long & Szabo, 2016). These additional features, designed primarily for use on touchscreen devices, can act as interactive scaffolds to support independent reading of young people without an adult needing to be present. Some digital platforms have additional pedagogical functions included such as assessments (Brueck et al. 2019). Accessing eBooks on devices which have internet search facilities can prove distracting for some readers (Merga & Roni, 2017). An alternative is to use E-readers: devices dedicated to the reading of eBooks and which also offer some functions such as text enlargement. Augmented reality books retain the physical book but add digital content (e.g. 3D animations, sounds,

tactile interactions) accessed through special devices such as a smartphone or smart glasses, with the aim of increasing reader interaction and immersion. This is seen as necessary because of the competition for young people's attention and concern that the instant gratification offered by other forms of entertainment might make young people less likely to persist with a print book, described as a less dynamic experience (Stanica et al., 2019).

Evidence suggests that increasing numbers of children and adolescents (aged 9 - 18) in the UK are now reading digitally (Clark & Picton, 2019). At the same time there is increasing concern about pupils' engagement with reading and literacy reading levels, particularly around age 11 - 13, (Faggella-Luby et al., 2009; McGeown et al., 2015). This coincides with the transition from primary (or elementary) school to secondary (or middle) school. At this more senior level pupils are expected to have a developed vocabulary, general knowledge of topics, ability to manage text structures, strategies for breaking down comprehension, and proficiency in self-monitoring their reading comprehension, all of which require more sophisticated and specific reading skills (Lee & Spratley, 2010). One possibility is that these more challenging demands decrease pupils' motivation (Brozo, 2009).

In response to the literacy drop-off among teenagers, some researchers have argued that digital reading has potential to support reading engagement. Picton and Clark (2015) identified that early adolescents (aged under 16) in the UK were, for the first time, more likely to claim that they read online outside class, rather than in print. Their later study further reported that, generally, adolescent pupils are more likely to engage with digital reading materials than their younger counterparts (Clark & Picton, 2019). Similarly, Snow and Moje's (2010) research indicates that US teenagers from a wide range of achievement levels report stronger interest in online reading outside school and unmotivated school readers often display impressive literacy skills in out-of-school environments. Research has suggested that intrinsic motivation to read is a significant predictor of reading test scores (Froiland & Oros, 2013). This suggests that digital tools used in school might be an effective approach to support adolescents' reading by increasing their reading enjoyment and motivation.

Compared with conventional paper-based reading, Information and Communication Technology (ICT) such as handheld PCs and mobile phones can enhance the reading experience due to their portability, the capability of wireless networking and the fact that they are in such common daily usage, potentially making reading more convenient and more engaging (Chen, et al., 2011). However, Baron (2013) suggests that the potential of technology to enhance reading experience is not being fully realized. Research on reading often focuses on it as a task to be completed (measuring factors such as length of texts, speed of reading, ability to memorise and understand texts and capability to annotate or re-read) rather than as an activity to enjoy. As a result, research may be missing the contribution which digital tools can make to reading performance through increasing engagement.

Reading

The understanding of reading has developed from it being seen as a technical skill, to an awareness of the complexity of the underlying processes, through to an understanding which emphasizes reading as a dynamic process and the interaction between reader and text. According to Irvin (1998), reading is a flexible interaction between the writer's thoughts on the page and the reader's comprehension within a particular context. The personal meaning of reading is stressed, and according to Narvaez et al., (1999), reading can have an impact on readers' moral development in terms of moral judgement and obligation. By being told what is good in moral literacy, readers can learn from moral exemplars in the read texts and tend to behave in a socially acceptable way and act as good citizens in the society (Bebeau et al., 1999). More recently still, definitions of reading have developed a pragmatic character in which the abilities. functionality and purposes of reading are highly emphasised. The Organisation for Economic Co-operation and Development (OECD) defined reading as the capability to understand, use and make reflections on written texts in order to develop one's knowledge and skills, to achieve one's aims, and to participate effectively in societies (OECD, 2001). The skills of decoding and meaning-making as well as the purposes of fluent and comprehensive reading – which

15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/effectiveness-of-digital-tools-to-support-pupils-reading-in-secondary-school/274503

Related Content

Designing Learning Activities with Mobile Technologies
Hokyoung Ryu (2009). *Innovative Mobile Learning: Techniques and Technologies (pp. 1-20).*
www.irma-international.org/chapter/designing-learning-activities-mobile-technologies/23827

Relationship Between the Use of Online Courseware and Achievement in a Developmental Writing Course
Christine Leow, Yun Jin Rho, Ross Metusalemand Sara Kasper (2020). *International Journal of Mobile and Blended Learning (pp. 16-32).*
www.irma-international.org/article/relationship-between-the-use-of-online-courseware-and-achievement-in-a-developmental-writing-course/249198

Mobile Learning, Digital Literacies, Information Habitus and At-Risk Social Groups
Margit Böck (2010). *International Journal of Mobile and Blended Learning (pp. 30-41).*
www.irma-international.org/article/mobile-learning-digital-literacies-information/46118

Integrating Cooperative Learning into the Combined Blended Learning Design Model: Implications for Students' Intrinsic Motivation
Chantelle Bosch, Elsa Mentzand Gerda Marie Reitsma (2019). *International Journal of Mobile and Blended Learning (pp. 58-73).*
www.irma-international.org/article/integrating-cooperative-learning-into-the-combined-blended-learning-design-model/215366

Handheld Educational Applications: A Review of the Research
Yanjie Song (2009). *Innovative Mobile Learning: Techniques and Technologies (pp. 302-323).*
www.irma-international.org/chapter/handheld-educational-applications/23841