Beyond Belief: Preservice Teachers' Planned Instructional Strategies

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ABSTRACT: This research describes a mixed-methods study of preservice teachers' planned instructional strategies. Of special interest were the preservice teachers' most salient strategies and how often these preservice teachers planned to use each one. Contrary to many earlier findings on preservice teachers' beliefs, results from this study of planned action indicate that preservice teachers in all content areas choose a variety of instructional strategies, although the extent of use for any one strategy differs across content domains. As such, we discuss the role of planned action as a focus for studying preservice teachers.

For the past 20 years, the dominant approach to investigating preservice teachers' instructional intentions has been to measure their pedagogical beliefs (Brookhart & Freeman, 1992; Chan & Elliot, 2004; Minor, Onwuegbuzie, Witcher, & James, 2002; Ozgun-Koca & Sen, 2006). However, a closer look at recent studies of instructional planning suggests that preservice teachers' planned actions should be examined directly instead (Baylor & Kitsantas, 2005; Bond & Peterson, 2004). As such, this article describes several limitations of employing belief measures to infer instructional intentions, and it presents findings from an alternative approach, measuring planned action. Our approach is based on investigating preservice teachers' proposed instructional strategies.

Research on Instructional Beliefs

Scholars who are interested in understanding the variety of influences on preservice teachers' instructional behavior have not been limited to investigating their pedagogical beliefs. They have also recently studied preservice teachers' self-efficacy beliefs (Brand & Wilkins, 2007; Palmer, 2006; Smolleck, Zembal-Saul, & Yoder, 2006) and their diversity beliefs (Garmon, 2005; Milner, 2005; Pohan & Adams, 2007). Scholars argue that beliefs are important to teacher educators because they influence teachers' classroom practice, including their methods of delivering instruction (Kagan, 1992; Pajares, 1992).

Research focused on pedagogical beliefs in particular suggests that many beginning teachers view teaching as telling or lecturing—that is, directly transmitting information to a passive learner (Brookhart & Freeman, 1992; Holt-Reynolds, 1992; Richardson, 1996; Torff, 2003). According to Chan and Elliot (2004), in the transmissive view, learning comprises the nonproblematic acquisition of knowledge by a novice from an expert. The novice is conceptualized as a student who quietly listens and absorbs the information passed to him or her by a knowledgeable teacher, or expert.

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Transmissive views have been widely studied because most preservice teachers arrive at their education programs holding these views (Hollingsworth, 1989; Holt-Reynolds, 1992), which often run counter to constructivist views of teaching and learning that many current teacher education programs now emphasize (Holt-Reynolds, 2000). Constructivist views are grounded in an epistemology of student-centered knowledge construction, focusing on the importance of student-centered instructional practices for learning (von Glasersfeld, 1995). Constructivist learning environments often include opportunities to examine complex problems (i.e., case studies) or opportunities for social negotiation (i.e., discussions among peers; Driscoll, 2004). However, other scholars argue that constructivism is a metatheoretical concept, or epistemology, that does not lend itself directly to prescriptive instructional practices (Seel, Al-Diban, & Blumschein, 2000).

Research on preservice teachers' transmissive and constructivist beliefs often employs quantitative methods (e.g., factor analyses of Likert-type survey items) to more fully explore their beliefs about instruction. In one mixed-methods study, Minor and colleagues (2002) administered an open-ended questionnaire in which preservice teachers identified, ranked, and defined the characteristics of effective teachers. Minor and coresearchers used the Witcher-Travers Survey of Educational Beliefs, comprising a Likert-type scale, to collect data on preservice teachers' pedagogical beliefs: 20 items tapped a transmissive view and 20 items tapped a progressive, more constructivist view. Among the responding preservice teachers, Minor and colleagues categorized 28% as having largely transmissive views and 13% as having largely progressive views, but they categorized most (59%) as having eclectic views. The researchers suggested that many preservice teachers held eclectic beliefs, or both views, because they had just begun their education programs and had not yet developed one tendency over the other (Minor et al., 2002).

Further evidence of the difficulty in classifying preservice teachers into a single pedagogical belief category emerged from Chan and Elliot (2004), who also used Likert-based scale surveys to assess transmissive and constructivist conceptions about teaching. Their sample of preservice teachers held neither exclusively transmissive nor exclusively constructivist views of learning, thus leading the researchers to question the dichotomous and mutually exclusive classification of beliefs into either the transmissive or the constructivist view that is often suggested in the scholarly education literature.

The limitations of belief measures raise several concerns—most notably, the attempt to understand preservice teachers' intended instructional actions by classifying them into one of several pedagogical belief categories. Such a classification presumes that preservice teacher beliefs about learning and teaching are best analyzed through latent trait theory and assessed through exploratory and confirmatory factor analytic methods. However, the difficulties that researchers have experienced in attempting to actually place teachers into belief categories challenges such conventional pedagogical wisdom. Furthermore, preservice teachers may have good reasons to split their responses between transmissive and constructivist views. Perhaps their understanding of student learning and instruction simultaneously supports both transmissive and constructivist views, as well as others yet untapped.

The problematic use of belief surveys to operationalize preservice teachers' plans for instruction creates an opportunity for researchers and educators to reflect on commonly used measures. If Likert-type surveys and the factor analytic methods that accompany them provide ambiguous information about how teachers conceptualize instruction (as some studies indicate), alternative forms of assessment are needed. Pajares (1992) made such a suggestion in his landmark review of teacher beliefs, as did Brookhart and Freeman (1992) in their comprehensive review of preservice teachers' beliefs.

Several alternatives to Likert-type scale items have been recently explored, including projective tests (Chiodo & Brown, 2007) and metaphor construction (Leavy, McSorley, &

Bote, 2007). Chiodo and Brown (2007) assessed preservice teachers' images of teaching, as made through their drawings and written comments. They were able to assess whether social science preservice teachers expressed instructional behaviors that were direct (e.g., lecture) or indirect (e.g., modeling, demonstrating, group discussions). Of the 52 preservice teachers who completed projective tests, 25.5% were evaluated as having predominately direct teaching behaviors, whereas 17.6% were found to have indirect teaching behaviors. The remaining 56.9% had a mixture of these two types of teaching behaviors.

Metaphor construction has also been used to assess preservice teachers' beliefs. Leavy and colleagues (2007) asked preservice teachers to construct metaphors of teaching and learning. A mixture of metaphors was created by preservice teachers—including behaviorist (e.g., teacher as transmitter of skills, student as a recipient), constructivist (e.g., teacher as a facilitator, student as an active constructor of knowledge), situative (e.g., sociohistorical, student derives meaning from context), and self-referential (e.g., what teaching means to the teacher). Results of their study indicated that many participants shifted from behaviorist to constructivist metaphors as a result of participation in a teacher education program. However, a limiting factor in their study was that each participant was classified into only one of the aforementioned metaphor categories, thus prohibiting the documentation of any mixed approaches to instruction that the preservice teacher may have held.

Another recent study, conducted with alternative measures, used a teacher belief Q-sort (Rimm-Kaufman, Storm, Sawyer, Pianta, & LaParo, 2006). Rimm-Kaufman and coauthors (2006) had teachers and preservice teachers rank, or prioritize, a set of statements about teaching practices—for example, "Having a morning routine," "Using whole group instruction," "Doing an activity to create a sense of community," and "Using drill and recitation for factual information." The exploratory factor analysis that Rimm-Kaufman and colleagues applied to their data resulted in a two-factor solution: first, values spontaneity, process, and collaboration; second, emphasis on children's social experience and choice. Although Rimm-Kaufman and colleagues' approach resulted in constructs other than the transmissive and constructivist approaches commonly hypothesized in the literature, their findings (expressed as factor solutions) still leave one wondering (1) exactly which instructional strategies preservice teachers plan to use and (2) how often they plan to use them.

In this study, we propose another strategy that can be used to broaden educators' understanding of what preservice teachers plan to do in their classrooms. Rather than try to determine whether preservice teachers tidily fall into transmissive and constructivist categories and then infer their actions from these categories, we directly asked preservice teachers about their planned instructional strategies.

Planned Instructional Strategies

We believe that scholarly research has neglected how preservice teachers consider planned instructional strategies. Much instructional theory asserts that pedagogical strategies should be thoughtfully considered and selected because they influence the learning goals that students can accomplish (Gange & Briggs, 1979; Rothwell & Kazanas, 1998). Although prior research highlights many preservice teacher beliefs that should be addressed through college instruction, several questions remain unanswered. For example, if preservice teachers do believe that teaching equates to transmitting information, will lecture be the only instructional strategy they plan to use? How much instructional time do they plan to spend on a strategy such as lecturing as compared to other strategies? Or is the "teacher as teller" simply the most salient—although far from the only—notion about teaching held by preservice teachers? And how does contextualization within a content area, which often involves differing pedagogical methods, affect the instructional strategies that a preservice teacher selects?

Thus, one alternative to measuring beliefs and then inferring instructional intentions from them is to directly focus on the specific instructional strategies that preservice teachers intend to employ. Furthermore, given that almost no scholars have quantified how strongly teaching is equated with lecturing relative to other instructional strategies, it will be useful to determine whether and how much planned lecture dominates other possible planned pedagogical strategies.

Overview of the Study

The purpose of this study was to investigate preservice teachers' instructional strategies. As such, we focus on two questions: Which instructional strategies are most salient in preservice teachers' planning? How does content area influence preservice teachers' plans for their instructional strategies?

Method

Participants and Setting

The participants were 128 preservice teachers drawn from four undergraduate educational psychology courses at a large southeastern university. Generally speaking, participants in this teacher education program are Caucasian female upper-division undergraduates between the ages of 19 and 22, from middle to high socioeconomic backgrounds. The sample in this study was 72% female. Juniors and seniors formed 90% of the sample, and 58% had either experienced observation or weekly practice in a classroom. Upon graduation, 57% intended to teach high school, 15% middle school, and 23% elementary school. We recorded eight content areas, with elementary education majors coded as a ninth category, given that they would teach most content areas (Table 1). Data from 19 students in other majors, with samples too small to be used in later analyses (e.g., art, physical education, foreign language), were not included in this study.

Procedures

Qualitative instrument. During the 1st week of class, participants completed a pencil-and-paper survey with one open-ended question: "Imagine yourself teaching within your content area. In a given week, what types of instructional practices, activities, or methods would you use or have your students use in class?" Thus, preservice teachers were asked to list the instructional strategies that they planned to use when they began teaching.

Quantitative instrument. Immediately following completion of the qualitative survey, preservice teachers answered a quantitative survey, which asked them to rate 12 strategies and their intended use of them. First, preservice teachers selected how many days per week (0–5) and how much class time per day (0–60 minutes) they planned to use each prelisted strategy—specifically, case study, computer use, demonstration, guided discussion, practice, reading, small-group discussion,

Table 1. Preservice Teachers' Planned Content Areas

Content Area	*Frequency*	*Percentage*
English	28	21.9
Music	27	21.1
Elementary education	23	18.0
Social studies	15	11.8
History	10	7.8
Math	10	7.8
Biology	9	7.0
Chemistry	3	2.3
Physics	3	2.3
Total	128	100.0

laboratory, lecture, media, presentations, and other. These strategies were selected from popular educational psychology textbooks but were not intended to be an exhaustive list of possible instructional strategies that might be used by teachers of varying disciplines (Ormrod, 2003; Woolfolk, 2001).[1] Furthermore, we attempted to keep our list free from terms that novice teachers might consider to be academic jargon, such as *expository instruction*, *cognitive apprenticeships*, *inquiry learning*, and so on. We sought to keep our list to concrete strategies that preservice teachers would be able to identify, given that most of them had not yet completed their disciplinary-based methods courses.

Therefore, to give a fair balance to transmissive and constructivist approaches, we selected the following strategies for inclusion in the quantitative instrument: as related to transmissive approaches, lecture, demonstrations, and presentations; as related to constructivist approaches, laboratory, case study, small-group discussion, and guided discussion. The participant did not have to choose a particular strategy and could respond with "Zero days used."

An *other* category was included so that participants could add any additional practices that they wished.

After preservice teachers completed the quantitative survey, we calculated a percentage score that represented the relative frequency of use for each strategy, created by multiplying the total number of days that a preservice teacher chose to use an activity by the total number of minutes per use. For example, if a preservice teacher planned to lecture 3 days a week for 30 minutes, this would total 90 minutes of instructional time for lecture. Each participant's strategy total was then divided by his or her personal strategy grand total and converted to a relative percentage. Thus, 90 minutes divided by 300 total minutes and multiplied by 100 would result in lecture composing a relative 30% of planned weekly instructional time.

We calculated relative percentage scores to standardize the participants' ratings. Although participants were asked to model a 300-minute week, most of their total minutes did not sum to 300; for example, Participant A's methods resulted in a total of 450 minutes, whereas Participant B's strategies totaled 274 minutes. Thus, standardizing the minutes by using percentages allowed us to directly compare the relative use of instructional strategies among preservice teachers.

The Influence of Content Area

To determine whether content area affected preservice teachers' planned instructional strategies, we used an analysis of variance procedure. To have sufficient numbers in each content category, we collapsed academic disciplines: Biology, chemistry, and physics were placed together into a *science* category; history and social sciences were grouped into a *social science* category. Elementary education was retained as an independent group. This resulted in six recoded content areas: science, English, math, music, social science, and elementary education.

Results

Salience of Instructional Strategies

We coded the qualitative data following guidelines set forth by Constas (1992). Several tactics were used to derive a final set of planned pedagogical strategies to represent the participants' written responses (Miles & Huberman, 1994). We derived a total of 14 strategies, then calculated the percentage of participants listing each strategy. Next, we counted how many participants selected an instructional strategy on the quantitative survey; then, we calculated the percentage of participants selecting an instructional strategy (Table 2). A ranked comparison of instructional strategies between the two instruments was calculated using Spearman's rho, resulting in a moderate correlation of .61 ($p < .05$) across the quantitative survey and the qualitative measure.

It is striking that in neither the open-ended questionnaire nor the structured ques-

Table 2. Percentage of Sample Selecting an Instructional Strategy

Instructional Strategy	*Qualitative Listing*	*Quantitative Listing*
Guided discussion	57	95
Practice activities	58	95
Demonstration	18	91
Lecture	65	85
Presentation	18	81
Small-group discussion	7	80
Computer use	21	76
Media	50	76
Reading	44	64
Laboratory	14	41
Case study	2	33
Other	—	14
Activities and games	51	—
Problem solving	48	—
Cooperative learning	65	—

Note. Dashes (—) indicate *not applicable.*

tionnaire was lecture the most often volunteered or checked instructional strategy. In the quantitative survey, lecture was trumped by guided discussion, practice, and demonstration, whereas small-group discussion followed closely behind. In the qualitative listing, cooperative learning was in first place, followed by lecture in second place—thus suggesting that lecture is a familiar, even if not a favorite, instructional strategy.

Influence of Content Domain on Planned Instructional Strategies

We next conducted an analysis of variance to test the second research question—whether planned instructional strategies differed across content areas. The percentages in Table 3 are the relative average amount of time that participants planned to use each strategy by content area.

We used Welch's adjustment for unequal variances (indicated by a significant Levene's statistic). The analyses of variance (presented in Table 4) revealed significant differences across content areas for 9 of the 12 instructional strategies: case study, computer use, demonstration, guided discussion, practice, reading, small-group discussion, laboratory, and lecture (media, presentations, and *other* were not significant across content areas). We used the Tukey honestly significant difference procedure to test pairwise comparisons. Given the many possible contrasts, only the statistically significant contrasts are described. (Complete tables are available upon request from the first author.)

Table 3. Average Percentage of Time Planned for Each Strategy by Content Domain

	Music	*Elementary*	*English*	*Math*	*Social Science*	*Science*
Practice activities	32	15	12	15	9	13
Demonstrations	21	13	9	13	9	11
Student presentations	9	4	6	8	10	4
Guided discussion	8	11	20	12	20	14
Media use	6	6	7	5	8	5
Lecture	6	9	10	15	19	20
Computer use	5	12	11	7	7	7
Laboratory	4	4	2	8	3	12
Small-group discussion	3	6	10	8	7	7
Reading	2	15	11	4	5	3
Case studies	1	2	1	3	5	3

Table 4. Analysis of Variance Results Using Welch's Statistic

Strategy	*Welch's Statistic*	df_2	*p*
Practice activities	9.96	39.87	.001
Demonstrations	3.40	38.47	.018
Student presentations	2.44	37.76	.063
Guided discussion	9.15	37.76	.001
Media use	0.59	37.86	.667
Lecture	8.18	36.78	.001
Computer use	2.88	39.34	.035
Laboratory	7.59	36.65	.001
Small-group discussion	9.17	36.21	.001
Reading	10.62	37.43	.001
Case study	4.13	37.08	.007

Note. For each strategy, $df_1 = 4$.

The analyses indicated several points of interest. First, preservice teachers planned only a relatively small percentage of total class time for transmissive approaches, such as lecture or demonstration. Second, planned instructional strategies across content areas were remarkably consistent. Although 9 of the 12 instructional strategies revealed statistically significant differences across content areas, nearly all differences occurred because of the music teachers' planned strategies. Of the 34 significant pairwise comparisons of mean percentages of class time, 20 involved music teachers. For case study, computer use, demonstration, and practice, the music group was involved in all significant contrasts.

Future English and social science teachers planned greater use of the guided discussion and small-group discussion strategies than did elementary education and music majors. Future chemistry, biology, and physics middle and secondary teachers had the highest intended use of laboratory exercises. All significant differences in laboratory use involved preservice science teachers. Science and social science preservice teachers planned to use lectures more than did future elementary school and music teachers.

Discussion and Implications

Results from this research indicate that preservice teachers' planned a variety of instructional strategies. Our results are consistent with more recent findings that indicate that preservice teachers may endorse a broader range of teaching behaviors or a more mixed view of teaching than what earlier studies indicated in the literature on preservice teachers' beliefs (see comments in Chan & Elliot, 2004; Minor et al., 2002). Furthermore, with the exception of music, the future teacher's disciplinary area made little difference in planned instructional strategies; furthermore, for any given content area, no single strategy dominated instructional time. Preservice teachers within each discipline planned several instructional strategies for their classrooms. Although much of the earlier literature on teacher beliefs suggests that preservice teachers may hold transmissive views, the future teachers in our study allocated only a small portion of their planned time to lectures.

We add to the scholarly literature related to preservice teachers' intended teaching behaviors by reporting to what extent preservice teachers plan to dominate instructional time with a particular strategy. For example, although 85% of the participants on the quantitative survey selected lecture and although 65% listed lecture among their spontaneous qualitative responses, lecture time averaged less than 20% of total weekly minutes. Lecture ranked as only the fourth-greatest consumer of instructional time, thereby demonstrating that one should look beyond frequency counts alone to estimate planned pedagogical strategies. Simply asking preservice teachers which strategies they plan to use provides no infor-

mation on how often they would like to use them. By recording not only the choice of strategy but how often preservice teachers planned to use that strategy, our study presents results on an aspect of preservice teachers' instruction that scholars have previously overlooked.

Our results may also help to explain why so many scholars have found it difficult to classify preservice teachers into either a constructivist or a transmissive category through factor-analytic approaches of belief measures. Our results indicate that preservice teachers consider a large set of instructional strategies: They plan not only lectures but also interactive forms of learning, such as cooperative learning and guided discussion. Perhaps prior studies that probed preservice teachers' beliefs revealed only their most salient representations of teaching. As our results indicate, although most preservice teachers planned to lecture at some point, lectures filled a minority of their anticipated instructional time.

Our results indicate that preservice teachers within all content areas endorse a broader scope of instructional strategies than what much of the literature on beliefs presumes. Furthermore, our results suggest that we should consider alternative forms of assessment as we study preservice teachers' thinking and how it develops. If preservice teachers are open to various instructional strategies, teacher educators may wish to focus on their students' decision-making processes during planning, the logistics of instructional strategies, and the type of learning that each strategy promotes, in addition to images and beliefs.

As educators, perhaps we should reframe our approach, as Woolfolk-Hoy and Murphy (2001) suggest, to think about what preservice teachers are "getting right": "Rather than trying to convince prospective teachers that explanation is wrong, we might help them give better explanations" (p. 163). Rather than ask, "Do my students think teaching is telling?" we as teacher educators could better ask, "Under what conditions do my teachers think lecturing is an appropriate strategy, and why?" Perhaps we should reconsider our focus and so direct our efforts to helping preservice teachers acquire a larger repertoire of strategies, understand the link between instructional goals and strategies, and learn to effectively implement various strategies. That is, as educators, we should promote in future teachers a deep understanding of the learning context, educational goals, and available teaching strategies—or what Shulman (2007) refers to as *wisdom of practice*. In doing so, we can move beyond conceptualizing and assessing our preservice teachers on a constructivist–transmissive belief dichotomy that does not capture the complexity of teaching.

Limitations

We offer several cautions. Our research focuses on planned action. Although we see our line of research moving beyond traditional notions such as transmissive and constructivist beliefs, we recognize that there are other ways to view instruction—for example, from "an academic, social reconstructionist, or social efficacy approach" (Chiodo & Brown, 2007, p. 20). These approaches may be particularly relevant in future explorations of the rationales that preservice teachers provide for their instructional choices.

Furthermore, although preservice teachers may have selected strategies on the quantitative survey that they might not have volunteered on their own (recognition versus recall), the qualitative survey responses indicate that preservice teachers do indeed consider diverse instructional strategies without explicit prompting. In fact, free responses from the qualitative survey generated three student-centered categories that were not explicitly addressed on the quantitative survey: activities, cooperative learning, and problem solving—strategies that were salient within the knowledge base of many preservice teachers. Because many preservice teachers spontaneously mentioned strategies not explicitly addressed on the quantitative survey, we believe that any study of instructional strategies should include a larger number of options. Additional research that explores how preservice teachers conceptualize instructional strategies

may help clarify what conceptual labels should be used and when such conceptual labels might make sense to preservice teachers when participating in different stages of a teacher education program. The specific meaning that preservice teachers ascribe to each strategy should be explored as well (purposes, mechanics, etc.). Holt-Reynolds (2000) addresses the importance of understanding what the strategies that we teach mean to preservice teachers. She cautions that preservice teachers have the potential to translate constructivist pedagogies into "a thin vision of their role as a teacher" (p. 21).

Further studies that employ pre- and post-measures to explore the impact of education courses on preservice teachers' selection of instructional strategies are needed, as are studies that examine how they reason about their choices. If the emphases that teacher educators place on a variety of student-centered pedagogical techniques influence teachers in training, it remains to be seen in future research whether the pressures placed on in-service teachers from competing tasks and roles will result in a greater regression to lectures during class time than what these preservice teachers idealistically expect (Valli & Buese, 2007). As such, preservice teachers' planned instructional strategies provide a gateway to understanding the complexity and diversity of teachers' planned actions and a caution against stereotyping preservice teachers' pedagogical intentions. ATE

Note

1. With the variety of topics that educational psychology courses cover (e.g., development, cognitive and social theories, motivation, classroom management, assessment, instructional strategies), it is not surprising that these texts do not exhaustively treat the instructional strategies of the different individual disciplines.

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