

**Poster Type: Research**

**Agricultural Education Teachers' Deconstruction of Content Knowledge**

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## **Introduction**

Pedagogical content knowledge (PCK) is what truly separates a teacher from an expert in content (Shulman, 1986). Teachers' content knowledge and understanding of material is influential in their ability to break down content for students (Diakidoy & Iordanou, 2003). Transformation of subject matter requires critical interpretation, representations of ideas in various forms, choosing specific instructional methods for topics, and tailoring adaptations based on the needs of students (Shulman, 1987). Due to the complexity of this process, beginning teachers often struggle to figure out how deconstruction of knowledge occurs. Examining agricultural education teachers' process of breaking down subject matter could aide teacher preparation programs in preparing preservice teachers.

## **Conceptual Framework**

A framework by Chick, Baker, Pham, and Cheng (2006) provided clarity on what characteristics teachers exhibit when tapping into their pedagogical content knowledge. The categories of PCK were: teaching strategies, questioning techniques, student thinking, student misconceptions, explanations, cognitive demands of task, representations of concepts, knowledge of resources, purpose of content knowledge, deconstructing content, curriculum knowledge, and other (Chick et al., 2006). For each PCK category in the framework there was a corresponding piece of evidence for how that might look in the classroom.

## **Purpose of Study**

The purpose of this case study was to explore how teachers deconstruct their content knowledge expertise for student understanding. The central question was: how is content knowledge being used by teachers in the process of planning and teaching for student understanding? Guiding questions included: 1) What are agriculture teachers sources of content knowledge? 2) How do agriculture teachers determine what content is important? 3) What strategies do agriculture teachers use to teach the content? 4) How do agriculture teachers assess student understanding of the content?

## **Methodology**

In this qualitative case study, a multiple-case design was utilized. The purposeful sample for the study included two agriculture teachers in [state]. One was a novice and the other had been teaching for seven years, which falls in the expert range (Darling-Hammond & Bransford, 2005). Having both a novice and an expert case provides two different lenses in which to understand PCK. The researcher viewed this study through a pragmatic lens. Data were collected through semi-structured interviews and field observations in the classroom. Upon transcription of

the interviews and classroom observations the data were coded and then grouped according to emergent themes. Categories were then collapsed into the final themes for the findings. To ensure trustworthiness of the data, member checking was utilized (Creswell, 2013). Relevant literature was also utilized as a basis for discussion and conclusions. Credibility of the data was insured by richness of the data obtained and reflexivity from the researcher through memoing.

### **Findings**

In the first theme, *Sources of Content Knowledge*, both teachers identified their own high school experiences as their most significant source of agriculture content knowledge. The second theme, *Choice and Purpose of Content*, demonstrated both teachers had similar goals in how the content knowledge was to be used by their students, which was to develop agricultural literacy. Student cognitive ability was also a factor in choice of content. The third theme, *Strategies for Teaching Content*, varied by teacher. The novice chose her teaching methods based on her comfort with the content and student approval and the expert chose her methods based on time limits, efficiency, and classroom management. The fourth theme, *Limitations of Teaching Content*, ranged from student understanding of the content itself to practical limitations such as the number of students to serve in one classroom. The novice teacher indicated problems with understanding by students, but focused more on her own limitations with the content.

### **Conclusions**

Both the novice and expert teacher demonstrated PCK through their interview and classroom teaching observation. This is consistent with Magnusson, Krajcik, and Borko (1999) who stated PCK begins to develop in preservice and beginning teachers. Previous high school education being the primary source of agriculture content knowledge for both the novice and the expert teacher could have future implications on the profession if incorrect knowledge is passed down from teacher to teacher over generations. How the two teachers choose their teaching methods was based on themselves primarily and on the students' needs secondarily but very little was based on the application to the content. This aligns with the report from Haston and Leon-Guerrero (2008) which stated there is concern in the education profession with the connection in methods courses between content and curriculum. The novice teacher indicated she struggled with answering questions from students and the students themselves understanding the content. This could be a beginning teacher efficacy issue or indicate a lack of content knowledge.

### **Recommendations**

The researcher recommends continued exploration into the PCK of teachers to determine if they are making the connection between teaching strategies and the content they are teaching. Further investigation into subjects teachers do not feel like they have expertise in could also aid in the process of deconstructing knowledge. Overall, the researcher recommends a similar study be conducted with a grounded theory design to focus more on the process of developing PCK and breaking down the content for student understanding with a larger sample of teachers.

## References

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