American Samoa is an unincorporated US Territory of 7 islands located 14.3 sq. 170.7 W totaling 199 square miles. Samoans, 90% of the population of 55,600 maintain traditional culture, language, and village identity. However, adoption of US textbook-based instruction and rapid cultural change have decoupled science teaching from urgent local issues of climate change, food sustainability, loss of mangroves, and water and waste pollution that compromise the health of communities and ecosystems. American Samoan teachers transformed their curriculum and pedagogy via three professional development (PD) strategies that look to the past to problem-find and problem-solve: place-based PD, community mapping, and curricular mapping.

Rapid urbanization (57%), population increase, clearing of forests and mangroves lead to issues of water sufficiency, distribution, and pollution of ground and coastal waters. Climate change leads to more frequent cyclones, storms, flooding, and erosion that threatens unique ecosystems and coastal habitats. Adoption of American lifestyles and diet contribute to lowest life expectancy in the US, 73-4 years vs. 81.3 in Hawai‘i. Indigenous ecological knowledge, practices, and values support food sustainability, active lifestyles, health diet, and environmental literacy but adoption of US texts and classroom curricula and past policies of English-only instruction disrupt cultural transmission of place-based STEM knowledge and practices oriented to sustainability.

A Framework for K-12 Science Education (NRC, 2012) states: “culturally influenced ways of approaching nature reflect a diversity of perspectives that should be recognized in designing science learning experiences” (p. 257). Samoans integrate culture and nature through stories that contain ecological, geological and historical knowledge and practices (Suau’a, 2013). Chiefly control over access to natural resources mandated deep place-based knowledge to maintain resilient, sustainable local social ecosystems. The Fourth National Climate Assessment (2018) reports: “Indigenous peoples of the Pacific are threatened by rising sea levels, diminishing freshwater availability, and shifting ecosystem services...Built on observations of climatic changes over time, the transmission and protection of traditional knowledge and practices...are intergenerational, place-based, localized, and vital for ongoing adaptation and survival.”

Seewald’s (1992) theory of structure and agency and Gonzalez et al’s (2005) theory of funds of knowledge opened the heuristically of culture, knowledge, and identity support teacher agency in transforming instruction to connect place, indigenous culture, and STEM.

LITERATURE REVIEW

American Samoa: Looking Back to Move Forwards
Pauline W. U. Chinn, College of Education, University of Hawai‘i at Manoa

AGU Fall Meeting
Dec. 10-14, 2018, Washington, DC

ABSTRACT

American Samoa is an unincorporated US Territory of 7 islands located 14.3 sq. 170.7 W totaling 199 square miles. Samoans, 90% of the population of 55,600 maintain traditional culture, language, and village identity. However, adoption of US textbook-based instruction and rapid cultural change have decoupled science teaching from urgent local issues of climate change, food sustainability, loss of mangroves, and water and waste pollution that compromise the health of communities and ecosystems. American Samoan teachers transformed their curriculum and pedagogy via three professional development (PD) strategies that look to the past to problem-find and problem-solve: place-based PD, community mapping, and curricular mapping.

PROBLEM

Strategies of place-based PD, community and curricular mapping help teachers integrate knowledge of place, culture, and STEM to create curricula relevant to students’ lives and cultures. Teachers research primary and secondary sources, going back in time via archeology, cultural stories, and interviews of elders. Community-based PD in professional learning communities (PLC) with community partners develops new resource networks that span school and community Curricular mapping intersects and contextualizes teachers’ new place and culture-based knowledge with STEM content. This case study focuses on the interdisciplinary earth science unit created by teachers from Leone who allowed me to share their work.

LITERATURE REVIEW

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METHODOLOGY: CASE STUDY

Methods: Data include teachers’ reflective writings, presentations, lesson plans, e-mails, photographs and field notes.

Participants: Ms. Savaili and Ms. Su’a are among 23 teachers in American Samoa’s first cohort of STEM Master of Education students. Ms. Suau’a is a field archeologist and cultural historian.

CONCLUSION

Findings suggest PD delivered in PLCs integrating Western and Samoan STEM knowledge, culture, and place supports teacher agency, engagement with their own learning, and cultural transmission. Savaili and Su’a wrote about preserving landmarks and teaching ways to be resilient when faced with natural disasters. After Cyclone Gita, 2018, bats fed on uncommon fruits, nii and pandanus. The 2009 tsunami brought debris and pollution to Leone’s wetlands, beaches and ocean. Planting breadfruit, mangroves, and pulu (banyan) helps to restore the ecosystem and prevent coastline erosion. They concluded: “The development of this placed based paper using our backyard as a starting point has really opened our eyes to knowledge that wasn’t known before. Research and reading have ignited in us curiosity and hunger for more depth of history and culture that we need to bring to life and make aware to our children before it goes extinct.”

REFERENCES


