Play-Based Design: 
Face-to-Face 
Interaction for 
Young Children 
Voices in the Design Process

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Research Setup
➢ Collaborative, child-centered design activities
➢ Support lightly-structured creative social play in the style of the Tools of the Mind (ToM) curriculum
➢ 7 of 101 publications over last 20 years include children under 5 in design process as informants
➢ 12 sessions with 4-year-olds and 7 sessions with 3-year-olds

Story Carnival
➢ Generic Props
➢ MiniBird

High Quality Social Play
➢ Children engaged in pretend role-play
➢ Common goals to plan play session
➢ Social dialogue and negotiation
➢ Use of generic physical props

Benefits
➢ ToM growth of self-regulation and executive function skills
➢ Improve math ability, reading, literacy and vocabulary, theory of mind, and creativity
➢ Feels like play and activity that children enjoy
➢ 32 ideas generated (19 from 4-year-old and 13 from 3-year-old)

Impact of Voice Agents
➢ Mean time off task: 8.1% 4-year-old and 4.2% 3-year-old
➢ Children mediate voice agent
➢ Voice agents promote peer interactions and redirect behavior
➢ Voice agents support communication between children and facilitator without interrupting play

Future Directions
➢ Facilitate design of technologies to promote children under 5 creating, connecting, and communicating (3Cs)
➢ Increase sustainability and inclusiveness
➢ Set up tools to allow non-programmers to create components
➢ Goal: Understand the roles of technology between the types and interactions supported

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