

Determining Early-career Georgia Agriculture Teachers' Agricultural Mechanics Professional Development Needs



Christopher C. Crump, Ed.D.

Trent Wells, Ph.D.

Introduction & Theoretical Framework

- Agriculture teachers need to be knowledgeable and skilled in various aspects of technical agriculture (Eck et al., 2019).
- Agricultural mechanics is commonly taught and is popular with students (Valdez & Johnson, 2020).
- Agricultural mechanics is broad and requires that agriculture teachers be competent in numerous content areas (Granberry et al., 2023).
- Professional development (PD) is an appropriate venue for improving agriculture teachers' competence (Grieman, 2010).
- Human capital theory undergirded our study.
- Investments in individuals' training improves individuals' abilities to contribute to society (Becker, 1993).

Purpose & Methods

- The purpose of our study was to assess early-career Georgia agriculture teachers' agricultural mechanics PD needs.
- We used Wells and Hainline's (2021) valid and reliable instrument to conduct our study.
- We worked with a Georgia Agricultural Education state staff member to obtain the names and e-mail addresses of all 253 early-career agriculture teachers (i.e., five or fewer years of teaching experience) in the state.
- We used five points of contact to elicit responses. Ten e-mails bounced, yielding 243 potential responders. Using five \$20.00 gift cards as incentives, we obtained a 31.3% response rate.
- We compared early- to late-responders and did not identify any non-response error.
- We used McKim and Saucier's (2011) Excel-Based MWDS Calculator to identify agricultural mechanics PD needs.

Results

Table 1

Early-career Georgia Agriculture Teachers' Agricultural Mechanics Professional Development Needs by MWDS

Item	n	MWDS	Importance		Competence	
			M	SD	M	SD
American Welding Society (AWS) standards for welding procedures	69	1	8.06	4.25	0.85	2.35
Procedures for structural welding	70	2	7.42	4.16	0.85	2.37
Principles of metallurgy (ex. identifying metals, proper use of metals, etc.)	69	3	7.32	4.17	0.82	2.42
Procedures for building metal projects (ex. trailers, barbecue pits, etc.)	70	4	7.29	4.11	0.81	2.34
Procedures for cold metalworking bending	70	5	7.27	3.94	0.85	2.10

Note. Importance Scale: 1 = Not important (NI), 2 = Of little importance (LI), 3 = Somewhat important (SI), 4 = Important (I), 5 = Very important (VI); Competence Scale: 1 = Not competent (NC), 2 = Little competence (LC), 3 = Somewhat competent (SC), 4 = Competent (C), 5 = Very competent (VC); MWDS = Mean weighted discrepancy score; M = Mean; SD = Standard deviation.



Conclusions & Recommendations

- Early-career Georgia agriculture teachers have PD needs in all 65 agricultural mechanics topics assessed in the instrument.
- This finding, while not surprising, helps inform PD offerings.
- Our findings indicate that priority should be given to providing PD in welding and metal fabrication-related topics.
- Georgia Agricultural Education stakeholders should explore opportunities to develop and implement agricultural mechanics-focused PD geared toward early-career agriculture teachers.
- Agricultural teacher educators in Georgia should consider exploring mid- and late-career agriculture teachers' agricultural mechanics PD needs as well.
- Such exploration would help expand the profession's knowledge and capacity to directly address agriculture teachers' human capital development needs, thereby helping to impact learning opportunities for students.



References

- Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis with special reference to education* (3rd ed.). The University of Chicago Press.
- Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the characteristics of an effective agricultural education teacher: A national study. *Journal of Agricultural Education*, 60(4), 1-18. <https://doi.org/10.5032/jae.2019.04001>
- Granberry, T., Blackburn, J. J., & Roberts, R. (2023). The state of agricultural mechanics in the preparation of school-based agricultural education teachers. *Journal of Agricultural Education*, 64(4), 144-158. <https://doi.org/10.5032/jae.v64i4.1610>
- Grieman, B. C. (2010). Continuing professional development. In R. M. Torres, T. Kitchel, A. L. Ball (Eds.), *Preparing and advancing teachers in agricultural education* (pp. 180-201). The Ohio State University.
- McKim, B. R., & Saucier, P. R. (2011). An Excel-based mean weighted discrepancy score calculator. *The Journal of Extension*, 49(2). https://www.joe.org/joe/2011april/pdf/JOE_v49_2t8.pdf
- Valdez, E. D., & Johnson, S. (2020). *Mismatch? Aligning secondary career and technical education with regional workforce demand*. Texas Public Policy Foundation. <https://files.texaspolicy.com/uploads/2020/05/05112536/Valdez-Johnson-Workforce-Demand.pdf>
- Wells, T., & Hainline, M. S. (2021). Examining teachers' agricultural mechanics professional development needs: A national study. *Journal of Agricultural Education*, 62(2), 217-238. <https://doi.org/10.5032/jae.2021.02217>