UNIVERSITY OF OXFORD EDUCATION DEANERY DIGEST



Deanery Digests are short, plain language summaries of the Department of Education's research outputs. This Deanery Digest is based on the following published research article: Booton, S. A., Hodgkiss, A., & Murphy, V. A. (2021). The impact of mobile application features on children's language and literacy learning: a systematic review. *Computer Assisted Language Learning*, 36(3), 400–429. <u>https://doi.org/10.1080/09588221.2021.1930057</u>

Which Mobile Application Features Support Children's Language and Literacy Learning?

What is this research about and why is it important?

There are many popular language learning apps available for children and adults, which provide new potential for learning. Whilst some studies show that using such apps *can* support language and literacy skills, fewer have examined *how* they do so – in other words, what features make an app effective? This can help us to design and choose better apps. In this work, we conduct a systematic review; in other words, we find and assess as much of the existing research as we can to draw conclusions about what we know about the topic. The aim was to synthesize the existing experimental research examining the effect of features of apps on language learning in primary school aged children.

What did we do?

To conduct our systematic review, in 2020 we searched three journal databases to identify relevant articles using a varied set of keywords related to the population (e.g. child*, student*, "elementary school"), technology (e.g., app, "mobile game*", iPad*), and language and literacy skills (e.g., writing, read*, "letter knowledge", "language skill*"), finding ~1800 unique articles. We screened these articles with specific criteria to ensure they worked with typically developing primary school children (3 to 11 years old), using apps on mobile, touchscreen devices to examine experimentally how specific app features impact language skills.

What did we find?

We found just 11 relevant articles in total published up until 2020: this suggests that there is a lot that scientists do not know about what app features are effective for language learning for young children. These 11 articles each tested one of four different features: inbuilt narration, parent conversation prompts, augmented reality and multimedia hotspots:

- Existing studies suggested that **inbuilt narration** (for example, a read aloud option for stories) is helpful for pre-readers' story comprehension, as well as learning new words in a second language, when using apps independently.
- They also imply that real-time **parent conversation prompts** (for example, ideas for questions to ask when reading e-books together with children) promote greater quantity and quality of parent-child conversation.
- Regarding **augmented reality** (AR) (hybrid digital-physical representations, such as projecting animations related to word meanings), this can (at least temporarily) boost motivation and word learning, although it remains to be tested whether the novelty of this would last.

• **Multimedia hotspots** that are relevant to a story (for example, touching a plot-relevant image to progress the page) don't affect text comprehension or word learning.

What does it all mean anyway?

Certain features of touchscreen apps can assist with vocabulary learning and text comprehension for primary school aged children. Educators and parents can look out for apps which include inbuilt narration if children are still learning to read or learning words in a foreign language, and real-time conversation prompts if adults are reading with children. Language apps integrating Augmented Reality features may provide a motivational boost for vocabulary learning. Story-relevant hotspots are not necessarily important for learning from e-books, although highly irrelevant or distracting hotspots (e.g., that open a new game or activity) may impair comprehension. Unfortunately, there has been a lack of evidence on other features (such as translation features, QR codes, video chat, or speech recognition, for example), and other linguistic skills, including grammar, writing, spelling, phonological awareness, or decoding, and most studies only look at immediate effects on outcomes. However, some of these features may well be helpful where they allow for social interaction and active and engaged learning of meaningful language content.

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Data: Data available from: <u>https://osf.io/ns58e/</u>

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