"Alex speaks with my voice!" Promoting science reasoning with bidialectal virtual peers.

Samantha Finkelstein, Ph.D.
Human-Computer Interaction Institute
Carnegie Mellon University

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Abstract: Since its founding, the United States has purported a proud heritage of cultural diversity. Despite this, in the realm of education, traditional school systems have largely treated students’ cultural differences as cultural deficiencies, and these differences have been under-considered, under-valued, or actively rejected in classroom contexts. In educational technology, we see the same institutionalized cultural barriers replicated even in unintentional design choices, such as in the pervasive use of and inflexible enforcement of Standard English dialect.

In this project, we use a virtual pedagogical peer, Alex, to promote students’ use of science reasoning, modeled during a collaborative dialogue that involved asking questions, proposing alternate explanations, and co-constructing ideas. We used Alex to investigate how agent dialect affects learning and social engagement for bi-dialectal students. We compared an Alex who spoke exclusively using school-ratified Standard American English (SAE), even in informal conversation contexts, with an Alex who was bidialectal, speaking SAE during a final “science presentation,” but using features of African American English (AAE) during initial social or brainstorming contexts. Across three studies with bidialectal African American students, we found that social engagement and learning outcomes were stronger with the bi-dialectal agent.

We show that educational technologies are not immune to some of the cultural critiques that have historically been given to brick-and-mortar school systems. This work reveals ways in which often-unquestioned design choices, such as dialect, have negative consequences on the efficacy of educational interventions for already-marginalized populations. The results support the insight that educational technology, like education itself, exists within a broader cultural and political system that cannot be ignored.

Bio: Samantha received her PhD from Carnegie Mellon’s Human-Computer Interaction Institute in 2017. She was a recipient of the National Science Foundation Graduate Research Fellowship Award, and was awarded a trainee fellowship in the Institute of Educational Sciences funded Program in Interdisciplinary Education Research. Samantha has worked on designing and evaluating value-sensitive technologies, with a focus on understanding how factors like identity and social relationships impact the effectiveness of various technological interventions. She’s presented this work at the World Economic Forum (2015, 2016) and The Global Education and Skills Forum in Dubai (2017). Samantha is currently a Senior User Experience Researcher at Chase, where she works to improve accessibility of financial goals and support savings behaviors.