

4-2023

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Recommended Citation

Dou, R. & Cian, H. (2023, April). A pluriversal model for equity in family and youth STEM identity research and praxis [Presentation]. 2023 NARST Annual International Conference, Chicago, IL.

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A Pluriversal Model for Equity in Family and Youth STEM Identity Research Praxis

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Session Type: Paper Presentation

Presentation Date: April 2023

Presentation Location: Chicago, IL

Keywords: Pluriversality, Equity, STEM identity, Research, Praxis, Families, Youth

Suggested Citation: Dou, R. & Cian, H. (2023, April). *A pluriversal model for equity in family and youth STEM identity research and praxis* [Presentation]. 2023 NARST Annual International Conference, Chicago, IL.

Studies of family science capital and its effects on child engagement and STEM identity development have yet to fully account for how researchers' and "participants'" onto-epistemologies interact, and more importantly, how researchers perpetuate and promote colonial practices through implicit (and explicit) conceptual framings of "appropriate" STEM knowledge and behaviors (Kayumova & Dou, 2022). Such unaltering standards are communicated through ethico-political heuristics, often insidiously embedded in the researchers' data collection tools (e.g., survey instruments and interview protocols). The design of such tools can coerce participants to question their cultural knowledge and lived experiences as they evaluate their affiliation with STEM contexts and spaces, as opposed to inviting them, particularly those outside of academia, to question the boundaries and characteristics of the contexts and spaces themselves (e.g., science as objective and empirical, the temporal and spatial universality of the "scientific method" in knowledge creation, findings presented by "scientists" as unquestionable facts). When learning spaces are designed in similar fashion, intervention efforts will promote a

minimizing of diversity in STEM engagement. Thus, efforts to increase the participation of minoritized youths either fail because such efforts either (a) alienate youths’ attributes and identities or (b) require youths to adopt the (often) white, middle-to-upper class masculine identities and dispositions that currently define STEM contexts and spaces while suppressing many of their lived experiences and ways of being in order to be considered successful (e.g., Dou et al., 2020; Francis et al., 2017; Jaeger et al., 2017; Simon et al., 2017). We posit that such efforts also fail to align with broadly noted conceptions of equity in the United States post-2020.

In this symposium, we present how we (re)consider and take into account the consequentiality of both our own (as researchers) and our participants’ onto-epistemological beliefs in relation to STEM and STEM contexts, particularly attending to the relationship between these beliefs and identity development through an ethico-political praxis centered on notions of equity as a pluriverse (Kayumova & Dou, 2022). Specifically, we focus our attention to this consequentiality in the *design, outcomes, and proposed implications* of our ongoing multi-methods research exploring the role of family science conversations in youth STEM identity development. Using examples from our relational interactions with Latine and immigrant families over the last three years, we illustrate how we came to identify tensions that existed not only between researcher and participants’ onto-epistemological and ethico-political beliefs about STEM, but also how the data collection tools we used to explore STEM identity development required revision to address these tensions. Specifically, we noted that we needed research approaches and dispositions that avoided establishing a standard of STEM participation and allowed equitable consideration of the value of ways of engaging with STEM that were familiar to our participants. We will present examples from our work that takes a decolonial, ecological approach to identity development, reconstituting our analytical lens on the construction of

learning contexts’ fit for youths and families with diverse experiences and insurgent dispositions, rather than on learners’ fit for learning contexts. Through these examples, we will articulate the need for STEM education scholars seeking attendance with equitable praxis to consider the onto-epistemologies of families and communities within all aspects of research—from the construction of data collection tools that provide equitable recognition of STEM engagement to the development of implications that frame interventions in terms of contextual change. We position these recommendations within an ecological lens, illustrating how equitable approaches require a pluralistic onto-ethico-epistemology for the intersecting persons and contexts that influence learners’ development and sharing strategies we have developed in response to our experiences and interactions. We will offer attendees of the symposium an opportunity to (re)consider this same consequentiality in their own onto-epistemologies using a theory of action that hinges on a critical examination of research “implications” against a vision of STEM identities as ecological boundaries (Cadenasso et al., 2003) where heterogenous conceptions of STEM and STEM identities exist, sharing multiple overlapping, communities-driven, context-dependent goals.

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