

Farm to Table PD Evaluation Report

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Sponsored by the Waynesboro Education Farm and Dr. Ying Jin's USDA NIFA grant, a professional development (PD) session focused on Project-Based Learning (PBL) with a Farm-to-Table theme was held on September 16 and 17 from 4:00 to 7:00 p.m. at the Waynesboro Education Farm. This PD drew 38 middle and high school teachers from nearby school districts. Table 1 presents participant information, including current grade level and subject taught, highest degree earned, years of teaching experience, gender, and ethnicity.

Table 1. Descriptives of teacher information

Items	Descriptives: number of teachers (percentages)
Grade	6 th grade: 7 (23%) 7 th grade: 6 (20%) 8 th grade: 5 (17%) 9 th grade: 1 (3%) 10 th grade: 8 (27%) 11 th grade: 4 (13%) 12 th grade: 4 (13%) Other: 3 (10%)
Subjects	Art: 1 (3%) CTE: 2 (5%) English: 8 (21%) Family Science: 3 (8%) Foreign Language: 3 (8%) History: 2 (5%) Math: 4 (11%) Science: 11 (29%) Social Studies: 1 (3%) Special Education: 1 (3%) Technology Education: 2 (5%)
Education	Bachelor's Degree: 27 (71%) Master's Degree: 10 (26%) Doctorate Degree: 1 (3%)
Years of teaching experience	Mean: 11 years Median: 7 years Min: < 1 year Max: 32 years Standard Deviation: 10 years
Gender	Female: 29 (76%) Male: 8 (21%) Do not wish to answer: 1 (3%)
Ethnicity	African American: 2 (5%) Hispanic: 2 (5%) White: 32 (84%) Other: 2 (5%)

Note: percentages may not add up to 100% due to rounding.

Among the participating teachers, the majority hold a bachelor's degree, are female, White, and are in the middle stage of their teaching careers. In terms of prior experience, 26 teachers (68%) have implemented PBL in their classrooms, 15 teachers (39%) have participated in professional development focused on PBL, and 17 teachers (45%) have taught in outdoor or farm-based settings.

Before and after PD, teachers completed pre- and post-surveys assessing their familiarity with PBL design principles, confidence in facilitating outdoor or farm-based learning, and likelihood of designing and implementing PBL that incorporates such settings. Items were rated on a five-point Likert scale ranging from 1 (e.g., not confident at all) to 5 (e.g., extremely confident), capturing teachers' self-perceived knowledge, confidence, and implementation intentions. Table 2 presents the pre- and post-survey results, showing higher mean scores across all items. **These findings indicate that the PD significantly enhanced teachers' knowledge, confidence, and intentions to implement PBL in outdoor or farm-based settings.**

Table 2. Pre- and post-survey changes on PD outcomes

Items	Pre-survey		Post-survey		Effect sizes (Cohen's <i>d</i>)
	Mean	SD	Mean	SD	
Familiarity with PBL design principles	2.66	1.02	3.89	0.80	1.10 ***
Confidence in facilitating outdoor or farm-based learning	2.71	1.09	3.74	0.72	0.87 ***
Design a PBL unit	3.79	1.28	4.50	0.98	0.46 **
Design a PBL unit connected to food, farming, or sustainability	3.24	1.17	4.32	0.87	0.79 ***
Implement the designed PBL unit	3.39	1.41	4.34	0.99	0.64 ***
Incorporate farm-based or outdoor learning into my teaching practice	3.34	1.24	4.29	0.98	0.63 ***

Note: Paired *t*-tests were conducted, ** $p < .01$, *** $p < .001$.

Teachers reported highly positive experiences with the PD as presented in Table 3. They emphasized the value of hands-on learning at the farm and reported gains in understanding how to design and implement PBL. Overall satisfaction was uniformly high, reflecting the effectiveness of the PD design and facilitation.

Table 3. PD experiences

Items	Mean	Median	Min	Max	SD
This PD increased my understanding of how to design and facilitate PBL	4.79	5	4	5	0.41
I gained practical strategies for managing student learning in outdoor or farm-based settings	4.53	5	3	5	0.65
The hands-on farm activities helped me see how PBL can be applied to my teaching	4.76	5	4	5	0.43
The PD activities were engaging and relevant	4.92	5	4	5	0.27

Overall, I am satisfied with this PD experience	5	5	5	5	0.00
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Before the PD, teachers were asked about what most excited them and what challenges they anticipated in implementing PBL in outdoor or farm-based settings. Tables 4 and 5 present the major themes derived from their responses, along with illustrative quotes from them. Teachers were most excited about exploring new instructional approaches to engage students in authentic, hands-on learning experiences in outdoor or farm-based settings. The primary challenges they anticipated involved logistical concerns and uncertainties related to implementation constraints, such as time, space, and resources.

Table 4. What excites teachers?

Theme	Description	Example quotes (occurrences of the theme)
Learning and innovation in teaching	Excitement about learning new approaches such as PBL, outdoor, and farm-based teaching to make lessons more engaging and effective.	“Learning more about the Farm to Table program and how to incorporate it into a middle school classroom.” / “The opportunity to learn more ways to incorporate PBL into our curriculum.” (16)
Hands-on and real-world learning	Enthusiasm for experiential, practical, and authentic learning that connects to real life and engages students meaningfully.	“The ability to have hands-on practice before doing it with kids.” / “Being able to make connections between the textbook science of geology to practical applications of farming.” (11)
Collaboration and community	Interest in connecting with other educators and community partners to share ideas and develop projects.	“I am excited to develop relationships with teachers outside of my campus and learn fun hands-on skills.” / “Community.” (4)
Personal fulfillment and enjoyment	Personal excitement for being outdoors, working with food and gardens, and exploring creative ideas.	“I love food and gardens and alternative learning.” / “Being out in nature.” (3)

Table 5. Anticipated challenges

Theme	Description	Example quotes (occurrences of the theme)
Logistical and time constraints	Difficulties with transportation, scheduling, and coordinating off-site activities or finding time to plan.	“Transportation to a farm would be a hurdle.” / “The district/state requirements for what we teach typically fill the whole year.” (14)
Limited access and resources	Barriers such as lack of space, funding, supplies, or administrative support for outdoor or farm-based learning.	“We have limited space around our school.” / “Having supplies and getting support to implement PBL.” (8)

Curriculum alignment and instructional fit	Struggles to connect farm-based learning to standards or existing subjects, especially in non-STEM areas.	“Connecting outdoor learning to my content (ELA).” / “Struggling on relating this to math in a way that excites the students.” (6)
Student and teacher readiness	Concerns about student behavior, engagement, and teachers’ own confidence or experience with outdoor learning.	“Classroom management and accessibility of ELLs.” / “I get overwhelmed trying to do something outside of my normal school day.” (5)
Weather and environmental factors	Unpredictable outdoor conditions that might interfere with planned learning.	“The weather.” / “Being rained on.” (3)

Teachers were also asked to reflect on their key takeaways from the PD. Their responses revealed a clear shift from uncertainty to confident action. Before the PD, many expressed concerns about logistics such as time, space, and transportation; afterward, they described concrete implementation plans, including creating herb gardens, outdoor cooking units, and courtyard-based projects. Teachers also moved beyond general curiosity about PBL to a deeper understanding of how to design authentic, interdisciplinary projects that connect core subjects with real-world applications. Additionally, the PD fostered stronger teacher collaboration, providing a community to exchange practical strategies and build a shared vision for outdoor and farm-based learning.

This report focuses on teachers’ experiences, perspectives, and intentions related to implementing PBL in outdoor or farm-based settings. The next step will involve evaluating student data to examine their engagement and learning outcomes as teachers translate their PD learning into classroom practice.