Maths@Home: App to Build Mathematical Foundations

An app designed to give adults ideas of various activities that will support the mathematical development of preschool children.

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Category
Software/Learning resources

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Background

20% of children in the UK struggle to learn maths. Informal learning experiences, particularly in the early years are vital for children's maths development but evidence suggests parents only engage in maths activities at home once a week, compared to every day for reading. At school, preschool teachers also spend less time on maths. Our studies have shown that this lack of focus on maths relates to adults feeling less confident to teach maths compared to reading and life skills

More high-quality maths interventions, especially those that support parents to implement more maths activities in the home, are required to support all children to develop the maths skills they need.

Maths@Home is an app designed to give adults ideas of various activities that will support the preschool child's mathematical development using resources easily available in and around the home. The app is a bank of ideas of games that are based on previous UCL research showing how mathematical foundations can be supported through interactive games that can be implemented in a child's daily routine. The learning goals of the Maths@home games have been carefully planned and developed in line with the latest research on mathematical development and the English national curriculum. Thus, there is a structured and systematic progression through the levels of the games tackling different domains of mathematics.

The app is co-created with parents and teachers and includes a bank of fun mathematical activities that can be included in the child's daily routine to support the child's mathematical abilities.

Technology Overview

The Maths@Home app includes 40 age-appropriate informal learning activities, which are based on recent research in mathematical development, including studies with children who are at risk for mathematical learning difficulties. These informal games are designed to improve mathematical abilities in children aged 2-6 years or those with mathematical learning difficulties who are working at a preschool ability level. They are

designed to encourage off-screen engagement between parent(s)/teaching professionals and their child, using resources easily accessible in the home or school. An accessible mobile app is currently being developed. Although the app is targeted at parents it is child-friendly to encourage child-adult engagement.

The app includes a sign up page that shows all of the registered children, followed by a page where children/ adults can select an activity based on the place they are in and around the house, Once they select the game, they see a short description of the game (as text or audio) and what is needed to do the activity. They can time themselves, like the activity or find out more about how the activity supports maths development.

The app has been piloted with parents and teachers in terms of the content.

See Figure 1, Figure 2.

Stage of Development

The app currently is just a proof of concept that includes all of the content. However, further development is required in terms of the graphics of the app and database options to track use of the app. Other features that could be developed in the future include a maths test that tracks progress of the child, a reward and sticker page, as well as a forum for adults to exchange further ideas of fun activities.

Benefits

Although 47% of the top 100 apps target pre-schoolers, only 13% of educational apps focus on mathematical abilities and most require the child to play simple counting and digit recognition games. In contrast, our games target parents and teaching professionals of pre-schoolers to gain a further and more holistic understanding of mathematical development. The app content encourages adults to play mathematical games with their child in and outside the home through everyday play opportunities. The Maths@Home app will include links to the underpinning research in the format of accessible blogs explaining key areas of mathematical development in easy to understand language.

Applications

Market research shows that in the UK, almost all children (96.6%) use mobile devices, and most start using them before age 1. Educational apps are a growing market, which is expected to be worth £128 billion by 2020. In addition, spending per device, per month is growing year on year with consumer spending growing 23% from USD $20.94 in 2017 to $25.65 in 2022.

Due to COVID, there has been an increased spending on educational app and this trend is likely to continue seeing the ongoing pandemic. There are also opportunities outside the UK, with Asia being the fastest growing market.

Opportunity

The team is looking for:

• Development partners

• Potential licensees

• Sponsorship

to support the further development of the Maths@Home app. They have a minimum viable product and have conducted several focus groups with parents and teaching professionals to ensure the initial app design met their needs and to receive feedback on the MVP. The team have also received positive feedback on our initial designs from our advisory board and potential stakeholders.

In their next steps and based on this user feedback, the team would like to:

• Enhance the design of the Maths@Home app to be more aesthetically pleasing and engaging for the user

• Implement the collection of user background data to support our research on the impact of the Maths@Home games

• Conduct additional proof of concept research to understand the efficacy of the Maths@Home games for supporting parents and child maths outcomes

• Work with industry partner(s) to identify routes to a large market for the Maths@Home games

Seeking

Development partner, commercial partner

IP Status

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