

**Student Engagement in a Place-Based Educational Experience to Enhance Ag Literacy**

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### **Introduction/Need for Innovation**

In educational settings, there are several ways teachers and professors alike contextualize learning in their classrooms to encourage the development of agricultural literacy (Clemons et al., 2018). This might include service learning, community-based learning, inquiry-based learning, land-based learning and more. One pedagogy that is underutilized, especially in agricultural education, is place-based education (PBE)—currently, no literature exists in the *Journal of Agricultural Education* directly relating to place-based education. One exception is McKim et al.'s (2019) study on land-based education, a practice that shares theoretical backings with PBE. Place-based education aims to increase student and teacher engagement, impact communities, and boost academic outcomes (Loveland, 2003), which overlaps with agricultural education's three component model of engaging in multiple learning experiences such as experiential learning, laboratory and classroom instruction, and leadership experiences. The two models encourage engagement and learning experiences to occur in their community (Croom, 2008). Place-based education is often confused with similar models like project-based learning and field trips but has distinct characteristics that separates it from other frequently used practices in agricultural education.

PBE is defined as “the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, sciences, and other subjects across the curriculum” (Sobel, 2004, p. 11). It emphasizes the use of hands-on, real-world experiences to increase academic achievement while strengthening ties to their community and enhancing student appreciation for the natural world simultaneously. Place-based curriculum and the design of local investigations to create authentic engagement with people, places, and things, outside of the classroom involves an array of complexities (Demarest, 2014). In short, place-based education is designed to capitalize on lived experiences to help students learn about their immediate surroundings (Knapp, 2005). While authors like Vander Ark, Liebttag, & McClennen, (2020) argue there are six principles that must be met in order for it to be considered as place-based education, others simply identify common characteristics that are frequently observed in PBE curricula (Smith, 2002; Woodhouse & Knapp, 2000). These characteristics include phenomenon as a foundation, students as creators of knowledge rather than consumers, student-centered design through questions and hypotheses, teachers as facilitators and community “brokers”, a fluidity between the school and the community, and contribution to the community wellbeing and sustainability (Ormond & Zandvliet, 2016).

### **How it Works/Methodology**

A place-based educational unit was developed in collaboration with a local high school biology teacher in Indiana designed to address an overgrown school forest. The teacher expressed a desire to restore their outdoor classroom and create a space that students will be able to use and

enjoy. The unit had three main topics: invasive and native species, biotic and abiotic indicators of ecological health, and forest restoration. Students explored concepts of native and invasive by using common examples like European Starlings, Zebra mussels, and nutria. Students then selected a local invasive species and created a public service announcement about how to identify and control the selected species. Once students understood native and invasive species, they conducted an ecological survey of the school forest by sampling a 10'x10' area. The survey included identifying various plants, animals, and insects in their selected sample area. Students then calculated the biodiversity of the forest, paying close attention to what percentage of the forest was bush honeysuckle, a fast-spreading invasive species. Additionally, students surveyed biotic factors like plant and animal habitation, and abiotic factors like the soil profile, soil pH, and the temperature of the ground and air. Once the health of the forest was determined, students created restoration plans to be presented to a local soil and water conservation office. Narratives from their plans will be used to develop a grant application to fund the restoration efforts. The unit emphasized developing solutions to an agroecological systems problem in their community and encourages students to take ownership of the space.

### **Results to Date and Implications**

Students completed a pre-post questionnaire about their preferred and actual learning environment and involvement in the community (Zandvliet, 2012). In addition to artifacts from the engagement and questionnaires, students were interviewed in groups about their experiences. While data for the intervention is still being analyzed, initial data shows a positive response to the unit. Upon introducing the project, most students were unaware that the schoolgrounds had a forest. This emphasized that community resources and connections exist and are waiting for us to use. As a result of the project, students expressed feelings of pride knowing they could address problems and be change makers in their community.

### **Future Plans and Advice to Others**

Future plans for the project include extending it into a multi-year project where students will carry out the restoration plans the current cohort created. With the help of local ecology and wildlife professionals, their restoration plans can be put into action while learning from field experts. When planning place-based engagements, it is recommended to try to identify a community problem that needs addressing or a topic or phenomenon that can be connected to the community.

### **Cost and Resources Needed**

Place-based education is very cost friendly, despite common assumptions that field trips or travel are required for implementation. Being able to engage in your community or at your own school does not require an associated cost. As place-based education is a practice, there is no associated curriculum package and lessons or units can be developed from existing plans. As far as resources, place-based education does not require special equipment or tools on its own but can be enhanced by using them.

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