

PRESENTERS

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Examining a Perception-based Pedagogical Content Knowledge (PCK) Survey for Agricultural Educators in Colorado

Introduction

The United States faces growing agricultural education teacher attrition rates and difficulty filling open positions (Deimer et al., 2019). One response to this challenge is to enhance the preparation and support of these educators through a deeper understanding of their pedagogical content knowledge (PCK). PCK refers to “the knowledge of the rationale behind, the planning for, and the act of teaching a piece of subject matter using specific methods for specific students to promote student learning” (Rice & Kitchel, 2017, p. 199). This necessitates an examination of agricultural education teachers’ perceptions of PCK.

This poster presents findings from a mixed methods study examining the following questions:

1. How do agricultural education teachers in Colorado perceive their level of confidence in teaching different content areas?
2. Which content areas do they feel most confident teaching, and which ones do they feel least confident teaching?
3. Additionally, where do these Colorado agricultural education teachers acquire the necessary content knowledge for teaching?

Methods

Design: Phase 1 of sequential mixed methods study

Participants: Licensed secondary agricultural education educators in CO during the 2022-2023 school year

Data Collection:

- Qualtrics survey administered during CO Vocational Agricultural Teachers Association meeting in January 2023
- Survey adopted from Wood & Sorenson’s (2023) instrument for exploring PCK among secondary agricultural educators
- Participants selected Agricultural, Food, and Natural Resources (AFNR) pathway in which they possessed highest and lowest level of confidence for teaching, followed by Likert scale questions regarding perceptions of content knowledge and pedagogical practice

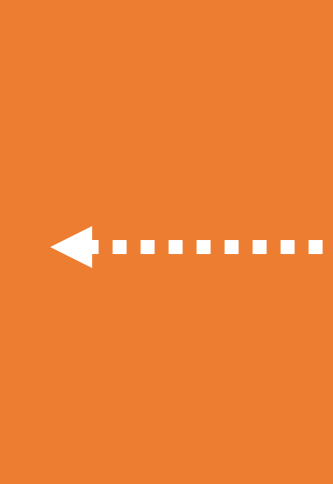
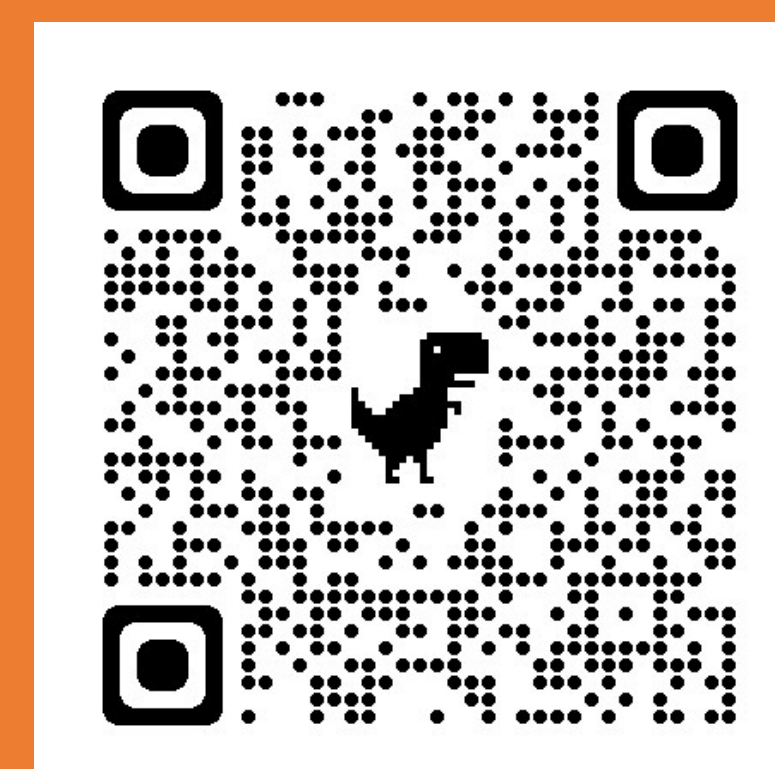
Results

Characteristic	Frequency	%
Gender		
Female	48	68%
Male	22	32%
Licensure		
Traditional	51	73%
Alternative	19	27%
Most confident pathway		
#1 Animal Systems: Livestock Production	31	44%
#2 Power, Structure, and Technical Systems	14	20%
Least confident pathway		
#1 Power, Structure, and Technical Systems	17	24%
#2 Plant Science	14	20%

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Most Significant	22	32%
Teaching Experience	3.89	1.26
Prior or Current Agricultural Experiences	3.77	1.25
Most Minor		
Teacher’s High School Ag Program	2.87	1.51
Previous Ag Employment	2.87	1.86

Note. N = 91 (n = 70 for all responses).

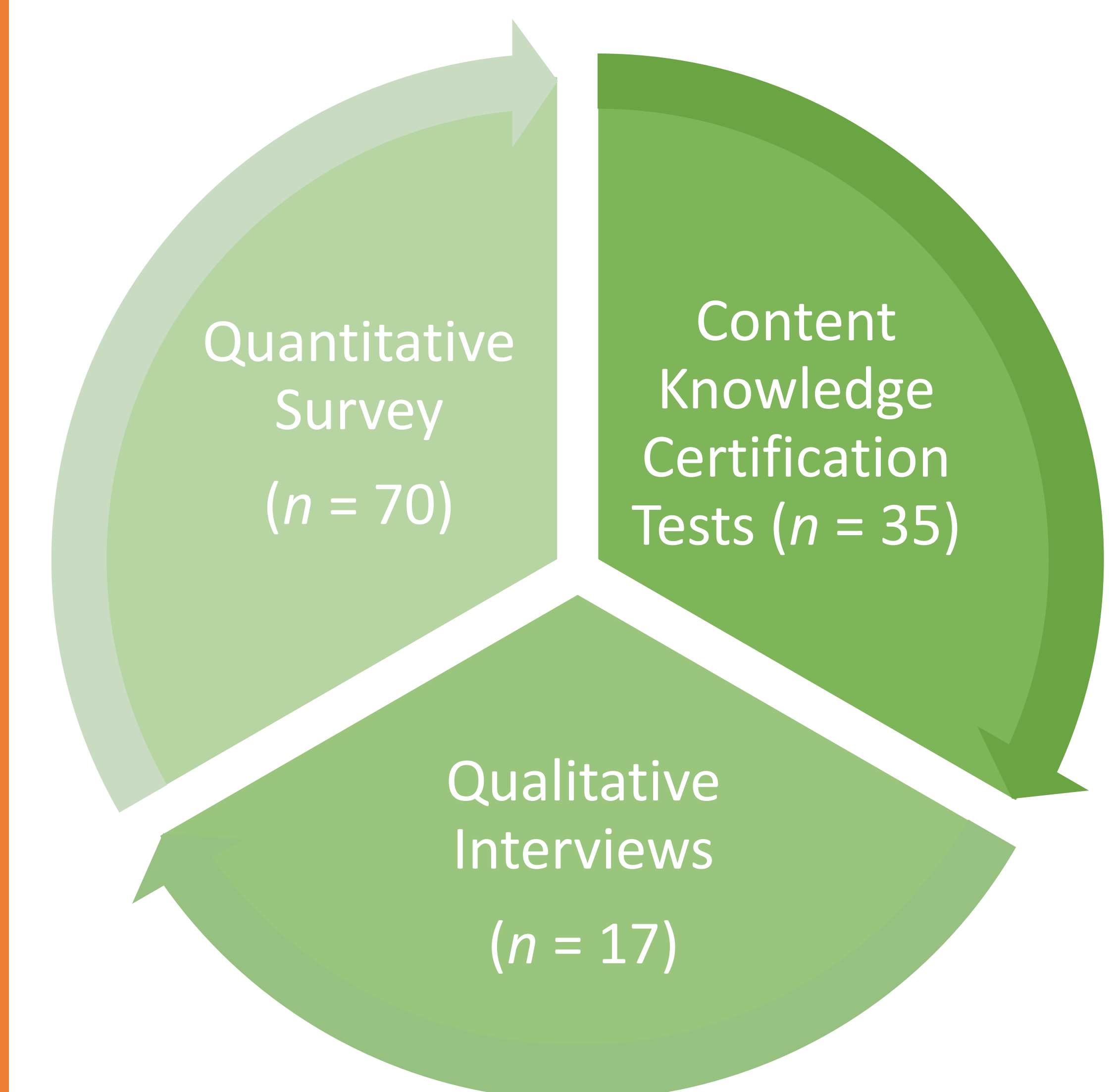
- 1) There is substantial variation in educator confidence in AFNR pathways; the pathways in which some are most confident are the same pathways in which others are least confident.
- 2) There is no significant correlation between gender, licensure type, or most/least confident pathway and significant sources of knowledge.
- 3) While employment in ag is not a significant source of knowledge, prior or current agricultural experiences are a significant source of knowledge for many ag teachers.



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Recommendations

1. Offer differentiated professional development opportunities that meet the needs of teachers in each phase of their careers.
2. Leverage expertise in various pathways within the CO agricultural educator network to support new educators and those with less confidence in those pathways.
3. Expand opportunities for teaching experience among pre-service educators to ensure greater PCK among new graduates.



Next Steps

- Combine with analysis of quantitative content area measures (certification tests; n = 35) and qualitative interview data (n = 17)
- Develop a more nuanced understanding of educators’ sources of confidence in content knowledge, teaching effectiveness, and how pedagogical practices vary across pathways and confidence in content knowledge.