

**Art, Ag, & Action: Developing Campus Partnerships for Inquiry-Based Learning in
Agricultural Literacy**

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Introduction

Pre-service students in agricultural education at The Pennsylvania State University complete a curriculum that includes educational theory, methods, and psychology. Students have previously identified shortfalls in preparation to deliver place-based learning opportunities, however. Campus entities like museums (Gray, 2007), botanical gardens, (Olsen et al., 1999) and commons spaces in the libraries (Galle, 2017) offer potential for high impact learning experiences that facilitate the benefits of place-based learning. Work from Lin (2022) documented measurable impact on food security education through the significant integration of sustainable campus farms into courses and Langran and DeWitt (2020) noted increased student engagement and retention of skills because of content supplemented with place-based learning experiences. Additionally, inquiry-based opportunities are shown to be more effective when conducted on-site as a place-based experience (Thomas, 2020). While studies on place-based learning and use of inquiry techniques are prolific, exploration of the intersection of place-based learning at art museums to engage students in agricultural literacy is absent. Scholars have documented a narrow focus of agricultural literacy at the elementary level (Balschweid et al., 1998) and little enhancement at the secondary level (Colbath & Morrish, 2010). Educational systems must take a role in addressing agricultural literacy (Dale et al., 2017) and considering that combining science and art synthesizes increased innovation and motivation (Jefferies & Jeffries, 2022) the use of art for literacy may become a powerful tool for teachers in applied STEM to facilitate differentiated instruction. Arts integration has been documented as a successful tool in addressing Next Generation Science Standards (NGSS) are implemented and art museums represent a storehouse of art-based tools for high-impact, place-based learning opportunities for applied STEM educators.

Given the identified gap in place-based instruction, agricultural literacy, and preparation of pre-service agricultural education students to deliver place-based instruction related to agricultural literacy, the instructional team at the Center for Professional Personnel Development at Penn State developed a partnership with the Palmer Art Museum to leverage inquiry-based learning demonstrations in a place-based context. Educational outreach coordinators from the Palmer Art Museum led activities with varying degrees of inquiry that were bookended with practice in designing and refining learning objectives from the course instructors. For many teachers, a lack of background in pedagogical training for use of the arts leads to a disconnect between art and the STEM area (Glass & Wilson, 2016). Therefore, pre-service students who are training to be agricultural educators participated and concluded the experience with the construction of a digital learning artifact that peers in the agricultural education community can use for best practices in delivering place-based inquiry learning opportunities.

How it Works

Initial conversations with the Palmer Art Museum began at the start of the semester through a shared interest in both working with agricultural education students as well as providing experience for the museum's educational outreach intern in planning and delivery of programming. On the day-of, students from the agricultural education capstone course were guided through a pre-departure activity where they met at the Palmer Art Museum and worked in pairs to identify objectives that they deemed appropriate for a field trip to an art museum. The tour began and the first stop was a showcase of teacher-centered learning with an in-depth explanation of a painting showcasing agricultural commodities from Pennsylvania. The second stop was a showcase of inquiry-based learning using a piece of art that related to early textile production in the Northeastern US. The final stop was a student-centered approach to learning in the affective domain as students were tasked with finding and discussing an agricultural-themed art piece that related to their personal journey in agricultural education. Students concluded the experience by revisiting their objectives to identify needs for adjustment based on how the place-based experience went and what they would repeat or do differently to facilitate a similar experience during student teaching and beyond.

Results to Date

Students in the capstone teaching methods course (n=11) who participated in the place-based education experience reflected about the session as well as thoughts for application of the session in their professional blogs. Every student created a reusable learning artifact anchored in their blog space that will serve as a playbook for peers to plan and deliver a high impact place-based experience. Their reusable learning artifacts were collected and combined into a shared folder for use during the student teaching internship and all but one of the pre-service student teaching candidates have planned a place-based experience for their students using the best practices gleaned from the session at the art museum.

Future Plans

Student feedback as well as feedback from the museum educators were positive and the foundation for a partnership beyond just the capstone class was established. Students from other grade levels will now be visiting the museum in various capacities to engage in professional development that uses agricultural literacy through the medium of art. Long-term research will be conducted to evaluate the impact of the experience through improved agricultural literacy, increased use of the arts to deliver content, and improved educator self-efficacy to plan and deliver place-based learning opportunities.

Resources Needed

Items	Notes/Description	Unit Cost	Qty.	Total
Curator Fee	Museum fee for curator time	\$50	1	\$50
Lesson Materials	Workbook for tour	\$5	11	\$55
			Total	\$105

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