Investigating the Content and Sources of Teacher Candidates' Personal Practical Theories (PPTS)

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Abstract:
Research on teachers' (personal) theories and beliefs and their (practical) knowledge derived from experience, whether held implicitly or stated explicitly as their personal practical theories (PPTs), indicates that such beliefs can influence teachers' classroom practices and, therefore, the opportunities that their students have for learning. This study uses a content analysis of 472 self-reported PPTs collected from 94 prospective teachers to develop a model of categories of beliefs, and describes the relationship between the content and sources of teacher candidates' beliefs, expressed as PPTs. The purpose of this study is to help teacher educators better understand beliefs that teacher candidates bring to their teacher education program as we try to influence their knowledge and practices.
Keywords: teacher education; preservice teachers; teacher beliefs; personal practical theory

Article:
Since the seminal work of Clark and Peterson (1986) was published, interest in the study of teacher thinking has been a prominent field of inquiry in the research on teachers and teaching. Three categories of studies on teachers' thinking are evident in this body of research: (a) descriptions of the content of teachers' thoughts, (b) studies of teachers' judgments and actions, and (c) research into the domains of teachers' knowledge. Also, many researchers have investigated teachers' beliefs and theories and studied the practical tasks and contextual nature of teachers' work (Schwab, 1983). Taking the practical context into consideration, several researchers focused their research on teachers' practical knowledge (Clandinin, 1986; Elbaz, 1981, 1983) and practical theories (Fenstermacher, 1986; Sanders & McCutcheon, 1986), and also studied the relationship between teachers' beliefs and actions (Clandinin, 1986; Elbaz, 1983; Pape, 1992).

Elbaz (1981) coined the term "practical knowledge" and defined five sources of teachers' practical knowledge: situation, personal, social, experiential, and theoretical. Elbaz also described how the structure of teachers' practical knowledge included rules of practice, practical principles, and images that guide actions. Other researchers have used similar terms to describe analogous interactions between knowledge, beliefs, and practices including such terms as "personal practical knowledge" (Clandinin, 1986; Connelly & Clandinin, 1985), "practical arguments" (Fenstermacher, 1986), "practical theory" (Handal & Lauvas, 1987; Sanders & McCutcheon, 1986), "practical reasoning" (Fenstermacher, 1986), "practical philosophy" (Goodman, 1988), "theory of action" (Marland & Osborne, 1990), "schema" (Bullough & Knowles, 1991), and "personal practical theories," or PPTs (Cornett, Yeotis, & Terwilliger, 1990).

More than a decade ago, Frank Pajares (1992, 1993) argued that teachers' beliefs should become an important focus of educational inquiry. Since then, Virginia Richardson (1996, 2003) has summarized much of the research about teachers' beliefs, showing that prospective teachers' prior beliefs influence what is learned during their teacher preparation program by acting as a filter through which teacher candidates acquire and interpret new knowledge. Because we know that teacher candidates' beliefs influence their subsequent judgments and actions in the classroom (Chant, 2002; Chant, Heafner, & Bennett, 2004), understanding more about the content and the source of teachers candidates' beliefs is essential for teacher educators, especially if

we want to try to influence or change their knowledge and practice (Pajares, 1992; Richardson, 1996) during their teacher education program.

In this study, the content and the sources of 94 teacher candidates' self-reported belief statements are identified and categorized as the first stage in (a) determining the types of beliefs that teacher educators may be able to influence and change during a teacher education program and (b) developing a model to show a way to categorize beliefs and the relationship between the content and sources of teachers' beliefs. The research questions that guided this study are: What are the contents of teacher candidates' beliefs as expressed in their written PPTs? What are the sources of teacher candidates' PPTs? What is the connection between the content of teacher candidates' PPTs and the sources of these beliefs?

RELATED RESEARCH

Cornett et al. (1990) and Marland (1988) studied individual teacher's PPTs and defined them as "empirically warranted claims-to-know about their own teaching practice." For the purposes of this study, we proceed from the premise that both teachers' personal theories (their beliefs) and their practical knowledge (derived from experiences) ultimately guide their actions in the classroom (Chant, 2002; Chant et al, 2004; Clandinin, 1986; Cornett et al., 1990). Although we do not follow our participants into their classrooms to evaluate this claim, earlier research cited above already makes this connection between teachers' beliefs and actions. Also, though we do not delve into more recent scholarship about teachers' professional identity development (e.g., Beijaard, 1995; Beijaard, Meijer, & Verloop, 2004; Beijaard, Verloop, & Vermunt, 2000), we believe that identity development is related, in part, to beliefs. Identity appears to be ever changing, influenced by social, cultural, political, and historical contexts, agentic, positional, and socially constructed, which is also true of some beliefs (Pajares, 1992). Although not the purpose of this study, reflection on and articulation of one's beliefs in the form of PPTs, plus identification of the sources of teachers' expressed beliefs, may be useful for those interested in future studies of teacher identity and the process of identity development.

To date, very few studies of teachers' beliefs have focused on the sources of teachers' beliefs. Most studies about teachers' PPTs, which we argue are also a proxy for teachers' beliefs, have been conducted by following only a few teachers into the classroom (Chant, 2002; Cornett, 1990a, 1990b). The individualized and context-based nature of teacher PPTs makes such analysis challenging to apply on a larger scale. Therefore, we posit that presenting a model that describes the salient features and interactions among knowledge, beliefs, and practices could be useful for helping teacher educators better understand their potential to influence teachers candidates' thoughts and actions at the preservice level.

In early studies about teacher beliefs, researchers concluded that beliefs cannot be changed by the "weak intervention" of a few years in a teacher preparation program (Richardson, 1996, 2003) and that what is learned during teacher education "washes out" once preservice teachers leave the university and become socialized in the field (e.g., Kagan, 1992; Lortie, 1975; Zeichner & Liston, 1987). We also know that teachers' beliefs influence their judgments and actions in the classroom during and after student teaching (Chant, 2002; Chant et al., 2004; Clandinin, 1986; Cornett, 1990a, 1990b; McCutcheon, 1992; Pajares, 1992, 1993; Pape, 1992; Ross, 1992; Ross, Cornett, & McCutcheon, 1992), which in turn influences the opportunities that their K-12 students have to learn. However, very little empirical research has emerged about the *sources* of teachers' beliefs, which may be a factor in whether or not teacher candidates' beliefs can be influenced during teacher education.

Several individual case studies have shown that teachers use their PPTs as their personal guiding theories in the pre-active (planning), interactive (teaching), and postactive (reflective) stages of their teaching (Chant, 2002; Clandinin, 1986; Cornett, 1990a, 1990b; Cornett et al., 1990; Pape, 1992). These researchers asked teachers what guided their thinking about pedagogy or interpreted their beliefs from what teachers stated, said they intended to do, or what they actually did during observations of their teaching (Chant, 2002; Chant et al., 2004; Cornett, 1990a, 1990b; Cornett et al., 1990; Lundeberg & Fawver, 1993; Pajares, 1992; Richardson, 1996, 2003; Tatto & Coupland, 2003). Other researchers have shown that the beliefs of both preservice and experienced teachers expressed as their PPTs during a process called "personal theorizing" drive pedagogical

decisions about teaching and learning of both novice and experienced teachers (Chant, 2002; Chant et al., 2004; Cornett, 1990a, 1990b; Cornett et al., 1990; Ross et al., 1992). For example, Cornett and his colleagues (Cornett, 1990a, 1990b; Cornett et al., 1990) studied how individual teacher's PPTs describe how their beliefs and knowledge are grounded in their (personal) experiences outside the classroom and their (practical) experiences inside the classroom. The connection between teachers' PPTs and their classroom practice is clear in this earlier research. However, larger studies about PPTs, revealing the sources of teachers' PPTs or beliefs, and research with preservice teachers have been scarce.

METHOD

Participants

For this study, written PPTs were collected from a total of 94 postbaccalaureate teacher candidates enrolled in a graduate-level course about the interaction of classroom management and instruction at a regional university in the southeastern United States during the fall semester in 2002, 2003, and 2004. Participants were recruited from teacher candidates enrolled in this course because the personal theorizing process (Chant, 2002; Chant et al., 2004; Cornett, 1990a, 1990b; Cornett et al., 1990) matched the course goals and was useful for these teacher candidates as they articulated their beliefs about and plans for classroom management and instruction prior to student teaching. Among the participants, 14 were male and 80 were female. The majority were White (n = 77), and most of the participants were nontraditional preservice teachers (n = 78) working on their M. Ed. degree (n = 91) leading to an elementary-grade teaching license. Eighty-three percent of the participants had already participated in an average of 140 hours of field experiences prior to writing their PPTs but had not yet completed their student teaching. The remaining participants were lateral-entry teachers who had their own classrooms (14%), although a few (3%) were not in classrooms yet or had left the classroom to attend graduate school full-time. All data were analyzed after the participants had completed this course.

Data Sources

All participants were asked to explicitly identify their PPTs in writing following the procedures outlined by Cornett (1990a, 1990b) and Chant et al. (2004). This assignment required everyone to (a) list, define, elaborate, and justify the beliefs, or PPTs, that guide their teaching; (b) provide examples of what their PPTs would look like in action in the classroom; and (c) identify the sources of each of their PPTs. The rubric emphasized completion of these three parts of the assignment, but the content or quality of beliefs expressed as PPTs was not evaluated. Each participant stated and described four to seven PPT statements, yielding a total of 472 unique PPTs collected during three semesters. For example, 1 participant's PPTs were as follows:

1. Wonder is the fuel that drives discovery and must be creatively inspired by educators if they wish to fulfill a lifetime love of learning.

2. Children should be encouraged to be active seekers of solutions to problems, old and new.

3. Energy and enthusiasm elevate the learning process.

4. Purposeful assignments and meaningful objectives motivate students.

5. Establishing a sense of self through a positive environment.

Participants' written descriptions elaborating each of their PPTs, including self-identification of the sources of each PPT, were the sole data source for this study.

Data Analysis Procedures

A content analysis of all 472 PPTs was conducted to identify categories to describe the content of the PPTs. Content analysis investigates the thematic content of text and serves as a basis of inference (Cohen & Manion, 1994). Initially, both researchers conducted manual coding of each PPT from the first year of data collection to identify words, phrases, or word-phrase clusters for purposes of this analysis. The researchers created a

dictionary to cluster words and phrases into conceptual categories for purposes of further coding and counting. Preliminary categories were modified and refined jointly by the researchers based on the data from the second and third year of this study to establish linkages and relationships between and among emerging categories. The steps used during data analysis for this study (Harry, Sturges, & Klinger, 2005) are described next, and a map of these steps is provided in Figure 1.

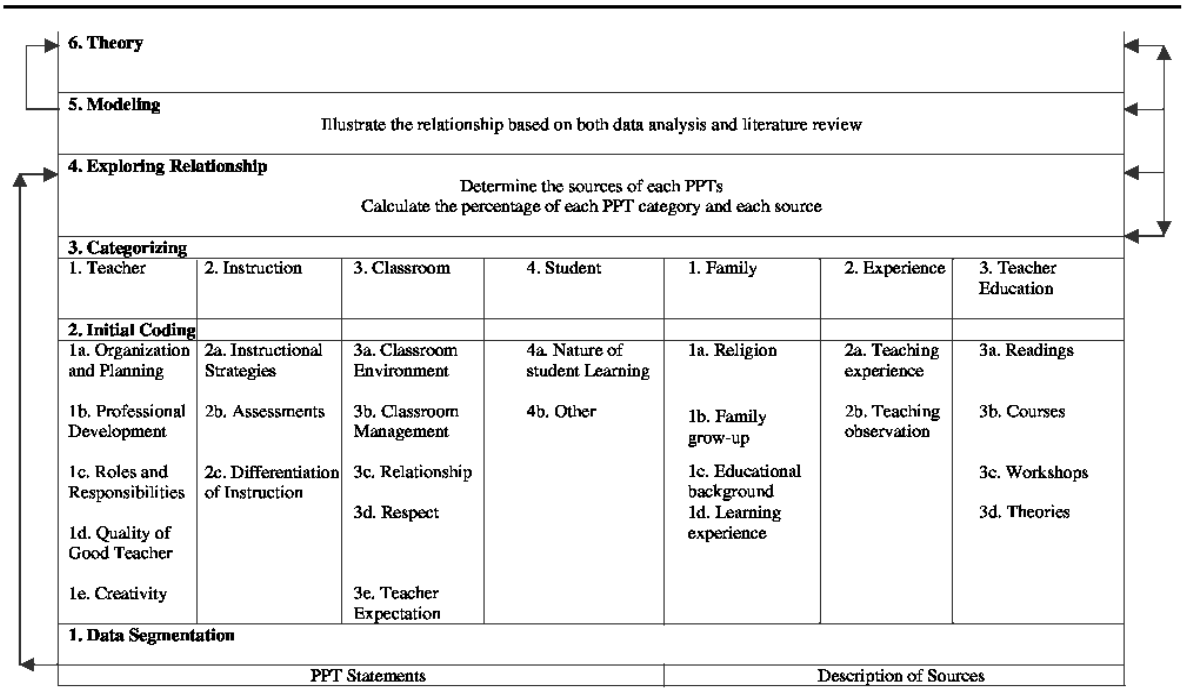


FIGURE 1: Data Analysis Map

Level 1 (data segmentation). To bring meaning, structure, and order to these data, the entire data set was first segmented based on the research questions and the nature of the document data into (a) the content of PPTs statements and (b) the description of their sources.

Level 2 (initial coding). Fifteen codes were identified for PPT statements and 10 for PPT sources based on the results of our initial open coding. These initial categories were generated from participants' original responses in their PPT statements and discrepancies in labels were resolved through negotiation between the two researchers. A constant comparison approach was used during the initial coding. Each coding strip was constantly compared to content coded under the same and different codes to see whether another code would apply. Once all the PPT statements were successfully coded, the code "other" was eliminated, leaving 13 codes for further categorizing.

Level 3 (categorizing). To identify the relationship among the initial codes, the researchers compared the coding labels to the related literature. Four new upper-level categories were identified that seemed similar to the four commonplaces of teaching described by Schwab (1983): the curriculum (*what*) that is taught by the teacher (*who*) to the students (*whom*) in the classroom (*where*). However, in these data, the category of curriculum (*what*) was renamed instruction (*how*) because the PPTs that these participants described were more about instructional strategies as ways to deliver the curriculum than the content of the curriculum. Table 1 shows examples of the content of each of the 13 categories of PPTs and also shows how these were combined and collapsed into four major sets of beliefs about instruction, teachers, the classroom, and students.
In analyzing the sources of PPTs, the researchers noticed that the initial identified codes include both what preservice teachers bring with them into teacher education from either their family, cultural, and religious background, their K-12 experiences, and what they learned from the coursework and fieldwork components of the teacher education program. Three main upper-level categories for sources of PPTs were identified as (a) family background and K-12 education prior to entry into teacher education, (b) observations or teaching experiences

during field experiences, and (c) coursework during teacher education. Table 2 displays the percentages of the original 10 sources of participants' beliefs (religious beliefs, family values, K-12 learning experiences, recent teaching experience in field placements, observations during field placements, coursework, readings, theories, and workshops attended) and shows how they were collapsed into three broad sources of PPTs.

Level 4 (exploring relationships). In this study, each PPT statement was linked by the participants to one or more sources. The researchers were interested in determining what types of PPTs the participants attributed to what types of sources. In other words, with an interest in the impact of teacher education on teacher candidates' beliefs, the researchers wanted to explore what types of PPTs that certain source categories impact the most.

Level 5 (modeling). Because of the amount of data in this study, it is not easy to demonstrate the relationship between 472 PPTs and their sources in a narrative fashion; therefore, we used the percentage of the PPTs in relationship to their source categories to represent the linkage or the relationship between the data segments. Based on these linkages, a model was developed to describe the interactions among the sources of teacher candidates' beliefs and the content of these beliefs, which is displayed on the left side of the model.

The personalized nature of the PPTs determines that the content, sources, and development of teachers' PPTs are individual-dependent and context-dependent (Chant, 2002; Chant et al., 2004; Cornett, 1990a, 1990b; Cornett et al., 1990; Ross et al., 1992). Therefore, this generalized model may not apply directly to each individual teacher. The purpose of building a model is (a) to present an overview of the prospective teachers' self-reported content and sources of the PPTs, (b) to illustrate the relationship between the sources and content of teachers' PPTs and identify the potential impact of the teacher education program, and (c) to provide a method and model for comparison of content and sources of PPTs in future research from teachers with various experiences.

To manage, analyze, and report the relatively large amount of qualitative data in a systematic manner, computer assisted qualitative data analysis (CAQDA) was applied in this study. Because of the textual nature of the data and the hierarchical categorizing and searching required by the analysis procedure in this study, NUD*IST 6 (QSR International Pty. Ltd., 2003) was used for data analysis and Microsoft Access (2000) software was used to manage and assist in the analysis of these data. NUD*IST 6 is a content-analysis package that allows researchers to explore qualitative data to establish lexical and conceptual relations among words, to index text files, and to conduct pattern matching and searching operations using Boolean co-occurrences of nodes (e.g., themes, concepts, categories, key words) identified in the text (L. Richards, 2005; T. J. Richards & Richards, 1991). In this study, NUD*IST 6 was used to explore and code the content of all PPTs and their sources. All 472 PPTs with identified sources were later entered into a database and given a code number. Participants' names were not maintained in the database because the emphasis was on studying the content and sources of multiple PPTs from similar cohorts of preservice teachers rather than on analyzing any one individual's PPTs. The final categories for the content and source of each PPT were entered and maintained in the Microsoft Access database to allow for further sorting and counting.

FINDINGS

PPT Content Categories

As can be seen in Table 1, within the general category of "who," or the teacher, we identified 130 PPTs combining four initial subcategories that addressed who teachers are and what they do with regard to (a) organization and planning, (b) professional development, (c) teachers' roles and responsibilities, and (d) qualities of good teachers. In the category of "how" the curriculum is taught, or the category of Instruction, 166 PPTs were combined from three subcategories that described ways to deliver and evaluate the curriculum including (a) instructional strategies, (b) assessment, and (c) differentiation of instruction. In the category of "where," or the classroom, we combined 138 PPTs that were all related to the (a) general classroom environment, (b) teacher/student relationships, (c) mutual respect, (d) teacher expectations, and (e) classroom management. Finally, only 38 PPTs referring to students were identified and put into one category, which focused solely on the nature of student learning. Given that these 83% of the participants had 140+ hours of

classroom experience but had not undertaken student teaching at the time of this study, the low number of PPTs categorized as related to the nature of student learning did not surprise us but was disappointing.

TABLE 1 Categories of Content of Personal Practical Theories (PPTs)

PPT Categories	*No.*	*%*	*Examples of PPTs*
Who: The teacher	139	28	
Organization and planning	43	33	1. Preparation and careful planning is a vital ingredient in the recipe of a meaningful and worthwhile education. 2. Planning and organization is essential to maximize student learning. 3. Planning and organization are the keys to a successful classroom.
Professional development	11	9	1. I also value professional development on the part of the teacher. 2. As a teacher, you are also forever a student. 3. Professional development, continuing education, and collegiality are all important to success in the classroom.
Roles and responsibilities	42	33	1. The teacher's role is to provide a variety of learning experiences which include choices for students and strategies to enhance learning. 2. The teacher's primary role is to serve as facilitator. 3. The teacher is a motivator.
Qualities of good teachers	33	25	1. Be passionate for teaching, with a desire to inspire. 2. Teachers must be passionate about the subject that they are teaching. 3. Love what you do.
How: The instruction	166	35	
Instructional strategies	124	75	1. Encouraging inquiry-based learning through integrated lessons is important in order for students to be actively engaged in their learning. 2. Flexible cooperative learning groups are important to promote social skills and learning from peers. 3. We should create opportunities for success by teaching to the "teachable moments", using a variety of methods, and exploring multiple-intelligences.
Assessments	13	8	1. Careful planning of assessments is essential in the learning process of children. 2. To implement a variety of informal and formal assessments. 3. Assessments are authentic and varied.
Differentiation of instruction	29	17	1. The teacher's role is to provide a variety of learning experiences that include choices for students and strategies to enhance learning. 2. Providing individualized instruction and assignments allows students to succeed within the classroom. 3. Children should always have choices.
Where: The classroom	138	29	
General	52	38	1. Basic human needs are very similar; we are all valuable and can thrive in a safe and inviting environment. 2. An optimal learning environment is one in which there is a sense of community. 3. The classroom environment should be maximized for optimal learning.
Relationship	21	15	1. Teachers should provide feedback to students and that feedback should be more than just general to ensure student learning. 2. Taking the time to build relationships with students opens a door of opportunity for learning. 3. Teachers should have good relationship with their students.
Respect	22	16	1. Receive respect and treat my students with respect. 2. Respect: All children deserve respect and autonomy. Children's thoughts and feelings are important. 3. Respect: Environment conducive to learning and enjoyment.
Expectation	26	19	1. Expectation shapes achievements. 2. Positive expectations give direction. 3. Positive expectations—expect the most out of your students.
Classroom management	17	12	1. The teacher must be fair. 2. Implement consistent and fair classroom management. 3. Discipline is required for effective classroom interaction.
Whom: The student	38	8	
Nature of student learning	38	8	1. Growth and development of children occur in predictable stages. 2. We are social creatures and we learn from interacting with one another. 3. All students can learn, but at different rates and at different levels.

TABLE 2 Sources of Personal Practical Theories (PPTs)

Combined Categories of PPT Sources	*Original PPT Sources From 2002-2004*	*No. of PPTs*	*%*
Family background and K-12 experiences (35%)	Religion	10	2
	Family values	32	5
	K-12 learning experiences	163	28
Observations and teaching experiences (35%)	Teaching experiences	109	19
	Observations	93	16
Teacher education coursework (31%)	Courses	69	12
	Readings	59	10
	Theory	48	8
	Workshops	4	1

Among the four major content categories, most of these teacher candidates' PPTs were related to instruction (35%) and the fewest to students (8%). Two of the four major categories yielded very similar percentages of the total PPTs: the classroom (29%) and teachers (28%). Looking at the subcategories of PPTs, these teacher candidates held beliefs that were most often concerned with instructional strategies for delivering the curriculum (n = 124), the general classroom environment (n = 52), organization and planning of the curriculum (n = 43), and the roles and responsibilities of the teacher (n = 42).

Sources of PPTs

Based on participants' self-reporting of the sources for each of their PPTs, we first sorted them into 10 categories and later merged these into three major categories: (a) family background and their own K-12 education, (b) observations and teaching experiences during their field experiences, and (c) coursework in their teacher education program. As can be seen in Table 2, 28% of the participants' PPTs were attributed to their experiences as K-12 students, which is what Lortie (1975) talked about as the "apprenticeship of observation" related to the beliefs and personal theories that teachers hold about teaching and learning as a result of having been students for at least 12 years. The next highest number of PPTs came from the participants' individual teaching experiences during their field placements (19%). This was closely followed by PPTs that came from observations that they had made during their field experiences (16%), which means that a total of 35% of their PPTs were rooted in the observations and teaching experiences required by their teacher education program. The fewest number of PPTs had their sources in workshops that they had attended and from their personal religious beliefs. However, after we combined PPTs that came from courses, readings, theories, and workshops into one category to describe beliefs that resulted from their teacher education course-work, 31% of all their PPTs came from their teacher education coursework. This, in addition to the finding that 35% of their PPTs came from their personal teaching experiences and observations during required field experiences by their teacher education program, indicates that in this study, 66% of the PPTs had their foundation in either the explicit curriculum of their teacher education program or the learning experiences offered by being placed in schools and classrooms for pre-student teaching field experiences.

Description of the Model

To further refine our understanding of these data, we developed a generalized model to identify and describe the linkages between the content and the sources of teacher candidates' beliefs and then to indicate how their beliefs, stated in the form of PPTs, are linked in theory to actions in the classroom (see Figure 2). The content in the top third of this model (teacher performance and student learning in the school context) has been described previously in the research literature on teacher beliefs and teachers' personal theorizing (e.g., Chant, 2002; Clandinin, 1986; Cornett, 1990a, 1990b; McCutcheon, 1992; Pajares, 1992, 1993; Pape, 1992; Ross, 1992; Ross et al., 1992), although only recently has Kennedy (2004) tried to graphically represent how concepts that are related to beliefs or PPTs—such as standing values and beliefs, accumulated principles of practice, intentions, and outcomes in the form of actions—are connected to general lines of teachers' thinking.

The bottom third of this model (the sources and the content of teachers' beliefs) reveals what has been previously inside a "black box" in the research on teacher beliefs. Missing from previous research is empirical

evidence that reveals what the sources of teachers' beliefs are, connected by teachers themselves to their explicitly stated beliefs, which were elicited in this study in the form of their PPTs. Hence, this model offers an explanation of the sources of teacher candidates' beliefs, the content of those beliefs, and the percentages that each of the three main source categories contributes to the four main belief categories describing the content of these teacher candidates' PPTs.

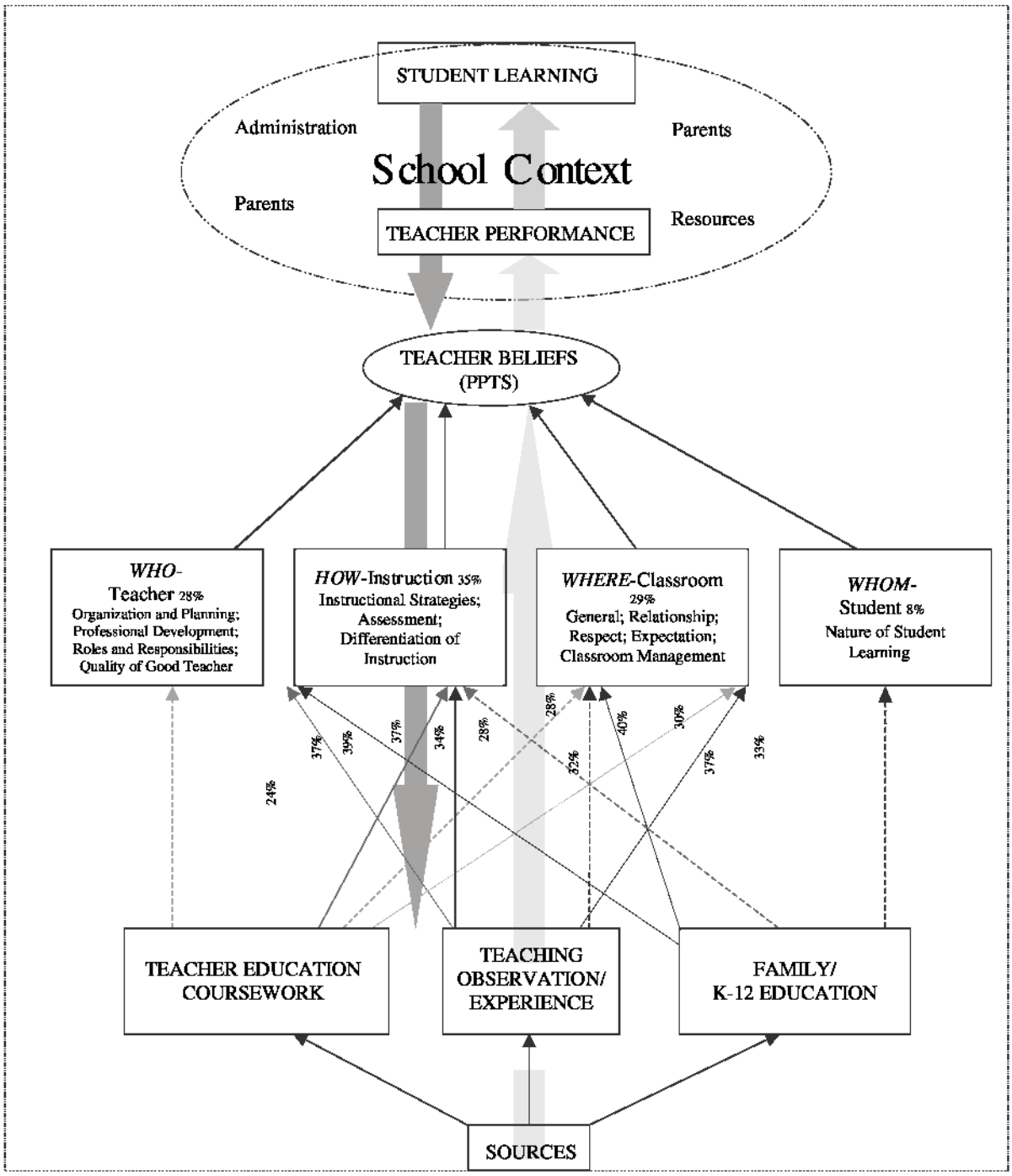


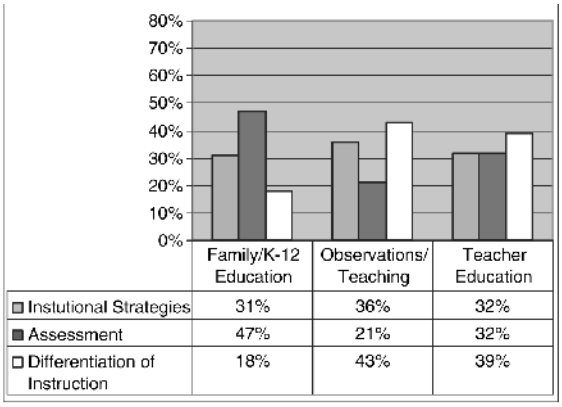
FIGURE 2: Model of Sources and Content of Preservice Teachers' Beliefs

As can be seen in this model, in the content category of beliefs about the teacher, most of these participants' beliefs about teachers come from their own family background and K-12 educational background (39%) and from their more recent observations and teaching experiences in their field placements (37%). Their teacher education program coursework seemed to have the most influence (37%) on their beliefs about instruction, whereas these participants' family background and K-12 educational experiences had the least influence on

their beliefs about instruction (28%). In the PPT content category of the classroom, the major source of beliefs expressed as PPTs in this study appear to stem from family background and their own K-12 educational background (40%). In the category of beliefs about students and the nature of student learning, the major source of their PPTs came from recent observations and teaching experiences in their field placements (37%) required for their teacher education program. Hence, it appears that the whole of their teacher education experience, combining teacher candidates' attributions of their beliefs to their coursework and their observations and teaching experiences in the field, appears to show the greatest influence on these teacher candidates' beliefs about instruction and the nature of students, whereas their family background and K-12 experiences has a strong influence on their beliefs about the nature of classrooms and about teachers. That teacher education appears to heavily influence beliefs about instruction is not surprising given that it is a major focus in teacher preparation, but that we do not have a very strong influence on beliefs about the classroom as a learning environment shows that Lortie (1975) and others were correct about the power of prior beliefs based on the apprenticeship of observation.

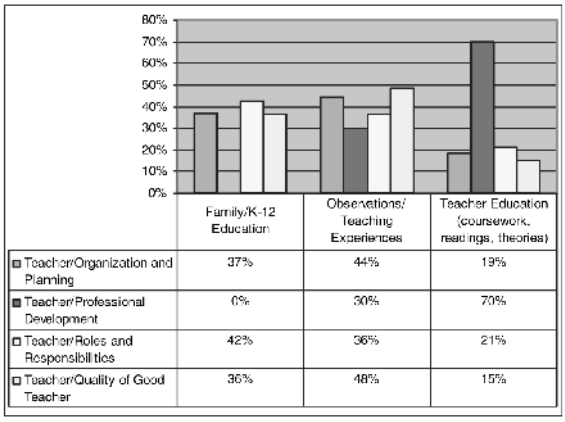
Further Detail About the Sources of PPTs in this Model

To better understand the relationships between participants' PPTs and their self-reported sources, these data were quantified by using NUD*IST 6 (QSR International, 2003) to calculate the percentage that each source contributed to each content subcategory identified in their PPTs. Queries in Microsoft Access (2000) were used to match each content subcategory with its sources. Then, Microsoft Excel (2000) was used for counting and graphing. As is illustrated in Figures 3, 4, and 5, different bars represent the three main sources of PPTs: (a) family background/K-12 education, (b) observations/teaching experiences during their teacher education program, and (c) teacher education coursework, which includes PPTs derived from coursework, readings, theories, and workshops.



	Family/K-12 Education	Observations/ Teaching	Teacher Education
Instutional Strategies	31%	36%	32%
Assessment	47%	21%	32%
Differentiation of Instruction	18%	43%	39%

FIGURE 3: Relationship Between PPTs About Instruction and Their Sources



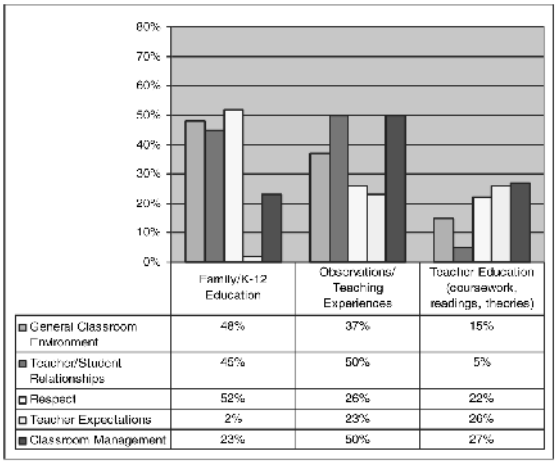
	Family/K-12 Education	Observations/ Teaching Experiences	Teacher Education (coursework, readings, theories)
Teacher/Organization and Planning	37%	44%	19%
Teacher/Professional Development	0%	30%	70%
Teacher/Roles and Responsibilities	42%	36%	21%
Teacher/Quality of Good Teacher	36%	48%	15%

FIGURE 4: Relationship Between PPTs About Teachers and Their Sources

Figure 3 shows the percentage of each subcategory of PPTs about instruction and their sources. As can be seen in Figure 3, more than two thirds of these teacher candidates' PPTs about instructional strategies result from a combination of their observations and teaching experiences during their fieldwork and their teacher education coursework, whereas about half of their PPTs about the subcategory of assessment come from their own family and K12 experience and a combination of their teacher education coursework and observations and teaching experiences during their teacher education program. However, 82% of their PPTs about differentiated instruction come from a combination of their teacher education coursework and their observations and teaching experiences in the field. These data indicate that these teachers' beliefs about instruction are heavily influenced by their teacher education program.

Figure 4 shows the percentage of each subcategory of PPTs about the teacher and their sources. As can be seen in Figure 4, PPTs about the importance of teachers being lifelong learners who continue with their professional development have their source solely in the teacher education program, and two thirds or more of their PPTs about the need for planning and organization and qualities of a good teacher come from a combination of their teacher education coursework and from their observations and teaching experiences in their fieldwork.

However, these data also indicate that just more than half of their PPTs related to teachers' roles and responsibilities have their source in the teacher education program, indicating that our teacher candidates appear to enter teacher education with strong prior beliefs about the roles and responsibilities of teachers.



	Family/K-12 Education	Observations/ Teaching Experiences	Teacher Education (coursework, readings, theories)
General Classroom Environment	48%	37%	15%
Teacher/Student Relationships	45%	50%	5%
Respect	52%	26%	22%
Teacher Expectations	2%	23%	26%
Classroom Management	23%	50%	27%

FIGURE 5: Relationship Between PPTs About Classrooms and Their Sources

Figure 5 shows the percentage of each subcategory of PPTs about the classroom and their sources. As can be seen in Figure 5, about half of these teacher candidates' held PPTs we categorized as being about the general classroom as a learning environment (teacher/ student relationships, respect, and teacher expectations) came from their own family background and K-12 experiences. This seems to indicate that prior beliefs about the classroom are a strong influence on these teacher candidates' thinking before and during their teacher education program. However, their PPTs about classroom management have their source mainly in their own observations and teaching experiences and in their teacher education coursework. It is also interesting to note that very few of their PPTs about student/teacher relationships or about the general classroom learning environment have their source in teacher education coursework, although half of their PPTs about student/teacher relationships come from their own observations and teaching experiences during their field experiences.

Given that there were relatively few PPTs coded as focusing on students (38 out of 472), and no subcategories were identified within this content category, we refer readers to Figure 2 to see the sources of these teacher candidates' beliefs about the nature of student learning. In this study, the majority of the participants were prospective teachers with limited classroom observation and teaching experiences. Because participants' PPTs are greatly impacted by their personal experiences, it was believed that with more classroom experiences and more interactions with students, participants would likely develop more PPTs regarding students (e.g., Levin & Rock, 2003; Rock & Levin, 2002).

SUMMARY

This study provides data about the content of 94 teacher candidates' beliefs and the sources of those beliefs, based on their self-reported PPTs. Overall, these data show that teacher education can and does influence teacher candidates' beliefs during their teacher education program, especially their thinking about instruction and the importance of differentiation of instruction and using multiple instructional strategies. Along with the field experiences that we require, teacher education also has a strong influence on these teacher candidates' beliefs about the importance of professional development for teachers, planning and organization, classroom management, the qualities of a good teacher, and their beliefs about who students are as learners. The sources of other beliefs are fairly evenly distributed between their family background and K-12 experiences and what is learned during teacher education, including their beliefs about the importance of having good student–teacher relationships, mutual respect, having high teacher expectations, assessment, and the general classroom learning environment.

Implications for Teacher Education

This study calls into question the strongly held belief of many in the field of teacher education that we do not or cannot influence teachers' beliefs. These data show that teacher education programs can and do have an influence on teacher candidates' beliefs about important aspects of how to teach the curriculum, the classroom context, and their beliefs about the roles and responsibilities of teachers, planning and organization, the qualities of a good teacher, and who students are as learners. However, we also know that additional experience, during student teaching and beyond, and in different school contexts, influences teachers' PPTs (Chant, 2002; Chant et al., 2004; Clandinin, 1986; Cornett, 1990a, 1990b; McCutcheon, 1992; Pajares, 1992, 1993; Pape, 1992; Ross, 1992; Ross et al., 1992), so this study and our model show only what beliefs our teacher education program influences up to the semester before student teaching.

This does not mean that other things do not also contribute to the beliefs of prospective teachers and serve as filters for what they learn in their teacher education program. Nevertheless, we share this model so that other teacher educators might be assured that teacher education programs can influence teacher candidates' beliefs and so that we can consider why we seem to have more influence on beliefs about instruction and less influence on beliefs about who teachers are. The large number of preservice teachers involved in this study, the identification of the sources of their PPTs, and the linkages made between PPTs and their sources also contributed to the development of a model to represent the relationship between teachers' beliefs, sources of teachers' beliefs, and factors influencing changes in teachers' beliefs. Because the model was data driven, we recommend that others replicate our study.

In addition, this study describes another approach to study teacher beliefs that can be accomplished over time and on a large scale. Because of the personal nature of teachers' beliefs, it has been difficult to generalize based on studies of a few teachers' beliefs stated as PPTs (Chant, 2002; Chant et al., 2004; Cornett, 1990a, 1990b; Cornett et al., 1990; Ross et al., 1992), and for larger studies, it is challenging to analyze multiple PPTs and present any trends or patterns. However, the data analysis procedures used in this study provide an alternative approach to studying teacher beliefs. The data analysis map (Figure 1) makes replication of this study possible for other interested researchers. Our approach to qualitative data analysis and representation also illustrates a new way to represent the validity of qualitative analysis. Using a similar data collection and analysis approach, other researchers could build similar models to represent and then compare the beliefs of in-service teachers and teacher educators or of different groups of teacher candidates. A comparison of the content of PPTs with their sources and identifying the relationship among those three groups of participants would further shed light on the influence of teacher education on teacher candidates' beliefs.

At the local level, we intend to be more deliberate regarding our role in instructing our teacher candidates about the importance of assessment and having more discussion about the roles and responsibilities of teachers. We also plan to continue using the personal theorizing process (Chant et al., 2004; Cornett, 1990a, 1990b), as our students are very positive in their feedback about the value of articulating and assessing their PPTs prior to student teaching and subsequently creating an action plan to improve one of their PPTs during student teaching.

Limitations and Future Research

Nevertheless, a limitation of this study is that the data we collected are based on written self-reports and are not sensitive enough to pick up where teacher education coursework and field experiences may have either reinforced or changed prior beliefs, even though the participants did sometimes name more than one source for a particular PPT. It is also likely that some beliefs may be impervious to our influence during teacher education coursework or by their field experiences, or it may be that we are reinforcing prior beliefs during the teacher education program. Furthermore, without follow-up and a longitudinal study of these prospective teachers, we do not know whether or to what degree they will actually enact their beliefs, as stated in their PPTs. Observations of our participants' practices during student teaching and beyond are definitely needed to confirm actions that do or do not follow certain expressed beliefs.

Based on this study, we only know about the content of our teacher candidates' expressed beliefs and the sources of their beliefs. The model that we developed, along with previous research, predicts that teachers do operate on their beliefs, but it does not predict which beliefs will remain strong or which will get changed by the teaching context. Ultimately, to understand where our teacher education program impacts our teacher candidates' beliefs and their subsequent actions in their classrooms, and to validate this model, we need to follow these preservice teachers into the field, collect their PPTs at various points in time, and observe their actions in the classroom. In addition, we would like to replicate this study with more experienced teachers, and with teachers from programs other than elementary education, to see where there might be similarities and differences in both the content and the sources of different teachers' beliefs.

Conclusions

We have known for at least two decades that teachers' beliefs drive the pedagogical decisions about teaching and learning of both novice and experienced teachers and that their practices in turn influence the opportunities that students have to learn (e.g., Chant, 2002; Clandinin, 1986; Cornett, 1990a, 1990b; Pape, 1992; Richardson, 1996, 2003). We also read that teachers' prior beliefs serve as a filter to what is learned during teacher education and that teacher education is a "weak" intervention because of teachers' strongly held beliefs (Lortie, 1975; Kagan, 1992; Richardson, 1996, 2003; Zeichner & Liston, 1987). What we have not known prior to this study is exactly what teacher candidates' beliefs are based on more than a few case studies, what the sources of their beliefs are, and what the connections are between categories of beliefs and their sources as these relate to teacher education coursework and field experiences. This study not only attempted to provide an answer to those questions by developing a model to show the connection between beliefs and their sources but also offered an alternative way to approach data representation in the study of teacher beliefs by using PPTs.

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