

MAKING SKILL GROWTH VISIBLE THROUGH SELF-EFFICACY REFLECTION IN AGRICULTURAL CONTROLLERS

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NEED FOR INNOVATION

- Agriculture courses often build on prior coursework.
- This requires students to integrate previous knowledge to:
 - solve applied problems.
 - connect skills across disciplines.
- Faculty needed a
 - clearer way for individual students to reflect on their developing skills and confidence.
 - to generate formative data to provide just-in-time instructional support.

GOALS

1. Make individual skill growth visible to students and faculty.
2. Strengthen opportunities for students' reflection on their confidence with agricultural controller skills.
3. Provide faculty with formative information to identify skill gaps and adjust instructional support.

NEED

- Strengthen the reflective observation phase of experiential learning.
- Faculty implemented retrospective pre-/post self-efficacy reflections at key course milestones.
- This innovation extends self-efficacy theory from a framework for studying confidence to a practical course-level reflection process (Bandura, 1977)
- Helps students and faculty monitor perceived skill growth across skill development within the course.

IDENTIFY FOCUS SKILLS

- Review the course learning outcomes to identify skills of interest for each learning milestone.

RESULTS

- The reflection innovation was implemented with 31 students in an upper-division CEA (Controlled Environment Agriculture) course organized around sequential learning milestones.
- Milestones in the course built toward a final project. The reflection was included as a graded course assignment.
- The structured reflections made the reflective observation and abstract conceptualization phases more explicit.
- Reflections functioned as both a student reflection tool and a formative instructional assessment strategy.

RESULTS EXPLAINED

- Milestone data provided concrete evidence of students' perceived confidence with agricultural controller skills at each milestone
- The course required students to transfer prior learning into a CEA context
- Identifying gaps lets faculty keep support focused on prerequisite skill transfer rather than re-teaching prior coursework.

ADVICE

- Reflection provided awareness of perceived skill levels for both students and faculty.
- Faculty were able to identify areas of struggle and provide support.
- The need to examine how additional reflection assignments influence course assessment and grading.
- For implementing this process, reflections should align with course milestones and used to guide just-in-time instructional support

HOW IT WORKS

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ADJUST

- Determine appropriate next steps including possibly of providing targeted coaching or access to curated tutorial resources.

CREATE INSTRUMENT

- Develop self-efficacy items and get expert review. Use "I can" statements as much as possible.
- Prepare the instrument for administration using form software of your choice.

REVIEW DATA

- Using a spreadsheet, calculate statistics of interest including frequencies and mean.
- Then explore individual and whole-class data for each item to identify patterns.

DEPLOY THE SURVEY

- At the end of each learning milestone the students complete the instrument.

