

A DOCUMENT ANALYSIS OF THE PEDAGOGICAL KNOWLEDGE ESPOUSED IN AGRICULTURE TEACHING METHODS COURSES

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Abstract

*The purpose of this study was to examine pedagogical knowledge espoused in teaching methods courses in agricultural education. The population was a census of 64 agricultural teacher educators nationwide who taught a teaching methods course during the 2002-03 academic year. The researchers utilized a content document analysis method (Hodder, 2000) of teaching methods course syllabi to identify the required course readings, assignments, and teaching methods taught by teacher educators. The most frequently required reading resource was Newcomb, McCracken, and Warmbrod's (1986, 1993), *Methods of Teaching Agriculture*. One-fourth of the teaching methods teacher educators required this text. Nearly one in seven educators required a teaching methods text outside of agricultural education. Teacher educators had a wide range of the types of assignments and amount of work required in their teaching methods courses. Teacher educators spent an average of 21% of the course time teaching methods. The problem-solving approach to teaching was the most widely espoused teaching method in agricultural education course syllabi. The predominant number of teaching methods taught appeared to be directly from Newcomb et al.'s book. Regardless of the teaching method listed in the syllabi, teacher educators spent a low percentage of course time on teaching methods.*

Introduction and Theoretical Framework

The professional practice of educators is guided by commonly held knowledge, beliefs, and assumptions about pedagogy. Likewise, a body of knowledge of research and theories guides the practice of the university professionals who prepare such educators. One important task for any practitioner is to reflect upon the actions of practice (Schön, 1983). A critical piece of such reflection involves examining the knowledge base and theories in use that inform, and ultimately shape the practitioners to which such knowledge and theories are disseminated. "Are we satisfied with the way that we, as teacher educators, teach our students or prepare them for their teaching roles?" (Crunkilton, 1988, p. 3) One step in determining the answers to this important musing is for teacher educators to gain a deeper understanding of the pedagogical knowledge they posit as a

part of agriculture teacher preparation courses.

Ducharme and Ducharme (1996) discussed the paucity of systematic research in the study of teacher educators. While numerous studies have documented the work of teacher educators in normal schools, reform efforts in teacher education programs, the demographics of teacher education faculty, the research productivity of teacher education faculty, and the nature of teacher education faculty work (Cruikshank, 1990), there is a lack of research regarding *how* and *what* teacher education faculty teach.

Cruikshank's Model to Guide Inquiry in Preservice Teacher Education (1984) provides a conceptual framework for the systematic study of teaching among faculty and students in teacher education, and thus forms the conceptual framework for this study. This model illustrates five variables: (1) teacher educators,

(2) preservice teacher education students, (3) contexts where teacher preparation takes place, (4) content of the teacher preparation curriculum, and (5) instruction

in the teacher preparation program. These five variables ultimately influence the sixth variable—student outcomes (Figure 1).

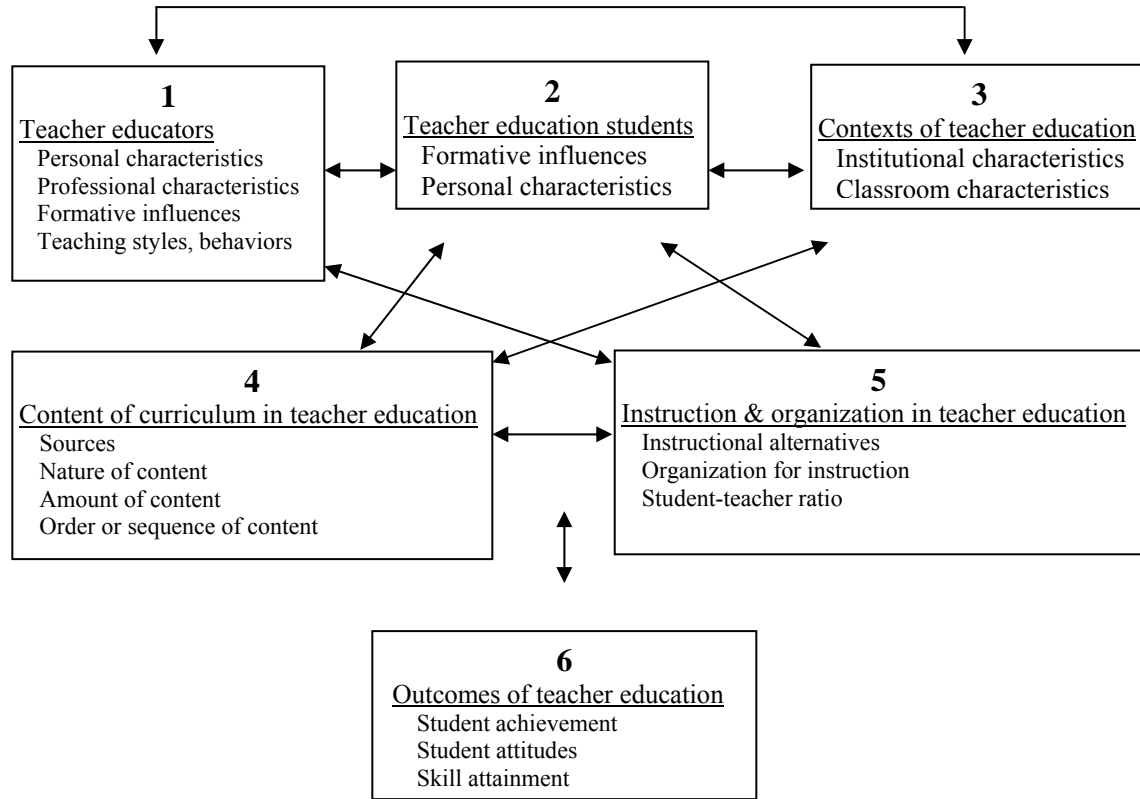


Figure 1. Model to Guide Inquiry in Preservice Teacher Education

Cruikshank’s model continues to be conceptually transferable to current literature in teacher education. Over two decades of research on teaching and learning has indicated that teacher quality is the most important variable to student success in the classroom (American Council of Education, 1999). Furthermore, the essential components of an effective teacher include among other components, knowledge in pedagogy and pedagogical content (American Council of Education). Connecting the literature base on teacher preparation to this model, it stands to reason that the pedagogical knowledge espoused in an agriculture teacher education program (Variable 4) is an important contributing factor in the knowledge, and ultimately the quality

of teacher education students (Variable 6).

Teachers draw upon pedagogical knowledge to create learning environments and teach students. Teachers need to have knowledge of the teacher’s role as the mediator in student learning, instructional strategies to promote active cognitive processing of the content, classroom environments that foster learning, and assessment methods that monitor students’ thinking (Borko & Putnam, 1996). In addition to encompassing many domains of knowledge needed to teach, the learning-to-teach process is complex (Borko & Putnam). The concept of teacher knowledge plays a critical role in how: one views teaching and learning, knowledge is learned, teaching performances are enacted, and one is

socialized into the profession (Munby, Russell, & Martin, 2001). “Universities are essential to high quality teacher education” (Darling-Hammond, 2000, p. 181), and teacher preparation programs should be created, implemented, and evaluated based on a body of knowledge consistent throughout the nation for what all teachers need to know to be effective (Darling-Hammond). Although some educators would disagree with Darling-Hammond’s proposition, there is tension between teacher educators and teachers in the field regarding how teachers develop, understanding and use of practical knowledge, and understanding and use of propositional knowledge (Munby et al.).

Several agricultural educators have published teaching methods books and resources that purport how agriculture teachers should teach. The researchers conceptualized seven themes that summarize the pedagogical knowledge espoused by these teacher educators and organizations in agricultural education: (1) Write lesson plans, develop program plans, create instructional objectives, and structure and organize content and its delivery (Hedges, 2000; McCormick, 1994; NCAE, 2000; Newcomb et al., 1986, 1993; Phipps & Osborne, 1988); (2) create and maintain student interests (Hedges; Lancelot, 1944; McCormick; NCAE; Newcomb et al.; Stewart, 1950) and motivate students by emphasizing usefulness of knowledge and skills in meeting student needs (Hedges; McCormick; Newcomb et al.; Phipps & Osborne; Stewart) with diverse ideas, abilities, backgrounds, and cultures (NCAE); (3) teach using the problem solving approach (Hedges, 1996; Lancelot; McCormick; Newcomb et al.; Phipps & Osborne; Stewart), give clear explanations (Hedges, 2000; Lancelot; Newcomb et al.), use effective questioning (Hedges; Lancelot; McCormick; National FFA Organization, 1998; Newcomb et al.), and develop thinking and understanding in the learners (Hedges, 1996; Lancelot; Newcomb et al.; Phipps & Osborne; Stewart); (4) use a variety of teaching methods, including lectures, discussions, demonstrations, supervised study, role plays, laboratory

activities, field trips, experiments, student notebooks, and appropriate references and instructional media (Hedges; McCormick; Newcomb et al.; Phipps & Osborne) (5) engage learners of all abilities (NCAE) by involving them in activities (McCormick; Phipps & Osborne), applying knowledge and practicing skills (Hedges, 2000; McCormick; Newcomb et al.; Phipps & Osborne; Stewart), and making “real-world” connections (NCAE); (6) care about students (NCAE), manage appropriate behaviors in the classroom, and guide students’ interpersonal relationships (Hedges; McCormick; Newcomb et al.; Phipps & Osborne); and, (7) provide feedback on progress and quality of work (Phipps & Osborne) and evaluate learning (Hedges; McCormick; Newcomb et al.; Phipps & Osborne).

McCracken (1994) stated that the pedagogical knowledge base of teaching and learning in agricultural education is mostly based upon sensory experiences, agreement with others, expert opinion, and logic. Further, the current knowledge on the practice of teaching agriculture is in a state of perpetual “emic” knowledge transfer. Very little pedagogical knowledge is based upon the scientific method of inquiry. Is the current pedagogical knowledge base espoused by agriculture teacher educators applicable to the complex and often ill-structured contexts of current teaching in and about agriculture? Information in regard to the specific *content* of teacher education, can assist teacher educators in a more critical reflection upon the answers to the aforementioned question, and ultimately influence the *outcomes* of teacher education—the adequate preparation of its future agriculture teachers.

Purpose and Objectives

The purpose of this study was to examine pedagogical knowledge espoused in teaching methods courses in agricultural education by identifying the (a) required reading resources, (b) nature and type of assignments, and (c) teaching methods.

Methods and Procedures

The researchers sought to explore and describe the population of teaching methods courses in agricultural education. This census of tangibles survey (Ary, Jacobs, & Razavieh, 1996) used a content document analysis method (Hodder, 2000) to identify the required course readings, assignments, and teaching methods taught by teacher educators in agricultural education.

The population of the study was a census of agricultural teacher educators who taught a teaching methods course during the 2002-03 academic year. The American Association for Agricultural Educators (AAAE) directory served as the frame of the study. Websites were reviewed to determine if the departments listed in the AAAE directory had teacher education programs and to locate the contact information of the teaching methods educator. Department heads were contacted if the teaching methods educator was not found on the departmental website. Seventy-five departments were contacted, but 11 departments responded that did not meet the criterion of offering an undergraduate teaching methods course in agricultural education during the current academic year. Therefore, 47 of 64 (73%) teacher educators responded to the survey, which resulted in a usable data set of 43 course syllabi (67%). Four syllabi were not analyzed because they did not meet the *a priori* criteria of an undergraduate level teaching methods course exclusive to agricultural education.

The data were collected between November, 2002 and March, 2003. Five contacts were made using Dillman's (2000) tailored method. The initial contact was a pre-notice message sent electronically to confirm the correct identification of the teaching methods educators and determine if they wished to participate by electronic or postal mail. For the second contact, a request for the teaching methods course syllabus was sent to each teaching methods educator. Third and fourth contacts were made using electronic mail, and a fifth contact was made via voice mail.

The researchers' epistemological stance was post-positivist based on the way of

knowing as being dualist because the researchers sought objective, factual data from the participants using quantitative analyses of course syllabi (Lincoln & Guba, 2000). The researchers developed a category-coding procedure (Gall, Gall, & Borg, 2003) that listed discrete, mutually exclusive categories of the manifest content (Fraenkel & Wallen, 2003): (a) required course reading resources; (b) course assignments; and, (c) teaching methods. The researchers developed an explicit set of scoring rules and collaboratively coded the syllabi to ensure consistency. It was assumed that the syllabi would represent the content of teaching methods courses in agricultural education, and thereby, the data would be valid. Although the syllabi represented teacher educators' selected resources, expectations, and teaching methods, some teacher educators did not list all this information in their syllabi. A limitation of this study is that phone interviews with selected individual instructors should have been conducted to clarify some syllabus information. However, Hodder (2000) stated that concrete texts, such as course syllabi, can be understood as a form of artifact produced under certain material conditions embedded within social and ideological systems (Hodder, 2000). Latent content can be inferred from the underlying meaning of a document (Fraenkel & Wallen, 2003).

A spreadsheet was used to organize and summarize the data. Required readings, assignments, and espoused teaching methods, *as cited in course syllabi*, were coded as units of analysis. Descriptive statistics using frequency counts (rounded to the nearest 1/10th), population means (rounded to the nearest 1/100th), and population standard deviations (rounded to the nearest 1/100th) were reported. In an effort to increase trustworthiness and believability, the researchers reflexively situated themselves in the study by identifying three roles and how their backgrounds may have influenced the research study (Christians, 2000; Denzin, 2000; Ellis & Bochner, 2000): (a) current teacher educators in agricultural education with constructivist views; (b) former

students who were taught teaching methods and knowledge traditionally espoused by agricultural educators; and (c) researchers' interested in epistemological beliefs. Although much care was taken to ensure accurate and reliable data, the findings of this study are limited due to the interpretation and subjectivity of the researchers (Denzin & Lincoln, 2000).

Results and Findings

The first objective was to identify the required reading resources in teaching methods courses in agricultural education as cited in course syllabi. There were a total of 74 reading resources required by 42 teacher

educators (Table 1). Four teacher educators (9.30%) required four reading resources. Three teacher educators (7.0%) required three reading resources. Fourteen teacher educators (32.6%) required two reading resources. Twenty-one educators (48.8%) required one reading resource. One teacher educator (2.3%) did not require a reading resource. The most frequently required reading resource was Newcomb et al's (1986, 1993), *Methods of Teaching Agriculture*. Second, nearly one in five teacher educators required a course packet or website. Third, nearly one in seven teacher educators required a teaching methods text outside of agricultural education.

Table 1
Frequency Counts of Required Reading Resources

Number of Resources (N = 74)	f	%
<i>Methods of Teaching Agriculture</i> (Newcomb et al., 1986, 1993)	19	25.7
Course Packets/Websites	14	18.9
Other Teaching Methods Texts	10	13.5
<i>Effective Teaching in Agriculture and Life Sciences</i> (Raven et al., 1998)	5	6.8
<i>Handbook on Agricultural Education...</i> (Phipps, 1980; Phipps & Osborne, 1988)	5	6.8
<i>Agriculture Teacher's Manual</i> (National FFA Organization, 1998)	5	6.8
State Curriculum Guides/Websites	5	6.8
<i>Local Program Success</i> (NCAE, 2000)	4	5.4
<i>The Power of Positive Teaching</i> (McCormick, 1994)	3	4.1
<i>Teaching Vocational Agriculture and Agribusiness</i> (Binkley & Tulloch, 1981)	1	1.4
College of Education Web Site	1	1.4
<i>What Being a Teacher Is All About</i> (Hedges, 2000)	1	1.4
<i>Program Planning Guide for Agriscience and Technology Education</i> (Lee, 2000)	1	1.4

The second objective sought to identify the nature and type of assignments in teaching methods courses in agricultural education (Table 2). Thirty-six out of 40 teacher educators reported lesson plans and microteachings as required assignments.

Four teacher educators did not cite lesson plans or microteachings as required assignments in their syllabi. There were 4.19 ($\sigma = 2.42$) lesson plans per course and 3.89 ($\sigma = 2.27$) microteachings per course.

Table 2
Nature and Type of Assignments by Agriculture Teaching Methods Professors (N = 40)

Assignments	<i>f</i>	%
Lesson Plans	36	90.0
Microteachings	36	90.0
Exam	27	67.5
Participation/Attendance	27	67.5
Quizzes	19	47.5
Unit Plans	16	40.0
Papers, Essays, Philosophy Statements	16	40.0
Critiques (Self, Peer, Feedback Conferences)	16	40.0
Homework	14	35.0
Field Experience	7	17.5
Portfolio	7	17.5
Technology (PowerPoint, Web Page, WebQuest, Integration Plan)	5	12.5
Bulletin Boards	5	12.5
Course Notebook, Internship Handbook	4	10.0
Management Plans (Student, Classroom, Program)	4	10.0
Objectives, Questions/Cognitive Levels	3	7.5
Modules	3	7.5
Interest Approach	3	7.5
FFA Activities/Guidebook	2	5.0
Game	1	2.5

The third objective identified the espoused teaching methods in agricultural education. Twenty-two different teaching methods were cited among teaching methods courses as listed in course syllabi (Table 3). Of the 40 course syllabi that listed a course schedule, teacher educators spent 20.8% (Range: 2.2 to 55.7%) of their course time on teaching methods. More than one-third ($N = 15$) of the courses spent less

than 15% on teaching methods. The problem solving approach to teaching was taught by 23 teacher educators and 11.6% of course time was spent teaching this method. One-third ($N = 13$) of the teacher educators listed teaching methods, in general, as a topic in their syllabi. Nine of the top ten most commonly espoused methods were identical to methods cited in Newcomb et al's (1986, 1993) book.

Table 3
Espoused Teaching Methods in Agricultural Education (N = 40)

Teaching Methods	No. of Courses	% of Course Time
Problem Solving Approach to Teaching	23	11.6
Teaching Methods (general)	13	8.8
Individual Teaching Techniques	12	4.2
Questioning	11	5.5
Discussion	9	3.3
Demonstration	8	4.8
Field Trips	8	2.6
Group Teaching Techniques	7	5.2
Lecture	6	6.5
Cooperative Learning	4	3.2
Games	4	2.5
Student-Centered	4	9.0
Teacher-Centered	4	8.6
Adult Teaching Methods	3	5.3
Formal	3	5.8
Constructivism	2	1.9
Nonformal/Informal	2	10.4
Problem-Based Learning	2	4.5
Projects	2	2.8
Role Plays	2	2.2
Experiments	1	4.4
Case Study	1	1.9

Conclusions, Implications, and Recommendations

One-fourth of the teaching methods teacher educators required Newcomb et al.'s (1986, 1993) text. The implication of this finding is that one resource, originally written seventeen years ago, widely serves the current pedagogical knowledge base for future agriculture teachers. While an updated edition of the Newcomb et al. text has been published since the time data for this study were collected, it is still recommended that teacher educators in agriculture continue to update and publish a

variety of scholarly reading resources for teaching methods of agriculture.

One-third of the teacher educators required course packets/websites or teaching methods texts outside of agricultural education. Further, one-third of the teacher educators required teaching methods texts that were dated more than 10 years. A quote from one syllabus utilized for analysis in this study serves as an implication of both of these findings. "Because a good, comprehensive, up-to-date textbook is not currently available for this course, students will need to develop a notebook of materials obtained through the educator..." (Teacher

Educator). It is suggested that teacher educators review teaching methods textbooks outside of agricultural education to discover agreed-upon resources that could be considered relevant and important to the profession.

While the nature of required reading resources was indicated from the results of the study, it was beyond the scope of this study to make conclusions in regard to specific readings and knowledge of teaching methods espoused in required readings. For example, an instructor may list a source on a syllabus as a required reading, but may or may not espouse knowledge from that source to students. Further research is recommended to investigate the nature and scope of required readings as well as the knowledge espoused through readings in agricultural teaching methods courses.

Nearly half of the teacher educators required reading resources that were low-cost or free, specifically in the form of Internet-based resources, or resources developed by individual teacher educators. One implication of this finding is that resources may be moving away from traditional textbooks as important resources for developing teachers' pedagogical knowledge. Further, it has been posited that agricultural education is a profession that learns, "by doing," (McCracken, 1994) rather than by reading and reflecting upon scholarly writings and research-based practices. Perhaps teacher educators should form special interest study groups to discuss and share ideas regarding the Internet and/or teacher educator-developed materials utilized in teaching methods courses. Further research is recommended to investigate the effectiveness of course packets and Internet modules versus paper texts in agricultural education courses.

Teacher educators had a wide range of the types of assignments and amount of work required in their teaching methods courses. Half of the assignments were performance-based in nature and half were more traditional in nature. The finding implies that teacher educators provide their students with a wide variety of learning opportunities through their assessment procedures. Further research should be

conducted regarding the nature and types of assessment in teaching methods courses and their impact on preservice teacher performance in the student teaching internship.

The problem-solving approach to teaching is the most widely advocated teaching method in agricultural education, which was aligned with Osborne's (1994) suggestion that this method was the preferred approach in agricultural education. The most frequently taught methods were the problem-solving approach, questioning, discussion, and demonstration. This conclusion was congruent with the methods published by Hedges (2000), McCormick (1994), Newcomb et al. (1986, 1993), and Phipps and Osborne (1988).

While more than half of the courses taught the problem-solving approach to teaching, research on teaching by high school agriculture instructors indicates that teachers employ this method minimally in their programs (Osborne & Hamzah, 1989). This finding supports the implication of a theory-practice gap in agricultural education (Osborne, 1994). Further research is needed regarding methods utilized by effective agriculture teachers as well as the ways in which teaching methods courses can teach pedagogical knowledge that is more reflective of the real-world practice of teaching agriculture.

Nine of the top ten most frequently espoused teaching methods as cited in agricultural education course syllabi appeared to be directly derived from Newcomb et al.'s (1986, 1993) book. This finding implies that the pedagogical knowledge imparted to future teachers in agricultural education is predominantly derived from a single perspective. Research is needed regarding the degree to which agriculture teachers utilize such methods as well as the effectiveness of the methods on student learning and achievement in agriculture.

Regardless of the teaching method espoused, it can be concluded that little time is spent on teaching methods. This finding is consistent with McLean and Camp (2000) who found that topics offered in selected teaching methods courses included

classroom management, curriculum design, lesson planning, evaluating students, and motivation and reinforcement among others. The pedagogical roles of the agriculture teacher are complex and varied, and teaching methods courses must also focus on preparing future teachers for such ill-structured roles. This implication is not an indictment of the knowledge espoused in teaching methods coursework; rather, it is an indictment on the structure of teacher education in universities. Perhaps one teaching methods course simply does not permit enough time to absorb, practice, and reflect upon the vast amount of pedagogical knowledge that an agriculture teacher must obtain. Further research is needed in regard to curricular structures that prepare future agriculture teachers for their complex roles.

The researchers in this study were limited in regard to interpretation of the nature of assignments as well as specific teaching methods due to limited information outlined in course syllabi. For example, in regard to teaching methods espoused, group teaching techniques and cooperative learning could have been very similar approaches. Similar assignments and teaching methods were not collapsed because the researchers attempted to describe unique ways in which teaching methods instructors described information in course syllabi. Perhaps pedagogical knowledge is not being clearly communicated within course syllabi. In addition, teaching methods educators could be incorporating too much pedagogical knowledge into one course. Further research should be conducted to identify specific teaching methods that are the most important for preservice teachers to learn. Further research should also be conducted to clarify pedagogical knowledge espoused based upon individual teacher educator assumptions and unique contexts within specific teaching methods courses.

This study was a look at the "first impressions" of the espoused pedagogical practices in teaching methods courses in agricultural education. The findings of this study created more questions that teacher educators should pursue to gain a deeper

understanding of the pedagogical knowledge underpinning the practices of developing future teachers of agriculture. This persistent pursuit should continue to uncover the beliefs that underlie these pedagogical practices. Such pursuit should make the assumptions of teacher preparation and development more transparent, and ultimately create dialogue among teacher educators about program improvement.

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