Supporting Inclusion in Early Childhood with Interactive Technology

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Abstract

I currently study how interactive technology might support young children in preschool and kindergarten with inclusive play, or play between children with and without disabilities. By increasing opportunities for inclusion in early childhood, children can benefit in a number of ways; for example, they can develop their social and emotional skills and learn empathy and acceptance for children with special needs. Based on formative qualitative work with children with and

without disabilities, I developed my own interactive tablet-based application that aims to support children with inclusive play. I then used this application as the basis for a laboratory study. Now, I am iterating on the design and will deploy the technology in an inclusive early childhood classroom. This intervention will allow me to study the design and the experiences and interactions it engenders in situ. Overall, I am interested in equality, equity, and participation in the early childhood classroom and take a disability studies perspective to my research. As such, I believe the *Imagining Intersectional Futures: Feminist Approaches to CSCW* workshop will be an excellent venue (1) to discuss my work and have it critiqued, and (2) to learn how to better approach this (and my other) research moving forward using intersectional feminism.

Author Keywords

Inclusion; children; disability studies; interactive technology; universal design.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Inclusion is an approach, commonly known within education, in which individuals with and without disabilities participate in the same setting. Inclusive

programs for children operate based on the theory that engaging children with and without disabilities together is not only socially just but will also positively affect all children [5]. Children with disabilities benefit from inclusive programs because they are not being implicitly told they are different, wrong, abnormal, or that they do not deserve to have the same experiences as other children. Typically developing children in inclusive programs shift their expectations and assumptions about their peers with disabilities in a positive direction [5]. These types of beneficial outcomes "ripple through the community of the setting," helping families of children to build inclusive relationships as well [2, p. 30].

High quality inclusive programs specifically enable young children to engage in meaningful play together, as active, pleasurable, and intrinsically motivated experiences and a medium for learning [2]. Inclusive play, or play between children with and without disabilities, benefits all children by providing learning opportunities that help children to develop empathy and acceptance, challenge stereotypes, build meaningful friendships, and practice important social and play skills [2,5].

As technology becomes a greater part of the early childhood educational landscape as a tool to provide equal opportunities and access, enabling children with different abilities to participate in activities and experiences [3,4], I have begun to investigate its role in facilitating and overcoming barriers to inclusive play in particular. Beyond issues of accessibility toward matters of equitable, meaningful participation, the goal of my dissertation work is to utilize an integrative approach to understand how technology can be designed to support young children with diverse abilities with inclusive play.

Based on formative qualitative work with children with and without disabilities, I developed my own interactive tablet-based application that aims to support children with inclusive play. I then used this application as the basis for a laboratory study. Next, I plan to iterate on the design and deploy the technology in an inclusive early childhood classroom as a design intervention. This will allow me to study the design and the experiences and interactions it engenders in situ. While I have looked at my research using a disability study lens, I am interested in better and more holistically approaching my work using an intersectional feminist perspective to (theoretically and methodologically) consider the participation of all children with diverse needs and forms of identity in the classroom.

Completed & Current Work
While there has been more CSCW and HCI research into play among solely typically developing children and into play among only children with disabilities, there has been less focus on play among children with mixed abilities [6]. In my current work, I have focused specifically on inclusive play among neurotypical and neurodiverse children, around age four to eight. Children who are neurodiverse include those with diverse cognitive, developmental, learning, social, emotional, and/or behavioral abilities [1].

In my research, I have been exploring what makes designing for play among neurotypical and neurodiverse children distinct from designing for play among children of only one group. I ask: using technology, how can we balance play interactions

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among children with drastically differing needs? How can we encourage children to communicate through and beyond technology to help build their relationships outside of this one particular type of play? How can interactive technologies encourage children to be more empathetic and accepting? Finally, what can interactive technologies do to lower barriers for adults, like teachers and parents, to set up, monitor, and follow up on inclusive play with their children?

I have conducted two main investigations thus far in relation to this work. First, I engaged in formative qualitative research to understand the current state of inclusive play. I examined the wants and needs of children, parents, and teachers who impact inclusive play by (1) doing 70 hours of design ethnography in an inclusive kindergarten classroom as a teacher's assistant; (2) running three design workshops with children with diverse needs; and (3) surveying and interviewing teachers and parents. I then described how designers might use this understanding to create technology in this space [6].

Using this formative work, I then iteratively designed and developed my own interactive, cooperative photography-based tablet application to examine how technology can support play interactions between children with different needs. I used this application, called Incloodle, as the basis for a mixed-methods short-term laboratory study to empirically evaluate the ability of particular interactive design features to directly facilitate inclusive play [7].

Now, I am currently working on the next stage of this research, which involves two main parts. First, I am in the process of iterating on the design of Incloodle, most importantly such that it is more adjustable to the needs of children with diverse abilities. The second part involves a two-month design intervention to study longer-term use of Incloodle in an inclusive early childhood classroom. Ultimately, by designing and studying technology as a mediational means for collective participation, engagement, play, and learning among children with diverse abilities and needs in a classroom context, I hope to make a theoretical contribution of what it means to design for inclusive play that expands beyond typical paradigms of designing technology for children with disabilities.

Expectations & Desires for Workshop

I would appreciate the opportunity to participate in the *Imagining Intersectional Futures: Feminist Approaches to CSCW* workshop because of its relevance to my current research from an angle into which I have not delved as extensively as I would like. While I have participated in workshops about children with disabilities and about play, and I have learned about and utilized critical disability studies in my work, examining my research through an intersectional feminist lens will allow me to learn about how to more holistically consider equity, participation, and the connections between different forms of identity that children and families have, beyond solely disability status. Through this workshop, I hope to make connections with other researchers and designers whose work can inspire and teach me too. I also believe I can share the knowledge I have gained from my particular research approaches and my personal experiences in the field with diverse children and in designing and developing my technology with other workshop attendees.

Biography

Kiley Sobel is a Ph.D. candidate in Human Centered Design & Engineering at the University of Washington, advised by Dr. Julie A. Kientz. She is also a National Science Foundation Graduate Research Fellow. She is interested in universal design, Interaction Design and Children, Child-Computer Interaction, and Assistive Technology. Her primary research is in understanding how interactive technology might help increase opportunities for children to equally, actively, and meaningfully participate in the same setting. She has done assistive technology research with Microsoft Research, worked as a teacher's assistant in early childhood education classrooms, and worked as a behavioral therapist for children with autism.

Acknowledgments

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