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A Food-Themed Cross-Disciplinary Faculty-Staff Learning Community Enriches Place-Based Experiential Learning Curricula - (Instructor Resource)

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Introduction

This document contains instructional resources to facilitate an 8-month Faculty-Staff Learning Community (FSLC) focused on learning and discussion to support the creation of campus farm-situated place-based experiential learning (PBEL) lessons that inspire place attachment, sustainability meaning making, environmental science literacy, and civic mindedness. *The development of this professional development resource is based upon work supported by the National Science Foundation under Grant Nos. DUE-1609219 and DUE-1915313.*

FSLCs are small multi-disciplinary groups of university faculty and staff that meet regularly to discuss a professional development topic of interest with an eye to the ultimate beneficiaries; students (Cox & Sorenson, 1999). The intentional inclusion of staff in the traditional Faculty Learning Community (FLC) format breaks down hierarchical silos, strengthens the academic community, creates opportunities for innovative living lab projects, and integrates curricular and co-curricular programming. In FSLCs, the facilitator is a member of the group that determines initial goals, but is guided by the interests and will of the group in final objectives and meeting topics (Cox, 2004). The primary goal of the FSLC curriculum presented here was to support faculty and staff in their efforts to create learning opportunities for students that enhance place attachment, sustainability meaning making of a place, environmental science literacy, and civic mindedness.

There were also two supplemental goals that were intended to support the achievement of the primary goal. These supplemental goals were to:

1. Build confidence as a cohort in the scholarship of teaching and learning by disseminating outcomes of the PBEL curricula and co-curricula as evidenced through academic presentations and publications (Richlin & Cox, 2004).
2. Establish campus farms as critical spaces for learning and collaboration that are integral to the lifeblood of the campus community, fostering long-term institutional support of these spaces (see Angstmann et al. 2022).

This FSLC curriculum uses a place-based experiential learning (PBEL) pedagogical framework. PBEL can be described as experiential learning set within a location to which learners may develop attachments and/or ascribe meaning (Angstmann et al., 2019). In experiential learning, knowledge is iteratively produced in a particular environment through an "experiential continuum" and is then reflected upon and reapplied to future experiences (Dewey, 2007, p. 45; Kolb & Kolb, 1999). This iterative process of a *concrete experience*, *reflective observatio*n of that experience, *abstract conceptualization* to explore the phenomenon of interest, and *active experimentation* to generate knowledge emulates the process of scientific reasoning to generate wonder, knowledge, and understanding of a particular topic (Angstmann et al., 2019, Figure 1).

Experiential learning undoubtedly occurs within a particular place and at a specific time. However, the attachments and meaning-making achieved by students may transcend the local places in which the learning experience occurred (Tuan, 1977). In fostering deeper connections to a local 'place', PBEL intentionally links local phenomena to global socio-environmental

problems (Gruenewald, 2003; Gruenewald & Smith, 2008) and facilitates the development of an ecological and communal identity (Gruenewald, 2003; Thomashow, 1996). All of this works to move students beyond the mere understanding of a phenomenon to a sense of responsibility, agency (Rodriquez, 2008), and civic mindedness (McInerney et al. 2011), all of which supports the cultivation of habits of civic action (Sobel, 2004; Stedman, 2002).

For this FSLC curriculum, the 'place' faculty and staff are learning to engage are college campus farms, which have experienced at least a 13-fold increase in number since 1992 to over 300 campuses, with 80% of these spaces less than 5 acres in size and 86% located on campuses with no agriculture school (AASHE, 2018; LaCharite, 2016). Campus farms—especially those at urban institutions—provide the rich interdisciplinary social context of urban and sustainable agriculture that spans the entire suite of social and physical sciences as well as non-STEM fields such as business, religious studies, and communications. Yet, the majority of these farm spaces are likely underutilized in the curriculum, engaging primarily with students majoring in agriculture or sustainability-related degrees and co-curricular programs (Galt et al., 2014; Parr, 2011). Expanding the curricular role of a campus farm beyond sustainability and agriculture courses increases collaboration among diverse faculty and staff. This expansion also upraises farm spaces as curricular resources while improving student outcomes related to environmental science literacy, place attachment, sustainability meaning making, and civic mindedness in STEM and non-STEM disciplines (Williamson et al., in press).

Successful implementation of PBEL can be challenging, because it requires an intentional and explicit linkage of local place-based phenomena to global economic, social, and environmental problems (Gruenewald, 2003; Gruenewald & Smith, 2008). However, with effective planning and implementation, PBEL pedagogies have the potential to encourage student agency through a "pedagogy of responsibility" (Martusewicz & Edmundson, 2005, p. 1), which supports the construction (as opposed to consumption) of knowledge through real-world experiences. This enables students to actively consider their civic role and its impact on broader society (McInerney et al., 2011; Smith, 2002). In fact, PBEL approaches have been shown to increase instructor and student enthusiasm and enjoyment (Dabbour, 1997; Lawson, 1995), to enhance perceived value of the learning experience to students (Graeff, 1997), and to positively impact student performance in content knowledge, course engagement, critical thinking skills, and civic mindedness (Ernst & Monroe, 2004; Gruenewald, 2003; Lieberman & Hoody, 1998; Sobel, 2004).

Objectives

This FSLC is designed to facilitate the co-creation of an engaging and collaborative space where faculty and staff can explore farm-situated PBEL in practice, learn about the campus farm and its agroecology approach, and experience success in the development and implementation of PBEL curricular activities (i.e., modules).

As designed, the FSLC consists of eight meetings (plus a social event) over the course of one academic year. The FSLC is intended to meet nine learning objectives:

1. Discuss the PBEL framework outlined in Angstmann et al. (2019) and identify student learning outcomes for course modules aligned with the framework.
2. Define and exemplify experiential and place-based education.
3. Compare and contrast modes of inquiry in different disciplines to construct an inquiry-based learning approach in your class.
4. Explore the concept of 'place' and the meanings that individuals subscribe to particular spaces. Operationalize how students will be encouraged to identify diverse meanings of 'place' to motivate learning and civic engagement.
5. Describe the ideal characteristics of a professional in your discipline through Scholarly Identity Mapping and identify important values and ethics related to environment and society that you will model for your students.
6. Demonstrate how to conceptualize and unpack "experience" through a farm-situated PBEL activity that models reflection and integrate critical reflection and discussion into module plans.
7. Make use of the PBEL framework to design course curriculum and evaluate the extent to which your module plan and its execution follow the framework.
8. Formulate assessments that measure specific module student learning outcomes and analyze data to inform refinement of modules.
9. Present integration of learnings from FSLC into course to the project advisory board and peers for formative feedback.

Each learning objective is intentionally created to include two parts—a learning goal and an applied goal for further development of class modules (which may contain multiple lessons)—to reinforce ties between PBEL theory and application to a classroom setting. Each participant is asked to complete a curricular template at the end of the FSLC, with each learning outcome contributing to its completion throughout the year.

Approach

In 2016 and 2019, the authors received National Science Foundation awards (DUE-1609219 and DUE-1915313) to 1) develop and implement a cross-disciplinary program of PBEL course modules using a civically-engaged space, such as a campus farm, as a place of inquiry, discourse, and community engagement and 2) measure impacts to faculty and staff collaboration and student environmental science literacy, scientific reasoning, place attachment and meaning, and civic mindedness. From 2016-2018, four participants from biology, chemistry, and environmental studies disciplines created and piloted 4-6 week PBEL modules for one of their courses. Learning from the pilot grant resulted in the development of the FSLC to further support PBEL curricular development for the four pilot participants and five new participants on the 2019 grant award in business, communications, pharmacy, religious studies, and education.

The FSLC was offered in the 2019-20 academic year as part of an ongoing FSLC initiative offered by the Office of the Provost. In addition to the FSLC facilitator and nine grant participants, additional applications to participate were solicited and reviewed through the Provost's office. This led to the participation of four additional participants in the fields of sustainability, art history, political science, and peace studies.

To reinforce engagement with the theoretical principles and applications of the FSLC's learning outcomes, every meeting has *pre-work* to prepare participants to discuss theory through readings and reflections and *post-work* to reflect, consolidate, and apply learnings into course modules (see "module development goals" in Table 1). The Canvas learning management system (Canvas LMS, Instructure) is used to submit pre- and post-work for other FSLC participants to view and discuss, share resources, and provide feedback on modules. Each FSLC meeting is 2 hours in length, except meeting six, which is a 6-hour field trip and workshop led by Patti H. Clayton, PHC Ventures, www.curricularengagement.com (see details under Meeting 6). PBEL design principles are used to create FSLC meeting activities to, position participants as both students and instructors.

Table 1. Schedule for the FSLC curriculum, including topics, module development goals, and FSLC learning outcomes.

Meeting	FSLC Topic(s)	Module Development Goals	LOs
1	Introductions, Course Module Presentations, PBEL Theory Discussion		1.
2	Modes of Inquiry	Question/problem and methods	2., 3.
3	'Place'	Strategies to connect local place to global contexts	2., 4.
4	Scholarly Identity Mapping	Student Learning Outcomes	1., 5.
5	Social Event		
6	Using Reflection to Unpack Experience		6.
7	Student Assessment, Incorporating Critical Reflection into Modules	Module Assessments	8.
8	Class Project and Activities Workshopping	Module Plan drafts	7.
9	Module presentations	Module Plan Feedback	9.
10		Final Module Plans Completed	
Mid- and end of-semester	Implementation check-in	Ongoing curricular refinement	8.

Now, we turn to a detailed description of each meeting. These descriptions contain information that a facilitator would need to run each FSLC meeting. Each description contains sections detailing pre-work, session work, and post-work.

Meeting 1: Introductions, Course Module Presentations, PBEL Theory Discussion

PBEL articulates situated learning with a meaningful interdisciplinary location and has been shown to increase instructor and student enthusiasm and enjoyment (Dabbour, 1997; Lawson, 1995), enhance perceived value of the learning experience to students (Graeff, 1997), and positively impact student performance in content knowledge, course engagement, critical

thinking skills, and civic mindedness (Ernst & Monroe, 2004; Gruenewald, 2003; Lieberman & Hoody, 1998; Sobel 2004).

Pre-Work

Prior to the FSLC meeting, participants are tasked with 1) watching the video "Experiential Learning: How We All Learn Naturally" (2015), 2) reading Angstmann et al. (2019), McClennen (2016), and Miller (2019), 3) identifying 2-3 course approaches they want to change, and 4) preparing a 3-5-minute chat about how they might incorporate a farm-situated PBEL approach in their class.

Session

The first meeting begins with introductions. Each participant is asked to talk about the course in which they are considering incorporating 'food' as a context for disciplinary learning, a challenge or concern in their class that they want to address, why they are interested in 'food' as a unifying pedagogical context, and beginning ideas for experiential projects they might conduct in the class to address their challenges or concerns. The group then establishes norms for the FSLC. The FSLC Learning Objectives and the meeting timeline are reviewed. Participants should be assured that the FSLC is not meant to be an add-on of more content, and that their disciplinary and teaching expertise is needed to enhance FSLC learning. For the remainder of the session, participants complete multiple activities centered around experiential learning and 'place' (Table 2).

Post-Work

On a Canvas discussion page, participants are asked to add bios, descriptions of their course and module ideas, and why they think this approach may improve their course.

Table 2.

Topic	Activity	Description
Experiential education definition	Pair-share	Pairs provide different quotes about experiential learning from the literature (Association of Experiential Education, n.d.; Breunig, 2005; Kolb, 2015; Lewis and Williams, 1994), identify key characteristics of experiential education, and regroup to create a working definition of experiential education for the FSLC.
Experiential learning theory	Discussion	The Kolb (1984, p. 41) quote, "Knowledge results from grasping and then transforming experience", is discussed as well as Dewey's Experiential Continuum (Dewey, 1938, p 33) and Kolb's four learning modes of experiential learning and how they manifest in their classes (Kolb 1984, p. 41).
Experiential learning application	Mapping	A figure showing how planned experiences can be imbedded in the experiential learning cycle (New Zealand Ministry of Education, 2004, first figure) is reviewed and participants mapp an existing or potential class experience onto this figure.

Experiential learning impact	Pair-share	The Spiral of Experiential Learning figure (Kolb & Kolb 2009, figure 4, p. 310, modified from New Zealand Ministry of Education, 2004) is discussed using the prompt *What aspect of the figure do you think is most important in determining whether a student gains civic mindedness and intent to act?*
'Place' definition	Think-share	Participants are asked to think-share on the idea of 'place'. *How does one define place? How does this differ from space or location?*
'Place' definition	Pair-share	BurrenBeo Trust (2018) figure is used to interpret and deepen understanding of place. *How, if at all, has your definition of place changed as a result of viewing this figure? How can one connect a local space to the broader domain to which that space belongs?*
'Place' application	Pair-share	Participants select three design principles from the place-based education design principles infographic (Getting Smart, 2017, p. 10) and brainstorm how they may be operationalized in their food curriculum.
'Place' impact	Think-share	"Place-Based Education can serve as a framework to connect learning models, increase the power of our educational system, and serve as the foundation for a thriving democracy." (McClennen, 2016). *How would a farm-themed PBEL module in your class connect with your existing learning models, improve student learning outcomes, and serve to further civic mindedness?*
'Place' and experiential learning	Discussion	Figure 1 from Angstmann et al. (2019) is used to connect experiential learning to 'place'.

Meeting 2: Modes of Inquiry

Using PBEL to address local problems helps us develop coherency in how we approach broader societal problems. Coherency in inquiry-based approaches and their language are integral to addressing current and future societal problems that need interdisciplinary approaches.

Pre-Work

Participants review the rules for the inquiry-based cooking game (see below), read Scotland (2012), and read their peers' Meeting 1 post-work discussion posts on the Canvas page. They are also tasked with designing a flow chart that details what the process of inquiry looks like in their respective disciplines.

Session

Participants partake in a gamified form of inquiry similar to the TV show Chopped (Food Network, 2009). Teams of 3-4 participants harvest 2-3 mystery ingredients from the campus farm and are tasked with creating a dish from farm-harvested produce (and other provided staple ingredients). Each team has access to the same ingredients. This activity is tied to

reflections and discussion around modes of inquiry in the activity and in different disciplines with the goal of creating a shared understanding of the basic stages of inquiry. Each participant then map their discipline's flow chart onto the experiential learning framework (figure 1, Angstmann et al., 2019) to create a common language of inquiry within the group. More details on this activity can be found in Appendix A.

Post-Work

Participants journal using the prompts: *What question or a problem are your students going to research or address? And what methods will they use? How does this approach use inquiry?* and *Write down one question you have about the science of urban agriculture or ecology based upon your experience harvesting on the farm. Note what aspect of the farm experience inspired that question. Research the question and write down the answers that you find* (This exercise was used meeting 6).

Meeting 3: 'Place'

Inquiry through experiential learning is a function of the environment in which it occurs. Pedagogical strategies that transcend a physical location to create a socially constructed local 'place' to which students can become attached and make meaning is imperative to linking local and global phenomena, developing an ecological and community identity, and fostering civic mindedness to evolve habits of civic action (Gruenewald, 2003; Smith, 2002; Stedman, 2002; Thomashow, 1996)

Pre-Work

Participants read McInerney et al. (2011), use a situated sustainability meaning making (SSMM) instrument developed for this study (see Appendix B; Sorge et al., 2022; Williamson et al. in press), and complete journal responses to prompts that help them identify sustainability "meanings"—focused upon the three pillars of sustainability: environment, economy, and equity (Purvis et al., 2019)—that they ascribe to the campus farm.

Journal prompts include: *Describe why each meaning matters to you. How, if at all, does each meaning connect to one or more of your personally held values? Name a different place (need not be related to agriculture and can be anywhere in the world) that you have experienced that also holds that meaning for you. Describe those other places and your key experiences within those places. Why, if at all, do you think you ascribe similar meanings to each of those places and to the campus farm? Select one of the meanings that you described, think of the opposite of that meaning, and a place that, to you, embodies the opposite of that meaning. Describe why.*

Session

Through discussions using the pre-work, participants unpack the concept of 'place' as formed by personal experience and explore how one specific location may evoke particular meanings based upon personal experiences. Then, a think-group-share activity is completed where each pair is provided a picture of a famous landmark and asked to write down the meanings they ascribe to the place. The facilitator then adds other documented place meanings for

each landmark using quotes from a diverse selection of widely known individuals or groups (see Appendix C). A discussion closed the meeting, using the prompts *How can consideration of diverse meanings of place be operationalized in your own classes? What approaches/tools can be used to encourage students to think about what meanings they subscribe to the campus farm or other urban farms? How can the recognition of personal place meaning be used to inspire students to connect their course learnings to change/civic action?*

Post-Work

Participants journal using the prompts: *What specific approaches or assignments will you utilize in your class to encourage students to think about what personal meanings they subscribe to the farm space in which they are learning? How will you help students connect their personal meanings for these places, to larger local and global issues, and how their discoveries in class can be used to direct personal and professional civic action? How will you help students connect their classroom experience with and personal meanings subscribed to urban farming to a global context of issues?*

Meeting 4: Scholarly Identity Mapping

Scholarly Identity Mapping (SIM) is a meaning-making process where participants reflect upon and schematically represent their professional identity, value, and the "public purposes" of their work (Price, 2018). The goal of this exercise is for participants to interrogate how their values are interwoven in their work (even if they are an "objective" scientist) and to identify and articulate these values as well as the civic and community contributions of their disciplines.

Pre-Work

Participants are asked to read and answer a couple of refection prompts related to two papers: *The Heart of Teacher: Identity and Integrity in Teaching* (Palmer, 1997) and *Socially Responsible Science is More than 'Good Science'* (Bird, 2014). These papers focus on exploring what good teaching and science looks like and the values that guide those practices of professional exceptionalism.

Session

During the session participants are asked to complete a 30-minute pre-mapping exercise where they identify 3-4 professional values (e.g., accuracy, justice, objectivity, etc.), 2-3 descriptors of their profession (e.g., scholar, organizer, administrator, etc.), and 2-3 public purposes of their work. They are then challenged to cite 2-3 specific examples that show how their work engages with their values and brings them closer to achieving the public purposes of their work. This information was then organized within a graphic map template. Both the pre-mapping exercise prompts and the Scholarly Identity Map template can be found in Price (2018).

Post-Work

No post-work is assigned for this session.

Meeting 5: Dinner/Social

A dinner and informal discussion facilitates reflections on past FSLC meetings and conversations about agriculture and food system challenges.

Pre-Work

Participants are asked to read IPES-Food (2016) and McClintock (2010) prior to the dinner to stimulate learning about agriculture and food system challenges as well as to consider diversified farming as a potential solution to those challenges.

Session

Facilitator uses general prompts or questions to spur Informal discussions of past FSLC meetings and the papers throughout the social dinner.

Post-Work

No post-work is assigned for this session.

Meeting 6: Using Reflection to Unpack Experience

Critical reflection is an intentional process that helps one test the validity and appropriateness of their personal assumptions and beliefs by articulating questions, confronting bias, examining causality, putting theory to practice, and identifying systemic issues. Critical reflection is a process that deepens, personalizes, and animates learning.

Pre-Work

The following readings are assigned: Ash & Clayton (2009) and Kniffin, Priest, Clayton (2017). Participants are also asked to complete a pre-experience critical reflection focused on the meanings and significance they ascribe to "farms". Reflection prompts challenge participants to describe their image of a "farm" and explore how that image is tied to their prior experiences. They are also prompted to imagine what both the campus farm and the industrial farm will look like and how, if at all, those imaginings are different from their original image of a "farm". Next, participants are asked to select from a series of quotes about nature from diverse authors, the one that most and least resonated with them and reflect upon why (Appendix D).

Session

The full-day workshop, facilitated by Patti Clayton during our implementation, begins with a presentation on the basics of critical reflection and then group work to brainstorm the incorporation of critical reflection into courses. Then, participants travel to and tour a 6,000-acre industrial farming operation and a 1-acre diversified operation (i.e., the campus farm). During the tours, participants are asked to take pictures during each farm tour that, for them, represent "sustainability". These photos are used during the seventh FSLC meeting.

During lunch at the university cafeteria, participants complete a food inventory exercise where they discuss where their chosen food items came from and the types of farms at which they are grown (info was provided by dining services partner prior to the workshop).

After lunch, the group uses Ash and Clayton 's (2009) DEAL model of critical reflection to Describe and Examine their experience of the farm tours through multiple lenses.

Post-Work

After the workshop, participants complete the final phase of DEAL: Articulate Learning. They do this by completing, posting, and discussing responses to the prompts: ***"I learned that..."***, ***"I learned this when..."*** ,***"This learning matters because..."*** , and ***"In light of this learning I will..."*** (Ash and Clayton, 2009, pg 46).

Meeting 7: Learning Goals and Backward Course Design

Backward course design begins with well-defined learning goals that contain specific and measurable language. Once learning goals are clearly defined, the instructor can then identify effective activities and appropriate assessments that are aligned with cognitive, affective, and psychomotor learning processes.

Pre-Work

Participants are asked to read two resources from the Center for Innovative Teaching and Learning at Indiana University (2019): 1) Backward Course Design (https://citl.indiana.edu/teaching-resources/course-design/backward-course-design/index.html) and 2) Developing Learning Outcomes: https://citl.indiana.edu/teaching-resources/course-design/developing-learning-outcomes/index.html. Participants are also asked to bring the syllabus for the course in which they plan to implement the farm-situated PBEL curriculum.

Session

Participants discuss and identify characteristics of specific and measurable learning goals and apply them to refine existing and/or create new learning goals for their course that are aligned with the farm-situated PBEL pedagogical framework. Participants then brainstorm specific activities that accomplish their learning goal(s) and are aligned with cognitive, affective, and psychomotor learning processes.

Mapping learning goals: What -- -- -- How -- -- -- Why

PBEL Framework =The How

Participants are reminded that the primary goals of their participation in the farm-situated PBEL workshop are to:

1. Co-create context and place via an introductory lesson (remember, understand)
2. Establish an inquiry-driven project (analyze, evaluate, create)
3. Have students communicate results on an inquiry-driven project, preferably outside of a classroom setting (create).
4. Utilize critical reflection (e.g., DEAL framework) to scaffold learning throughout the entire module.

Post-Work

Participants finish mapping their course activities that have been aligned with course learning goal(s). They are also challenged with identifying potential assessment(s) for each learning goal. Each participant brings their final module plan to the next meeting.

Meeting 8: Student Assessment, Incorporating Critical Reflection into Modules

As mentioned before, critical reflection is an approach used to make learning visible to students by facilitating meaning making of an experience. Critical reflection can be used as a form of student assessment: assessment *as* learning, assessment *for* learning, and assessment *of* learning. In other words, critical reflection and other forms of assessment, if planned carefully, can help students understand their own learning, involve students in the learning process by allowing them to monitor their own progress, and provide evidence of student learning aligned with learning goals, respectively.

Pre-Work

Using a provided example, participants are asked to select a photo from each farm – taken during the Meeting 6 field trips – that represents a facet of sustainability and then to complete a Photovoice reflection using SHOWED questions (Figure 1, Hergenrather et al., 2009).

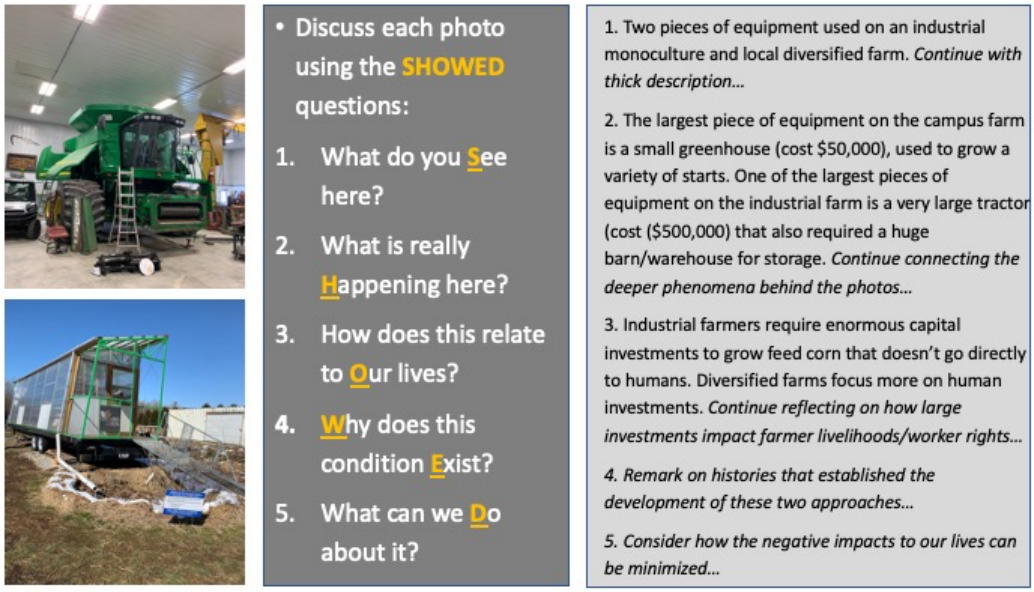

Figure 1. Example photovoice critical reflection using the SHOWED model from Hergenrather et al. (2009).

Participants are also asked to listen to Episodes 5 and 6 of The New York Times 1619 podcast series (Hannah-Jones, 2019) and to bring their draft module plan including, at a minimum, their module learning goal(s), their module activities, and their course syllabus.

Session
FSLC participants share and discuss their photovoice critical reflections. Groups then complete critical reflections on the 1619 podcast episodes using the DEAL framework. Participants then discuss how critical reflection could be implemented in their courses.

In the second half of the meeting, assessment *as*, *of*, and *for* learning are presented and participants work in small groups to begin brainstorming the types of assessments, including critical reflection, that they will utilize in their farm PBEL modules. In other words, they are challenged to think through, for each activity: How will it create learning? How will student know they are learning? How will you assess learning?

Post-Work
Participants continue to work on their final farm-situated PBEL module plans and schedule a time to present their final plans to the broader campus.

Meeting 9: Class Project and Activities Workshopping
This meeting is reserved for workshopping the final PBEL module plans and scheduling a time to present their final plans to the broader campus. Participants were provided a lesson-plan template to think through their modules that are aligned with PBEL principles (Appendix E).

Significance and Conclusion

Faculty-staff learning communities are important practices for fostering collective efficacy among faculty who want to use new teaching strategies. Building a community of practice around a specific pedagogical approach breaks down hierarchical and disciplinary silos, strengthens the academic community, and creates opportunities for innovative living lab projects. Centering this community of practice around a centralized theme—in this case, food and farming—enhances cross-disciplinary thinking and collaborations to create unique pedagogical approaches and increased learning outcomes for students. For example, the farm-situated place-based experiential learning FSLC presented here, resulted in a pharmacy and business class working together to expand their understanding of the human health implications of food access (or lack thereof) and the business drivers maintaining inequities in the food system. Lastly, the FSLC curriculum presented here mirrors the PBEL pedagogical approach that participants would take into their classroom, perhaps helping instructors to grapple with how to effectively implement farm-situated PBEL in their own courses.

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Appendix A. Meeting 2: Modes of Inquiry Chopped Game

Chopped Rules:

1. You will be assigned to teams of 4.
2. Farm harvesting. Each team will harvest three items from the campus farm. These items will be unknown until time of harvest. All farm-harvested items MUST be used in the dish prepared by the team. Once harvest begins, your team can begin brainstorming what could be made out of these items.
3. Dish Preparation. Facilitator provides a quick orientation to the kitchen space and a basic reminder of the rules.
    i. Teams must use all three farm-harvested ingredients in their created dish.
    ii. Teams can select an unlimited number of items from the staple ingredients, but these are not required (include spices, grain base, sauces, other vegetables, etc.).
    iii. Teams are required to share ingredients and supplies. Unfair hogging of ingredients or cooking supplies will result in disqualification.
    iv. Dish can be cooked or raw.
    v. Teams will have 30-minutes to prepare their dish. Full preparation is the food on a plate and ready to be served.
    vi. A 15-minute, 5-minute, and 2-minute warning will be provided.
    vii. At the final bell, teams will not be allowed to do anything further on preparation.
4. Tasting/Judging. Dishes that do not use all three farm ingredients will be disqualified. Winner gets bragging rights.

Judge Each Team's dish on a scale of 1 (poor) to 5 (delicious) for the following categories: smell, texture, taste, presentation, and originality.

Judging Scale	1 Blech	2 Meh	3 I would eat another bite	4 Tasty	5 Phenomenal, give me the recipe!

	Team 1	Team 2	Team 3	Team 4
Smell				
Texture				
Taste				
Presentation				
Originality				
Total Score				

5. Discussion.
    i. Debrief with your team on each step undertaken to design and prepare your dish. What past experiences did you draw on as individuals to design and prepare the dish?
    ii. Write on the board a flow chart of the steps you took in the decision-making process to creating your dish. How is this approach based in inquiry?

iii. Each team member, write your discipline and your flow chart on the board from the pre-work assignment. Honor your own principles of inquiry, but develop a shared understanding. Focus on the stages. Look at each pre-work flow chart and identify commonalities and differences there are with the recipe decision-making process.
iv. Look at each pre-work flow chart and identify commonalities and differences among disciplines. How are the skills of inquiry taught in different disciplines?
v. Discuss how scientific reasoning is applied in teaching disciplinary content. What scientific skills are needed for your students to learn the disciplinary content?
vi. Map PBEL framework onto flow chart for use as a common language in this FSLC.

Appendix B. Meeting 3: Situated Sustainability Meaning Making Survey

5-point likert scale

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

The [urban farm] is a place….

1. to connect with nature.
2. to watch wildlife.
3. where people can find nature.
4. where farming is an important part of the community.
5. to find many species of wildlife and plants
6. to value.
7. to see environmental action in practice.
8. to learn.
9. to observe eco-friendly food production.
10. to engage in taking care of the environment.
11. to experience nature in an urban environment.
12. to be in nature.
13. to gain knowledge about environmental matters.
14. to enjoy nature's beauty and peace.
15. to grow food.
16. to support the local economy.
17. to contribute to social well-being.
18. to appreciate nature in the city.
19. to provide deeper meaning to social and economic food issues.
20. where people, plants, and wildlife interact as part of the natural environment within a city.

Appendix C. Meeting 3: Unpacking 'Place' Meanings

1. Concept of 'place' and pre-work discussion.
   i. For each meaning you identified in the Situated Sustainability Meaning Making survey, describe why that meaning matters to you. How, if at all, does each meaning connect to one or more of your personally held values?
   ii. For each meaning you identified, name a different place (need not be related to agriculture and can be anywhere in the world) that you have experienced that also holds that meaning for you. When selecting these different places, it is preferable for you to select at least one place that you have a more significant attachment to, or history with, than the CUE Farm. Describe those other places and your key experiences within those places. Why do you think you ascribe similar meanings to each of those places and to the CUE Farm?
   iii. Select one of the meanings that you described in #2, think of the opposite of that meaning, and a place that, to you, embodies the opposite of that meaning. Describe why.

2. Think-group-share activity. 1-2 photos of a famous national landmark are provided to each group.
   i. Write down the meanings you subscribe to this place.
   ii. Share these meeting with your group
   iii. Consider other meanings that may not be shared by the experiences of people within your group.
   iv. Facilitator: Speak to additional place meanings subscribed to each landmark based upon research.

3. Reflection of activity.
   i. How can consideration of diverse meaning of place be operationalized in your own classes?
   ii. What approaches/tools can be used to encourage students to think about what meanings they subscribe to the campus farm or other urban farms?
   iii. How can the recognition of personal place meaning be used to inspire students to connect their course learnings to change/civic action?

'Place' examples used in step #2. Below are three examples of national monuments and perspectives of those monuments from online research. A detailed description of the monument and alternative perspectives can be further developed to enhance the discussion using the links provided.

- Yosemite National Park. In 1903, President Roosevelt spent several days exploring Yosemite with naturalist John Muir. During the trip, the two men discussed the importance of preserving natural areas. After the trip, Roosevelt added Yosemite Valley to Yosemite National Park. Alternative view: President Roosevelt conserved 230 million acres of public land through the expulsion of Indigenous peoples and the rural poor. The resulting national parklands were primarily a sanctuary for Anglo-Saxon men. Alternative

view 2: John Muir was a racist. He wrote about the laziness of Black "Sambos." He described the Miwok, the Indigenous people of Yosemite, as "dirty" and "altogether hideous." "They seem to have no right place in the landscape," he wrote.

- The Conservation Legacy of Theodore Roosevelt. (February 14, 2020). U.S. Department of Interior (Webpage). Retrieved November 3, 2019 from: https://www.doi.gov/blog/conservation-legacy-theodore-roosevelt.
- The Time Editorial Board (July 23, 2020). Coming to Grips with the Checkered History of John Muir — and the Conservation Movement. *The Los Angeles Times*. Retrieved November 3, 2019 from: https://www.latimes.com/opinion/story/2020-07-23/john-muir-conservation-movement-racism-eugenics.
- Treuer, D. (May 2021). Return the National Parks to the Tribes: The Jewels of America's Landscape Should Belong to America's Original Peoples. *The Atlantic*. Retrieved November 3, 2019 from: https://www.theatlantic.com/magazine/archive/2021/05/return-the-national-parks-to-the-tribes/618395/

- St. Louis Arch. A monument to the westward expansion of the Unites States, the Arch is the world's tallest arch and was officially dedicated to "the American people". Yet, most people don't know the history of building one of the most recognizable monuments in the U.S. Alternative view 1: While local business leaders in St. Louis touted the Arch as a memorial to the expansive vision of Thomas Jefferson and the Louisiana Purchase, it has been noted that their real goal was to rid the city's waterfront of blighted property and bring in federal construction money. In fact, the plan was presented as "an enforced slum-clearance program" by city engineer, W.C. Bernard (Tracy Campbell, "The Gateway Arch: A Biography"). Voting on the use of city funds to partially cover the costs of the Arch, was corrupt, with 46,000 phony ballots supporting the slum-clearance program (reported by the *St. Louis Post-Dispatch*) and a resulting 40 square blocks including 290 businesses and 5,000 jobs were demolished through condemnation rather than purchase. Alternative view 2: Civil rights activists regarded the Arch as a token of racial discrimination because federal funds were being used to build a national monument that was discriminating against black contractors and skilled black workers.
  - Encyclopedia Britannica (2019) Gateway Arch, monument, Saint Louis, Missouri, United States. Retrieved November 3, 2019 from: https://www.britannica.com/topic/Gateway-Arch
  - Kaplan, F. (October 2015). The Twisted History of the Gateway Arch: With its origins as a memorial to Thomas Jefferson's vision of Western Expansion, the Arch has become a St. Louis icon. *The Smithsonian Magazine.* Retrieved November 3, 2019 from: https://www.smithsonianmag.com/history/story-st-louis-gateway-arch-180956624/
  - Waldek, S. (May 29, 2018). 8 Facts You Didn't Know About St. Louis's Gateway Arch: Completed in 1965, there's more to the Eero Saarinen–designed monument than meets the eye. *Architectural Digest.* Retrieved November 3, 2019 from: https://www.architecturaldigest.com/story/facts-about-st-louis-gateway-arch

- **Statue of Liberty.** The statue of liberty is known as a symbol of both human freedom and American national identity, welcoming the oppressed from throughout the world. Alternative view 1: A persistent rumor among African Americans, is that the Statue of Liberty, as it currently stands, is not the original sculpture The original sculpture was modeled after a black woman with African features and was meant to commemorate the abolition of slavery in America. This original statue has been rumored to carry broken chains that symbolize emancipation. The current white statue was substituted for the original when American politicians objected to the portrayal of Liberty as a black woman. This rumor, which has no evidence, nevertheless shows the meaning of the Statue of Liberty as a symbol of whiteness and white freedom. Alternative view 2: Many feminists see the Statue of Liberty as an attempt to mask the oppression of women, using the female form as a symbol instead of recognizing them as human beings worthy of freedom.
    - The Statue of Liberty – Ellis Island Foundation, Inc. (2019). Overview and History: The Statue Of Liberty. Retrieved November 3, 2019 from: https://www.statueofliberty.org/statue-of-liberty/overview-history/
    - Stovall, T. (January 5, 2018). White Freedom and the Lady of Liberty. (Presidential Address). *132nd annual meeting of the American Historical Association*. Washington, DC. Retrieved November 3, 2019 from: https://www.historians.org/about-aha-and-membership/aha-history-and-archives/presidential-addresses/tyler-stovall

Appendix D. Meeting 6: Quotes used for pre-work activities

(a) *"The land is always stalking people. The land makes people live right. The land looks after us. The land looks after people."*

> [Annie Peaches quoted in Basso, Wisdom Sits in Places, 1995" cited on p. 1 in Tuck, E., McKenzie, M. & McCoy, K. (2014) Land education: Indigenous, post-colonial, and decolonizing perspectives on place and environmental education research, *Environmental Education Research, 20*(1), 1-23, DOI: 10.1080/13504622.2013.877708]

(b) *"For a colonized people the most essential value, because the most concrete, is first and foremost the land: the land which will bring them bread and, above all, dignity."*

> [p. 44 in Fanon, F. (1963/2004). *Wretched of the earth*. New York: Grove Press]

(c) *"and Coyote sprinkles corn pollen in the four directions*
to thank the tribal people
indigenous to what some call the state of California
the city of Oakland
for allowing use of their land."

> [a stanza from a poem in Belin, E. (1999). *Blues-ing on the brown vibe*. Retrieved from: https://www.poetryfoundation.org/poems/53453/blues-ing-on-the-brown-vibe]

(d) *"'Āina momona/Fertile land. The land is our ancestor, teacher, parent, provider and nurturer continually shaping and defining us. Hawaii is an island nation protected, preserved and nurtured by our oceans, lands, sky and heavens. Land/'āina is abundant, rich, and living. We connect to our land as we connect to ourselves. To see our land as 'āina momona is to also see ourselves as full of life, fertile, abundant, and healthy."*

> [Collier, 2012)" (cited on p. 100 in Meyer, M. A. (2014). Hoea Ea: land education and food sovereignty in Hawaii, *Environmental Education Research, 20*(1), 98-101, DOI: 10.1080/13504622.2013.852656]

(e) "*The arrogant eye is the colonial, imperialistic, patriarchal eye that simplifies and controls the other — poor people and nature become human resources or natural resources. …. All of us in the White affluent West share this gaze, especially when it is turned on nature. …. we perceive forests, air and water, plants and wild animals as existing solely for our benefit."*

The loving eye … suggests something novel in Western ways of knowing: acknowledgment of and respect for the other as subject … the refusal to assume that subjectivity is … the sole prerogative of Westerners, of men, of rich people, or even of human beings. … The loving eye is not the sentimental, mushy, soft eye; rather, it is the realistic, tough, no-nonsense "God's eye" that acknowledges what is so difficult for us to admit: that reality is made up of others."

> [Excerpted from Sallie McFague, "The Loving Eye vs. the Arrogant Eye: A Christian Critique of the Western Gaze on Nature and the Third World," *Macalaster International* vol. 6, art. 12 (1998):77-97; pp.83-5.]

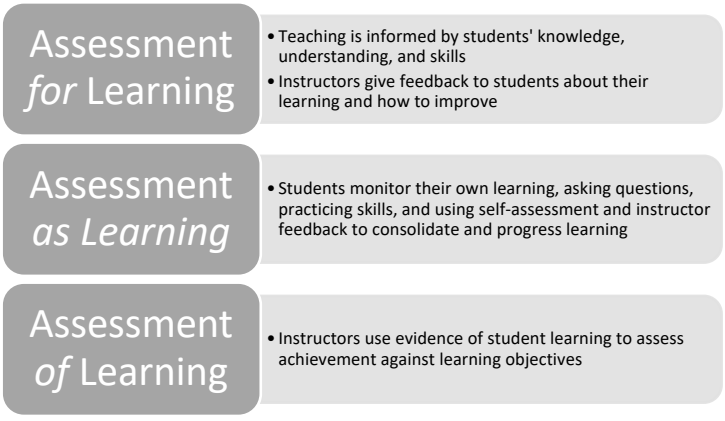
(f) *"All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively the land." …. [A] land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such."*

> [Leopold, A. (1949). *A Sand County Almanac.* New York: Oxford University Press. pp.203-204]

Appendix E. Place-based experiential learning (PBEL) module planning template

Instructions on completing the template.

1. The overall module curriculum is divided into three main lesson plans: Introductory, Inquiry Project, and Communicating Results.
2. Lesson Objectives for each of the three main lesson plans should accomplish your overall Module Learning Goal.
3. All three main lesson plans should, combined, accomplish all the PBEL Framework Guidelines Met. Therefore, all boxes under this heading should be checked at least one time throughout the entire module curriculum.
4. On the right-hand side, check as many boxes as are relevant to each of your lesson plans and then detail specifics of activities and assessments under "Introduction", "Action", and "Consolidation". Use following questions to guide your decision-making on assessments:
    i. How will students determine their own learning during the learning process?
    ii. How will students demonstrate understanding of lesson objective(s)?
    iii. How will you monitor student progress towards lesson objectives as you are teaching? (i.e., formative, informal, and/or formal assessments)
    iv. What evidence will you collect and how will you document student learning/mastery of lesson objective(s)? (i.e., formal OR summative)
    v. How will you give academic feedback? How will your academic feedback promote student understanding of the learning objective(s)?



1. Be sure to embed Critical Reflection *in all three lessons using the DEAL framework, i.e., have students "Describe", "Examine", and "Articulate Learning"*. What specific prompts will you provide to facilitate learning from experiences during each lesson? Provide as much detail as possible in the table and/or as appendix materials.
2. Reflection & Next Steps will be left blank for now. This is meant to be a space where you can reflect and make changes after your first implementation semester.
3. Attach any handouts, assignments, digital readings, other media, critical reflection prompts, or additional resources as an Appendix to this document.

Module Curriculum Template

Module Title:

Module Length (in hours):

Grade level:

Subject Area(s):

Description of Module:

Module Learning Goal(s):

Assessment Blueprint [align lessons with module learning goal(s)]:

Lesson Objectives	Cognitive Level	Activities	Assessment Type(s)	Percent of Final Grade
***Introductory Lesson (personalize, localize, connect to global challenges)*				
***Inquiry Project Lesson (personalize via values, localize relevance, globalize need)*				
***Communicate Results Lesson*				

**Critical reflection should be integrated throughout every lesson in the module.

Introductory Lesson Plan	Course Number: _____	Date: ___ /___20___

Subtitle:

Lesson Objective(s)

Hours to Completion

In Class _____

Out of Class _____

Location

- ☐ In class
- ☐ Out of class
- ☐ On campus farm
- ☐ Other _____

PBEL Framework Guidelines Met

- ☐ Clear learning goals
- ☐ Framing of inquiry question or problem
- ☐ Relevance of inquiry personally & professionally
- ☐ Relevance of inquiry locally & globally
- ☐ Sensory Reflection
- ☐ Carbon Footprint Food Diary
- ☐ Map mode of inquiry to be used
- ☐ Compare mode of inquiry to scientific reasoning
- ☐ Communicate results, including broader impact
- ☐ Critical reflection of experience

Materials

Introduction	Assessment Description

Action	Assessment Description

Consolidation	Assessment Description

Reflection & Next Steps

Activities that worked	Topics to be revisited

Strategies/Activities

- ☐ Readings
- ☐ Digital Media
- ☐ Lecture
- ☐ Visual Mapping
- ☐ Think/Pair/Share
- ☐ Modeling or Simulations
- ☐ Writing/Speaking Exercises
- ☐ Problem-based learning
- ☐ Project-based learning
- ☐ Service Learning
- ☐ Group Work
- ☐ Discussion Questions
- ☐ Photovoice
- ☐ DEAL Approach to Critical Reflection
- ☐ Other _____

Assessment *for* Learning

- ☐ Observations
- ☐ Conversations
- ☐ Anecdotal Notes
- ☐ Work Sample
- ☐ Class Check-Ins/Quizzes
- ☐ Checklist
- ☐ Diagnostics
- ☐ Other _____

Assessment *as* Learning

- ☐ Self-assessment
- ☐ Peer-assessment
- ☐ Presentation
- ☐ Visual Mapping
- ☐ Collaboration
- ☐ Class Check-Ins/Quizzes
- ☐ Homework
- ☐ Other _____

Assessment *of* Learning

- ☐ Test
- ☐ Quiz
- ☐ Presentation
- ☐ Project Portfolio
- ☐ Critical Reflection Journal
- ☐ Essay
- ☐ Rubrics
- ☐ Other _____

Inquiry Project Lesson Plan	Course Number: _____	Date: ___ /___20___

Subtitle:

Lesson Objective(s)

Hours to Completion

In Class _____

Out of Class _____

Location

- ☐ In class
- ☐ Out of class
- ☐ On campus farm
- ☐ Other _____

PBEL Framework Guidelines Met

- ☐ Clear learning goals
- ☐ Framing of inquiry question or problem
- ☐ Relevance of inquiry personally & professionally
- ☐ Relevance of inquiry locally & globally
- ☐ Sensory Reflection
- ☐ Carbon Footprint Food Diary
- ☐ Map mode of inquiry to be used
- ☐ Compare mode of inquiry to scientific reasoning
- ☐ Communicate results, including broader impact
- ☐ Critical reflection of experience

Materials

Introduction	Assessment Description

Action	Assessment Description

Consolidation	Assessment Description

Reflection & Next Steps

Activities that worked	Topics to be revisited

Strategies/Activities

- ☐ Readings
- ☐ Digital Media
- ☐ Lecture
- ☐ Visual Mapping
- ☐ Think/Pair/Share
- ☐ Modeling or Simulations
- ☐ Writing/Speaking Exercises
- ☐ Problem-based learning
- ☐ Project-based learning
- ☐ Service Learning
- ☐ Group Work
- ☐ Discussion Questions
- ☐ Photovoice
- ☐ DEAL Approach to Critical Reflection
- ☐ Other _____

Assessment *for* Learning

- ☐ Observations
- ☐ Conversations
- ☐ Anecdotal Notes
- ☐ Work Sample
- ☐ Class Check-Ins/Quizzes
- ☐ Checklist
- ☐ Diagnostics
- ☐ Other _____

Assessment *as* Learning

- ☐ Self-assessment
- ☐ Peer-assessment
- ☐ Presentation
- ☐ Visual Mapping
- ☐ Collaboration
- ☐ Class Check-Ins/Quizzes
- ☐ Homework
- ☐ Other _____

Assessment *of* Learning

- ☐ Test
- ☐ Quiz
- ☐ Presentation
- ☐ Project Portfolio
- ☐ Critical Reflection Journal
- ☐ Essay
- ☐ Rubrics
- ☐ Other _____

Communicate Results Lesson Plan	Course Number: _____	Date: ___ /___20___

Subtitle:

Lesson Objective(s)

Hours to Completion

In Class _____

Out of Class _____

Location

- ☐ In class
- ☐ Out of class
- ☐ On campus farm
- ☐ Other _____

PBEL Framework Guidelines Met

- ☐ Clear learning goals
- ☐ Framing of inquiry question or problem
- ☐ Relevance of inquiry personally & professionally
- ☐ Relevance of inquiry locally & globally
- ☐ Sensory Reflection
- ☐ Carbon Footprint Food Diary
- ☐ Map mode of inquiry to be used
- ☐ Compare mode of inquiry to scientific reasoning
- ☐ Communicate results, including broader impact
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Assessment *for* Learning

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- ☐ Conversations
- ☐ Anecdotal Notes
- ☐ Work Sample
- ☐ Class Check-Ins/Quizzes
- ☐ Checklist
- ☐ Diagnostics
- ☐ Other _____

Assessment *as* Learning

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- ☐ Peer-assessment
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Assessment *of* Learning

- ☐ Test
- ☐ Quiz
- ☐ Presentation
- ☐ Project Portfolio
- ☐ Critical Reflection Journal
- ☐ Essay
- ☐ Rubrics
- ☐ Other _____

Module Timeline. Create a more detailed outline of when activities and assessments will occur, i.e. in class or outside of class. Feel free to extend and/or modify as is useful for your needs.

***Introductory Lesson (personalize, localize, connect to global challenges) – ___ hours*

	In Class		In Class
Outside of Class		Outside of Class	

***Inquiry Project Lesson (personalize via values, localize relevance, globalize need) – ___ hours*

	In Class		In Class
Outside of Class		Outside of Class	

***Communicate Results Lesson – ___ hours*

	In Class		In Class
Outside of Class		Outside of Class	