NARST - Title: Using communities-of-practice to support informal educators' professional development

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Informal educators have an ongoing need for professional development to accurately and effectively communicate complex science issues. In addition to learning theory and specific science concepts, these professionals need strategies for utilizing relatively brief interactions to convey their messages and effectively work with multiple audiences that include a range of ages, content sophistication, interests, and political identities; in particular their strategies need to relate to motivation for learning about the specific complex science issue (Bevan & Xanthoudaki, 2008). Unfortunately, informal educators may lack the resources for obtaining the necessary professional development and thus may default to avoiding a given issue or offering only limited programming (e.g., authors' publication). To address this challenge, we applied an emergent community-of-practice (CoP) approach to provide professional development to regional informal educators addressing climate change education (CCE) and to attempt to create a sustainable community of educators. We are exploring challenges and strategies for facilitating this CoP and subsequent impacts on members' practice. We will present the process that informed project design, provide data that reveals the kinds of learning that occurred among members, and describe the emerging relationships between learning opportunities and learning outcomes.

A CoP is a sustained learning partnership with regularly interacting members who have a commitment to a shared domain (Wenger 1998). Unlike most professional development models that dictate outcomes, CoP members co-create outcomes, and CoPs are bounded by shared identity founded on interest and intrinsic value expectations (O'Donnell et al. 2003). We created a structure that differs from more traditional CoPs because (1) our members initially had only a shared interest not a shared practice (as they resided in dissimilar institutions), (2) we (as facilitators) initiated and organized the community through a funded NSF grant and initially directly recruited members, and (3) we did not use the term "community" until the members self-identified as such. At its inception, we used reflective practice to foster group cohesion, deep interaction, and meaningful connections; this was supported by guided instruction and discussions focused on philosophy, context, content, prior experiences, and other internal data (Schön 1983). With time, we helped community members form a shared practice by gradually increasing the focus on CCE content and pedagogical practices in community meetings (Bales, 2009).

Through worksheets, reports on practice, and informal discussions, we are gathering data on how our CoP strategies impacts members' perception of the value of the community and their practice. Thus far, we have found that engagement with a range of learning opportunities within the CoP (e.g., traditional training experiences, informal

conversations, collaborative projects, community meetings) is supporting the unique and varied needs of community members. Indeed, members have recognized the immediate, potential, applied, and realized value of the CoP (see Wenger et al. 2011). We also have evidence that members are changing their practice based on what they are learning together in the CoP. For example, members have integrated guidance on framing and CCE provided during the CoP into staff development at their home institutions, and they have expanded informal conversations about outdoor explorations into a wide range of collaborative projects. Overall, our CoP is offering an important and appropriate professional development approach for informal educators addressing a complex topic as it allows them to authentically define and share learning outcomes, engage in active collaborations, and reflect on the implications of these experiences on their practice. Of particular interest to NARST members are the unique and necessary affordances of learning opportunities embedded in CoPs that our research suggests are necessary to meet the ongoing needs of informal science educators.

References

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