



SOURCES OF SELF-EFFICACY ACROSS MILESTONES IN AN AGRICULTURAL CONTROLLERS COURSE

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INTRODUCTION

- Learners in courses enter with varied prior knowledge, technical skills, and confidence, which makes course design challenging.
- Controlled environment agriculture (CEA) is a growing industry that requires skilled labor.
- There is a need to better understand how students develop confidence in their ability to perform CEA-related tasks.

PURPOSE

- This study describes participants' self-reported most influential sources of efficacy across course milestones in an agricultural-controllers course.

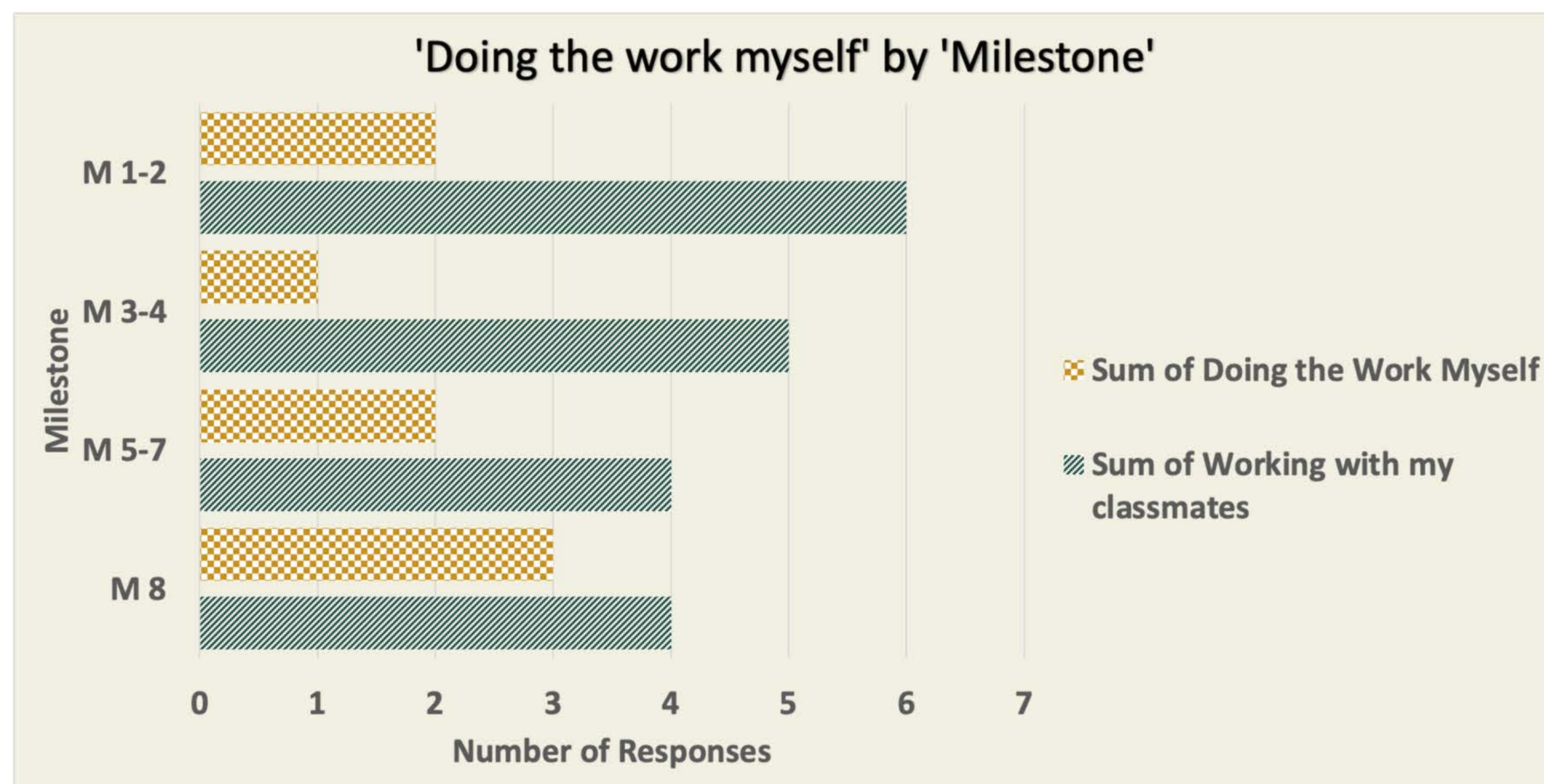
THEORETICAL FRAME WORK

- This study was guided by Bandura's self-efficacy theory.
- Self-efficacy refers to individuals' beliefs in their capability to perform specific tasks (Bandura, 1977, 1997; Pajares, 1996; Zimmerman, 2000).
- Agricultural learners often develop confidence through applied, skill-based, and context-specific experiences (Knobloch, 2014; McKim et al., 2017).
- Agricultural education scholars have applied self-efficacy theory across learning contexts.
- Supporting its use for examining confidence development in agricultural learning environments (Knobloch, 2014; Wolf et al., 2010).

HOW EFFICACY WAS MEASURED

- Bandura (1977) identified four primary sources of efficacy information: mastery and vicarious experiences, verbal persuasion, and physiological states. These four sources framed the development of items for each course milestone efficacy scale.
- The figure below compares the number of responses between independent learning ("Doing the Work Myself") and collaborative learning ("Working with my Classmates") between each milestone.

RESULTS



CONCLUSION

- Working with classmates was the most frequently identified source of efficacy.
- Students identified varied sources of efficacy across the term.
- Independent learning did increase at times and peer learning decreased.
- Students' confidence development in technical agricultural controller skills may be both course-dependent and individualized.

METHODOLOGY

- Data were collected from the Spring 2026 BREA 332 Ag Controllers Course.
- Milestone self-efficacy scales were developed by the course instructor, reviewed by an expert panel, and revised prior to administration.
- At each milestone, students selected the experience they perceived as most influential to their confidence in performing the related skills.
- Frequencies and percentages were calculated within and across milestones using SPSS v.30.

IMPLICATIONS & ADVICE

- This research suggests CEA coursework should design learning experiences that provide varied opportunities for efficacy development
- Attending to individual learners' needs within the CEA context can help prepare a highly qualified workforce through intentional course design.
- Future research should examine additional populations within CEA to determine how self-efficacy sources align with demonstrated skills.
- Researchers should also explore how pedagogical choices, such as peer collaboration, repeated practice, and feedback influence self-efficacy development.

