MULTIMODALITY AND INFRASTRUCTURE: SEEING BEYOND DEFICIT FRAMINGS OF DISABILITY AND AAC USERS IN K-12 STEM

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THEME:

Expanding STEM opportunities through inclusive practices

BACKGROUND AND AIMS

Disabled students in science are most often positioned as deficient, needing assistance and accommodations to participate in science learning activities (McInnis & Kahn, 2014). One group of students that has been almost left out of inclusive science education research is users of augmentative and alternative communications (AAC) technologies. The term AAC is used to describe a variety of tools, from picture-based communication books to voice output devices, which generate spoken words from user-inputed symbols, typing or predictive text. They are often used by students with autism spectrum disorders, cerebral palsy, apraxia of speech and other disabilities that can impact expressive language. In this paper, we offer a critical review of the literature in critical disability studies, human computer interaction, and scientific modeling in K-12 education and argue that the emphasis on multimodality as a central feature of scientific modeling (Lehrer & Schauble, 2006) is deeply synergistic with the representational practices of AAC users (Ibrahim, Vasalou & Clarke, 2018) in ways that can contribute to re-understanding AAC users as unique and valued actors in classroom scientific practices.

METHODOLOGY

Using the interpretive synthesis method (Noblit & Hare, 1988), we offer a critical review of literature in critical disability studies, human computer interaction, and science education (with a focus on modeling) that focus on AAC users. We used a combination of both theoretical and purposive sampling and identified 34 papers published in research journals, and then used the constant comparative method to identify key themes.

RESULTS AND CONCLUSIONS

The main findings of our critical review are: a) AAC use is a rich, multi-modal and distributed experience, that involves a high degree of complexity of interpretive and representational work; and b) recognizing the distributed nature of and the infrastructural support for AAC communication is essential for recognizing and valuing contributions of AAC users in science classrooms. Our findings challenge deficit framings of disability in which disability is located within the student, and in contrast, illustrate how viewing AAC users as creative and multimodal communicators can help us center their participation in science classrooms.

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