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EXAMINING THE INSTRUCTIONAL PLANNING PROCESS TAUGHT IN AGRICULTURAL EDUCATION TEACHER PREPARATION PROGRAMS: PERSPECTIVES OF UNIVERSITY FACULTY

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Abstract

Instructional planning is a curricular topic in teacher preparation programs, but limited research in agricultural education has been conducted in this area. The purpose of this study was to examine aspects of the instructional planning process that are taught to agricultural education preservice teachers. Survey research and content analysis of course materials was utilized to collect and analyze data. The population for the study was a census of agricultural education teacher educators who taught instructional planning to preservice teachers at land grant institutions during 2006-2007. This study found that the two most frequent instructional planning models being taught were the Allen 4-step and the Madeline Hunter direct instructional model. A majority of the instructional plan components being utilized were aligned with Searcy and Maroney's (1996) literature review; however, notable exceptions pertained to estimated time required and reflection. Teacher educators were most frequently requiring Methods of Teaching Agriculture (Newcomb, McCracken, Warmbrod, & Whittington, 2004) as a required text and a course Web site as a required student reading resource. This study concluded that while instructional plan requirements did not change at a number of institutions during student teaching compared with when taught during coursework, there were changes whereby a more succinct or more expanded instructional plan was required.

Introduction

Preparation in the form of instructional planning, termed lesson planning by some educators and researchers, is the basis for effective teaching and student learning (Reiser & Dick, 1996). In support of this premise, Sung (1982) found that students who were taught using more structured instructional plans had significantly higher achievement than those taught with less structured plans. Additionally, teacher planning improves the likelihood of a successful class session through the use of proactive strategies (Bond & Peterson, 2004), and instructional planning provides the teacher "with some control over what is going to happen as opposed to reacting only to what has happened" (Duke & Madsen, 1991, p. 11). As such, an important goal of teacher preparation programs is to assist preservice teachers in developing a systematic process for instructional planning and to embrace the concept of writing instructional plans (Baylor & Kitsantas, 2005; Kitsantas & Baylor, 2001).

Lending further support for the importance of instructional planning, the Interstate New Teacher Assessment and Support Consortium (INTASC) (1992) outlined a common core of 10 knowledge and skills that should be acquired by all new teachers. Principle seven states that, "The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals" (p. 27). The INTASC principles were drafted by teachers, teacher educators, and state agency officials, and represent a shared view of the important skills that should be integrated into the teacher preparation curriculum. Consistent with INTASC, Ball and

Knobloch (2005) identified the importance of developing instructional plans as a curricular activity of teacher preparation programs in agricultural education.

Instructional planning is a process that accounts for a significant portion of a teacher's time. For example, in a study of agricultural education student teachers during a 15-week experience, Torres and Ulmer (2007) found that planning and preparing to teach consumed 26% of student teachers' time. Interestingly, teachers spend more of this time thinking about planning rather than writing formal instructional plans (Ball, Knobloch, & Hoop, 2007; Wilen, Ishler, Hutchinson, & Kindsvatter, 2000).

This study extends previous research in agricultural education by focusing on the mental aspect of instructional planning. The researchers contend that instructional planning models, instructional plan components, texts, and reading resources are a major influence on preservice teachers' attitudes, beliefs, and mental approaches to planning instruction. Equally important, these aspects are an indication of the epistemological beliefs held by faculty regarding instructional planning. Limited research has been conducted in this area, and this study sought to gain insights regarding instructional planning from the perspective of university faculty.

Theoretical Framework

The study drew upon educational psychology and reflective practice theory found in the professional knowledge and competence literature to form the theoretical framework. Previous research has found that teachers engage in a remarkably complex thought process as they construct instruction (Fernandez & Cannon, 2005). This *psychological process of planning* was described by Clark and Dunn (1991) as a means for teachers to visualize their future teaching situation and to consider the goals and ways of achieving them. During the planning or *preactive teaching stage* (Jackson, 1968), teachers mentally engage in a purposeful effort to develop activities that will motivate and enhance students' cognitive development. As a result, written instructional plans provide evidence that can be used to gain insight into teachers' pedagogical content knowledge (Panasuk & Todd, 2005).

In *The Reflective Practitioner,* Schön (1983) examined how professional competence develops and suggested new forms of investigation into teacher thinking. He posited that *knowing-in-action* is learned through experience and is a competency that a skilled professional demonstrates every day. Knowing-in-action is composed of actions, judgments, and recognitions that are typically exhibited by the professional in an automatic, spontaneous, and tacit manner. Schön suggested that "as a practitioner experiences many variations of a small number of types of cases, he is able to 'practice' his practice" (p. 60). As a result, the professional develops a repertoire of techniques, learns what to look for, and how to respond to everyday situations. Rather than perceiving something to be unique, the practitioner sees it as something already in his/her repertoire and sees the situation as both similar and different from the familiar one. Schön's knowing-in-action corresponds closely to what Eraut (1994) described as *skilled behavior*, which he defined "as a complex sequence of actions which has become so routinized through practice and experience that it is performed almost automatically" (p. 111). For example, Jackson (1968) estimated that a high school teacher might make 1,000 decisions each day, and such decisions have to be largely intuitive.

As a result of developing knowing-in-action, expert teachers become more efficacious and tacit in making decisions, and less dependent on a written instructional plan (Yinger, 1980). Thus, it can be logically argued that the novice teacher benefits from developing a more detailed instructional plan as they learn to make classroom decisions, whereas the expert teacher utilizes the mental instructional plan that they have developed through multiple experiences of teaching the content. Supported by Schön (1983), preservice teachers begin developing knowing-in-action during student teaching, and as a result, there is a need to conduct research on the optimal instructional plan format and/or requirements that will align with the

professional development needs of the student teacher. This study sought to initiate this inquiry.

Literature Review

The review of literature consisted of instructional planning models that were germane to the study, instructional plan components, and the instructional planning process.

Instructional Planning Models

Allen 4-Step. This model was designed by Allen (1919) during his work as a vocational educator and consists of the following steps: (a) preparation, (b) presentation (delivery), (c) application, and (d) evaluation. The Allen 4-step was utilized during World War I training programs and was credited with increasing the output of shipyard workers by tenfold. More recently, the Allen 4-step model was successfully adopted by the Japanese car industry.

Madeline Hunter Direct Instructional Model. Hunter's (1984) instructional theory into practice (ITIP) consists of seven elements that teachers should consider during instructional planning: (a) anticipatory set, (b) objective and its purpose, (c) instructional input, (d) modeling, (e) monitoring to check for understanding, (f) guided practice, and (g) independent practice. Hunter asserted that the instructional planning elements are not steps and are thus not necessarily taken in sequence, and each instructional plan may not need every element.

5 E's: Engage, Explore, Explain, Extend, Evaluate. This model was created in the late 1980s by the biological sciences curriculum study (BSCS) and is based on the science curriculum improvement study (SCIS) learning cycle of exploration, invention, and discovery. The 5 E's model has been used in the development of curricula, materials, and professional training (Bybee et al., 2006).

Strategic Instruction Model. The strategic instruction model (SIM) is a reading program based on research and composed of six intervention strategies: (a) paraphrasing, (b) story grammar, (c) self-questioning, (d) visual imagery, (e) visual interpretation, and (f) multipass (Hock & Mellard, 2005).

PAVER-Doc. This model is based on the personalized system of instruction (PSI) developed by Keller (1968) and requires documented student completion and mastery before allowing the student to move to the next unit of instruction. PAVER-Doc is comprised of six steps: (a) principles, (b) applications, (c) verification, (d) extension, (e) reflection, and (f) documentation (Project SIMPLE, n.d.).

7-Element Approach. This model was developed by the National Research Council for Career and Technical Education (Stone, Alfeld, Pearson, Lewis, & Jensen, 2005), and was designed to enhance CTE student learning and understanding of mathematical concepts. The seven elements are: (a) introduce the CTE lesson, (b) assess students' math awareness as it related to the CTE lesson, (c) work through math example embedded in the CTE lesson, (d) work through related, contextual math-in-CTE examples, (e) work through traditional math examples, (f) students demonstrate their understanding, and (g) formal assessment.

Instructional Plan Components

Searcy and Maroney (1996) conducted a literature review of instructional planning models and found 14 instructional plan components that were frequently included in teacher preparation curricula: (a) student objectives, (b) materials required, (c) time required, (d) prerequisite skills, (e) seating arrangement, (f) anticipatory set, (g) instructional steps, (h) checks for understanding, (i) guided practice, (j) independent practice, (k) summary/closing, (l) evaluation of student outcomes, (m) follow-up activity, and (n) self-evaluation of lesson presentation.

Instructional Planning Process

One of the challenges that teacher educators face regarding the teaching of instructional planning revolves around the beliefs and behaviors that preservice teachers have developed (Schmidt, 2005). Lortie (1975) identified this phenomenon as an *apprenticeship of observation*, and this refers to a sense of familiarity created by preservice teachers' observations of teachers

and their own experiences as students. This familiarity contributes to preservice teachers' illusion that they "know" how to teach (Zeichner & Gore, 1990). Further, few preservice students have observed their instructors write or use instructional plans, and thus they discount instructional planning as a chore for a teacher preparation class and "maybe for student teachers, but not part of the practice of teachers in the real world" (Harwood & Wiggins, 2001, p. 35). However, experienced teachers believe in the value of instructional planning and that it should be taught to novice teachers (Neale, Pace, & Case, 1983).

Research has found that student learning increased when teachers plan carefully with the aim of achieving objectives based on the content and students' needs (Clark & Yinger, 1987). However, this objectives-first approach to instructional planning advocated by Tyler (1950) is foreign to many teachers. It is common for teachers to begin instructional planning by first considering the content to be taught, and they rarely consider learning objectives (Ball et al., 2007; Peterson, Marx, & Clark, 1978; Sanchez & Valcarcel; 1999, Zahorik, 1975). After making decisions regarding content to be taught, Zahorik found that teachers' next step in preparing to teach was focused on planning activities in the form of student learning experiences. Teacher perceptions of their students' needs, interests, and abilities were also found to be significant factors in teacher planning (Shavelson & Stern, 1981). Much of what a teacher does during early planning decision points is mental and very little is written down (Kagan & Tippins, 1992; Sardo-Brown, 1988).

This study was conducted to fill a gap in the literature and is based on the premise that the instructional planning model and associated schema that is taught to preservice teachers will have a tremendous impact on their professional development. Therefore, it is important to gain the perceptions of agricultural education faculty regarding instructional planning.

Purpose and Objectives

The purpose of the study was to examine aspects of the instructional planning process that are being taught to agricultural education preservice teachers. The objectives of the study were to: (a) identify the instructional planning models taught to preservice teachers, (b) describe the instructional plan components utilized in agricultural education, (c) identify the required student texts and reading resources for instructional planning courses, and (d) determine if and how the instructional plan requirements change during student teaching compared to during an instructional planning course.

Methods and Procedures

This study utilized survey research (Gall, Gall, & Borg, 2003) and content analysis of course materials to collect and analyze data. The population for the study was a census of agricultural education teacher educators who taught instructional planning to preservice teachers at land grant institutions in the United States during the 2006-2007 academic year. Contact information of participants was obtained from the American Association for Agricultural Education (AAAE) directory and from Web sites of land grant institutions. Forty-four agricultural education department chairs were contacted, but two declined to participate, and another department did not meet the criteria of being involved with teacher preparation. The study achieved a 76% response rate with 31 of the 41 departments participating in the study.

The data collection instrument was developed by the researchers and a University of Minnesota faculty member whose research interest is focused on instructional planning. An expert panel comprised of eight university faculty members from four different institutions assessed the instrument for face and content validity. Panel members were selected because of their background in instructional planning, and several modifications were made to improve the clarity of the questionnaire based on the input from the panel.

The data collection instrument contained three parts. The first part consisted of a list of six possible instructional planning models, and participants were asked to

answer *yes* or *no* if the model was taught to the preservice teachers at their institution. Additional space was provided for participants to identify the instructional planning model they used if it was not in the list. The second part of the questionnaire consisted of six possible changes in instructional plan requirements that may have occurred during student teaching in comparison to during coursework. Participants were asked to answer *yes* or *no* to each possible change, and space was provided to identify changes in instructional plan requirements if not found in the list. The third part of the questionnaire was a request for participants to share their course syllabi, instructional plan templates, and instructional plan scoring guides with the researchers. Participants had the option of returning course materials by mail or by an attachment through e-mail.

A modified version of Dillman's tailored design method (2000) guided the data collection process. A cover letter explaining the study, questionnaire, and self-addressed, stamped envelope were mailed to the department/unit chair in November 2006. The chair was asked to forward the materials to the faculty member who taught the teacher preparation course focused on instructional planning. Approximately 20 days after the first mailing, nonrespondents were mailed a cover letter, questionnaire, and self-addressed, stamped envelope. The third and final mailing was conducted during February 2007 in an effort to gain a representative response rate.

The Statistical Package for the Social Sciences (SPSS version 14.0) was used to compile and compute the data. Categorical data were reported as frequencies and percentages for each of the four objectives. For Table 1, 3, 4, and 5, respondents could report more than one answer, and thus the frequency total does not match the number of respondents. Quantitative content analysis (Bos & Tarnai, 1999) was employed to analyze the course material as part of objectives 2 and 3. The researchers' professional backgrounds were beneficial during the content analysis process. One researcher had taught a preservice course that included instructional planning, and the other researcher had recently student taught. The first step in the analysis process was for each researcher to independently read the course material and to identify text units that would fit into appropriate categories. Initially, this was done with half of the respondents for objective 2, and the researchers met to establish inter-rater reliability. The researchers classified 94% of the content into similar categories, and where differences were found, the researchers reviewed their process of coding and establishing categories and resolved their differences by mutual consent. After this process was conducted, one of the researchers analyzed the remainder of the content for objective 2, and the other researcher randomly checked the data for agreement; the same process was followed for objective 3.

Findings

The first objective of the study was to identify the instructional planning models taught to preservice teachers. As shown in Table 1, the Allen 4-step (f = 16, 51.6%) and the Madeline Hunter direct instructional model (f = 15, 48.4 %) were identified as the most frequent instructional planning models being taught to preservice teachers. Some type of problem-solving model was being utilized by 19.4% (f = 6) of the respondents. Examples of models in this category were the problem-solving approach advocated by Newcomb et al. (2004), and the Minnesota model (R. L. Peterson, personal communication, October 15, 2003).

The second research objective was to describe the instructional plan components utilized in agricultural education. To accomplish this objective, the researchers reviewed the instructional plan templates that were returned by 14 respondents and then conducted content analysis to identify the instructional plan components. As revealed in Table 2, all respondents (f = 14, 100%) identified that a title of the course, unit, and/or lesson; student learning objectives; content material; and evaluation were instructional plan components being utilized in their teacher preparation curriculum. The next most frequent (f = 13, 92.9%) components included teaching

materials, interest approach, application, and summary. Reflection (f = 1, 7.1%) was the instructional plan component that was least frequently utilized.

Table 1
Instructional Planning Models Taught to Preservice Teachers (n = 31)

Instructional planning model	*f*	%
Allen 4-step: preparation, presentation, application, evaluation	16	51.6
Madeline Hunter direct instructional model	15	48.4
Problem-solving model	6	19.4
5 E's: engage, explore, explain, extend, evaluate	6	19.4
Brain-based model	3	9.7
SIM: strategic instructional model	3	9.7
PAVER-Doc	2	6.5
Self-developed	2	6.5
Praxis III	1	3.2
7-Element Approach: centralized teaching & learning method	1	3.2
State department of education model	1	3.2
No model	1	3.2

The third objective of the study was to identify the required student texts and reading resources for instructional planning courses. To accomplish this objective, the researchers reviewed the course syllabi of instructional planning courses that were returned by 20 respondents; content analysis was utilized to identify the student texts and reading resources. As shown in Table 3, the most frequently required student texts were *Methods of Teaching Agriculture* (Newcomb et al., 2004) (f = 8, 40.0%), and *Strategies for Great Teaching* (Reardon & Derner, 2004) (f = 4, 20.0%). The most frequently required student reading resources (Table 4) were course Web sites (f = 6, 30.0%) and course packets (f = 4, 20.0%).

The fourth objective of the study was to determine if and how the instructional plan requirements change during student teaching compared to during an instructional planning course. As shown in Table 5, the most frequent responses (f = 12, 38.7%) were no change, less scripted, and a shortened version. The less frequent responses were more detailed (f = 5, 16.1%) and more scripted (f = 4, 12.9%).

Table 2
Instructional Plan Components Utilized in Agricultural Education (n = 14)

Instructional plan component	*n*	%
Title of course, unit, and/or lesson	14	100
Student learning objectives	14	100
Content material	14	100
Evaluation	14	100
Teaching materials	13	92.9
Interest approach	13	92.9
Application	13	92.9
Summary	13	92.9
Instructional strategy	12	85.7
Situation	10	71.4
References	10	71.4
Estimated time required	7	50.0
Standards: national, state, local, academic	6	42.9
Purpose or broad goal	5	35.7
Key terms	3	21.4
Reflection	1	7.1

Table 3
Required Student Texts for Instructional Planning Courses (n = 20)

Required student text	*f*	%
Methods of Teaching Agriculture (Newcomb et al., 2004)	8	40.0
Strategies for Great Teaching (Reardon & Derner, 2004)	4	20.0
Foundations of Agricultural Education (Talbert, Vaughn, & Croom, 2005)	3	15.0
Classroom Management Strategies (Cangelosi, 2004)	1	5.0
Strengthquest (Clifton & Edward, 2002)	1	5.0
The Act of Teaching (Cruickshank, Jenkins, & Metcalf, 2006)	1	5.0
Methods of Teaching (Feden & Vogel, 2003)	1	5.0
Program Planning Guide for AgriScience and Technology Education (Lee, 2000)	1	5.0
Preparing Instructional Objectives (Mager, 1997)	1	5.0
The Power of Positive Teaching (McCormick, 1994)	1	5.0
Learning Outside The Lines (Mooney & Cole, 2000)	1	5.0
Teaching Strategies (Orlich, Harder, Callahan, Trevisan, & Brown, 2004)	1	5.0
Active Training (Silberman, 2006)	1	5.0
Managing the Occupational Education Laboratory (Storm, 1993)	1	5.0

Table 4
Required Student Reading Resources for Instructional Planning Courses (n = 20)

Required student reading resource	*f*	%
Course Web site	6	30.0
Course packet	4	20.0
LifeKnowledge (National FFA Organization, 2005a)	3	15.0
State department of education curriculum guides	2	10.0
Local Program Resource Guide (National FFA Organization, 2005b)	2	10.0
Agriculture Teacher's Manual (National FFA Organization, 2001)	1	5.0
Agricultural Education Supply & Demand Study (Camp, Broyles, & Skelton, 2001)	1	5.0

Table 5
Change In Instructional Plan During Student Teaching Compared to During An Instructional Planning Course (n = 31)

Change in instructional plan during student teaching	*f*	%
No change	12	38.7
Less scripted	12	38.7
Shortened version	12	38.7
More outlined	10	32.3
More detailed	5	16.1
More scripted	4	12.9

Conclusions, Implications, and Recommendations

Instructional planning is a complex and mental process (Clark & Dunn, 1991; Fernandez & Cannon, 2005; Jackson, 1968) that forms the basis for effective teaching and student learning (Reiser & Dick, 1996). While instructional planning is a curricular topic in teacher preparation programs, limited research in agricultural education has been conducted in this area. The purpose of this study was to examine aspects of the instructional planning process that are taught to preservice teachers, and perceptions were obtained from university faculty.

This study found that the two most frequent instructional planning models being taught are the Allen 4-step and the Madeline Hunter direct instructional model. Therefore, it is implied that these two models are most frequently serving as the framework for preservice teachers' mental process of instructional planning. Further, the Allen 4-step and Madeline Hunter direct instructional model are an indication of the epistemological beliefs held by faculty regarding instructional planning. The next most frequently taught instructional planning models are based around problem-solving and science (i.e., 5 E's). It is recognized that problem-solving and the 5 E's model are based on similar principles, as both aim to engage students through inquiry and discovery learning (Bybee et al., 2006; Parr & Edwards, 2004). It came as no surprise that problem-solving models were taught during instructional planning courses, as problem-solving is an instructional strategy that has been embraced by agricultural education for many years (Parr & Edwards). However, it was somewhat surprising to find the 5 E's model being taught as frequently as problem-solving models. This finding implies that some agricultural education faculty embrace the concept of agriscience as a curricular area in high school agricultural education programs. As a result, the way that preservice teachers are being prepared to conduct instructional planning reflects the concept of agriculture as a science, and thus it seems logical to incorporate the 5 E's model into teacher preparation courses.

This study concluded that a majority of the respondents were utilizing instructional plan components that aligned with the 14 components identified by Searcy and Maroney (1996). However, there were notable exceptions, and the components being utilized less frequently in agricultural education instructional plans were estimated time required and reflection. Estimated time required for the instructional plan was a component being utilized by only half of the respondents, and only one respondent indicated that reflection was an instructional plan component that they were utilizing in teacher preparation courses. It is recommended that agricultural education teacher educators consider incorporating estimated time required and reflection as instructional plan components (Searcy & Maroney). While it is possible that an additional assignment requires preservice teachers to reflect and write about their instructional plan during an instructional

methods course, it would appear that purposefully incorporating this component may have merit in assisting preservice teachers to develop the habit of reflective thinking and knowing-in-action (Russell, 2005; Schön, 1983).

Teacher educators most frequently require *Methods of Teaching Agriculture* (Newcomb et al., 2004) as a student text, and problem-solving is prominently featured. The second most frequently required text is Reardon and Derner's (2004) *Strategies for Great Teaching*, and brain-based instruction is the basis for much of the content. The most frequently required student reading resources were course Web sites and course packets. This implies that faculty are attempting to individualize their instructional planning course and may be incorporating a number of resources that would be unavailable in one required text. It was beyond the scope of this study to determine the specific reading resources found at course Web sites and in course packets.

This study concluded that at a number of institutions there were no changes in the instructional plan requirements during student teaching compared with during an instructional planning course. An almost equal number of respondents indicated that a more succinct (i.e., less scripted, shortened version, more outlined) instructional plan format was required during student teaching. Thus, it appears that agricultural educators might be adjusting instructional plan requirements in support of the professional development needs of student teachers (Schön, 1983). Rather surprisingly, a small number of respondents indicated that a more expanded (i.e., more detailed, more scripted) instructional plan was required during student teaching compared with during the instructional planning course. It is recommended that additional research be conducted to learn more about the rationale associated with changes in instructional plan requirements.

Although the findings from this study contribute to the limited research conducted on instructional planning in agricultural education, the researchers recognize there are several limitations with the study. First, the generalizability of the findings is limited to agricultural education teacher educators located at land grant institutions. Due to being part of a larger study, participation was limited to land grant institutions. It is recommended that further research be conducted with all agricultural education teacher preparation programs in the United States. Second, additional follow-up with participants may have clarified some of the questions regarding the course materials that were provided to the researchers and may have resulted in additional materials being shared. However, this investigation is intended to stimulate additional research focused on instructional planning, an important aspect of effective teaching (Reiser & Dick, 1996).

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