

# PEDAGOGICAL CONTENT KNOWLEDGE:

## DESCRIBING TEACHER PREPARATION PROGRAMS' REQUIRED CURRICULUM WITHIN AFNR PATHWAYS AND STANDARDS

Over the last several decades, one of agricultural education's largest problems has been recruiting and retaining highly qualified agricultural educators (Lemons et al., 2015). Unfortunately, approximately 50% of new educators will leave the profession within their first five years (Moser & McKim, 2020). While agricultural educator attrition has been associated with numerous factors, one of the main factors is the educator's lack of pedagogical content knowledge (McKim et al., 2017). Pedagogical content knowledge is defined as how teachers relate what they know to what they know how to teach (Cochran, 1997). Educators can feel unconfident in their abilities without pedagogical content knowledge, leading to attrition (McKim et al., 2017). One of the main sources of pedagogical content knowledge is the traditional teacher preparation program, but many agricultural teacher preparation program graduates feel unprepared for the classroom (Rice & Kitchel, 2015). This study sought to describe how well teacher preparation programs' curriculum aligns with the national Agriculture, Food, and Natural Resources (AFNR) standards to identify gaps in required coursework.



**IF TEACHER PREPARATION PROGRAMS CAN ALIGN THEIR REQUIRED COURSEWORK WITH THE AFNR STANDARDS, IT COULD PROVIDE THE EDUCATION AND SPECIALIZED TRAINING TO IMPROVE COMPETENCE (BECKER, 1993).**

### AUTHORS

Emily Sampson and Dr. William Norris

### AFFILIATIONS

New Mexico State University

### OBJECTIVE

1. Describe to what degree teacher preparation programs' required coursework is aligned with the national AFNR standards.

### THEORETICAL FRAMEWORK

- Human Capital Theory (HCT)
- Becker (1993) suggests that as education, experience, and specialized training increase, an individual's competence in their profession will subsequently increase.
- Post-secondary teacher preparation programs provide relevant coursework within each AFNR pathway (Education and Specialized Training)
- The pedagogical content knowledge of preservice educators will be increased
- Pre-service competence will be amplified

### METHODS

- A Descriptive Correlational Research Design used to describe how teacher preparation programs' required coursework aligns with national AFNR standards.
- The population consisted of department heads who served as administrators for the teacher preparation program ( $N=89$ ).
- This population was selected due to their administrative influence over teacher preparation programs. A census method was employed to reduce sampling bias.
- Instrument development took place using Qualtrics, and was distributed via email to each department head using their faculty email. Distribution occurred in weekly intervals over the course of four weeks.
- Overall,  $n=54$  responses were collected, resulting in a 60.7% response rate. Of these responses 25 were complete and 29 were incomplete. Incomplete responses were excluded due to the lack of data.
- The instrument used in the study was developed using the Agriculture, Food, and Natural Resources (AFNR) standards and pathways (NCAE, 2023).
- The instrument used in the study was developed using the Agriculture, Food, and Natural Resources (AFNR) standards and pathways (NCAE, 2023). These standards represent content taught nationally within school-based agricultural education (SBAE). There are eight AFNR pathways with a total of 37 Common Career Technical Standards.
- The instrument asked participants to rate the degree to which the required coursework in their teacher preparation program taught those standards.
- The participants rated the alignment to each standard using a Likert scale ranging from 1 = None, 2 = Some, 3 = Moderate, 4 = Strong, and 5 = Very Strong.
- The instrument's reliability was assessed post hoc utilizing Cronbach's alpha reliability coefficients, which ranged from .86 to .98. Validity was assessed by a committee of three faculty and one graduate student.
- The data for this study was analyzed using SPSS version 28.0, which utilized central tendencies and standard deviations to execute the research objective.

### RESULTS/FINDINGS

Analysis suggested that most agriculture teacher preparation programs require coursework in all of the AFNR pathways, with an average of 2-3 courses required in each. Reportedly, the most taught AFNR pathways were Animal Systems, Plant Systems, and Power, Technical and Structural Systems. The most concerning finding was that department heads rated the coursework as somewhat to moderately aligned with the AFNR CCTC standards in that pathway. The most aligned pathways included the Plant Systems ( $M = 3.05$ ,  $SD = 1.04$ ), Animal Systems ( $M = 3.00$ ,  $SD = .96$ ), and Power, Structural, and Technical Systems ( $M = 2.63$ ,  $SD = .96$ ). The least aligned pathways included Food Products and Processing Systems ( $M = 2.13$ ,  $SD = 1.06$ ), Environmental Service Systems ( $M = 2.28$ ,  $SD = 1.07$ ), and Biotechnology Systems ( $M = 2.35$ ,  $SD = 1.07$ ).

### CONCLUSION

The results suggest that there is a misalignment in what agricultural educators are asked to teach in the national AFNR standards and the content they receive in their teacher preparation program, which could explain preservice educators' dissatisfaction with the quality, quantity, and transferability of the content knowledge they received (Rice & Kitchel, 2015). This may also help explain teachers' lack of confidence when entering the classroom (McKim et al., 2017), and their attrition from the profession (Lemons et al., 2015). The results of this study guided the researchers in recommending the evaluation of required coursework for preparation programs.