At the crossroads of teacher knowledge and teacher efficacy:
A mutlimethod approach using cluster and case analysis

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Abstract

This study employed a multi-method research methodology to explore the relation of teachers’ efficacy to their pedagogical knowledge. Cluster analysis was used on data from 102 practicing teachers to identify profiles of teachers based on their knowledge and efficacy. Results from this analysis indicated a three cluster solution illustrating unique profiles that emerged. These clusters differed significantly with regard to knowledge such that there emerged high-, moderate-, and low-knowledge clusters. Only the high-knowledge cluster differed significantly from the other two clusters with regard to efficacy, specifically participants in the high-knowledge cluster had significantly lower efficacy than participants in the moderate- or low knowledge clusters. The qualitative portion of this study explored the relations that exist between efficacy and knowledge in the practice of specific teachers. This component of the study offered illustrative case analysis of three teachers. Four themes emerged as a result of the qualitative analysis. Emergent themes included: participants’ verbalization of efficacy beliefs, teachers’ beliefs about the nature and evaluation of teaching, knowledge and knowledge beliefs, the influence of perceived responsibility on efficacy. The results of this study offer support for the use of cluster analysis and qualitative methods in the study of teacher efficacy.
Teacher efficacy is related to many positive educational outcomes (e.g., Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998). However, little research has examined the nature of this construct in relation to pedagogical knowledge (see Fives, 2003 for a review). The few studies that have examined the relations of teacher efficacy and teacher knowledge focused primarily on assessing group differences and relations among variables using primarily analysis of variance (e.g., Campbell, 1996) and correlational analyses (e.g., Enochs, Scharmnn, & Riggs, 1995).

Further, despite calls for a more in-depth analysis of teacher efficacy via qualitative procedures (e.g., Coladarci, 1992; Hoy & Woolfolk, 1990), the use of qualitative methodology in teacher efficacy research is rare. The present study extends the existing literature in two significant ways. First, I employed cluster analysis procedures to profile practicing teachers based on their levels of demonstrated knowledge and teacher efficacy. Second, I used an in-depth interview approach to examine the cognitions of three teachers. Thus, I used instrumental case studies to “provide insight into an issue or refinement of theory” (Stake, 1994, p. 237). The purpose of these case studies was to develop an understanding of how teachers’ efficacy and knowledge contribute to or are visible in the practice of three teachers representing differing levels of knowledge and efficacy.

Literature Review

Teacher efficacy is defined as teachers’ beliefs in their abilities to organize and execute courses of action necessary to bring about desired results (Tschannen-Moran et. al, 1998). The construct of teacher efficacy has become a pillar in the research on teachers’ beliefs. The persistent interest in this construct lies in its continued predictive and relational power in
research on teachers and teaching. Teachers’ beliefs in their ability to perform tasks related to teaching have been and continue to be related to student achievement (e.g., McLaughlin & Marsh, 1978), student motivation (e.g., Midgley, Feldlaufer, & Eccles, 1989), teacher valuing of educational innovations (e.g., Cousins & Walker, 2000), classroom management skills (Woolfolk, Rosoff, & Hoy, 1990), and teacher stress (Greenwood, Olejnik, & Parkay, 1990). Tschannen-Moran and colleagues have proposed a cyclical model of the process by which teacher efficacy influences teachers’ decisions, goals, and persistence regarding pedagogical issues. This model was extended by Fives (2003) to incorporate the important aspects of teachers’ pedagogical knowledge and pedagogical beliefs in shaping teacher cognitions and subsequently teacher efficacy. However, little remains known as to the salience of these models for teaching practice, or as to the existence of emergent profiles related to teachers’ knowledge and efficacy.

Exploring the Relation of Teacher Efficacy and Teacher Knowledge

Raudenbush, Rowan and Cheong (1992) highlighted the important intersection between teachers’ efficacy and the knowledge and skills that are necessary to be successful. They contended that neither knowledge nor efficacy alone can generate effective teaching. Rather, these researchers emphasized the role of efficacy as a mediator between knowledge and action, such that efficacy provides the impetus for teachers to utilize their knowledge and skills in new situations and with persistence (Raudenbush et al., 1992). In this light, Raudenbush and colleagues (1992) saw positive feelings of self-efficacy as necessary, but not sufficient, for effective teaching. That is, these positive feelings produce a generative capability that will allow teachers to develop new teaching strategies, increase their effort, and extend their persistence in the face of difficult or uncertain teaching situations. Thus, these authors concluded that from
… this perspective feelings of positive self-efficacy cannot guarantee effective teaching, since teachers with high levels of perceived self-efficacy may lack the requisite knowledge or skills to be effective. But, low feelings of self-efficacy almost certainly work against effective teaching by decreasing teachers’ generative capability to cope with the uncertainties of classrooms (Raudenbush et al., 1992, p. 151).

The vast majority of literature on teacher efficacy has focused on two areas. First, and to a greater extent, researchers have investigated the relationship between teacher efficacy and desired educational outcomes (e.g., student achievement and teacher behaviors). To a lesser degree, researchers have looked at school and teacher characteristics related to and possibly contributing to teachers’ sense of efficacy (e.g., organizational effects, inservice training). Among this second category of investigations, often embedded in larger questions, some researchers have looked at the extent to which teachers’ knowledge is related to their efficacy beliefs.

The research that has investigated the relation between knowledge and efficacy can be categorized by the manner in which knowledge is addressed, focusing on educational level, explicit learning experiences, and measures of demonstrated knowledge. Each of these categories of studies is based on what I interpret to be an assessment of knowledge. Here I present a brief overview of these studies, for an in-depth analysis of this literature see Fives (2003).

**Education**

The first group, entitled “education” consists of those studies in which formal education was used as a proxy variable for knowledge in relation to teacher efficacy. In these studies, education was assessed as education level (e.g., Hoy & Woolfolk, 1993) or as courses taken (i.e., Enochs, Scharmann, & Riggs, 1995).

Three studies demonstrated a relationship between educational level and teacher efficacy (Benz, Bradley, Alderman, & Flowers, 1992; Campbell, 1996; Hoy & Woolfolk, 1993). Most
often, higher levels of education were associated with higher levels of efficacy. This may seem like a logical relationship. Individuals, who earn more degrees and gain more knowledge about teaching, feel more confident in their ability to teach successfully. However, these studies do not address two key concerns. First, there is no attention given to the personal characteristics that influence individuals’ decisions to pursue graduate study. It could be that these individuals had higher efficacy prior to investing in graduate work, and it was this higher efficacy that pushed them to learn more so that they could fulfill their own expectations.

The second concern is the assumed link, between education level and knowledge. The actual knowledge base and abilities of these individuals was not tapped, so a true understanding that more education leads to more knowledge and eventually to higher efficacy cannot be verified by this work. There could be other events that occur within the continuing education experience that are increasing efficacy unrelated to knowledge.

Enochs et al. (1995) explored the extent to which preservice teachers’ sense of teaching efficacy for science instruction was related to the coursework they had received. Specifically, they assessed 73 preservice elementary teachers’ efficacy for teaching science using the Science Teaching Efficacy Beliefs Instrument-B or STEBI-B, (Enochs & Riggs, 1990), as well as the amount of science education these preservice teachers had received at both the college and high school levels. Significant correlations were found between personal science teaching efficacy and the number of college science courses taken ($r = -.21$, $p<.05$) and years of high school science ($r = -.22$, $p<.05$). These negative relationships suggest that the more science classes taken in college and high school, the less personal science teaching efficacy was reported by these students.
Enochs et al. (1995) explained the negative relationship between science teaching efficacy and the number of science courses taken, by focusing on the manner in which sciences classes are taught at the secondary and college level. Namely, these courses are often taught in a traditional lecture format with a heavy focus on memorization, which is the antithesis of how preservice teachers are instructed to conduct science lessons in their education methods courses. Thus, according to Enochs et al. (1995), the students with more science courses, also had greater exposure to poor models of how to teach science that, in turn, served as a source for efficacy beliefs (vicarious experiences).

I would offer a second explanation for this difference, that is, the advanced level of these courses, in conjunction with the way that they are delivered, may inhibit preservice teachers’ beliefs in their ability to reconstruct this material for elementary school children. Further, these preservice teachers may not be able to see or make the connections between college level physics and a second grade unit on simple machines, because the two courses, while rooted in the same science, are at very different levels of understanding. The advanced courses in science may influence how these preservice teachers view the domain of science, such that their teaching efficacy beliefs are inhibited by their larger scope and understanding of the field. Their greater knowledge of the field may be informing their efficacy judgments, causing them to question their ability to best treat this content. Additionally this study highlights the reality that there are a multitude of other variables embedded in any educational experience that can also influence teacher efficacy.

Learning Experiences

The second category, learning experiences, outlines those studies that investigated specific, usually structured, experiences of teachers or teacher education students. These specific
learning experiences were defined in such a way so as to convey an expectation of specialized knowledge (e.g., experience teaching in an inclusive setting, Minke, Bear, Deemer, & Griffin, 1996). These studies have found that teachers (inservice and preservice) who are given explicit training or experiences with regard to unique teaching tasks tend to demonstrate higher levels of teacher efficacy for those tasks than their peers who did not have the same learning opportunity. One area where this work has been investigated is special education, specifically, teachers’ feelings of efficacy for teaching special needs children (Minke, 1996; Reid, Vasa, Maag, & Wright, 1994). Across these studies an influential relationship that seems to exist between specific training or learning experiences and teachers’ sense of efficacy.

Demonstrated Knowledge

Two studies explicitly investigated the link between demonstrated knowledge and teachers’ level of content specific efficacy. Schoon and Boone (1998) investigated the relationship between science teaching efficacy beliefs and knowledge of specific alternative conceptions in science. In a similar study Sciutto, Terjesen, and Bender Frank (2000) investigated the relationship between self-efficacy for teaching a child with ADHD and teachers’ knowledge of ADHD. These two studies illustrated the often assumed relationship between knowledge and efficacy, that greater efficacy is associated with higher levels of knowledge. Moreover, each of these studies revealed, to some extent, that there may be specific bodies of knowledge that are more or less important to efficacy beliefs within specific domains. Thus, it may be most appropriate to target interventions and instruction for preservice and practicing teachers at specific areas of knowledge and efficacy.
Present Study: Research Questions

The current study employed a multi-method research methodology to take advantage of the benefits of both quantitative and qualitative research designs. The quantitative analysis was used to identify profiles of teachers based on their knowledge and efficacy. The qualitative portion of this study sought to address the limitations of quantitative analysis, such as losing the individual among the larger sample, by investigating three teachers’ practices by means of instrumental case studies (Stake, 1994).

The present investigation forwarded two research questions: (1) What common groups of inservice teachers emerge based on demonstrated knowledge and teacher efficacy? (2) What relations exist between and among teacher efficacy, knowledge and pedagogical beliefs in the practice of specific teachers?

Part I: Quantitative Analysis

Methodology

Participants

The quantitative study included 102 practicing teachers. The teachers were identified through master’s level courses, professional development workshops, contact via district wide content coordinators, and through professional contacts within specific schools. This approach to data collection allowed for the gathering of information from a broad spectrum of teachers relative to their teaching experience, context (i.e. urban, suburban or rural schools), content area, and grade levels. The majority of these participants were female (77.5%). Participants primarily identified themselves as European American (77.5%) or Multiple Ethnicities (7.8%). Teachers from all grade levels were represented (35.3% elementary, 33.3% middle school, and 31.4% secondary school). These teachers taught in multiple school types including public (67.6%),
private-religious (18.6%), parochial (7.8%), public magnet (2.9%), charter (1.0%), and private-
nonreligious (1.0%).

Measures

Data were gathered from participants using a battery of questionnaires. The present study
utilizes the data gathered from only three of the instruments used in the overall data collection.
These measures included questionnaires assessing background information, teacher efficacy, and
pedagogical knowledge.

Background Information. Participants provided relevant background information. This
information included: their current position, previous experience, educational level, the types and
quantity of professional development pursued, as well as general demographic information (i.e.,
age, gender, and ethnicity).

Teacher efficacy. Teachers’ efficacy was assessed with the Teachers’ Sense of Efficacy
Scale (TSES) developed by Tschannen-Moran and Woolfolk-Hoy (2001). The TSES is a 24-
item, 9-point scale. The TSES is comprised of three subscales which assess efficacy for
classroom management, instructional practices, and student engagement. An overall score of
teacher efficacy can be calculated as the unweighted mean of responses to all of the scale items.
Tschannen-Moran and Woolfolk-Hoy (2001) reported means, standard deviations, and
reliabilities for responses to the overall scale ($M=7.1, SD=.94, \alpha=.94$), and the subscales
(instructional practices: $M=7.3, SD=1.1, \alpha=.91$; classroom management: $M=6.7, SD=1.1,
\alpha=.90$; and student engagement: $M=7.3, SD=1.1, \alpha=.87$). For the purpose of the present
study only the overall efficacy score was used. This was done to examine the emergent clusters
of teachers around their overall efficacy and demonstrated knowledge. Responses to this measure
yielded a mean of 7.12, standard deviation of .85, and a Cronbach’s alpha of .93.
General pedagogical knowledge. Teachers’ general pedagogical knowledge of instructional practices, classroom management, and student engagement was assessed with a 10-item multiple-choice measure. In the context of this study and this measure, I limited the conceptualization of teacher knowledge to respondents’ demonstrated achievement on a paper and pencil measure assessing the areas of instructional practices, classroom management, and student engagement. Further, the content of this measure was limited to what Shulman (1987) would call general pedagogical knowledge. Schulman’s (1987) conceptualization of general pedagogical knowledge includes those broad principles and strategies that “appear to transcend subject matter” (p. 8). For the purposes of this study, I focused on this general knowledge in the three areas assessed in the TSES in order to best understand the relation between this type of knowledge and teachers’ efficacy beliefs in those areas. Thus, this measure was developed to provide a direct assessment of respondents’ knowledge related to the instructional tasks examined in the TSES (Tschannen-Moran & Woolfolk-Hoy, 2001). Each item was created and then selected based on its ability to mirror a core theme from the TSES, as well as its quality as an assessment item (see Table 1 for sample items).

This measure was differentially scored such that the correct response was awarded 2 points, a second somewhat plausible response earned 1 point, and the two remaining incorrect and implausible responses received 0 points. The maximum score for this measure was 20, and respondents’ data yielded a mean of 16.32, a standard deviation of 3.01 and a reliability of .67.

Cluster Analysis and Results

Cluster analysis procedures were employed to profile experienced teachers based on their levels of demonstrated knowledge and teacher efficacy. The variables of teacher efficacy and demonstrated knowledge were selected for clustering due to their theoretical interest. Initial
clusters were formed using Ward’s minimum variance hierarchical clustering technique in order to minimize the within-cluster differences (Ward, 1963). This technique is considered to be useful in recovering the underlying structure of the data (e.g., Atlas & Overall, 1994; Blashfield, 1976).

Multiple steps were followed to identify the appropriate number of clusters. Graphical representations of the data in the form of dendograms were examined. Dendograms illustrate the largest gaps between cluster groups and suggest an appropriate number of meaningful clusters (Olson & Biolsi, 1991). The initial examination of the dendogram for this data set identified one participant who acted as an outlier due to a low knowledge score (8). Thus, this participant was dropped from the analysis. The cluster analysis procedures were applied to the remaining data set (n=101). The resulting dendrogram suggested three, four, or five cluster solutions to best represent the data.

Next, clusters for each of these potential solutions were created so that each cluster solution could be assessed. Multivariate tests indicated that significant differences existed among the clusters for each solution. Therefore, the between-subjects effects were examined. These tests revealed significant differences in demonstrated knowledge and teacher efficacy across the three solutions. Further, the post hoc tests for each solution indicated significantly different levels of demonstrated knowledge for each cluster across the three solutions. Differences in efficacy were not as consistent across the three solutions. However, within each cluster solution one group consistently had significantly lower efficacy than the others. Figure 1 illustrates this information for the three factor solution.

I used discriminant function analysis to validate the cluster solutions (Romensburg, 1984). In this step, the original clustering variables (demonstrated knowledge and efficacy) were
used to predict group membership. The extent to which these predictions were correct corroborated the validity of the solution. The three-factor solution successfully predicted cluster membership 98% of the time. Under the same conditions cluster membership could be successfully predicted 100% of the time for both the four-factor and five-factor solutions. Thus, each of these solutions could have been selected based on this criterion. For the purpose of this study, the three-factor solution seemed to offer the most parsimonious description of the unique profiles that emerged. In comparison with the other two solutions the three-factor solution seemed to best encapsulate the differences among groups of teachers without parsing differences too minutely. In both the four- and five- factor solutions difference in groups other than the high knowledge-low efficacy group also present in the three-factor solution were related to differences in knowledge only. Therefore, I determined that the three-factor solution with a high, moderate, and low knowledge groups best represented the data. Table 2 provides descriptive information of those cluster profiles.

I performed a one-way MANOVA with cluster membership serving as the independent variable and demonstrated knowledge and teacher efficacy as the dependent variables for the three factors that emerged. A significant multivariate effect was identified [$F(4, 194)=94.95; p<.001$]. Examination of the univariate tests indicated significant differences between the groups relative to demonstrated knowledge [$F(2, 98)=288.128; p<.001$] and teacher efficacy [$F(2, 98)=3.776; p=.003$].

Fisher’s LSD was then used in the post hoc analyses to examine how the clusters differed on each variable. Each of the cluster groups differed significantly ($p<.001$) with respect to the others on demonstrated knowledge. Those differences occurred such that the first cluster, high knowledge-low efficacy, had significantly higher knowledge than the other two groups.
Similarly, the second, cluster moderate knowledge, had significantly lower demonstrated knowledge than the first cluster and significantly higher demonstrated knowledge than the third cluster. Finally, the third cluster, low knowledge, had a significantly lower mean for knowledge than the other two groups. Thus, three groups were identified relative to participants’ demonstrated knowledge.

Examination of the post hoc test on teacher efficacy also revealed differences in efficacy between these groups. Specifically, teachers in the high knowledge-low efficacy cluster had significantly lower efficacy than teachers in the moderate knowledge \((p=.001)\) and low knowledge \((p<.05)\) groups. There were no significant differences between the moderate and low knowledge groups relative to efficacy.

*Discussion of Cluster Analysis Findings*

Examination of the identified clusters revealed that demonstrated knowledge provided the clearest distinction among these groups of teachers. However, while the mean scores for demonstrated knowledge differed significantly between these groups, the moderate knowledge group contained some members who scored as high on the demonstrated knowledge measure as teachers in the high knowledge-low efficacy group. Thus, the moderate knowledge group, while having an overall mean level of knowledge that was significantly lower than those in the high knowledge-low efficacy group also contained members who held similar knowledge levels with higher efficacy. This indicates that high knowledge is not always associated with the lowest levels of efficacy.

Still, the emergence of the high-knowledge low efficacy group raises several questions in the face of the current information provided in the literature on efficacy and knowledge which primarily associates higher levels of knowledge with higher levels of efficacy (e.g., Benz et al.,
How is it that a group of practicing teachers with the overall highest knowledge scores can also have significantly lower efficacy than the other emergent groups? The work of Enochs et al. (1995) offers some support for this finding. Preservice teachers with greater experience in science courses (a proxy for knowledge level) also had lower efficacy. I argue that the teachers who have the greater level of knowledge for general pedagogy may be using this knowledge to better ascertain the task of teaching, see this task as more challenging, and perhaps generate more tentative efficacy beliefs. In the case studies that follow I examined the relation of efficacy and knowledge in three high knowledge teachers, one of whom was from this high knowledge-low efficacy cluster. These cases serve to illustrate the relation of efficacy and knowledge in the practice of three specific teachers.

Part II: Qualitative Analysis

Methodology

Participant Selection

Three teachers were selected for case study analysis. These individuals were identified from the knowledge and efficacy profiles that emerged from the cluster analysis results. Across the three clusters, demonstrated knowledge was significantly different, while teacher efficacy was only significantly different between two groups.

Given one of the initial assumptions that guided this study was that teacher efficacy mediates the relation between knowledge and action (Raudenbush et al., 1992), I was interested in exploring the nature of efficacy in teachers with higher levels of demonstrated knowledge. An initial hypothesis guiding this study was that greater levels of knowledge would be related to higher levels of efficacy. However, this hypothesis did not emerge in the cluster groups. Instead the cluster analysis indicated that teachers with the highest levels of knowledge also tended to
have the lowest levels of efficacy. Therefore, I wanted to use case study analysis to better understand the nature of efficacy in the work of three high knowledge teachers.

I selected teachers with higher knowledge for three reasons. First, I believe that there is much to be learned from examining the practices and thinking processes of teachers who are knowledgeable of their profession. Second, I felt that teachers with greater demonstrated knowledge might be better able to articulate their thoughts and reasons for pedagogical decisions. Finally, by constraining these cases to one knowledge level, I was able to explore differences in this group across levels of efficacy.

The high knowledge cluster that emerged in the cluster analysis contained teachers with significantly lower efficacy than was demonstrated by the other two cluster groups. In order to examine efficacy differences among high knowledge teachers I therefore needed to draw from both the high knowledge-low efficacy and moderate knowledge clusters, to identify participants who demonstrated varied levels of efficacy along with relatively high levels of knowledge. However, in considering teachers for participation in this study I only included those teachers from the moderate knowledge group who had scored within the same range (demonstrated knowledge score \( \geq 17 \)) as members of the high knowledge group on the demonstrated knowledge measure. This way, the participants were similar with respect to knowledge.

In addition to the cluster analysis results, I was also interested in achieving maximum diversity among the teachers studied. Thus, every effort was made to select teachers who were different from one another relative to content area, grade level, years of experience, and personal background. This was done for two reasons. First, to limit the extent to which I as the researcher or readers of this work, might adopt an evaluative stance across the three teachers. That is, if I worked with three third-year, third grade teachers of differing efficacy levels I might,
inadvertently, begin to compare the teachers’ practice rather than focus on exploring their 
process and illustrating it in light of the current research questions. Second, this maximum 
diversity allowed for a greater exploration of the manifestation of demonstrated knowledge and 
teacher efficacy in teaching practice.

It is important to note that in addition to using the cluster analysis as a selection criterion, 
participant selection was also constrained by access concerns. First, only teachers who had 
indicated on the test battery that they would be willing to participate in this extension research 
(n=30) were considered. Second, several socio-historical events occurred in the region where the 
study took place that influenced school officials to limit access to schools. Therefore, selection 
was limited to teachers in schools (n=3) or districts (n=2) where permission to conduct this phase 
of the project was granted. Third, once potential participants (n=9) had been identified, they 
again had the option to rescind their offer to participate in this part of the study.

Access to Site

Participants from the high- and moderate- knowledge clusters, with varying levels of 
efficacy, who had expressed a willingness to engage in continued research, were contacted. 
Specifically, three teachers with high efficacy (efficacy > 7.5), three with moderate efficacy 
(efficacy > 6.7 and <7.5), and three with low efficacy (efficacy<6.7) were contacted by email. 
This email reminded participants of the study, explained the requirements of participating in this 
next step, and asked if they would be interested in going forward with the project. Five teachers 
chose not to participate. All teachers (n=4) who expressed a willingness to participate were 
included in the study. However, one of these teachers after learning more about the study 
requirements elected not to participate.
Participants

Three high knowledge teachers were included in this portion of the study (see Table 3). These teachers included Ms. Roarke, Mrs. Gilbert, and Mr. Lyons (pseudonyms). According to the cluster analysis the third participant, Ms. Roarke, was a member of the first cluster, high knowledge-low efficacy. Ms. Roarke taught fifth grade in a suburban Catholic elementary school who had taught for 11 years. Mr. Lyons and Ms. Gilbert were both in the moderate knowledge cluster. Mr. Lyons had taught for 18.5 years at the middle and high school level and who was currently teaching 9-12th grades English and yearbook at a large rural, public high school. Mrs. Gilbert had taught middle and high school French taught for 3.5 years in the same district as Mr. Lyons.

An initial meeting was set up with each teacher. During this meeting, I discussed the goals and procedures for the case studies. We also scheduled the observation and interview sessions. All interviews were audio taped and transcribed. In addition, I recorded extensive field notes during both the observations and interviews. The classroom observations relied solely on field notes, due to the stringent requirements for videotaping in classrooms.

Procedures

Role of the researcher. In this study, my goal as the researcher was to record and interpret what happened in the teaching context. Following each observation, an interview took place. The observations served as a starting point for those interviews. I used the observations to bring up salient points in each teacher’s practice and attempted to understand the thought processes and role of efficacy and knowledge in the pedagogical decisions these teachers made.

Data types collected. Three specific types of data were collected. These included classroom observations, participant interviews, observer reflections, and artifacts from the
classroom including student assignments. Three observations/interviews were scheduled and performed with each teacher. The goal of these observations was to witness teaching events relevant to teachers’ efficacy and the areas of knowledge under investigation (instructional practice, classroom management, and student engagement). These teaching events were then discussed with the teachers in terms of their efficacy and knowledge. These interviews served as the primary data source for this exploration. The interviews were semi-structured in nature (Fontana & Frey, 1994).

Data Analysis

A uniform process was implemented to analyze the data collected from each of the three case study participants. This process began with an initial transcription of the audiotapes of all data collected in that form (interviews and observer reflections). Next, I reviewed the interview transcripts while listening to the audiotapes. At that time I made some general notes. Then data were coded by emergent themes, themes were analyzed, and common trends identified. I used a constant-comparative process across the three case studies. This was done to ensure that analytical decisions were not based on one participant’s responses and simply applied to the others. Throughout this process I followed the coding guidelines suggested by Strauss (1987, p.30): 1. ask the data a specific set of questions; 2. analyze the data minutely; 3. frequently interrupt coding to write a theoretical note; 4. don’t assume the analytical relevance of any traditional variables such as sex, age, or socio economic status.

Coding was conducted at the concept level. Concepts have been defined by Sanders and Pinhey (1959) as words or clusters of words that group together to form meaning, which may be representative of the psychological constructs used as variables in a study. Interview transcripts and field notes were reviewed and each unique concept was given a label and associated letter.
One of the case participants was randomly chosen to be used in the development of the initial codes. As the data from this participant were reviewed, concepts were identified and labeled. During this process, I maintained a list of the concepts and their code letter. I also maintained a separate list of any notes made during this process.

Prior to moving on to the second case, the code list was typed and reviewed for parsimony. For example, at one point, the code list included concepts for “student developmental stage” and “knowledge of students’ abilities,” which seemed to be tapping into the same concept of knowledge about students. Next, this code list was used and expanded as data from the second participant were reviewed. Following the coding of the second participant, the code list was updated and applied to the data from the first participant. This pattern was followed so that all of the data were reviewed using a complete listing of codes that emerged from the data of all three participants.

A list of 50 codes resulted from the initial coding process applied to all three interviews. A copy of this complete list can be found in Appendix 1. Themes emerged based on the data that were collected. However, given the research question, concepts relevant to these teachers’ sense of efficacy and knowledge of pedagogy and content were sought. Thus, two important categories of codes included concepts about efficacy/confidence and knowledge. Here I focus on the information that best describes the individual participants and exposes their remarks relative to their efficacy and knowledge.

Case Study: Ms. Roarke

At the time these data were collected, Ms. Roarke was a 34-year-old fifth-grade teacher. She taught her class all subjects except science. Ms. Roarke had a Bachelor of Arts degree in elementary education and was pursuing a Master’s degree in administration and supervision from
a well-known college of education. Ms. Roarke had taught fifth grade for the previous 11 years in the same K-8 Catholic, parochial grade school. This school was located in a suburb of a major metropolitan city and served primarily middle-income Catholic families who belonged to the parish with which the school was affiliated. The student population was fairly diverse, including students of African, Asian, European, and Hispanic descent. Additionally, a few students were multilingual and were the first in their family to be schooled in the United States.

With respect to the quantitative measures used in this study, Ms. Roarke was positioned within the high knowledge-low efficacy cluster. She displayed a high level of demonstrated pedagogical knowledge by scoring a 19 on the demonstrated knowledge measure. However, she was below the mean with respect to efficacy, receiving a mean score of 6.79 for overall teacher efficacy, 5.80 for instructional practices, 8.25 for classroom management, and 6.50 for student engagement. When asked why Ms. Roarke decided to pursue her Master’s degree, she responded: “I don’t really know what motivated me to do it. Just something to do. And then I just, I don’t know, I liked it. So you know, I got into the program” (Interview transcript, May 19, 2003). She also described surprise that “a lot” of the content she was learning was on teaching strategies and being a better teacher. Further, she acknowledged that due to this focus in many of her classes, the program helped her to become a better teacher.

*Prevailing Disposition: Responsibility*

As I reviewed my interviews with Ms. Roarke, I noticed an overriding theme in each set of transcripts: responsibility. Throughout our discussions, Ms. Roarke continued to vocalize that she was responsible for student progress, behavior, and learning in her class. For example, in our first interview Ms. Roarke described a time when she attempted to implement a hands-on math activity with her class.
It was a complete failure…I don’t think anything’s a complete failure, because they still got something out of it. But in this activity I wanted them to use these blocks to build a hotel. And I wanted them to use multiplication to figure out how many blocks they needed. And instead they were actually building the hotel. They kept asking me for more blocks. And eventually, at the end, I was able to bring them around, to see how the multiplication worked. So if I do this again, next year, I’ll definitely have more rules. You know. Only 20 blocks. Because I guess I was helping them to be off-target because I kept giving them the blocks (Interview transcript, May 15, 2003).

In this short description, Ms. Roarke reflected on the experience of attempting a strategy that did not work as she had planned. Moreover, at the end of this reflection, we see that she accepted responsibility for the lack of success of the activity. In our second interview, Ms. Roarke reiterated this theme. The following is an excerpt of her response to my query of how she improves her own teaching.

I guess just always trying to find new ways to do things. You know, like if I give them a quiz, or even if I just ask them a question in class, and like they have no idea what the answer is. I mean that’s, that’s, I’m able now to see that that’s my doing. I need to do more. Or I need to get them to come up with this answer in a better way. I need to change. Whereas, I think, when you first start teaching, it’s more, why don’t they know this? You know, you know. Whereas now I take more responsibility for it. You know. Like, well, obviously I didn’t do something, that’s why they don’t know it (Interview transcript, May 19, 2003).

This theme of accepting responsibility for “failure” or less desirable outcomes of her pedagogical decisions continued throughout our discussions. Another example occurred when Ms. Roarke described implementation of the Jigsaw cooperative group technique. The first time she used this technique she felt that it really did not work. Yet, she attempted the technique again. She explained that the reason the technique didn’t work was because she need to “use it in a different way” (Interview transcript, May 19, 2003). Ms. Roarke concluded, “So, once again, it was, I didn’t do what I should have done” (Interview transcript, May 19, 2003).
In the preceding examples, we see Ms. Roarke reiterate a belief that success or failure of a strategy was due to her own actions. Ms. Roarke’s reflection on her practice is also visible in the preceding excerpts. If the strategy had not worked the second time, she stated that she would have to “re-think it,” demonstrating her tendency to reflect on her teaching practice.

**Efficacy and Knowledge**

*Efficacy.* Ms. Roarke expressed her efficacy beliefs most clearly when describing why she would not engage in a particular activity. In describing the various teaching strategies that she had learned in her Master’s program, she admitted that there were some strategies that, despite their perceived usefulness, she would not use. For example, Ms. Roarke stated that she would not want to try to “…things that I don’t think I’m any good at” (Interview transcript, May 13, 2003). She went on to explain:

> For example, multiple intelligences, that seems liked a really good idea, but there are areas that I’m so weak in myself, like music or that environmental one, that I just can’t see how I would bring it into the classroom. I see other people using them and I think that’s really good, but I just don’t see how I would do it (Interview transcript, May 13, 2003).

These statements demonstrate how Ms. Roarke’s belief in her lack of ability led her to make decisions about what she would not do in class. Ms. Roarke spoke with hesitation relative to her abilities. On my second day of observations, there was an incident in class in which two students were using their English grammar statements to tease each other. Ms. Roarke worked with the students, redirected them, refocused their attention on the content and substituted a new sentence. Yet, the student continued to press the issue. Finally, Ms. Roarke turned to the student, and simply stated “T---, that’s enough,” and returned to the lesson. The student stopped immediately, without complaint, and class continued. In our discussion later, I asked Ms. Roarke how confident she was that her asking the child to stop would put an end to it. She responded
“He, usually does, if I put it like that, he usually stops. I just hoped that he would – he usually does” (Interview transcript, May 19, 2003).

This situation was handled smoothly, with little effort. Yet, Ms. Roarke seemed hesitant in voicing her belief in her own ability to manage the situation. There seemed to be a theme in Ms. Roarke’s statements of her own ability, a theme of hesitancy. This hesitancy might also lead her to avoid challenges or tasks for which she was not confident in her ability to bring about a desired resolution. For example, Ms. Roarke expressed a desire to use group activities more with the class, but she felt constrained by the desks in the classroom. She would rather have tables so students could better move around. Then, after a few moments of reflection, Ms. Roarke stated:

I think, if I started in the beginning of the year, having them break into different kinds of groups and move around, then they would be able to do it. But to try now, in May or March, would just be a disaster” (Interview transcript, May 13, 2003).

Thus, while she felt able to work with the students and teach them how to move in and out of groups, she was hesitant in her belief that it would be something she could do this late in the school year. This statement might well be a reflection of her knowledge and understanding of fifth-grade students and her class in particular. However, it might also reflect a lack of confidence in her ability.

**Knowledge.** Ms. Roarke spoke of knowledge as knowledge of content matter and pedagogy. With regard to content or subject matter, there were two key ideas that Ms. Roarke expressed. First, that knowledge of content was important to teaching, and, second, that her own comfort with content matter was related to the subjects she most enjoyed and wanted to teach.

Ms. Roarke stated that she felt her knowledge of the content area had a large influence on the actions she performed in the classroom. Specifically, she revealed that the subjects she felt most comfortable with were also the ones she was more motivated or interested in teaching. She
Cluster and case analysis

stated that she felt her knowledge influenced her motivation, “…because, like for instance, reading, math, social studies, I really like to teach those subjects a lot more than I do some of the other subjects. Just because, again, I know more about it…” (Interview transcript, May 21, 2003). However, she also acknowledged that the converse was true, in that subjects she knew less about, she would spend less time on with class:

So, like even in math, for instance, like things that I, you know, know really well, we get more into in class, and like when we get to, you know, converting – you know – quarts to gallons, and all, pints to whatever, I mean that stuff, I still have a problem with it, so we don’t get into it nearly as much, and it is because I’m not as comfortable with it, so that’s [the impact of knowledge on motivation] a definite thing. I definitely think that it goes hand-in-hand. I never really thought of that (Interview transcript, May 21, 2003).

Ms. Roarke also expressed the belief that knowledge of pedagogy might help to make up for a lack of content matter knowledge. She stated that if one were not familiar with the content then knowing the different strategies was “…definitely helpful. Because, again, some of the strategies put a little more on the students to learn things. So it’s kind of, some of the pressure is taken off of you, if you know the different strategies to use…” (Interview transcript, May 19, 2003).

Summary

Ms. Roarke demonstrated: a sense of responsibility for the events that occurred in her classroom; varying degrees of confidence that might influence her pedagogical decisions; persistence in re-evaluating her own teaching and in implementation of strategies; and, beliefs in the importance of the relation between knowledge and motivation. She demonstrated a willingness to try new strategies, along with a hesitation or avoidance of content about which she felt she had little knowledge or could not implement herself. Additionally, Ms. Roarke identified her own criterion for evaluation of good teaching as the extent to which students learned, where learn meant to transfer or apply information to another area or real life situation. Ms. Roarke
described her teaching with the statement: “I don’t always, you know, consider myself a good teacher, but sometimes I’m pretty pleased with what I do, and that they learned it” (Interview transcript, May 19, 2003).

**Case Study: Mrs. Gilbert**

At the time of data collection Mrs. Gilbert was a 48-year-old French teacher. This was Mrs. Gilbert’s fourth year as a full-time teacher. However, she had substituted extensively prior to becoming a teacher, had taught English as a Second Language for adults, and had developed and implemented an after-school program for elementary school children entitled, “French is fun.” Her current position as a French teacher required her to work in three separate schools each day. She taught three classes of eighth-grade French in two middle schools, as well as French 3, 4, and 5 in a large high school. To accomplish this teaching load Ms. Gilbert traveled between all three schools each day.

Mrs. Gilbert was employed by a rural county with a fairly homogeneous student population relative to socioeconomic status and ethnicity. The county office had determined that foreign language in eighth grade was for advanced students. Thus, all of the middle school children in her classes, with the exception of a few, were considered by their schools to be at an advanced level.

Mrs. Gilbert held two Master’s degrees, one in Administrative Science, her first career, and a second, more recent, Master’s of Education. She had pursued a continuing education program in reading in the content area, and was a member of the American Association of Teachers of French, the local conferences of which she attended annually.

With respect to the quantitative measures used in this study, Mrs. Gilbert was positioned in the moderate knowledge cluster, although her score (17) on the demonstrated knowledge
measure was equal to that of some participants who were placed in the high knowledge cluster. Thus, she is considered to hold a high level of knowledge. Additionally, she responded to the efficacy measure such that her overall mean was 7.42, with 8.38 for instructional practices, 7.63 for classroom management, and 8.38 for student engagement.

*Prevailing Disposition: Enthusiasm and Motivation*

Throughout my interviews and observations of Mrs. Gilbert, two themes were prevalent. First, she demonstrated a great deal of enthusiasm for teaching in general and French in particular. Second, her comments revealed a focus on student motivation.

Mrs. Gilbert’s discussions of her class activities, students, and content area were infused with a sense of enthusiasm and excitement. In our second interview, I asked Mrs. Gilbert what she found most enjoyable to teach. Her initial response was, “I love teaching stuff about culture.” This was elaborated on to include a host of topics, and clearly demonstrated the enthusiasm she has for French:

Most enjoyable? I love teaching stuff about culture. You know, related to art, related to history, related to ways of life. I like teaching vocabulary. I like, you know, I love teaching like talking, dialogue, speaking…The thing I don’t enjoy teaching as much is grammar, although I’ve learned how to make it fun at this level, like the S, S, Nothing, Ons, Ez, Ent and then you say it, SS, you know, say it the way we said it, real fast. (Interview transcript, May 22, 2003).

Thus, Mrs. Gilbert demonstrated enthusiasm for multiple components of French instruction. Further, even the content that she felt was less enjoyable to teach she described with enthusiasm, and she focused on developing an entertaining means for her students to learn the material.

What seemed to underpin her approach to the classroom was a desire to instill in her student the same love of the French language that she held. In fact, in our first interview she stated “…I want them to love French, and love my class, because if they do, they’re gonna do better…” (Interview transcript, May 20, 2003). Her responses further indicated that this need to
motivate her students was a prevailing force in her classroom decisions. Mrs. Gilbert said that for her, one of the hardest things to learn about teaching was “…No matter how hard you work and how much you try to motivate them and make them like it, there are gonna be some kids who still don’t like it” (Interview transcript, May 22, 2003). This goal of motivating students was highlighted in her elaboration of the previous statement with the following comments:

> It’s not whether they do well or not, ‘cause some, some have more ability than others, some work harder than others. But I really want them to like French more than anything, and like, and love learning French. And when some still don’t, I find that, that makes me sad. (Interview transcript, May 22, 2003)

Mrs. Gilbert’s desire to instill a joy of learning French in her students also guided several of her pedagogical decisions. For example, to help her middle-school students best learn the vocabulary for directions (e.g., right, left, stop, etc.) she employed games. One afternoon she took each of her French classes outside to the field adjacent to her portable classroom, and took on the role of Napoleon leading the troops. The students marched, turned, stopped as Mrs. Gilbert called out and mimed the instructions. When I asked why she chose to incorporate this activity, Mrs. Gilbert responded that in addition to addressing students’ kinesthetic skills, that “the concept, was fun…it was not much time… but it got them motivated about it… today was to keep them coming back. They want to do more of it now, I’m sure…” (Interview transcript May 20, 2003). Therefore, this belief that if the students enjoyed the class they would want to learn more seemed consistent throughout Mrs. Gilbert’s responses.

Mrs. Gilbert offered some qualifiers that suggested that making it “fun” was not always the critical factor. In particular, when describing her upper-level French classes she acknowledged, “I just haven’t had time to make complicated grammar fun….and they’re really supposed to be an independent study course…They’re very mature students, and it’s supposed to be like a college course, and you don’t have to make it all fun…But I still try” (Interview
Mrs. Gilbert also recognized that some of her activities, like marching with Napoleon or driving the car on the map, needed to be “saved” until the end of the year. “You don’t want to use up all your best tricks at the beginning” (Interview transcript, May 20, 2003).

**Efficacy and Knowledge**

_Efficacy._ Mrs. Gilbert exhibited a moderate to high sense of efficacy on the quantitative measures that was echoed in her responses and comments throughout the interviews. Mrs. Gilbert voiced her confidence in her teaching abilities in more evaluative terms than what would typically be classified as efficacy statements. For example, I asked Mrs. Gilbert what topics she felt she taught the best. She responded, “Ah, boy. I think, I think I teach everything well, and that when they test, they seem to do really well on all parts of it” (Interview transcript, May 22, 2003). Mrs. Gilbert elaborated on this statement and averred, “I think what I do that’s better maybe then some other teachers is the speaking part, ‘cause I’m so comfortable speaking French fluently that I probably do that better than a lot of people” (Interview transcript, May 22, 2003). This extended statement provides some efficacy information, if “I’m so comfortable” can be interpreted to mean “I’m able to.” That the part of French instruction Mrs. Gilbert considered herself best at teaching was also an area that she was able to do and was comfortable with suggests efficacy beliefs.

Mrs. Gilbert’s enthusiasm appeared to be intertwined with her efficacy beliefs. For example, we discussed at length a project she was conducting with her French 5 students who went to a local second-grade class and taught several French lessons to those second-grade students. I was particularly interested in how Mrs. Gilbert was confident of her ability to
 orchestrate this activity during her first year working with this particular class and group of
students. I asked about this specifically in our third interview and her response was:

I didn’t even think about it. [pause] I mean, I’ve been in the elementary school, and, they
know these kids are students and that they haven’t taught before. But second graders are
very nice little people, and happy-go-lucky, and their own teacher’s gonna be in there
too, and I just, I know it’ll be okay.

I was surprised at Mrs. Gilbert’s opening response, “I didn’t even think about it,” to my
question of how she was so confident that this project would work. She quickly explained the
various reasons why she felt she did not need to feel concerned. However, I think her initial
response was probably the most telling: “I didn’t even think about it.” Mrs. Gilbert thought of an
idea that she felt her students would enjoy (two student in this class were planning on becoming
teachers) and benefit from and began planning. Mrs. Gilbert contacted the principals in each
school, wrote a proposal for the activity to the county, trained her students on how to write a
lesson plan, state objectives, and employ multiple intelligence theory. She had them give mock
lessons in class prior to going to the elementary school, and she planned to be there on the first
day of this three-day adventure. Each of these steps was important to ensuring that this activity
was successful and safe. Yet, it never occurred to Mrs. Gilbert that it might not work out.

Even when the mock lessons were scheduled for senior cut day and one of the students
was an hour late and one pair was clearly ill-prepared for the upcoming week, Mrs. Gilbert
remained confident. She reflected:

It’s pretty much what I predicted. The two who haven’t prepared are the ones who always
have problems, the one who was late and all, who’s been problems all year. … I’m more
concerned about them. The other three, the two of them, the blond girl, M----, and the
one who went last, H----. They both want to be teachers. … And the last one, too, she has
taught in summer camp, so she’s familiar. But K----, the redhead, she’s younger than they
are. She’s only a junior, but she has such an ebullient personality…she’s just gonna be
able to pull it off, …The other two I’m not so sure about. But they’re gonna be with a
very experienced teacher, … so that if things get low or something, I’m sure the teacher
will find something to do with them. (Interview transcript, May 23, 2003).
Mrs. Gilbert’s confidence seemed to rest on her belief that most of the students would be fine and in the abilities of the second-grade teachers should anything go wrong. She stated previously that it did not matter if the second graders met the objectives. This was just a diversion for the end of the year that might well have some really good educational outcomes. This type of disposition toward the project might have helped to strengthen her overall confidence. The expectations described were easily met, so Mrs. Gilbert’s confidence could easily remain high. It is also important to note that she tended to focus on the strengths of the situation (e.g., the three students who were going to be fine) and gave less attention to the problems (e.g., two who were not prepared).

A similar pattern was observed in her discussion of a Napoleon marching activity she conducted with two of her French 1 classes. She took the students outside, acted as Napoleon and required the students to march according to her instructions – thus furthering a lesson on giving directions in French. When I asked why she chose to do this activity during the last three minutes of each class, she stated that it was a motivating activity and that the students would learn from it. But, she also made clear that she did not do this activity at the other middle school where she teaches, because it was a long walk to get outside and “they’re [the students] not really well-behaved, and I know I would have had kids off-task and stuff like that” (Interview transcript, May 20, 2003). She concluded that she based her decision to use the activity on her knowledge of her students, that it would be a motivating activity, and that she knew they would learn from it.

Mrs. Gilbert evaluated the activity based on her observation of her students, stating:

…the second group, even more, was following exactly what I said. People were smiling. The first group, someone said, “Oh, this is gonna be fun, I can’t wait.” … I knew I wasn’t gonna get much learning in. We only did it for, what, three minutes. … So it was kind of
like more motivational ... I knew I wasn’t going to get a lot of learning in, in three minutes, but. But they’re pretty bright. Some of them will remember some of that. And the more you hear it, the better it is (Interview transcript, May 20, 2003).

Thus, even while Mrs. Gilbert conceded that completing the activity that afternoon was more motivational than instructional, she still maintained that the students were bright and some would remember the experience.

Mrs. Gilbert also expressed a desire or willingness to accept challenges. For this school year, Mrs. Gilbert had been offered an opportunity to continue to teach French 1 at three middle schools or to change her schedule and take French 3, 4, and 5 in the high school. Despite the problems she anticipated having with grammar, she felt confident about literature, reading the students’ work, and speaking. Moreover, she was certain she knew more than her potential students, and stated “I wanted the challenge. ‘Cause I knew I’d get more from it, too” (Interview transcript, May 20, 2003).

This willingness to accept challenges was also borne out in her acceptance of a full time high school position for next year. She agreed to give up her advanced homogeneous middle school French 1 classes, which she has taught for three years, in exchange for heterogeneous high-school classes of French 1 through 5. Mrs. Gilbert expressed some concern about her ability to meet the needs of a group of diverse learners, but had already established a game plan. She had made arrangements with a Spanish teacher at the high school to “drain her brain” this summer. Mrs. Gilbert planned to quiz this highly experienced and successful teacher on how to best work with these students.

Underscoring Mrs. Gilbert’s willingness to accept challenge seemed to be interest in the topic and curiosity. If given the opportunity to teach any class any subject other than French, Mrs. Gilbert expressed an interest in teaching history or reading, stating how much she loved
both subjects. “I love history. It was always my best subject in school” (Interview transcript, May 23, 2003). She also stated that she could not teach mathematics, art, music, or most sciences. Interestingly, she agreed that she could teach business, in which she had a Master’s degree, but that she had no interest in it, “…I think it’s boring. I don’t think I’d want to do it” (Interview transcript, May 23, 2003). Mrs. Gilbert’s curiosity was revealed when she described her interest in working with special education or really low ability students.

… I would like just the experience of working with special ed, I don’t think I’d be really good at it, maybe, but I’d like the experience of it, to see, and I wouldn’t mind working with a very low ability class, too, on something, I’m not sure a foreign language is the right thing, but something, just to get a feel for that, to get some experience. I guess I’d want to do it more for the experience, to see what it’s like. Because I’ve never worked with really low kids before (Interview transcript, May 23, 2003).

From these remarks, Mrs. Gilbert revealed that she was willing to accept challenges and that she was often guided by her interests despite her knowledge level. For instance, she stated that she had no desire to teach business, a topic for which she had knowledge but no interest. In contrast, she was very interested in working with a special needs population, despite her lack of training and belief that she might not be good at it. Thus, her responses revealed curiosity, confidence, and a willingness to engage in pedagogical risk-taking.

Knowledge. Mrs. Gilbert expressed the belief that organization, child psychology, and subject matter knowledge were vital to successful teaching. Specifically, she stated that planning well and being organized are crucial components of teaching, but did not elaborate on this point. Instead, she turned her attention to knowledge of students. Throughout our discussion, Mrs. Gilbert referred to her students, their talents, needs, and common traits as the basis for her decisions. When she articulated knowledge of children as a necessary component of a teacher’s knowledge base, this fit well with the presentation of information she offered. Mrs. Gilbert stated, “I think you have to know something about child psychology, and how kids operate. I
mean, if you’re clueless towards children, and what motivates them and what they like and what they don’t like, I don’t think that’s gonna work” (Interview transcript, May 22, 2003).

Knowledge of subject matter was articulated as important by Mrs. Gilbert and was often a recurring theme in her discussion. The lack of knowledge, specifically of sophisticated French grammar, often seemed a source of trepidation. This trepidation is revealed in her statement about teaching grammar to her higher level students: “So, that’s why it’s harder, I guess. ‘Cause I don’t know it 100%” (Interview transcript, May 22, 2003). However, Mrs. Gilbert also contended that lack of knowledge was not the real problem; instead, she felt it was a lack of time. “I wish I had more time to like, [study] some particular points of grammar, just study them myself, more. But I put in like 2 to 3 hours a night, anyway, on all my work and I just can’t do any more” (Interview transcript May 20, 2003). These comments do not offer a clear view of how Mrs. Gilbert interpreted the meaning of the word knowledge. She claimed that she wanted more time to study the grammar, but that the problem was not a lack of knowledge. It could be that she discriminated between knowledge as understanding the content, which she most likely did have, and knowledge as being able to articulate the content freely without hesitation. Regardless, she only made these types of statements relative to her knowledge of complex grammar necessary for the upper-level classes. In fact, she expressed the belief that she was quite confident teaching all areas of French 1: “Gosh, I know so much more than they do.” (Interview transcript, May 20, 2003).

When asked which area of French she most enjoyed teaching, Mrs. Gilbert responded, culture, and gave the following reason. “Because I know a lot about French culture, because I, lived in France a year and a half, I traveled all over Africa for my past career” (Interview transcript, May 22, 2003). Additionally, Mrs. Gilbert shared with me that her students have also
been impressed with her knowledge of culture. “The kids have said to me, they, like at the upper levels, ‘You know culture a lot, Mrs. Gilbert.’ They remarked that to me. They felt I was very strong in that area” (Interview transcript, May 22, 2003). So for Mrs. Gilbert there seemed to be a connection between the subject she most enjoyed teaching, her estimation of it as something she did well, and her knowledge of that particular content area.

Summary

Ms. Gilbert’s excitement and enthusiasm for teaching might be rooted in the fact that this was her fourth year of practice after waiting 27 years to fulfill this dream. Teaching was something Mrs. Gilbert wanted to do when she first graduated college in 1976, but she was told the market was glutted and, therefore, did not go into the field. Five years ago, after working at many jobs such as: a bilingual secretary, a full-time mother, a real estate agent, and an adult English as a second language instructor, Mrs. Gilbert decided to go back to school to become a classroom teacher. The result of this decision to teach was clear in her statement, “And I love it! I love it more than anything I ever did. It’s like oh my gosh…My whole life is teaching. You know, that’s my life right now” (Interview transcript, May 20, 2003).

Case Study: Mr. Lyons

When I met Mr. Lyons, he was a 53-year-old high school Yearbook and English teacher, as well a Chair of his school’s English department. This was Mr. Lyons’s nineteenth year of teaching, during which time he had taught a number of courses at the high school (e.g., English 1, Advanced English 1, American Literature, the Bible as Literature, and Yearbook) and middle school level (English, Social Studies, Mass Communications and Yearbook). Mr. Lyons, like Mrs. Gilbert and Ms. Roarke, attained a high score (17) on the demonstrated knowledge measure of the quantitative test battery. However, Mr. Lyons reported a high overall efficacy score (8.79)
with equally high response for instructional practices (8.90), classroom management (9.00), and student engagement (8.33). Based on the cluster analysis procedures he was in the moderate to high knowledge group with Mrs. Gilbert.

Mr. Lyons held a Bachelor’s degree in English and a Master’s of Science in Curriculum and Instruction. He reported having pursued continuing education in real estate and property management, and attended at least one or two professional conference or workshops a year. He described these conferences as “anything on brain-based learning.”

The high school at which Mr. Lyons taught was located in the same rural community as Mrs. Gilbert, approximately one and a half hours from two major metropolitan centers. This high school was one of three that served this community and had a large student population. The school served a fairly homogeneous group of students with respect to their ethnic backgrounds. However, these students did vary relative to socioeconomic status.

Mr. Lyons taught two classes at this school and was Chair of the English department. He taught a semester course on Yearbook for students in grades 10-12. In conjunction with this, Mr. Lyons also supervised several students on an independent study for the purpose of creating the school’s first-ever interactive CD, yearbook supplement. Mr. Lyons also taught one section of Advanced English 1 for freshmen.

*Prevailing Disposition: Confidence*

Mr. Lyons exuded the confidence born from almost 20 years’ experience in teaching. He had worked with middle school and high school students as an English and Mass Communications teacher for the majority of his adulthood. Whether discussing teaching, his teaching process, or the learning of his students, Mr. Lyons revealed a deep level of confidence and motivation for his ability to successfully fulfill his role as teacher based on his own
experience and lessons learned. In our first meeting together Mr. Lyons described his motivation and attitude towards teaching and life.

I’m an extremely motivated person. I get here at five o’clock in the morning, and I don’t leave until four or five. Why? Because that’s what you have to do. I don’t do it because, I’m not bragging, that’s not, that’s not it, you know. What I’m saying, it’s, I’m stating it to you factually. If it’s what you have to do, if it’s what you perceive has to be done, then that’s what you have to do, period. And it’s as simple as that. You know, I base my whole, I base my whole reasoning of anything I do on exactly that. (Interview transcript, May 6, 2003)

This statement revealed the commitment Mr. Lyons had to his position as a teacher. Moreover, it reflected Mr. Lyons’s general disposition toward his work. As Mr. Lyons discussed teaching in general and his own work in particular, two themes emerged: first, the overriding conviction that perceived need should guide instruction and second, a sense of confidence that he could meet the needs that appeared before him.

When asked what guides the pedagogical decisions he makes in the classroom, Mr. Lyons answered succinctly, “Perceived need” (Interview transcript, May 6, 2003). He explained that what guided his choices in the classroom was not the curriculum guide or a formula identified by the state, although he did refer to these sources. Rather his decisions were based on the needs of the students he was teaching. For example, Mr. Lyons explained that his advanced English 1 students were very strong in grammar (e.g. parts of speech and sentence structure). So at the beginning of the year, he skipped that content area. Instead, he focused on their analytical skills and interpretation of texts.

This was Mr. Lyons’s first year as the Yearbook teacher/moderator, and he had made many changes in how things were done, again based on what he perceived as the needs of the students and to prepare them for the future. For example, he garnered funds from the administration to replace all of the computers with new personal computers. Additionally, he
decided to institute a new component to the yearbook—an interactive CD supplement. He gave two reasons for this decision. The first reason was that the interactive CD was the wave of the future, was more economical than the traditional yearbook supplement, and it allowed for as many as 1,800 screens. Mr. Lyons also provided a second answer.

...because it’s there, because it’s like a mountain, you know, you climb it. You know, if you have ability as a climber then, you know, you should be looking at things that are gonna refine your abilities, and that are gonna challenge you, they’re gonna challenge me as a teacher, they’re gonna challenge these kids. Kids who are challenged, kids who are engaged, truly engaged at something, are going to learn something (Interview transcript, May 6, 2003).

These examples revealed the marriage between pedagogy and confidence in Mr. Lyons’s teaching process. He described himself as motivated, as a challenge-seeker. But, for every challenge he identified that affected his classroom practices, there also existed a logical, thought-out pedagogical purpose. Further, Mr. Lyons’s comments revealed a deeply rooted belief that people are in a constant state of formation, and that we must continually seek to improve ourselves. He stated that he did not want to feel comfortable because comfort or complacency “...is an academic killer. I think it’s an intellectual killer. I think it’s a psychological killer” (Interview transcript, May 20, 2003). The statements he made about himself as a teacher, looking for new challenges, changing schools or subject matter every five years, demonstrated his commitment to ensuring that he would not experience complacency.

Efficacy and Knowledge

Efficacy. Of the three teachers I observed and interviewed, Mr. Lyons demonstrated the highest efficacy on the quantitative measures ($M=8.79$). Thus, the prevailing disposition of confidence and challenge seeking described in the previous section seemed to coincide with his reported efficacy beliefs. One of Mr. Lyons’s most telling efficacy statements was quoted above,
“…you know, if you have ability … then … you should be looking at things that are gonna refine your abilities, and that are gonna challenge you …” (Interview transcript, May 6, 2003). With this statement, Mr. Lyons seemed to highlight the traditional view of self efficacy: if you can do it, if you are able, then you identify and seek challenging tasks. Here Mr. Lyons couched the efficacy statement with “should.” However, the strength with which this statement was made, in concert with Mr. Lyons’s other statements, supports the interpretation of “you should” as “you do,” or at least as something he did.

Throughout our conversations, we talked about Mr. Lyons’s recent pedagogical decisions, long-term plans for the students, and goals for his own career. During these conversations, Mr. Lyons’s efficacy for fulfilling his role as teacher was evident. His classroom decisions were based on what he felt would work best for his students, regardless of the challenge, effort, or flexibility he needed to exert in order to make the experience effective for his students. This belief was demonstrated in his Advanced English 1. First, Mr. Lyons decided to have the students translate Act II of Macbeth themselves in small groups. Mr. Lyons described his reason for implementing this activity.

…learning takes place across a broad range of situations and contexts, and that this, today, was probably more of a learning experience than the three or four days we’ve been looking at Macbeth than they’ve had up to this point. And that for them to put together Act II, scene by scene, act it out for one another, you know, in the manner in which they’re doing it, is gonna have a lot more power (Interview transcript, May 15, 2003).

What this statement did not reveal was the effort Mr. Lyons exerted during class to assist the students with this assignment. For the 30 or 40 minutes the students engaged in this activity, Mr. Lyons never sat down, responded to the same question from different students multiple times, and maintained an awareness of the each groups’ progress.
Second, about 20 minutes into the activity, Mr. Lyons realized that he would need to adjust his schedule, because the assignment was going to take longer than he had planned. What he had intended to be a two-day activity (i.e., translate one class and act out in the second class) ended up taking four days to complete. Mr. Lyons could have chosen to end the activity early. Instead, he persisted and continued to help the students to develop a deep understanding of the play. I felt his persistence was rooted in two beliefs. First, he believed that this activity was an important opportunity for the students’ learning. Second, he recognized his own ability to alter plans, make adjustments, and provide the extra support the class seemed to need.

Mr. Lyons expressed a low-efficacy belief only once in our conversations. I asked him to contemplate how he would respond to the hypothetical situation of being assigned to teach first grade in the fall. Mr. Lyons offered a quick and decisive response.

I won’t do it. I’m not trained to do it, number one, I have no desire to do it, number two, don’t have the expertise to do it, and I think all those things put together would conspire to make me not have a very successful experience in doing it (Interview transcript, May 27, 2003).

This response demonstrated the integration of interest (desire) and ability (expertise) in formulating Mr. Lyons’s reaction. What is unclear is which, if either, held greater sway over Mr. Lyons’s decision. If Mr. Lyons had expertise but not interest, or the reverse, would his response have been different? Mr. Lyons’s addendum to his refusal to teach first grade suggested that he was open to change if it was within his area of expertise.

…if they came to me and said, well, you know, you’ve taught yearbook and Advanced English 1 for the past three years, what we need you to do is teach yearbook, but we want you to teach Brit Lit, or we want you to teach a Survey of American Lit, I’ll do that. Matter of fact, I am doing it next year. So I’m not averse to change, but that’s, that’s just – it doesn’t make sense. It would go beyond my training. The classes that I have taken, the studies that I have undertaken were all about the adolescent mind, and not about the pre-adolescent mind (Interview transcript, May 27, 2003).
Thus, his decision to take on new tasks was framed within his existing areas of expertise, areas for which he had knowledge, training, and experience. Moreover, when stating that he would not teach first grade, Mr. Lyons commented that his lack of desire, training, and experience would conspire together to ensure a less than successful experience. In contrast, teaching an alternative course in his area of expertise was a welcome and sought-after experience. This demonstrated the importance of knowledge of content and students for Mr. Lyons’s feelings of efficacy and, in turn, his likelihood to engage in particular teaching tasks.

Knowledge. Mr. Lyons articulated three areas of knowledge that were necessary for successful teaching: knowledge of students, knowledge of content, and conditional knowledge or timing. Mr. Lyons expressed the belief that knowing one’s students well was a critical component in teaching. He described this as knowledge of the particular learners in the classes to be taught rather than a more general sense of the students’ developmental stage. He cautioned that knowledge of students was something that changes every year. However, he argued that the means by which you learn about those students did not have to change. Mr. Lyons suggested that there were instruments in place (e.g., preassessments) that could be used to identify what the students need.

The second knowledge area Mr. Lyons felt was critical in teaching was knowledge of subject matter. He stated, “... I think it’s very important. You know the more specific your knowledge can be the more effective you can be as a teacher” (Interview transcript, May 27, 2003). Mr. Lyons also expressed the belief that the more knowledge he had of a subject, the better able he was to teach it. As he stated, “...the more one understands something, the more approaches there could be to, you know, help someone else gain an understanding of it...” (Interview transcript, May 20, 2003). Mr. Lyons identified subject matter knowledge as critical
to learning, but also cautioned that how one used that knowledge was also important to the teaching endeavor.

The final area of knowledge Mr. Lyons described as important was timing.

…knowing when to keep going with something, when something is really going well and it’s really, you know, continuing, or when to stop, cut bait, and go on to another thing. Even if it’s, even if it means you abandon something you made great plans to do, … that’s something very difficult to learn, but, again, very essential (Interview transcript, May 27, 2003).

Mr. Lyons described this notion of timing as “everything.” He highlighted the importance of a teacher being willing to change plans and adapt to the needs of the students. This was a belief he himself demonstrated in practice with his own class, when he extended the translation of Act II to meet the abilities of his students. Mr. Lyons also acknowledged that this was not an easy skill to learn and was probably something that could not be taught in school. Still, it was essential for successful teaching.

Summary

Of the three teachers interviewed Mr. Lyons had the most experience and demonstrated the greatest degree of confidence in teaching. He was not only willing to take on challenges but often sought them out, guided by the belief that complacency was a killer of his professional growth. Further, Mr. Lyons expressed the belief that if he perceived a need and had the ability, then he had no choice but to step in and complete the task.

However, in the face of this confidence and practical approach, one should not ignore Mr. Lyons’s genuine love of teaching. He expressed enjoyment of what he does, anticipation for going to school each day, and a willingness to put in the hours he believed necessary to teach his students well. Mr. Lyons described his perspective on the teaching experience and the ability to
motivate students: “...the extent you can find things that all kids would be interested in, yeah, it’s great. There’s a lot of magic there” (Interview transcript, May 15, 2003).

Emergent Themes

Several themes emerged as a result of this investigation. The first theme emphasized participants’ verbalization of efficacy beliefs. The second theme that emerged reflected these teachers’ beliefs about the nature and evaluation of teaching. The third theme that emerged centered on knowledge and knowledge beliefs. The fourth theme identified the influence of responsibility acceptance on efficacy beliefs.

Verbalizing Efficacy Beliefs

Efficacy beliefs were most clearly verbalized when these teachers offered reasons for not engaging in particular practices. The current understanding of self-efficacy theory anticipates that self-efficacy, or in this case teacher efficacy, serves as a motivator that pushes individuals to action and supports persistence once a task has begun. In my interviews with these teachers, I repeatedly identified specific classroom events and asked the teacher to explain the reason for the decision made. The most frequent response to those inquiries was that their decision was based on the best instructional opportunity for the students. For example, when I asked Mr. Lyons why he chose to do a translation activity with his English class, he explained that it was the best way for them to understand the content.

However, when I altered the questions to address why these teachers would not implement particular tasks or take on specific classes to teach, efficacy beliefs seemed to come to the forefront of their responses. Ms. Roarke explained that while she believed that teaching to students’ musical intelligence was important, she would not attempt to do this. She stated that
she would not attempt this because music is an area of weakness for her, and that she could not successfully incorporate it into her class.

Mrs. Gilbert rejected the possibility of ever teaching mathematics to middle school students stating: “Forget it. No way. I can’t do math like that. I’m not prepared at all. I can’t do it. …No way absolutely not. I’d have to quit” (Interview transcript, May 23, 2003). Her reason for not agreeing to teach eighth-grade math was that she “can’t do it;” she did not feel capable of the task.

We saw a similar pattern in Mr. Lyons’s response to teaching first grade. He promptly rejected the possibility of his teaching this level of students. Mr. Lyons asserted that he did not have the training, experience, or interest in teaching that level of students. He underscored this statement by explaining that all of his experience and expertise was with adolescents, that teaching preadolescents was not in his repertoire of expertise or experience.

Thus, efficacy beliefs became clearly stated in these teachers’ rejection of potential teaching situations. However, these teachers rarely, if ever, voiced an ability belief as the reason for engaging in practice. It may be that efficacy guided the initial phase in the decision-making process, in that without efficacy, a teacher will not engage in a particular activity. However, ability beliefs may not determine which activity will be pursued. Once the teacher has identified a task as something he or she is able to do, then the decisions related to achieving the task are guided by other aspects of the situation (e.g., students’ needs, interests, or abilities). In contrast, if one looks at a task and determines that it is not within one’s range of abilities, then the decision process does not continue. Thus, once these teachers determined that the task (e.g., teaching fifth-grade, yearbook, or French 5) was within their abilities, their decisions regarding how to achieve the task were based on their perceptions of the situation.
The interviews with these teachers did not unearth the relation of their efficacy to the selection and rejection of specific teaching strategies for use with their current classes. I asked each teacher to explain the extent to which they weighed multiple options when creating their lesson plans. All three teachers responded that they tended to go with their first idea, that they did not spend much time considering alternatives. Efficacy beliefs may be at work in teachers’ decisions regarding lesson planning, such that the options teachers generate are already within their ability level. Thus, there may be a connection between teachers’ consideration of pedagogical options and their efficacy beliefs that was not revealed in this investigation.

_Efficacy beliefs were demonstrated through these teachers’ responses to potential challenges._ Each teacher expressed differing degrees of willingness to accept challenge that seemed related to their level of efficacy. Mr. Lyons seemed to be the most vocal of the three in his desire to seek out and accept challenge. He described complacency as a “killer,” believed that everyone is a “work in progress,” and that if you have the ability you must accept the challenge in order to hone your skills.

Mrs. Gilbert also accepted challenge or created challenging activities. First, she expressed a desire to work with special needs students. She stated that she was not sure if she would be good at it, but that she wanted to know and to have the experience. It seemed like the push behind her acceptance of challenge was not to succeed, to reach the mountaintop, but rather to learn from the process.

Ms. Roarke never made any direct statements about either seeking or avoiding challenge. When asked what other grade she might like to teach, she first pointed out that she would rather stay with her fifth grade. She was comfortable there. But, if she had to change, she would pick either fourth or sixth, because they were close to fifth. In contrast to this statement, Ms. Roarke
was enrolled in a master’s program and frequently tried new strategies in her class, a practice that may be perceived as a challenge.

*The Nature and Evaluation of Teaching*

Perceptions of teaching as an innate ability may serve to enhance efficacy beliefs of teachers who see themselves as so endowed. Mrs. Gilbert and Mr. Lyons both explicitly discussed whether teaching is an ability one is born with or if it could be learned. However, this topic did not emerge in my conversations with Ms. Roarke. One might extrapolate from her comments, however, that Ms. Roarke believed individuals could learn to teach or at least learn how to improve their teaching. I draw this interpretation based on her comments regarding the knowledge she had acquired in her Master’s program and the extent to which she expressed the idea that these classes helped her to become a better teacher.

Mrs. Gilbert took a moderate stance on teaching as ability. She felt confident that she had learned a great deal in her preservice course work that helped her to become a better teacher. She stated that her education was worthwhile to her current practice and really helped to prepare her for teaching. She asserted that while many people claim that teaching is common sense she really felt there was valuable information to be learned, especially when put in the context of being a teacher. However, Mrs. Gilbert also felt that there might be some basic traits that would make someone a good teacher. Those traits included curiosity, enthusiasm, and good interpersonal skills.

Mr. Lyons stated point blank that he felt teachers were born, that there was an innate talent for and love of teaching that could not be taught. He did acknowledge that teachers could perfect their craft. Referring to teaching in this way, as a craft, suggests that teaching is more like an art (e.g., acting, writing, and painting) than a science. He argued that the use of a formulaic
curriculum guide would not necessarily lead to student learning and that lessons and techniques needed to be adapted to each student or group of students. We see this tendency to view teaching as an art when he described the skills or knowledge that teachers must have as encompassing “timing.” Knowing when to push students forward, to stop an activity, to let it go were the aspects of timing of which Mr. Lyons spoke.

These varying perspectives on teaching as ability or learned, raise the traditional debates on ability beliefs in general and Weiner’s (1979) attribution theory. Mr. Lyons believed he was a born teacher, therefore, he needed to pursue challenges and hone his abilities. From his perspective, taking classes on how to teach was a waste of time, your skills are honed in the classroom. Mrs. Gilbert was told by her mentor teacher that she was “a born teacher,” however, Mrs. Gilbert was hesitant to take on that belief. Instead, she contended that there might be particular traits one was born with that would help one to be a better teacher, but there was still much one could learn. Both Mr. Lyons and Mrs. Gilbert expressed a belief to some degree that they had a talent or gift for teaching. This belief may have served as a defense mechanism when they faced challenging situations.

*Teachers’ identification of good teaching seemed reflective of their own strengths and served as the basis of self-evaluation.* Each of these teachers described different means for assessing teaching, their own in particular and good teaching in general. Ms. Roarke assessed teaching based on the student-teacher interactions and the extent to which students demonstrated learning. She described learning as being able to apply content, skills, or strategies learned in class to another related but unfamiliar task or to the real world. Ms. Roarke made no reference to her students’ test scores or the evaluation of her own teaching by an outside authority. Instead, she focused on successful teaching as assessed by student learning.
In contrast, Mrs. Gilbert stated that she knew she was a good teacher. She based this claim on the results of many formal evaluations that had been conducted on her teaching practice and the fact that she always received an “Excellent” rating. Mrs. Gilbert also felt that successful teaching could be identified by students’ performance on exams such as the Advanced Placement Exam, as well as on local high-school assessments. Mr. Lyons reported a third means of evaluation, the amount of student engagement he perceived while teaching, that is to say, the extent to which he could get students interested in content that they would normally avoid.

Knowledge and Knowledge Beliefs

Knowledge was most often interpreted to mean knowledge of students or subject matter, rather than pedagogical knowledge. Each of the teachers interviewed expressed beliefs about the importance of knowledge in their teaching practice. Specifically, they focused on their understanding of knowledge relative to students and content. All three of these areas were reported by these teachers to be vital to successful teaching.

Knowledge of students was explicitly identified by all three participants. Each teacher described a need to know students on multiple levels. Ms. Roarke, Mrs. Gilbert, and Mr. Lyons each addressed the need to be aware of students’ developmental levels.

In addition to this more generic knowledge of learners, each teacher expressed a need to know the specific students in your classroom. Mr. Lyons spoke specifically about identifying the academic needs, strengths, and weaknesses of the students in his class so that he could best teach them and provide them with assignments that were worthy of their abilities. Mrs. Gilbert described how important it was for her to get to know her students and for them to know that she cared about each of them. She believed that, if the students knew she cared, they would be more likely to perform well in her class. Toward that end, Mrs. Gilbert greeted her students at the
door, discussed current events with them at the beginning of class, and attended their dances and other school events to demonstrate her caring.

Ms. Roarke expressed similar beliefs about the importance of knowing her students and establishing a relationship with them. She took advantage of the K-8 setting in which she teaches to get to know not only the students in her class, but also the families in the school. Additionally, she used her classroom and class activities to help build community among her students.

Knowledge of content matter was also identified as an important component of teaching across the three participants. Each participant asserted the belief that extensive knowledge of the subject matter being taught would lead to better instruction. Ms. Roarke expressed this belief, revealing that she was able to go more deeply into the content that she was most comfortable with than she was with other areas.

Mrs. Gilbert also expressed the view that she valued content knowledge. Both she and Ms. Roarke reported that they taught the material (speaking and mathematics, respectively) best that they knew best. In contrast, these teachers also reported that they found the material they had the least knowledge of (grammar) to be the most challenging to teach.

Each of these teachers expressed the belief that knowledge was a valuable commodity to have with respect to teaching and one that enabled them to feel more successful. However, the quantitative portion of this study revealed a negative relation between teachers’ demonstrated knowledge and their efficacy beliefs. Thus, there seems to be a confound between these two components of this study that may be understood when one looks at the type or meaning of knowledge described in each aspect of the study. Here, the teachers interviewed interpreted knowledge to mean knowledge of students and knowledge of subject matter. In the quantitative portion of this study the knowledge assessed was for pedagogy, teaching strategies and
declarative knowledge relative to the practices of instruction, classroom management, and student engagement.

Two possible explanations of these differences can be articulated. First, it may be that there are differences in the relation between knowledge and efficacy that are unique to specific knowledge content. Second, in the qualitative portion of the study, these teachers speak of knowledge of student and knowledge of subject matter as being important. However, the knowledge of these teachers for these areas was not assessed, Thus it may be that perceived knowledge has a different relation with efficacy than exists with demonstrated knowledge as assessed in the quantitative study.

The fragility of Ms. Roarke’s pedagogical knowledge may explain her low efficacy beliefs. Based on the quantitative data, Ms. Roarke was identified as having high knowledge and low efficacy, and was included in a cluster of teachers who demonstrated a similar profile. Ms. Roarke had taught fifth-grade for 10 years. She enrolled in a Master’s program approximately 9 months before participating in this study. She described her experience in the program very positively, and volunteered that the focus of most of her courses was on becoming a better teacher and learning research-based teaching strategies. Further, Ms. Roark explained that she was learning a great deal about how to become a better teacher and that she was really enjoying this process.

Although Ms. Roarke demonstrated high knowledge on the quantitative measure, this knowledge could be characterized as fragile. That is, the knowledge was new to her and while she retained the meaning of the information she might be less facile in her ability to employ that knowledge or more hesitant in her beliefs about those abilities.
In contrast, both Mrs. Gilbert and Mr. Lyons had completed their advanced study years ago. Both had had the opportunity to implement and shape the knowledge gained from their course work in their classrooms. Thus, the knowledge of these teachers was less fragile, which may be related to greater confidence in their ability to wield that knowledge appropriately.

**Influence of Responsibility Acceptance on Efficacy**

Ms. Roarke reported the lowest efficacy score of the three case study participants. Throughout her conversations with me, she expressed a sense of responsibility for the outcomes that occurred in her class. For example, when the Jigsaw technique did not work in her reading class, it was because she did not implement it correctly. Neither Mr. Lyons nor Mrs. Gilbert expressed this degree of ownership for the lack of classroom success. This perspective of responsibility on the part of Ms. Roarke may help to explain her reported low efficacy score. By accepting responsibility she assumed that she had control of the classroom situation and student learning. If students did not succeed, she was responsible. Then when she evaluated her class and saw that students were not all succeeding, her efficacy dropped.

Ms. Roarke also demonstrated persistence in spite of setbacks. For example, she described how the Jigsaw technique did not work out the first time she tried it. Still, she modified her use of the technique and tried again. She stated that if it failed a second time, she would have still tried again, because she knew it was a good technique and that she must have been implementing it incorrectly. In contrast, Mr. Lyons only stated that he erred early in his career, and Mrs. Gilbert never expressed the sentiment that she might inappropriately implement a strategy. For example, Mrs. Gilbert stated that she did not think that cooperative learning strategies were useful for her classes. Even though there was a lot of research on it and attention given to it in her education program, she did not find it valuable in practice. She also offered the
caveat: “Even if you do all the things you’re supposed to do with groups, I just found sometimes I do not think they get as much out of it as when it’s direct instruction” (Interview transcript, May 20, 2003).

The interesting contrast between Ms. Roarke and Mrs. Gilbert is that Ms. Roarke assumed that if the technique did not work, she had implemented it wrong, whereas Mrs. Gilbert assumed that it was the technique that did not work, despite the research and attention it had received in her education program. These different perspectives may help to explain some of the differences in the efficacy between these two knowledgeable teachers. That is, efficacy may be related to how teachers interpret events in addition to their perceptions of their own abilities.

Summary of Emergent Themes

The themes that emerged from this investigation highlight how these teachers verbalized efficacy beliefs, described their beliefs about and evaluation of teaching, interpreted knowledge and teaching knowledge, and the role of responsibility in efficacy beliefs. The first theme emphasized participants’ verbalization of efficacy beliefs. It became evident that for these teachers efficacy beliefs were most clearly verbalized when these teachers offered reasons for not engaging in particular practices. That is when asked why a particular teaching practice was used these teachers typically offered a pedagogical or student-centered reason. However, when asked why they did not engage in some activity these teachers often gave a lack of confidence in their own ability as the reason.

The second theme reflected these teachers’ beliefs about the nature and evaluation of teaching. Perceptions of teaching as an innate ability seemed to enhance efficacy beliefs of teachers who see themselves as so endowed. Similarly, these teachers’ identification of good teaching seemed reflective of their own strengths and served as the basis of self-evaluation.
The third emergent focused on knowledge and knowledge beliefs. These teachers most often interpreted “teaching knowledge” to mean knowledge of students or subject matter, rather than pedagogical knowledge. Thus, during the interviews I found that unless I brought up pedagogical issues, these teachers tended to focus their reasons and explanations for their teaching on their knowledge of student likes and needs as well as their own knowledge of the content matter.

Finally, the last theme examined the potential influence of perceived responsibility on efficacy beliefs. Specifically, Ms. Roarke demonstrated a prevailing attitude of responsibility and held the lowest efficacy beliefs of these three teachers. She saw the success or failure of teaching strategies used as due to her implementation of those techniques. In contrast, Mrs. Gilbert blamed the failure of the technique on the method itself.

Theoretical and Practical Significance of Case and Cluster Analyses

The results of this study offer support for the use of cluster analysis and qualitative methods in the study of teacher efficacy. The formation of teacher profiles based on knowledge and efficacy has not been explored in the literature. The present study sought to explore what teacher profiles might emerge based on experienced teachers’ demonstrated knowledge and efficacy beliefs. The cluster analysis procedure revealed three distinct groups of teachers. Most interesting was the emergence of the high knowledge-low efficacy teacher group. Participants in this group demonstrated significantly higher knowledge and significantly lower efficacy than teachers in the other two groups. Thus, these teachers who seemed to know the most about pedagogy held the lowest beliefs in their ability to employ that knowledge. The case study teacher, Ms. Roarke, was identified as a member of this group. Because of her recent enrollment in a graduate program, it is suspected that while she may have learned the terms and concepts of
current pedagogy, thereby increasing her knowledge base, she may not have had the opportunity
to explore and gain confidence in her ability to wield that knowledge, leading to lower efficacy.

However, this cannot be the explanation for all of the teachers in the high knowledge-low
efficacy group. It is also important to consider that teachers with higher knowledge of
pedagogical practices may hold higher criteria for evaluating their own abilities. For example,
many people not associated with the field of education often express the opinion that
kindergarten is easy to teach. They contend that kindergarten is just playing games, painting
pictures, and singing songs. However, educators might counter that kindergarten is one of the
most challenging grades to teach. Thus, the extent of individuals’ knowledge may affect their
evaluation of the situation and, in turn, that evaluation becomes the basis of efficacy beliefs.

The case study analysis offered an in-depth illustration of how three teachers think about
their practice and their reflections of how efficacy, knowledge, and pedagogical beliefs influence
their teaching practice. This investigation confirmed the need to further explore the relations of
teachers’ knowledge, pedagogical beliefs, and efficacy. Of particular interest are the beliefs
teachers hold about the value of pedagogical knowledge, the nature of teaching, and the
knowledge content (e.g., subject matter) that is most essential. Future studies should explore in
greater depth the interrelations of these constructs.
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Table 1

Sample items from the Teacher Sense of Efficacy Scale and the General Pedagogical Knowledge Measure

<table>
<thead>
<tr>
<th>Sample Items</th>
<th>Teacher Sense of Efficacy Scale (Tschannen-Moran &amp; Woolfolk-Hoy, 2002)</th>
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</thead>
<tbody>
<tr>
<td><strong>Instructional Practices</strong></td>
<td>How much can you do to adjust your lessons to the proper level for individual students?</td>
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<tr>
<td></td>
<td>(1) Nothing (2) Very Little (3) Some Influence (4) Quite a bit (5) A Great Deal</td>
</tr>
<tr>
<td><strong>Classroom Management</strong></td>
<td>How much can you do to get children to follow classroom rules?</td>
</tr>
<tr>
<td></td>
<td>(1) Nothing (2) Very Little (3) Some Influence (4) Quite a bit (5) A Great Deal</td>
</tr>
<tr>
<td><strong>Student Engagement</strong></td>
<td>How much can you do to get your students to value learning?</td>
</tr>
<tr>
<td></td>
<td>(1) Nothing (2) Very Little (3) Some Influence (4) Quite a bit (5) A Great Deal</td>
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</tbody>
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<th>General Pedagogical Knowledge Measure</th>
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<tr>
<td><strong>Instructional Practices</strong></td>
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<td><strong>Classroom Management</strong></td>
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<td><strong>Student Engagement</strong></td>
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Figure 1

Teacher Efficacy and Demonstrated Knowledge of Cluster Groups

Cluster Groups
Table 2

Cluster Profiles of Practicing Teachers Based on Demonstrated Knowledge and Teacher Efficacy

<table>
<thead>
<tr>
<th>Cluster Profiles</th>
<th>Clustering Variable Descriptives</th>
<th>Cluster</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Demonstrated Knowledge</td>
<td>Teacher Efficacy</td>
</tr>
<tr>
<td></td>
<td>maximum = 20</td>
<td>maximum = 9</td>
</tr>
<tr>
<td></td>
<td>M (SD) Range</td>
<td>M (SD) Range</td>
</tr>
<tr>
<td>High Knowledge Low Efficacy</td>
<td>18.43a (0.79)</td>
<td>6.80a (0.83)</td>
</tr>
<tr>
<td>Moderate Knowledge</td>
<td>16.06 b (0.87)</td>
<td>7.37b (0.71)</td>
</tr>
<tr>
<td>Low Knowledge</td>
<td>12.12c (1.41)</td>
<td>7.31b (0.74)</td>
</tr>
<tr>
<td>Total Sample</td>
<td>16.54 (2.46)</td>
<td>7.09 (0.82)</td>
</tr>
</tbody>
</table>

*Note.* Superscripts represent significant differences between group means.
Table 3

Case Study Participants

<table>
<thead>
<tr>
<th>Teacher*</th>
<th>Knowledge Score</th>
<th>Efficacy Score</th>
<th>Teaching Experience</th>
<th>Grade/Content</th>
<th>School Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mrs. Gilbert</td>
<td>27</td>
<td>7.42</td>
<td>3.5 years</td>
<td>8-12 French</td>
<td>Rural, Public Middle and High School</td>
</tr>
<tr>
<td>Mr. Lyons</td>
<td>26</td>
<td>8.79</td>
<td>18.5 years</td>
<td>9-12 English and Yearbook</td>
<td>Rural, Public High School</td>
</tr>
<tr>
<td>Ms. Roarke</td>
<td>27</td>
<td>6.79</td>
<td>11.5 years</td>
<td>5th All Subjects</td>
<td>Suburban, Parochial K-8 School</td>
</tr>
</tbody>
</table>

*Note. Teacher names used here are pseudonyms*
Appendix 1
Case Study Emergent Codes

A – Knowledge
   A1 – of students
   P – Pupil developmental needs
   A2 – of content
   A3 – of pedagogy
   A4 – of self

B – Development as a teacher

C – Efficacy/Confidence
   C1 – Lack of efficacy
   C2 – w/qualifications/excuses

D – Motivation/boring

E – Reasons – decisions
   E1 – for instructional practices
   E2 – because it’s fun/they’ll like it
   E3 – Motivate students
   E4 – Classroom Management

F – Take pressure off

G – Support needed/wanted/missing

H – Cooperative group techniques

I – Reflection/reconsideration

J – Evaluation of Success
   J1 – of student needs/behavior

M – Evaluation of learning

K – Accepts responsibility

L – Autonomy – Acquiescence

N – Hesitation/confidence

O – Important skills
   O1 – Classroom Management
   O2 – Instructional Practices

O3 – Student Engagement

O4 – Child Development/ed psych

O5 – Content

O6 – Timing

Q – Development of student social skills

R – Strategies

S – Awareness of class events during post
class interviews

T – Relations with students/appreciation

U – Likes/dislikes

V – Goals as teacher

W – Extensions – creation of new programs
e tc.

X – Joy/love of teaching

Y – Beliefs/theories

Z – Flexibility

AA – Challenge

BB – Holding back/ making qualifications

CC – “Kids in my head”

DD – Relate to student interests

EE – Interest of the teacher (content)

FF – Teaching as ability/learned

GG – Class time management

theories/organization of activities

HH – Hard/challenging to diversify

instruction to meet all need