Child-Coach-Parent Network for Early Literacy Learning

Juliana Nazare*, Anneli Hershman*, Ivan Sysoev, Lauren Fratamico, Juanita Buitrago, Mina Soltangheis, Sneha Makini, Eric Chu, Deb Roy
Email: juliana@media.mit.edu, anneli@media.mit.edu, isysoev@media.mit.edu, fratamico@mit.edu, buitrago.juanita.ib@gmail.com, mina.soltangheys@gmail.com, snehapm@media.mit.edu, echu@media.mit.edu, dkroy@media.mit.edu
MIT Media Lab
* These authors contributed equally to this work.

Abstract: Literacy is an inherently social experience. Yet, many literacy learning apps have no collaborative dimension. In response, we propose a learning network centered around children's play on open-ended literacy apps that engages three stakeholders—child, parent, and family learning coach—in the experience. Findings from our pilot show that coaches' messages increased parent visibility into and understanding of children's play. This work has implications for how digitally-mediated networks could facilitate family engagement in children's learning.

Introduction

When well-designed to be open-ended, child-driven, provide support, and encourage co-creation, learning technologies can offer unique affordances (Hirsh-Pasek et al., 2015). Educational apps designed for parent-child dyads have the potential to empower parents to engage in their child's learning process (Takeuchi & Stevens, 2011). Despite the well-documented importance of family involvement in learning, few literacy technologies are designed with parents and families in mind. Many learning apps are opaque, offering no way for children's learning moments to be shared with parents (Vaala et al., 2015). With existing open-ended literacy apps, the nature of free-play and the customizability of child-directed learning goals makes it difficult to automate feedback for parents. Since a fully automated solution is neither practicable nor desirable, a human element must be incorporated into the system.

Therefore, we propose a family learning network with new human-in-the-loop features, augmented by data analysis tools to help an adult collaborator support the child's learning in a time-efficient manner. This person, whom we call a *family learning coach,* has a background in learning. The coach analyzes children's play on open-ended apps in order to: track a child's progress through play, send brief individualized updates to parents, and suggest short, contextualized activities for family co-engagement based on a child's play patterns.

The goal of this pilot was to explore how to design a sociotechnical system—or family learning network—that could engage children and parents in literacy-related play, and lead to new knowledge, skills, and attitudes about literacy.

Methodology

Our learning network involves three stakeholders: child, parent, and coach. The child plays with SpeechBlocks (SB), an open-ended literacy learning app that focuses on helping children with grapheme-to-phoneme correspondence (Sysoev et al., 2017). Using SB, children can tinker with letters and sounds, make nonsense words, and create and save personally meaningful words. When letters are pulled apart, put together, or tapped, a speech synthesizer pronounces the letter sequence. All in-app play is captured and streamed to the coach.

Nine families in the Greater Boston Area with children ages 4 to 10 (12 female and 4 male) participated in our 10-week exploratory pilot. All families were given Android mobile phones with the SB app installed. Families attended a pre-workshop where they learned about the coaching system, filled out a background survey, and met coaches to start building a relationship.

Three of the researchers with backgrounds in education served as the coaches for this study. Each coach served approximately 5 parent-child dyads. Three times a week, the coaches analyzed children's play data and translated key insights into short updates that were sent to the child's parent via SMS or email (per parent preference). Once a week, these updates included a 2-minute activity, based on the child's in-app play, that the parent and child could do together. For example, a coach might say, "Sofia made the word BATMAN. She then created the words BATMOM and BATDAD. For a fun activity, you and Sofia could brainstorm new characters that have 'bat' in them and Sofia can write her favorites in SpeechBlocks."

At the end of the pilot, families attended a post-workshop in which they filled out a survey on their experience with the coaching system.

Initial findings

To investigate how parents felt about the coaches' updates, we used qualitative analysis methods to identify emergent themes in parents' free-response answers in the post-workshop survey. The two emergent themes were: parents felt the updates helped them (a) increase their visibility into their children's in-app play and (b) understand what their children learned through their in-app play.

Multiple parents reported that they liked the updates because they increased their visibility into what their child was doing when they played with SB. For example, one parent said, "I wasn't always watching what they were doing… I liked getting the text messages [so] I know what they were doing." In fact, a couple of parents reported not knowing where the SB device was during the study because it was in the child's possession, and therefore the increased visibility afforded by the updates was helpful to them.

Parents reported feeling that they learned about their children's literacy learning process through the parent updates. One mother said that she liked it when the coaches explained "*why* we [coaches] think [her son] did something," and another stated that the updates "help [her] understand what her daughter needs." One parent reported that she liked it when the coaches' sent her an update on *how* her daughter tried to construct the word TOASTER by spelling TOAST and adding the letter R to make TOASTR. She explained, "What I found interesting was Ella trying to make TOASTER… [it shows] that she's trying to think on her own." When reflecting on the coach updates about her child's play, one parent stated that her child "always refused to read or learn to read" but through seeing her child's progress, she realized the app had "really helped [her child] become more confident."

Conclusions and implications

The results of our pilot show that our family learning network was feasible and well received by the families. Reflecting on the coaches' actions and the family feedback, we better understand the coach's role: supporting the family in understanding and contextualizing their children's learning process on open-ended learning apps in order to empower the parents to co-engage with their children.

This exploratory pilot also helped us understand what types of skills a coach might need, and who would be best suited to fill this role. The amount of time a coach spent (approximately 40 minutes per week) is a relatively low time commitment in comparison to that required for in-person literacy coaching, yet enough to sustain a high frequency of communication. An ideal coach is someone who has both empirical skills and knowledge of literacy processes, in order to identify emerging patterns related to literacy development; and who is relationship-focused and interested in family and community engagement. One group with these skills that might be well-suited to be coaches are speech language pathologists (SLPs). Our next step is to run a comparison study in which SLP students will be trained as coaches and separate researchers compare the SB program with and without coaches to better examine the effectiveness of the coaching system.

Overall, our family learning network was shown to be promising. Many parents perceived that the coach's updates increased their visibility into their children's play and understanding of their children's learning process. We hope that this work will be the first of many iterations on the role of the family learning coach, as new apps are added to the repertoire and new coaches mold the role to fit their communities' contexts and needs.

References

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