



Integrating Employability Skills into Agricultural Courses using the PDSA Model of Improvement

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USDA United States Department of Agriculture National Institute of Food and Agriculture

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Considerations for Interdisciplinary Agricultural Leadership Curricula

In 2009, the National Research Council challenged agricultural education professionals to transform their relationship to the evolving global food and agricultural enterprise.




- Training and development of entrepreneurial leaders helps effectively forge and advance agricultural innovation (Mars, 2015).
- Improving resources and support for educators helps those ultimately responsible and held accountable for student achievement (DiBenedetto & Myers, 2016).

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Why Are We Doing This Work?

- As America's workforce changes, so does the nature of work and the skills necessary for success (Flores et al., 2012).
- Agricultural employers increasingly need a workforce that effectively engages in collaborative leadership (Alston et al., 2018; Clayton, 2016).
- Students need practical skill development in collaborative leadership (Biggs et al., 2018; Cournoyer, 2019).



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Opportunities to Bridge the Gap



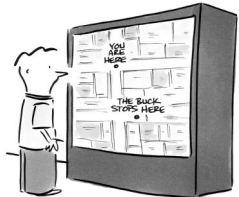

Specific Aims

- (1) Enhance an agricultural technology program's core curriculum with practical skill development in collaborative leadership appropriate for workplace success;
- (2) Adapt and extend collaborative leadership curricula for use with the community college agriculture workforce training programs; and
- (3) Create reusable learning objects that allow application of the collaborative leadership curricula in food and agricultural sciences programs at other community, junior, and technical colleges/institutes.

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Overview of Outcomes to Date

- Focus group participants validated APLU report on employability skills (a.k.a. "durable skills")
- New VT Ag Tech internship assessment & feedback
- Enhanced VT Ag Tech first-semester seminar
- 13 VCCS faculty from 9 colleges piloted curricular enhancements related to teaching professionalism, asking questions, and incorporating rubrics

2021-22 Development Activities Project Budgeted Results

Understand Role in the Workplace and Have Realistic Career Expectations	Recognize and Deal Constructively with Conflict	Accept and Apply Critique and Direction in the Workplace	Listen Effectively	Communicate Accurately and Concisely	Realize the Effect of Decisions	Build Professional Relationships	Navigate Change and Ambiguity	Identify and Analyze Problems	Transfer Knowledge from One Situation to Another	Ask Good Questions
SKILL 1	SKILL 2	SKILL 3	SKILL 4	SKILL 5	SKILL 6	SKILL 7	SKILL 8	SKILL 9	SKILL 10	SKILL 11

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Agriculture Workforce Training for Collaborative Leadership

Home About the Project Meet the Team! Engagement and Outreach Blog Contact Us

Developing Future Agriculture Leaders



Welcome to the Agriculture Workforce Training Project

Agricultural employers are increasingly in need of a workforce that effectively engages in collaborative leadership.

This project designs, develops, and evaluates curricula for community colleges to prepare the agriculture workforce for effective leadership in an increasingly diverse environment.




In the News

- "Life-changing" Agricultural Technology Program prepares students for careers and new opportunities.
- Workforce readiness grant prepares next generation of agricultural leaders for new educational opportunities.
- A new program at Roanoke Community College aims to help young farmers

<https://sites.google.com/vt.edu/awt>

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Exploring Plan-Do-Study-Act (PDSA)

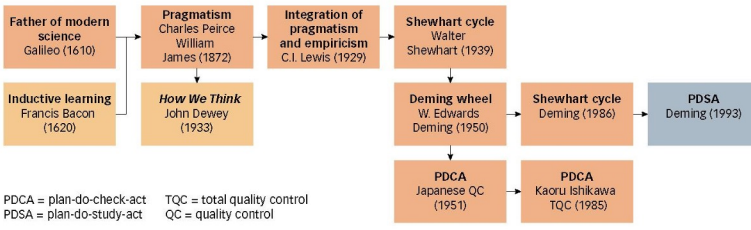


PDSA is an iterative, four-stage problem-solving model used for improving a process or carrying out a change. In applying PDSA, ask yourself three questions:

- GOAL: What are we trying to accomplish?
- What change(s) can we make that will result in improvements?
- How will we know the change is an improvement?

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Evolution of the Scientific Method and PDSA Cycle



Father of modern science Galileo (1610) → **Pragmatism** Charles Peirce, William James (1872) → **Integration of pragmatism and empiricism** C.I. Lewis (1929) → **Shewhart cycle** Walter Shewhart (1939) → **PDSA** Deming (1993)

Inductive learning Francis Bacon (1620) → **How We Think** John Dewey (1933) → **Deming wheel** W. Edwards Deming (1950) → **Shewhart cycle** Deming (1956)

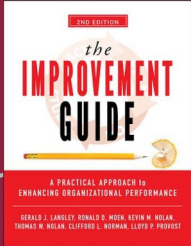
PDCA Japanese QC (1951) → **PDCA** Kaoru Ishikawa TQC (1985)

PDCA = plan-do-check-act TQC = total quality control
 PDSA = plan-do-study-act QC = quality control

(Moen & Norman, 2010)

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Model for Improvement (PDSA)



What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?




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Question Burst on PDSA

Thinking about your own readiness to implement PDSA into your teaching during the coming year, what questions emerge?


[Resist the temptation to provide answers. The more surprising and provocative the questions are, the better.]



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Q-Burst: Surface Questions on PDSA

Thinking about your own readiness to implement PDSA into your teaching during the coming year, what questions emerge?




Time Remaining: 4:00

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Q-Burst: Surface Questions on PDSA

Thinking about your own readiness to implement PDSA into your teaching during the coming year, what questions emerge?



Time Remaining: <<4:00>>

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Assessing Impact of Q-Burst Activity

Consider your “emotional temperature” surrounding PDSA before the question burst and after. How has it changed (if at all)?

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Assessing Impact of Q-Burst Activity

How has the challenge been reframed?
 What new insights have you gained?
 Which questions compel you to action?
 How might you alter or adjust the Q-Burst?

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PDSA Model for Improvement

Hunches/ Change Ideas

<https://nycdoeishandbook.org/>

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Example 1: PDSA with Q-Burst Intervention

<p>What are we trying to accomplish?</p> <p>How will we know that a change is an improvement?</p> <p>What change can we make that will result in improvement?</p>	<p>Rapid Cycle #: 1</p> <p>PDSA Cycle Start Date: 8/22/2022 PDSA Cycle End Date: 10/17/2022</p> <p>What is your goal? My goal is to increase student engagement in class discussions, thus increasing their learning as well as their ability to effectively problem solve in the workplace.</p> <p>What is the next change to be tested? I plan to test integration of questions bursts into classroom activities. Specifically, I plan to use the Question Burst Toolkit provided by Gregerson: https://halgregerson.com/catalytic-questions-toolkit/</p> <p>Write a hypothesis for your next change to be tested (i.e. one PDSA cycle). If we...integrate a question burst into a unit of study,</p> <p>Will it result in...students participating more in class discussions</p> <p>Prediction: Student will report an increased comfort with applying concepts from the unit to their future work.</p> <p>P PLAN STEP 1: Create a test plan. What is the test? What are the tasks needed to set up this test? Where and when will the test happen?</p> <p>As part of the ALCE 2014 class I am teaching in Fall 2022, for the second unit of study, I will begin class discussion with implementation of the Question Burst activity. I will adapt guidance from the Question Burst Toolkit provided by Gregerson: https://halgregerson.com/catalytic-questions-toolkit/. I will first challenge students to generate their lists of questions individually, then we will aggregate them as a class. Following the generation of questions, I will invite the class to help prioritize questions to focus our learning in the following class meetings for the unit of study.</p>
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Example 1: PDSA with Q-Burst Intervention (cont.)

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

P	PLAN STEP 2: Create a measurement plan. What is the plan for collection of data (who, what, where, when, and how)? During class meetings, I will monitor the number and variety of students participating in class discussions. (If as student assistant is available to observe the class meetings, I may have them track student participation they observed.) Also, at the conclusion of the unit of study, I will invite students to complete a brief evaluation of their "emotional temperature" related to the unit topic. If I repeat these measures for other units (e.g., units one and three), I can compare the differences.
D	DO: Describe what happened when you completed your test plan. What steps did you implement? Document any observations and/or problems. Click or tap here to enter text.
S	STUDY: What were the results from your measurement plan? How do they compare with your prediction? What surprised you? What did you learn? Click or tap here to enter text.
A	ACT: What is your next step? Adapt? Adjust? Abandon? Why? What changes could be made to the process (decisions made/action to take)? Click or tap here to enter text.

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Example 2: PDSA with Guest Speaker

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Rapid Cycle #: Click or tap here to enter text.	
PDSA Cycle Start Date: Fall 2022	PDSA Cycle End Date: Fall 2022
What is your goal? My goal is to improve student awareness of expectations, opportunities, and connections with potential employers.	
What is the next change to be tested? Invite a local employer to join a class as a guest speaker	
Write a hypothesis for your next change to be tested (i.e., one PDSA cycle). If we... invite a guest speaker to one of the classes	
Will it result in... help students to 1) learn about employer expectations and what they look for in employees; 2) spark ideas about potential internships/job/career opportunities; and 3) to begin building networks and connections beyond the classroom. Prediction: It will improve students' understanding of what employers are seeking in future employees and result in increased student awareness of opportunities while they are in—and after they complete—school.	
P	PLAN STEP 1: Create a test plan. What is the test? What are the tasks needed to set up this test? Where and when will the test happen? <ul style="list-style-type: none"> - What: Invite a local employer to speak to the class - Who: Identify an employer that hires people who match the constituency of the class - Where: Classroom or VideoConference. Coordinate the Zoom or in-person session - When: One of the classes about 3 weeks into the semester (coordinate timing with guest) - How: Adjust the syllabus and set aside a half hour for the guest employer

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Example 2: PDSA with Guest Speaker (cont.)

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

P	PLAN STEP 2: Create a measurement plan. What is the plan for collection of data (who, what, where, when, and how)? <ul style="list-style-type: none"> - My Observations - Post-session informal interview with guest - Student reflections (write 250 words reflecting on what you learned from engaging with guest speaker)
D	DO: Describe what happened when you completed your test plan. What steps did you implement? Document any observations and/or problems. Example: I adjusted my course content. It was not as hard as I thought it would be to find ½ hour for a guest to join us. I invited a guest speaker from Carilion Services, and it was more convenient to have them join via Zoom. Initially, I had trouble finding a speaker, and then I talked to some friends and colleagues. Now, I have several people who have offered to come and speak to my class. I created a reflection assignment for the students to complete. This took longer than I thought it would because I was trying to anticipate what the speaker would discuss. In the end, I included very broad prompts.
S	STUDY: What were the results from your measurement plan? How do they compare with your prediction? What surprised you? What did you learn? Student reflections indicated value for having the guest speaker; however they noted the person spent a lot of time talking about the mission of the organization and described a couple of scenarios where they find employees for devolution of duty—rather than describing what employees seek in future employees. I had the person join our class via Zoom. In the past, it would have been difficult to have someone join a class remotely. Comfort level with the technology has shifted over the past couple of years (mine, the students, and the person who joined us remotely). None of the student reflections indicated a preference to have the person join the physical classroom; the technology expands the opportunities of who can be invited into the classroom.
A	ACT: What is your next step? Adapt? Adjust? Abandon? Why? What changes could be made to the process (decisions made/action to take)?

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Readiness to Proceed: Fist to Five Voting

A fist means: "Stop! We need to discuss this before moving forward."
 1 finger means: "I'm not sure, but it's probably fine to proceed."
 2 fingers mean: "Although I'm a little unsettled, I'm fine to go along."
 3 fingers mean: "I could go either way, depending on the rest of the group."
 4 fingers mean: "It's fine; I prefer to move on."
 5 fingers mean: "I've got it, and I'm eager to move forward."

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Blogging for Agriculture Workforce Training




Point your phone's camera. Tap the link.

Our Project Website

[bit.ly/awt4cl_network](https://sites.google.com/vt.edu/awt/home)
or
<https://sites.google.com/vt.edu/awt/home>




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VCCS Faculty Experience with PDSA

Ideas for Enhancing Agriculture Workforce Training


February 14, 2023

By Jama S. Coartney and Eric K. Kaufman


The **Agriculture Workforce Training for Collaborative Leadership** cohort met January 13, 2023, to check in and discuss topics of mutual interest, including PDSA projects, opportunities to share key insights with a broader audience, and the potential of incorporating digital badges into the learning management system.

During the summer of 2022, each member of the cohort drafted a **PDSA** proposal to focus on an aspect of their teaching they would like to improve and test. The January 2023 meeting focused on updates on this work.


The cohort faculty used **IdeaBoardz** to share news on pilot projects, gain feedback and insight from others, and explore ideas for future improvements. This **video** summarizes a discussion around the challenges faculty face with balancing the amount of class time to both engage with students and cover content. The **project blog** contains some updates from various cohort members. Their posts (see below) explore a rich set of topics related to the student experience and curricular development.




Do social interactions and project ownership promote student success?



Horticultural Jeopardy: Motivation through Gamification



Can Industry Introductions Lead to Internship Increases?



Using Structured Activities to Teach Durable Skills

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What process or aspect of your teaching employability skills would you like to improve?

Using the Plan-Do-Study-Act process



<https://bit.ly/PDSA-forms>



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Refinement of Ideas



AGRICULTURE WORKFORCE TRAINING
FOR COLLABORATIVE LEADERSHIP

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Gallery Walk

For each poster (i.e., flip chart page), leave a sticky note with praise, wonderings, or ideas/resources for consideration.





Photo by [iSAW Company](#) on [Unsplash](#)

Photo by [Kelly Sikkema](#) on [Unsplash](#)

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Reflection & Evaluation

What's your "I plan to..." statement?



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