ILLINOIS INSTITUTE OF TECHNOLOGY

impact

Nayar Prize I Quarterly Progress Report

July, 2016

Project: Game Development for Early Language Acquisition in High-Risk Children
Team: Carly A. Kocurek, Jennifer Miller, Cynthia Hood, Matt Bauer

Progress

Since the previous report in February, we have completed data collection on three separate projects:

1. **Usability of touchscreen devices for children** (49 children). There is very little information about how children use touchscreen devices, contributing to poorly designed games. We designed a number of activities to assess the capabilities of young children to interact with two devices. As a result of our design, we're currently in the process of writing the first paper in our field that provides a framework to measure children's interaction with touchscreen devices.

2. **Parent perceptions and attitudes toward touchscreen devices** (49 parents). Parents were interviewed to understand how parents view technology during their children's development and how they perceive touchscreen devices.

3. **Early childhood educator perceptions toward technology and touchscreen devices** (125 early childhood educators). The Department of Education recently released an updated National Education Technology Plan that provides guidance about the use of technology in educational settings. One of the growth areas is to understand educators' views of technology. This study surveyed 125 early childhood educators across the Chicagoland area to provide information about technology adoption in daycare and preschool settings.

We have also begun data collection for two more projects:

1. **Development of coding system to determine current quality of educational apps** (50 apps). At the beginning of July 2016, the American Academy of Pediatrics suggested that researchers and policy makers should think about developing an assessment to determine developmentally appropriate content. We are in the process of using our developed system to assess the quality of educational apps.

2. **Development of coding system to determine current quality of educational shows**. This data is informing game development for our project, but is also being published and circulated given that the studies completed have all yielded significant results.

The game, named *Zebra Cakes*, is in production with our development partner, For All to Play, and we anticipate having the game in hand to begin testing on schedule. This game uses principles drawn from our extensive research into key areas through the data collection completed thus far and presents an interactive storybook grounded in best practices from learning games and developmental psychology.

Publications

We have published two papers in the proceedings of the Immersive Learning Research Network 2016 International Conference:

- Kocurek, C. A. & Miller, J. L. (2016). Olive dreams of elephants: Game-based learning for school readiness and pre-literacy in young children. *Proceedings from the Second Immersive Learning Research Network Conference,* 160-170.

- Miller, J. L. & Kocurek, C. A. (2016). Cognitive principles for game-based learning in young children. *Proceedings from the Second Immersive Learning Research Network Conference,* 117-128.

We have one paper under review for publication:

- Miller, J.L. & Kocurek, C.A. (submitted June 23, 2016). Principles for educational game development in children. Submitted to *Journal of Children and Media.*

Members of our student research team have also presented multiple posters, one of which won second place in the graduate division at Illinois Institute of Technology's Spring Research Day.

- Kamin, A., DeAnda, M. A., Kocurek, C. A., & Miller J. L. (2016, April 9). *Identifying learning opportunities in television for children.* Poster presented at Chicago Area Undergraduate Research Symposium, Chicago, IL.

- Kamin, A., DeAnda, M. A., Kocurek, C. A., & Miller J. L. (2016, April 11*). Identifying learning opportunities in television for children.* Poster presented at Illinois Institute of Technology Research Day, Chicago, IL. Awarded second place in the graduate research division.

- Kamin, A., DeAnda, M. A. (2016, April 31). *Identifying learning opportunities in television for children.* Poster presented at Lewis College of Human Sciences Undergraduate Research Day, Chicago, IL.

- Paniagua, D., Suriano, J., Miller, J. L., & Kocurek, C. A. (2016, April 9). *Caregiver attitudes towards child usage of technology and electronic devices.* Poster presented at Chicago Area Undergraduate Research Symposium, Chicago, IL.

- Paniagua, D., Suriano, J., Miller, J. L., & Kocurek, C. A. (2016, April 11). *Caregiver attitudes towards child usage of technology and electronic devices.* Poster presented at Illinois Institute of Technology Research Day, Chicago, IL.

- Paniagua, D., Suriano, J., (2016, April 31). *Caregiver attitudes towards child usage of technology and electronic devices.* Poster presented at Lewis College of Human Sciences Undergraduate Research Day, Chicago, IL.

These posters are reflective of the active role student members of the research team are playing in key areas of this project.

We are also giving a workshop, “Designing Design Research,” at the Games, Learning, and Society conference in August, in which we will train other researchers and game designers in our practices and processes. And, we have two posters and a prototype, *Zebra Cakes*, accepted for the Society for Research of Child Development’s special topic, Media on Technology and Media in Children’s Development, in October.

Finally, a number of works for publication are currently in development at various stages:

- Kocurek, C.A. & Miller, J.L. (in prep). Learning at the Farm: Peekaboo Barn and children’s development. Will be submitted to *Well Played*.

- Kocurek, C.A. & Miller, J.L. (in prep). Toddlers and touchscreens: What parents and educators think about apps. Video essay. Will be submitted to *Kairos*.

- Miller, J.L. & Kocurek, C.A. (in prep). Technology in education: Early childhood educators’ perceptions and attitudes of the role of technology in young children’s lives. Will be submitted to *Journal of Research on Computing in Education.*

- Miller, J.L. & Kocurek, C.A. (in prep). Beyond swiping and tapping: Challenges and strategies in measuring touch screen tablets in young children. Will be submitted to *Journal of Applied Developmental Psychology.*

Symposium

We have also planned a symposium on children's media, *Screen Time*, which will be held on September 9 at Illinois Tech's downtown campus. This event, which has sprung from our Nayar project research, brings together researchers and practitioners from across the United States, including several who are leaders in the field. This symposium represents a partnership with the TEC Center at the Erikson Institute.

Grants and Funding

We have submitted a Letter of Inquiry for Mazda Foundation funding and also have several grant applications in development for submission this coming fall and spring, including National Institutes of Health and National Science Foundation. We are committed to the sustainability of this project. The insights we have already gained will be critical in optimizing the development of learning games and in understanding the intersection of new media technologies and children's development.

Future Work

We are on track to complete our initially proposed work by the end of the prize's one-year cycle. To date, this has included robust data collection and a research-driven game design process. Over the remaining months, we will begin testing on the game and complete data collection on the outstanding studies. We will also finalize submission on the papers and publications currently in development. There is currently a dearth of research on the effects of media on children in the age range we are addressing in this project, and similarly games for this age range have not been rigorously assessed and evaluated. Our work is filling this void; we are committed to these projects as a means of addressing the emerging technical landscape and improving educational opportunities for young children.