Preparing the Next-Generation Rural Workforce Through Inclusive and Place-Based Smart and Connected STEM Educational Delivery Models

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WHO

The school-aged residents of growing Midwestern communities, primarily the US-born children of migrants and refugee low-skilled workers, represent a significant untapped population of future STEM workers and entrepreneurs growing up in and wanting to stay in rural America.

WHY

There is a lack of research on workforce development in rural communities with large migrant and refugee populations. Thus, there is a critical need to study train strategies and keep this skilled workforce local to rural communities where expanded employment opportunities will limit the out-migration of technical and entrepreneurial talent.

HOW

- Identifying stakeholder needs and aspirations for new place-based educational curricula in STEM fields and entrepreneurship in partnership with the community.
- Co-designing innovative XR-enabled technology delivery models to meet these needs.
- Assessing the outcomes of the pilot project to develop future large-scale research projects based on the results.

BROADER IMPACT

The pilot activities test if the power of XR can significantly increase the quality and impact of STEM education. The long-term objective is to develop XR-enabled systems for rural students that allow them to achieve the same levels of engagement, understanding, and mastery as their counterparts in better-resourced urban and suburban communities.

NEXT STEPS

- Assess data from community activities to determine most engaging and impactful
- Extend activities to middle school children

Pilot new XR-enabled STEM educational delivery models developed in collaboration with youth and adults in rural communities with large numbers of low-skilled workers shows great potential for developing large-scale place-based research projects through co-design.

ACTIVITIES

1) COORDINATION VISITS

Two coordination visits to forge relationships with Iowa 4-H, Youth Outreach Coordinator for ISU Extension and Outreach in Buena Vista County, teachers in the Storm Lake CSD, district families, and two local community organizations focused on holistically supporting students and their families.

2) CO-DISCOVERY WORKSHOP WITH STUDENTS

A workshop with students in Storm Lake to learn more about how they are growing up in rural regions in Iowa and how we can together re-imagine a future in careers and jobs related to STEM.

3) STEM EDUCATION WORKSHOP WITH STORM LAKE TEACHERS

A workshop with teachers in Storm Lake to identify their needs and aspirations for STEM Education in the community, explore their definitions of what STEM means for them, their students, and the community; and identify strategies to reinforce STEM pathways in rural communities.

4) SUMMER CAMP AND VISITS TO ISU

A 3-day summer camp and visits to ISU to get the students excited about STEM for higher education degrees, college and career readiness, XR tech, design tech, creating digital tech, STEM in education, game design, game-based learning, and human-centered design.

5) GAME JAM

A 2-day design jam took place in Storm Lake to design games that represent issues faced by the Storm Lake community using an accessible 2D game engine, aiming to generate new ways of thinking and creative ideas around real-world challenges.

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