Modeling Higher Order Thinking in Teacher Preparation: Relationships Between Objectives, Classroom Discourse, and Assessments

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Abstract

The purpose of this study was to determine the levels of cognition modeled via course objectives, instructional strategies, and assessments in preservice teacher preparation courses, and to examine the relationships between course objectives, classroom discourse, and assessments in regards to cognitive levels. The accessible sample consisted of seven teacher educators teaching courses for secondary and middle school-level education majors at a Doctoral/Research Extensive university. Higher levels of cognition (application, analysis, synthesis, and evaluation) were represented in 88% of the preservice teacher preparation course objectives. Lower levels of cognition, were modeled in 61% of classroom discourse. Application, analysis, synthesis, and evaluation levels of cognition, represented 39% of the classroom discourse. Higher levels of cognition as a whole represented a mean of 90% of all classroom assessments, with the synthesis level of cognition representing a mean of 40% of the classroom assessments for all instructors. A significant distinct negative relationship was found between course objectives and classroom discourse. A low positive non-significant relationship was identified between course objectives and assessment practices. Classroom discourse and assessment practices were found to have a moderate negative non-significant association.

Introduction/Theoretical Framework

One aim of education for the 21st Century is to cultivate the problem-solving, critical thinking, and higher order thinking skills necessary for students to adapt to the rapidly changing "Information Age" (Greenspan, 2001; Kerka, 1992; *Literacy: A Position Paper on Information Problem-Solving*, 1995). "The new frontier for education is to empower every youngster to function effectively in a world increasingly dependent upon the intellectual skills and informed actions of all people" (Council of Chief State School Officers, 1989, p. 1).

The concept of higher order thinking is derived from the *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain* (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). More popularly known as Bloom's Taxonomy, this system identifies a hierarchical progression in which to categorize lower to higher order levels of cognitive processing. The six levels of Bloom's Taxonomy include: knowledge (the recall of facts and information), comprehension (the basic understanding of information), application (the utilization of knowledge and information to tasks), analysis (the dissection of information and understanding of the relation of the parts to the whole), synthesis (the compilation of information into a new concept or creation), and evaluation (the making of judgments regarding the worth and value of information).

The first two levels of Bloom's Taxonomy have generally been regarded as lower order thinking, while the remaining four levels have been classified as higher order thinking (Miller, 1990). The four levels of higher order thinking are the levels to which educators have been increasingly charged with teaching, thereby promoting students' higher-order thinking abilities.

A surprising number of studies indicate that students possess limited abilities to think at higher levels of cognition (Gardiner, 1998; Kuhn, 1989; Tsui, 1998). Moreover, faculty members in colleges of education have been guilty of conducting classroom practices that only emphasize lower levels of cognition. Cruickshank (1990), in an extensive analysis of research in teacher education, reported that teacher educators utilize traditional lecture and discussion methods of teaching versus the feedback approaches of microteaching, simulations, or protocol materials that can enhance preservice teachers' reflective thinking skills. Forbes (1984) reported that the teaching of thinking skills, in worst-case scenarios, was not even considered in the development of teacher preparation programs. Orata (1999) claimed that teacher education faculty members as a whole were poor models of the educational theories in which they profess. Further, Howsam, Corrigan, Denemark, and Nash (1976) asserted that teacher educators should "exemplify what they explicate" (p. 3). If teacher education programs are to adequately prepare future teachers to teach toward higher levels of cognition, they must model such concepts in their own classrooms.

A growing body of educational literature has challenged teacher educators to provide preservice teachers with the knowledge and skills necessary to develop thinking skills and problem-solving abilities in their respective students (Buriak, McNurlen, & Harper, 1996; Crunkilton, 1990; Newcomb & Trefz, 1987). "Teaching teachers to teach thinking must become one of the highest priorities of [teacher] education" (Underbakke, et. al., 1993, p. 145). One method of modeling a classroom culture for thinking is suggested by the concept of alignment. Alignment refers to the "degree of correspondence" between instructors' educational objectives,

methods of instruction, and forms of assessment (Anderson & Krathwohl, 2001, p.10). The concept of modeling alignment of instructional objectives, classroom discourse, assessment practices to create a classroom culture for thinking in preservice teacher preparation can be organized around Cruikshank's Model to Guide Inquiry in Preservice Teacher Education (1984) (See Figure 1.).

In studying the complex phenomenon of education, Cruikshank (1990) suggested using theoretical models. The theoretical framework for this study was derived from an adaptation of Cruikshank's Model to Guide Inquiry in Preservice Teacher Education, as presented in the *Journal of Teacher Education* (1984). 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.

In Cruikshank's theoretical model, the goal or outcome for teacher education is for faculty members to model a culture of classroom thinking, which will serve as an important reference for future teachers to design instructional objectives, instructional activities, and assessment practices that challenge their students to think at higher cognitive levels. Thus, the input variables in question are the extent to which teacher educators write instructional objectives (variable 4), conduct classroom discourse (variable 1), and design assessment (variable 5) that challenge preservice teachers at higher cognitive levels. The knowledge and skills gained by future teachers in preservice teacher preparation courses (student outcomes) in regard to creating a culture of thinking in the classroom ultimately influence the thinking skills gained by students in the public school systems.

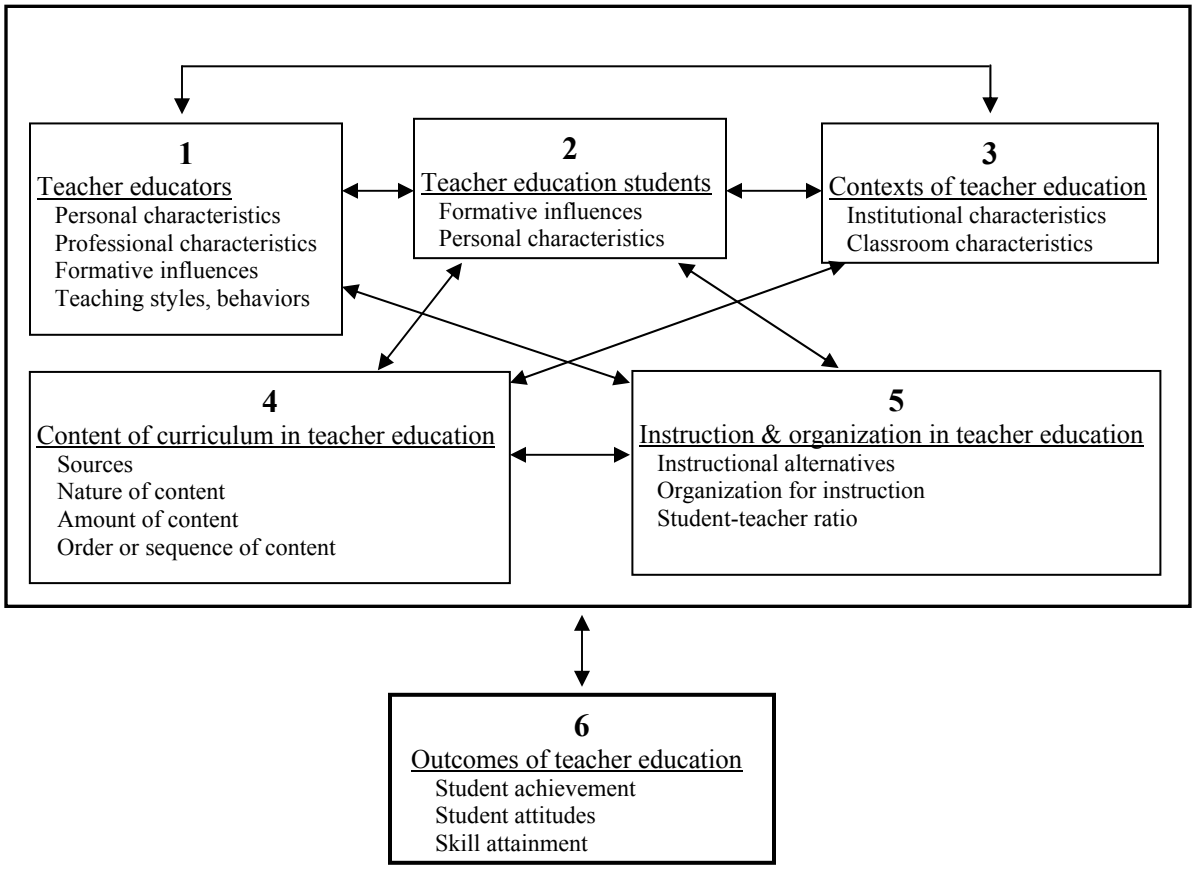

Figure 1. Model to Guide Inquiry in Preservice Teacher Education

The alignment between course objectives, methods of instruction, and assessment toward higher levels of cognition is essential to creating a culture of thinking in teacher preparation (Anderson & Krathwohl, 2001). The evidence suggests that teacher educators do not model this culture of thinking (Cruikshank, 1990; Howsam, Corrigan, Denemark, & Nash, 1976; Orata, 1999). In addition, little is known about the specific practices of teacher educators regarding objectives, instruction, and assessment, as well as the influence of those practices on preservice teachers' attitude toward teaching to higher levels of cognition. Further, while research has been conducted regarding the disparities between aspirations and classroom discourse at certain levels of cognition (Whittington, 1995), and between the cognitive levels to which instructors construct classroom objectives and challenge students via assessment practices (Adkins, 1983; Miller & Newcomb, 1990), no studies have been conducted to examine the relationships between the levels of cognition modeled via instructional objectives, instructional methods, and assessments in *teacher preparation* courses. Such findings could challenge teacher educators to provide curriculum and instruction that most effectively models a culture of classroom thinking, whereby preservice teachers could further model in their own teaching practices. Thus, the secondary teachers of the 21st Century could better prepare their students to succeed in a society that is increasingly *less* dependent upon the ability to memorize discreet facts and increasingly *more* dependent upon utilizing facts to think critically and to solve problems.

Purpose/Research Questions

The purpose of this study was to determine the levels of cognition reflected in the course objectives, instructional strategies, and assessments in preservice teacher preparation courses, and to examine the relationships between course objectives, classroom discourse, and assessment practices in regards to higher cognitive levels. To guide the stated purpose of the study, the following research questions were examined:

1. To what cognitive levels were preservice teacher preparation course objectives written?
2. What cognitive levels were modeled via classroom discourse in preservice teacher preparation courses?
3. Toward what cognitive levels were students assessed in preservice teacher preparation courses?
4. What relationships existed between instructional objectives, classroom discourse, and assessment practices in preservice teacher preparation courses in regards to the cognitive levels modeled?

Methods/Procedures

The target population for this descriptive-correlational study was faculty members at a Doctoral/Research Extensive university, teaching middle and secondary preservice teacher preparation courses. The accessible sample for the study was a convenience sample of seven

teacher educators teaching teacher preparation courses for secondary and middle school-level education majors in the Winter/Spring, 2002 semester. The specific content areas represented by the teacher educators participating in the study included: Agricultural Education, Business and Marketing Education, Music Education, Mathematics Education, Science Education, and Social Studies Education.

The Florida Taxonomy of Cognitive Behavior (FTCB) was utilized to assess the cognitive levels toward which teachers conducted verbal classroom discourse (Brown, Ober, Soar, & Webb, 1968). The validity of the Florida Taxonomy of Cognitive Behavior is based upon its derivation from Bloom's Taxonomy (Miller, 1989). Thus, the FTCB is generally considered to be valid in light of the support given to Bloom's Taxonomy as a means to classify behaviors across levels of cognition (Miller, 1989; Whittington, 1991). The reliability of the FTCB is dependant upon the raters' use of the instrument (Whittington, 1991). In this study, a single rater observed each participant; therefore, a random sample of five tapes were re-assessed yielding an intra-rater reliability of .99 (Pearson correlation coefficient). Participants were videotaped during the third, sixth, ninth, and twelfth weeks of the semester, and videotapes were analyzed according to the FTCB.

Both instructional objectives as well as assessments were classified according to a classification guide developed from an adaptation of "Toward Teaching at Higher Levels of Cognition" by Newcomb and Trefz (1987). Instructional objectives as well as assessment items were coded according to the cognitive process category each individual objective or assessment item described or required of students. A panel of expert teacher educators, who had conducted research in the cognitive levels of teaching and learning, assessed the classification guide for appropriateness of content and relation to Bloom's Taxonomy.

A single rater coded all instructional objectives as well as assessment items according to the classification guide. The intra-rater reliability was established by coding sample instructional objectives as well as assessment items from four instructors not participating in the study. The intra-rater reliability for the ratings of instructional objectives was a .98 (Pearson correlation coefficient), and the intra-rater reliability for the ratings of classroom assessments was a .99 (Pearson correlation coefficient).

Classroom discourse across each level of cognition was assessed as a percentage of the total behaviors indicated for the four videotapes. Frequencies of observed behaviors were totaled for each of the six levels of cognition, yielding a subtotal of teaching behaviors at each cognitive level for a given observation. Then, the subtotals for each cognitive level for the four observations were summed. The summed totals across each cognitive level for the four observations was then divided by the grand total of observed behaviors, revealing a percentage of classroom discourse at each level of cognition. Similar procedures were utilized for the ratings of course objectives. The number of instructional objectives written at each level of cognition was divided by the total number of instructional objectives indicated on the syllabus.

The percentages of assessment items for a given level of cognition were calculated in a slightly different manner. For a given test, quiz, assignment or project, each individual item was categorized according to a cognitive level. The item was then weighted according to the number

of points attributed to the overall score on the test, quiz, project, or assignment. Subtotals were then calculated for each project, quiz, or test across the six levels of cognition. Finally, the subtotals were weighted according to the percentage each test, quiz, assignment, or project contributed to the overall grade for the course. The subtotals were then summed to determine a grand total of classroom assessments occurring across each level of cognition.

To create a single cognitive score for course objectives, classroom discourse, and course assessments, weighted values were assigned to each level of cognition, and a total cognitive weight was determined (Miller, 1989). The percentage of instruction occurring at each level of cognition was multiplied by the cognitive weighting value for each level. The values were then summed to attain a total cognitive weighted score. Pearson product-moment correlations were employed to describe the relationships between the cognitive levels modeled within preservice teacher preparation course objectives, classroom discourse, and assessment practices. The alpha level was established a priori at .05 and the magnitude of relationships were interpreted using Hopkins' (1997) descriptors.

Results/Findings

Research question one sought to determine the levels of cognition toward which teacher preparation course objectives were written. Application and synthesis-level objectives were each modeled in 38% of the preservice teacher preparation course objectives (Table 1). Application-level objectives represented between 13% and 63% of the objectives included in preservice teacher preparation course syllabi. Synthesis-level objectives represented between 13% and 57% of the objectives included in preservice teacher preparation course syllabi. Higher levels of cognition (application, analysis, synthesis, and evaluation) were represented in 88% of the preservice teacher preparation course objectives. Conversely, lower cognitive levels, as indicated by the mean percentages of comprehension-level objectives, represented 12% of preservice teacher preparation course objectives. The mean cognitive weighted value for all objectives was 38.

Table 1. *Cognitive Level of Instructional Objectives*

Level	*M* %	Range	Wt. Value	Cognitive Wt.
Knowledge	0	0 - 0	.10	0
Comprehension	11.9	0 – 25.0	.20	2.4
Application	38.0	13.3 - 62.5	.30	11.4
Analysis	9.3	0 - 26.7	.40	3.7
Synthesis	37.9	12.5 - 57.1	.50	19.0
Evaluation	2.9	0 - 11.1	.50	1.5
Total	100.0			38.0

Research question two sought to determine the levels of cognition toward which classroom discourse was conducted in teacher preparation courses. Lower-order thinking, as defined by the knowledge and comprehension levels of cognition, represented 61% of classroom discourse (Table 2). Knowledge-level objectives ranged from 18% to 56%, and comprehension-level objectives ranged from 19% to 39% of classroom discourse. Higher-order thinking, as defined by the application, analysis, synthesis, and evaluation levels of cognition, represented

39% of the classroom discourse. Application-level discourse ranged from eight percent to 27% of classroom discourse, analysis discourse ranged from seven percent to 33%, synthesis-level discourse ranged from zero to 14%, and evaluation-level discourse ranged from zero to seven percent of classroom discourse. The total cognitive weighted value for classroom discourse was a 24.

Table 2. *Cognitive Level of Classroom Discourse*

Level	*M* %	Range	Wt. Value	Cognitive Wt.
Knowledge	35.15	18.46 - 55.90	.10	3.52
Comprehension	26.01	19.09 - 38.84	.20	5.20
Application	13.52	8.18 - 26.92	.30	4.06
Analysis	16.30	6.67 - 32.73	.40	6.52
Synthesis	6.17	0 - 13.64	.50	3.09
Evaluation	2.85	0 - 7.27	.50	1.43
Total	100.00			23.82

Research question three sought to determine the levels of cognition toward which teacher preparation course assessments were written. The results of the analysis of cognitive levels of classroom assessments revealed that 10% of classroom assessments were written at the lower levels of cognition (Table 3). The range of knowledge level assessments was between zero and seven percent; and the range of comprehension level assessments was between zero and 13%. The synthesis level of cognition represented a mean of 40% of the classroom assessments for all instructors, with a range of 17% to 62%. In addition, higher levels of cognition as a whole represented a mean of 90% of all classroom assessments. The total cognitive weighted value for all assessments in the preservice teacher preparation courses was 40.5.

Table 3. *Cognitive Level of Classroom Assessment*

Level	*M* %	Range	Wt. Value	Cognitive Wt.
Knowledge	2.67	0 – 6.87	.10	.27
Comprehension	7.34	0 – 13.10	.20	1.47
Application	19.25	10.43 – 25.80	.30	5.78
Analysis	23.91	3.00 – 37.00	.40	9.56
Synthesis	39.09	16.60 – 61.74	.50	19.55
Evaluation	7.74	0 – 19.50	.50	3.87
Total	100.00			40.50

Research question four sought to determine the relationships between the course objectives, classroom discourse, and assessment practices in teacher preparation courses in regards to cognitive levels modeled. The mean cognitive weighted values was 38 for course objectives, 24 for classroom discourse, and 40 for assessment practices (Table 4). The highest cognitive weighted value for course objectives was 42. Four of the seven instructors received a mean cognitive weighted value of 40 or higher for course objectives. The lowest cognitive weighted value for course objectives was 30. For classroom discourse, the mean cognitive weighted value for all instructors was 24. The highest cognitive weighted value for classroom discourse was 32, and the lowest value was 18. Finally, the mean cognitive weighted value for

assessment practices in all of the preservice teacher preparation courses was 41. Three instructors produced classroom assessments with a cognitive weighted value of 41 or above. The highest cognitive weighted value was 44 and the lowest value was 36.

Table 4. *Cognitive Weight of Objectives, Classroom Discourse, and Assessment by Instructor*

Instructor	Objectives	Discourse	Assessment
1	30.0	31.7	41.9
2	41.4	18.1	39.8
3	41.8	22.9	38.4
4	38.9	23.4	39.6
5	40.0	23.8	43.0
6	32.5	29.1	36.4
7	40.7	17.6	44.3
M Cognitive Wt.	38.0	23.8	40.5

A distinct or nearly perfect (Hopkins, 1997) significant negative correlation (r = -.90) was found between course objectives and classroom discourse. A minor non-significant correlation (r = .20) was revealed between course objectives and assessment practices. The correlation between classroom discourse and assessment practices was negative, moderate, and non-significant (r = -.32).

Table 5. *Congruence of Course Objectives, Classroom Discourse, and Assessment Practices*

Variables	1	2	3
1. Course objectives		-.90*	.20
2. Classroom discourse			-.32
3. Assessment practices			

*p < .05

Conclusions/Recommendations/Implications

From the findings the conclusion can be drawn that the teacher educators predominantly modeled course objectives at the Application and Synthesis levels of cognition (76%). Higher cognitive levels were modeled in the course objectives a mean of 88%. The findings from this study are contrary to prior studies that categorized instructional objectives across the six cognitive levels of Bloom's Taxonomy. Prior research revealed that 77% (Adkins, 1983) and 60% (Sultana & Klecker, 1999) of instructional objectives were written at the lower (knowledge and comprehension) levels of cognition.

It was also concluded that the knowledge level of cognition was not modeled in the preservice teacher preparation course objectives. This finding differs from previous studies as well. The knowledge level of cognition was represented in 41% (Sultana & Klecker, 1999) and 10% (Adkins, 1983) of objectives in previous research. Overall, lower (knowledge and comprehension) levels of cognition were modeled in a mean of 12% of the course objectives.

This finding differs from prior studies, in which lower cognitive levels dominated a total of 77% (Adkins, 1983) and 60% (Sultana & Klecker, 1999) of objectives.

The data revealed similarities in the evaluation-level objectives described in prior studies. In this study, the evaluation-level of cognition was represented in three percent of preservice teacher preparation course objectives. Prior studies indicated that the evaluation level of cognition was represented in two percent (Adkins, 1983) and three percent (Sultana & Klecker, 1999) of instructional objectives.

The findings imply that the teacher educators in this sample modeled instructional objectives at higher levels of cognition. Orata (1999), indicated that teacher educators charged with the task of preparing future teachers for the new challenges of an educational system aimed to cultivate thinking in students have been found to be lax in modeling such curricular practices. Yet, these findings imply that the teacher educators studied differed from prior research, and were *not* lax in modeling the curricular practice of writing course objectives at higher cognitive levels.

It can be further concluded that teacher educators were modeling lower levels of thinking (61% knowledge and comprehension) in their verbal classroom behaviors. This is consistent with previous research indicating that teacher discourse in college classrooms occurs primarily at the knowledge and comprehension levels of cognition. The knowledge and comprehension levels were represented in 73% (Whittington, Lopez, Schley, & Fisher, 2001), 80% (Whittington, Stup, Bish, & Allen, 1997), 85% (Miller & Newcomb, 1990), and 98% (Whittington, 1995) of instructor discourse in previous studies.

While teacher educators in this study were modeling classroom discourse primarily toward lower levels of cognition, it can be concluded that they model more high-level cognitive behaviors than college instructors in previous research. Higher-order thinking represented 39% of classroom discourse in this study, whereas in previous research higher-order thinking occurred in as little as two percent (Whittington, 1995) to as much as 27% (Whittington, Lopez, Schley, & Fisher, 2001) of instructors' verbal discourse in college classrooms.

The results imply that, true to Orata's (1999) assertions, the teacher educators in this study were not modeling high levels of thinking in their classroom teaching. Accepting the premise that teachers teach the way that they were taught (Eraut, 1997) implies that the teacher educators in this study are teaching their students to conduct classroom discourse at lower levels of cognition.

Teacher educators in this study modeled high levels of cognition in classroom assessment practices (90%). In particular, the synthesis level of cognition represented 40% of the assessment practices for all courses and is consistent with prior research (McCormick & Whittington, 2000). The findings would imply that teacher educators expect students to move beyond mere recall and recognition of information, and apply, analyze, synthesize, and evaluate the knowledge obtained in preservice teacher preparation courses.

The distinct or nearly perfect negative relationship between course objectives and classroom discourse suggests a lack of congruence or alignment. Anderson and Krathwhol (2001), in the revised version of Bloom's Taxonomy discuss the importance of alignment by illustrating that the examination of alignment between objectives, instruction, and assessment, "emphasizes consistency in terms of intended student learning" (p. 10). Thus, the distinct negative relationship between course objectives and classroom discourse in this study implies that there is a lack of alignment, congruence, or consistency between the descriptions of intended student learning (course objectives) and the instructional environment (classroom discourse) in which the learning occurs. Course objectives are global indicators of the intended outcomes of a learning experience. This suggests that they would represent the learning that is intended to take place in the course on a global level. An additional implication in this finding is that global, course objectives would not necessarily be as closely aligned with specific daily observations in a classroom, as indicated by the cognitive levels of classroom discourse as indicated in four random classroom observations.

In addition, not all learning takes place in the classroom. The data revealed a low positive correlation between course objectives and assessment practices. The absence of statistical significance in this relationship indicates an absence of variance between course objectives and assessment practices. Thus, the teacher educators in this study appear to display a degree of alignment between course objectives and assessment practices. The results of these findings imply that teacher educators in this study may be extending classroom teaching and learning beyond mere verbal discourse in the classroom. While classroom discourse occurred at lower levels of cognition, students were challenged at higher levels of cognition through assessment practices. Dewey (1933) through his discussions of experiential learning asserted that students learn best from real-world experiences, from which they can construct meaning. The results of this study imply that while teacher educators were not modeling higher order thinking directly in the classroom, they were indicating through the course objectives that higher cognitive levels were intended outcomes of their courses. Through assessment practices, they were demonstrating expectations for students to then perform at higher cognitive levels.

A further implication extends to the relationship between classroom discourse and assessment practices. The data revealed a moderate negative correlation between classroom discourse and assessment practices. This relationship however was not significant, implying an absence of variance and thus a degree of alignment between classroom discourse and assessment practices.

Further research should be conducted regarding the relationship between the cognitive levels of teaching and student performance at those levels. The results of this study indicated that teacher educators did not model higher levels of cognition in classroom discourse, however higher cognitive levels were represented in course objectives and assessment practices. This finding incites the following question: What are the relationships between the cognitive levels of course objectives, classroom discourse, and assessment practices, and student performance at those respective levels?

Additional research is also needed to identify the levels of cognition modeled in the objectives, classroom discourse, and assessments of the beginning teachers who were students in

the teacher preparation courses. Research is warranted to determine the relationship between the levels of cognition modeled in preservice teacher preparation courses and the levels of cognition toward which the preservice students teach as beginning teachers themselves.

The current study was descriptive in nature, intended to describe, "what is". While the study attempted to answer the question of "what is" in regard to the levels of cognition modeled in objectives, classroom discourse and assessments, the study raises the following question: What is ideal? Further research is needed to determine the levels of cognition modeled in college courses that have the greatest impact on student learning. For example, do students learn more in courses taught at high levels of cognition, low levels of cognition, or a combination of all levels? Further, do students taught in courses that model classroom discourse at higher cognitive levels perform better on critical thinking measures than in courses where classroom discourse occurs primarily at the knowledge and comprehension levels?

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Ball and Garton are to be commended for the presentation of an outstanding piece of research that meets some important needs in the profession not only for its presentation of the core research data, but for providing a model of how collection of meaningful baseline data may be utilized in the framework for an ongoing research agenda. Clearly, the research shows us that college professors are not providing preservice teachers with models for instructional environments promoting higher order thinking. This study further defines what occurs in a typical setting and it is hoped that the researchers will be able to build on this research to answer some of the questions that have been raised as a result.

The authors do an outstanding job of leading the reader through a discussion of key concepts underlying this study. They have outlined prior research and effectively laid the groundwork for why the study is important. I think that the literature review would have been enhanced by some additional discussions of differences in the various levels of cognition and why classrooms focused on higher order thinking matter in the grander scheme of things. Doesn't it all relate to the individual's (learner's) ability to function as a citizen, parent, problem-solver, etc.? Why is this especially important in teacher preparation programs in the 21st century? The authors allude to these things, but only superficially.

The Methods section was well written—complete without providing unnecessary information about procedures—and clearly described the rationale for selection of certain procedures. I think in many ways this paper is a model for presentation of a rationale for conducting a study and how to write a methods section. I also appreciated the "neatness" of the Findings section in that it presented findings without repetitiously including information from the tables in detail.

For purposes of this discussion (and where the authors may go from here):

Another thing struck me as I was reading this. What about faculty influences from other courses (non-education)? Does how preservice teachers receive instruction in the content areas have as much or more influence on their teaching practices as what they learn in an education classroom? Can they think and talk about effective classroom practices, design constructivist-style lesson plans for an education course, and provide a micro-teaching lesson using cooperative learning, but when they are in the classroom revert to lecturing about the animal science content? What implications does this research have for the 2/3 of required coursework that is out of the control of the teacher educator?

I appreciate the job that Ball and Garton have done with this study. They present their findings within the context of some larger, more global questions and give us all some food for thought.