



Learning Through Challenges and Instructor Support in Agricultural Engineering Technology

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INTRODUCTION

- Learning mechanical skills involves unfamiliar tasks, mistakes, and decisions about when to seek assistance.
- Understanding students' responses to these situations can inform instruction in introductory Agricultural Engineering Technology (AGET) courses.
- Experiential Learning Theory emphasizes reflection and renewed action in learning (Kolb & Kolb, 2017).
- Social Cognitive Theory addresses self-regulation and personal agency within a social environment (Bandura, 2001).
- The purpose of this focused qualitative analysis was to describe students' responses to mechanical learning challenges and the instructor behaviors they identified as supportive of help-seeking and continued participation.

METHODS

- This analysis used open-ended responses from a fall 2026 survey of 43 students enrolled in AGET 2303, Introduction to Agricultural Engineering Technology.
- All enrolled students voluntarily participated.
- Questions addressed responses to mistakes, anticipated difficulty, comfort with asking for help, instructors' expectations, and previous discouraging experiences.
- Findings are presented through descriptive patterns and individual examples identified by participant numbers.
- Responses reflect student-reported experiences and expectations before completing the course rather than observed laboratory behavior.

RESULTS

Students' Responses to Mechanical Learning Challenges

Responding to Mistakes



Students examined errors, retraced steps, sought help, and tried again.

EXAMPLE

Students 12, 23, and 27 identified the cause of mistakes before making corrections.

Persistence Despite Discomfort



Frustration and anxiety sometimes accompanied continued effort.

EXAMPLE

Students 7, 25, 31, and 36 continued after frustration or distress. Student 40 expressed anxiety and eagerness to learn.

Supportive Instructor Interactions



Students requested patience, assurance, respectful responses, and clear explanations.

EXAMPLE

Student 15 indicated that rude responses could discourage further questions.

Access to Learning Opportunities



Students raised concerns about barriers in prior learning environments.

EXAMPLE

Student 16 reported perceived gender bias, judgments based on physical size, and restricted learning opportunities.

Discomfort can coexist with persistence. Respectful guidance and access to learning opportunities matter to participation.

CONCLUSION

- Survey findings provide meaningful insight into students' responses to mechanical learning challenges and the instructional support they perceive as beneficial.
- Participants' accounts illustrate that emotional discomfort can coexist with persistence.
- Respectful instructor interactions were identified as relevant to students' willingness to seek assistance.
- Instructional implications include opportunities to examine errors, revise approaches, and engage in repeated practice within a supportive learning environment.
- Equitable access to equipment and technical support may encourage meaningful participation and address concerns identified in students' accounts.
- Although these practices were not directly assessed for effectiveness, the survey provides a useful foundation for responsive instructional planning.
- Future research should examine classroom interactions, observed help-seeking, and persistence during laboratory tasks to clarify how instructional support relates to student engagement and skill development.