Developing Workplace Readiness in Agricultural Engineering Technology Students: A Multi-Evaluation Study of Technical and Soft Skills

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INTRODUCTION

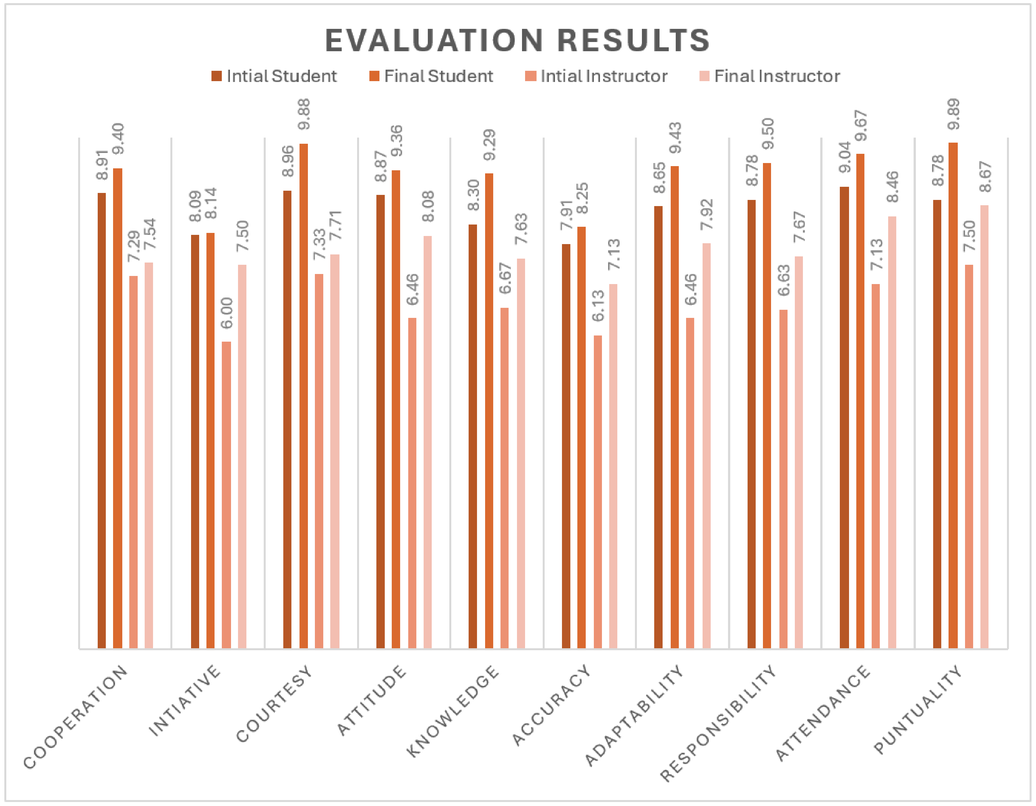
- High unemployment rates among graduates may reflect gaps in both soft and technical skills required by employers.
- Jang (2016) highlights persistent disconnects between STEM education and workforce demands across industry, academia, and government.
- As technology and industry evolve, work increasingly requires continual skill development, adaptability, self-motivation, and engagement (Cirillo, 2016; Tushar & Sooraksa, 2023).
- In Agricultural Engineering Technology (AGET), employability skills are especially critical alongside technical knowledge.
- Employers prioritize communication, teamwork, responsibility, initiative, and adaptability (Robles, 2012; Tushar & Sooraksa, 2023).
- Comparing student self-perceptions with peer and instructor evaluations can provide insight into overall workplace readiness and career preparedness.

METHODS

- Study Participants: 25 senior AGET students enrolled in AGET 4381: Advanced Metal Fabrication during Spring 2026.
- Groups & Project: Students were randomly placed into seven groups of three and one group of four and completed a semester-long agricultural metal fabrication project.
- Self-Evaluations: Students completed self-evaluations at the beginning and end of the semester.
- Instructor Evaluations: The instructor independently evaluated cooperation, initiative, attitude, job knowledge, accuracy, work habits, adaptability, responsibility, shop appearance, attendance, and punctuality using a 1–10 scale (100-point total).
- Weekly Evaluations: Weekly peer and instructor evaluations assessed technical skills, safety, work ethic, teamwork, and accountability using a 0–5 scale (30 points per week).

RESULTS

- Weekly evaluations showed slight improvement over time, with Responsibility and Accountability rated highest in Lab 1 (4.84) and Technical Fabrication Skills lowest (4.53); by Lab 13, Work Quality and Precision were highest (4.73), while Technical Fabrication Skills remained lowest but improved (4.65).
- Student self-evaluations increased overall, with Attendance initially highest (9.04) and Accuracy lowest (7.91); by the final evaluation, Punctuality (9.89) and Courtesy (9.88) were highest, while Initiative remained lowest (8.14) but improved.
- Instructor evaluations showed similar gains, with Punctuality highest both initially (7.50) and at the end (8.67); Accuracy remained lowest but increased from 6.13 to 7.13, while Initiative improved from 6.00 to 7.50.



Changes in Student and Instructor Evaluation Scores Across Workplace Readiness Competencies

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CONCLUSION

- Overall Improvement: Students showed improved workplace readiness across self and instructor evaluations.
- Areas of Growth: Gains were seen in technical skills, professionalism, and work habits.
- Strongest Areas: Punctuality, responsibility, and work quality were the strongest areas.
- Areas for Improvement: Initiative and technical accuracy were weaker but showed improvement.
- Overall Finding: Hands-on, collaborative fabrication projects improved both technical competence and employability skills in AGET students.

IMPLICATIONS

- Workforce Readiness: Hands-on, team-based technical courses strengthen technical, and employability skills needed for the workforce.
- Student-Led Projects: Encourage students to take greater ownership of their learning and improve initiative.
- Peer Accountability: Strengthens responsibility and teamwork.
- Multi-Source Assessments: Combining self, peer, and instructor evaluations provides a more complete view of student performance.
- Technical Performance: These strategies improve applied technical skills and workplace readiness.
- Industry Preparation: Overall, these approaches better prepare students to meet industry expectations.

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