

Promises and Challenges of Virtual Human-Centered Design With and For Rural Communities

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Abstract: Approximately 13.4 million children in the United States live in rural areas, and a growing body of research indicates these children often lag behind their non-rural peers academically, thus establishing an achievement gap. This poster details initial stages of the MOLLY OF DENALI Rural Engagement Initiative project which utilized human-centered design in the co-development of educational resources that authentically reflect and amplify rural, multicultural perspectives, while addressing aspects of the achievement gap.

Keywords: human-centered design, rural, media, elementary, participatory design

Approximately 13.4 million children under the age of 18 live in rural areas in the United States (US Census Bureau, 2016). Rural schools enroll more students than the US's 85 largest school districts combined; one in six students in the rural US live below the poverty line, and one in seven qualifies for special education (Showalter, Hartman, Johnson, & Klein, 2019). Yet, a growing body of research shows that children who grow up in rural communities often lag behind their non-rural peers in educational achievement (Lee & Burkam, 2002; Miller & Votruba-Drzal, 2013). Data from the Early Childhood Longitudinal Study indicated that kindergarteners in rural communities perform below their suburban peers in math and reading (Miller & Votruba-Drzal, 2013).

Children living in rural communities could therefore benefit from early educational engagement initiatives; however, there remains a dearth of educational resources developed by and for rural communities. The MOLLY OF DENALI Rural Engagement Initiative aims to fill this gap by developing educational resources for informal learning in rural communities, designed with rural communities. Using a human-centered design approach (HCD), six public media broadcasters (PBS stations), Alaska Native and educational content advisors, and families in rural communities across the United States worked together to develop a suite of educational games to promote family engagement around the educational concepts of informational text and social studies.

This poster details initial stages of the MOLLY OF DENALI Rural Engagement Initiative design process, using HCD in the co-development of program materials and resources that authentically reflect and amplify rural, multicultural perspectives, while also addressing the achievement gap between rural children and their non-rural peers. The educational materials created for this project are based on MOLLY OF DENALI, the first nationally distributed children's television series in the United States with a Native American lead. The show, targeting children ages 4-8, follows the adventures of feisty and resourceful 10-year-old Molly Mabray, an Alaska Native girl who lives in the fictional town of Qyah, Alaska (<https://pbskids.org/molly>).

The team's approach to HCD is also rooted in participatory design, which focuses on giving individuals a voice in the design process, regardless of their background or level of expertise. As Disalvo & Disalvo (2014) discusses in their paper illustrating the connections between participatory design and learning sciences, parents and teachers are rarely involved in designing learning environments, yet they are extremely influential in what and how children learn. Participatory design provides an avenue for more people to be part of the design process, which ultimately leads to solutions that reflect the entire community's learning values. In highlighting the first two phases of HCD, this poster aims to contribute unique learnings from conducting HCD virtually, with team members who are located across the United States and are new to using a participatory design process. The poster will also provide a demo of the materials that were ultimately designed for the families.

Project phase 1. Assemble the design team

The design team consisted of the authors (a public media station), five partner public media stations ("partner stations"), Alaska Native advisors, and educational content advisors. Partner stations and the Alaska Native advisors convened in Alaska in order to (1) build their capacity of the principles and practices of HCD, as outlined by the IDEO theoretical framework (IDEO, 2015); (2) learn about each phase of the HCD process through hands-on exercises; and 3) explore MOLLY OF DENALI and the role of culture in the series. Upon the conclusion of the workshop, the design group sought input from the end users, families in rural communities, to understand what kinds of educational resources they needed and wanted.

Project phase 2. Community conversations

The design team identified the needs of families in rural communities as part of the *Inspiration* phase. Rather than focusing on *all* rural communities, the team focused on the rural communities served by the partner stations, where the stations already had credibility and deep relationships with local families. In total, stations spoke with 15 families from across Alaska and the Lower 48 states, some of whom reside in indigenous communities.

Project phase 3. Virtual brainstorming

After spending time with families in partner communities, the design team began the *Ideation* phase of the HCD process by convening virtually to share what was learned, identify relevant themes, and begin brainstorming the resources for informal learning settings to prototype.

Project phase 4. Iterative design and testing of materials

Based on the virtual meetings and conversations with advisors and families, the next step of the HCD process was for the authors to iteratively design and test low-fidelity prototypes in order to inform the development of the final educational materials. After using each of the prototypes, families and station members shared their feedback about the materials using structured rubrics; the rubrics were analyzed for family engagement, learning outcomes, and feasibility. Responses from 27 families, as well as comments from the five stations, provided the basis for the design of the final set of materials: 16 indoor and outdoor games that promote family engagement around social studies and informational text, which are currently in development.

Discussion and significance

This project provided opportunities to explore (1) using an inclusive process to create MOLLY OF DENALI educational resources that accurately reflect and amplify the voices of rural communities, and (2) adapting the traditional HCD process for design teams who primarily interact virtually and have minimal or no previous experience using HCD. Using a strength-based approach, the design team collaborated with a large, often ignored group – rural communities. The design team is now set to develop meaningful, engaging, and educational MOLLY OF DENALI games that are the result of a community based, HCD process, while also building the capacity of rural public media stations on how to conduct their own HCD projects in the future. The authors learned about best practices for onboarding team members who are new to non-linear design processes like HCD.

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