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., Kolancali, P., & Murphy, V. A. (2023) Touchscreen apps for child creativity: An evaluation of creativity apps designed for young children. Computers & Education, 201, 104811. https://doi.org/10.1016/j.compedu.2023.104811

Selecting Good Quality Apps for Creativity for Primary School Aged Children

What is this research about and why is it important?

Children are increasingly using mobile touchscreen devices for entertainment and educational purposes, and app stores provide an ever-expanding number of applications for them to use. Despite opportunities for creativity being a key goal for children and their parents when using apps, we know little about the quality of commercially available apps that claim to support primary school children's creativity. We assessed the quality of a sample of these apps based on existing research evidence and whether app store information (such as review scores or cost) related to their quality. This allowed us to see whether existing apps are well designed to potentially allow for and build children's creativity, and what information educators or parents can look at to try to identify good quality apps.

What did we do?

We took a sample of 152 apps available on the Google Play app store which are targeted at children aged 4 to 12 years. The apps were found from 3 sources: Google Play's 'Enriching Apps' list, searching Google Play for the keywords 'children kids creat*', and Common Sense Media's (commonsensemedia.org) reviews for apps involving creativity. Two researchers then used the apps and assessed them against 8 criteria which previous research suggests should be supported to allow children's creativity: these were domain-specific skills, divergent thinking, convergent thinking, experimentation, inspiration, modelling, meta-cognition, and self-efficacy. We checked that the researchers had a good level of agreement (reliability) with these criteria. We also took information from the app store, such as the customer review score, cost, number of relevant keywords, and the number of installs.

What did we find?

- There are lots of different types of creative apps available, including drawing, coding, doll's house, cooking, puzzle-solving, animation, storytelling, and craft tutorials. There were more visual arts apps and fewer STEM and language apps, even though children can be creative in all subjects.
- The children's creativity apps reviewed were overall not strongly evidence-based: they scored low on all our criteria, especially modelling (providing numerous and varied examples of creative products and processes) and convergent thinking (providing scaffolded opportunities for structured creative problem-solving).
- There were some high-quality apps in our sample: in particular, some coding apps (Scratch and ScratchJnr, Programming Zemi, and Grasshopper: Learn to Code), as well as BBC

CBeebies Get Creative and Toontastic 3D, which were good examples of apps that allowed for creativity as well as being well designed overall.

- App store data (customer review scores, number of installs, whether the app was free to use or not, and Google Play's "expert approval" badge) were not strong predictors of quality in terms of supporting creativity.
- Apps with fewer different activities (i.e., more focused), a higher number of relevant keywords, and sourced from Common Sense Media (an independent review website) scored higher.
- Apps found through keyword searching were lower quality (compared to an independent website or a list of "Enriching" apps compiled by Google Play).

What does it all mean anyway?

These findings suggest that parents and teachers need to be selective when choosing apps to develop children's creativity. Finding apps from independent review websites, such as Common Sense Media (commonsensemedia.org), looking for lots of relevant keywords in the app description, and using focused apps which have fewer different activities will likely result in better quality apps.

Some evidence-based features to look out for include varied materials and modes which allow for experimentation and editing and inspire ideas; tools for reflection (e.g., replay of drawing) and lots of different examples of things to create and ways to create them; and supports for children's confidence in their own creativity, such as a gallery or telling children that they are creators (e.g., chefs, scientists or artists). Conversely, we should be wary that keyword searching can result in lower quality apps, and that customer review scores, number of installs, app cost, and "expert" or "teacher" approval badges can be misleading.

However, we should also bear in mind that children's creativity will depend on how and in what context they use these apps – creating a supportive environment outside the app and observing how they play with them is also important.

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