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ABSTRACT

This study of student teachers' reflective abilities defines reflecting about teaching as the capability and willingness of prospective teachers to question and critically analyze their teaching and teaching experiences. In discussing differences between student teachers in psychological and personal dimensions, the characteristics examined were: (1) experience; (2) academic performance; (3) achievement need; (4) locus of control; (5) creative ability; and (6) personality type. The subjects of the study were 16 elementary education majors enrolled in reading/language arts courses designated as an inquiry-oriented early field experience. Dialogue journals were chosen as the primary mode of reflection. These journals were analyzed weekly for evidence of reflective thinking. At midsemester the subjects were classified as either "reflective" or "non-reflective" based on their journals and individual interviews. The results indicated that there may be measurable psychological and personal determinants or characteristics which describe "reflectors." Some of these characteristics are self-confidence, academic ability, and prior experience. A significant "reflector" characteristic was internal locus of control and the belief that they are in control of themselves and their actions rather than external forces. (JD)

Psychological and Personal Dimensions of Prospective Teachers' Reflective Abilities

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Running Head: PSYCHOLOGICAL AND PERSONAL DIMENSIONS

The term "reflection" is quite common in current teacher education literature and is defined in numerous ways. Our framework for conceptualizing the term "reflection" stems from our work supervising elementary education majors teaching within the practical contexts of classrooms. In this study, we define reflecting about teaching as the capability and willingness of prospective teachers to question and critically analyze their teaching and teaching experiences (Charvoz, Crow, & Knowles, 1988; Zeichner & Teitelbaum, 1982; Zeichner & Liston, 1987).

Reflective Abilities

Prospective teachers differ in their willingness and abilities to reflect about teaching (Korthagen & Verkuyl, 1987). Some students seem to possess a natural ability to examine and critically question themselves and their teaching as Betsy's[1] first journal entry demonstrates: "I need to structure my very first lesson in such a way that the children do not lose interest. My goal is to get them excited about learning. Now, this week I'll try to figure out how" (1/15/88). (See Appendix A for selected student journal entries.)

Other prospective teachers initially appear unwilling or unaware of how to reflect about their work. As Sadie writes during the second week of the semester: "This lesson is still on-going and it's the second week already. Getting started was difficult. You will ask me why? Well, I don't know!!!" (1/20/88). Yet, as the semester progresses, some of these initially "non-reflective" students become extremely reflective (e.g., "I tried my hand at reflecting in this journal at the beginning of the semester and when I didn't go far enough you asked 'Why?' or some other question to get me to analyze further. Now I find myself asking myself why after almost everything" (Sadie: 5/2/88) (See Appendix A).

Still, other prospective teachers demonstrate little tangible evidence of reflective ability. They seem to discount the importance of reflection or to confuse reflective thinking with descriptions of routine teaching procedures (e.g., "Are there any strategies that would help decrease the time needed to reflect?"; "I handed out the name tags. Next we made up a story going around the circle. That's about it." excerpts from selected 5/5/88 journal entries).

Very little is known about why prospective teachers within the same teacher education programs are predisposed or disinclined toward reflection. Consequently, there is "no guidance as to how to raise their [prospective teachers] 'level of reflectivity'" (Noffke & Brennan, 1988, p. 7). Yet, a specific aim of inquiry-oriented teacher education programs is to develop reflective

[1]All student names used throughout this paper are fictitious.

attitudes in all preservice teachers (Charvoz, Crow, & Knowles, 1988). If we hope to accomplish that aim, we need to know more about prospective teachers outside the boundaries of formal teacher education programs (Feiman-Nemser, 1983). Since reflecting about teaching "is generally understood to concern more than the cognition involved in teaching" (Calderhead, 1988a, p. 5) (e.g., self-direction, decision-making and knowledge), we need to come to "a better understanding of who the reflector is" (Noffke & Brennan, 1988, p. 26).

We need to begin to appreciate the unique qualities and characteristics which make student teachers different from each other. Differences in psychological and personal dimensions may help explain why some novices are willing and able to analyze their teaching experiences while others exhibit little enthusiasm or ability for reflective thought.

Differences in Psychological and Personal Dimensions

Experience

Certainly, students enter teaching programs with diverse biographies and perspectives. "Each is the product of his or her own heredity and environment" (Myers & Myers, 1980, p.1). For example, some education majors have little experience working with children. Others have spent a considerable amount of time instructing groups of children in a variety of settings. They may teach nursery school, coach little league teams, or lead scout troups. Knowledge gleaned from experience may help novices "criticize and question their performance" (Calderhead, 1988b, p. 3). For example, prospective teachers with prior professional experience may possess some of the practical knowledge necessary for reflection (e.g., a repertoire of teaching strategies, an understanding of group dynamics, and a language to describe teaching objectives and performance). Experienced novices also tend to feel more competent and in control, and therefore have the confidence to be self-critical (Russell, 1988). They can step back from their teaching in order "to consider how the lesson is actually going" (Calderhead, 1988a, p.5). Perhaps they can improvise creatively when the situation warrants a new approach (Schön, 1988). Experienced novices can more easily ask and answer such questions as, "How well did I teach?" and, "What could I have done differently?" (Calderhead, 1988a).

Academic Performance

Another documented difference is education majors' academic performance. Some novices are straight "A" students while others achieve mediocre grades. A recent study suggests that prospective teachers with higher grade point averages are more motivated, enthusiastic reflectors (Charvoz, Crow & Knowles, 1988). This

finding parallels other research which suggests that academically more able students develop a wide range of learning and self-regulatory strategies which academically less able students lack (August, Flavell & Clift, 1984; Bransford, Stein, Vye, Franks, Auble, Mezynski & Perfetto, 1982; Brown, Armbruster & Baker, 1986).

Need for Achievement

Germane to academic performance is the idea that prospective teachers, like all human beings, vary in their basic need for achievement (McClelland, Atkinson, Clark & Lowell, 1953; Rotter, 1966). For instance, some students set extremely high academic goals. Others, perhaps more easy-going and self-tolerant, may set lower goals and exert less energy on their studies.

Social learning theory posits that differences in achievement needs relate to a subjectively-held belief about "the relationship between one's own behavior and its consequences" (Rotter, 1966, p.2). This belief, termed locus of control, refers to individuals' perceptions regarding personal success and reward being contingent upon or independent of one's actions (Rotter, 1966).

Locus of Control

Novices with an internal locus of control may believe that what they do and how they act generally determines whether their lessons go well or poorly. Therefore, their behavior may be more internally regulated and goal directed. In contrast, prospective teachers with an external locus of control may attribute their teaching successes or failures to fate, luck or chance, or to their students' behavior or intellectual ableness (Rotter, 1966; Veblen, 1899). Consequently, these novices may prefer and expect considerable external direction and support from their supervisors (Korthagen, 1988). Beliefs about whether there is a causal relationship between behavior and success may determine whether prospective teachers perceive that reflecting about teaching is beneficial and productive or simply a waste of time (Korthagen & Verkuyl, 1987).

Creative Ability

Although difficult to measure, prospective teachers' creative abilities also vary considerably. Some novices struggle to compose a rhyme, create a learning game, or devise a unique way to present a phonics lesson. They may only choose to teach lessons which are explicitly described in methods textbooks or which they have observed. Others consistently turn in imaginative, innovative projects and produce unique lessons. They have the ability to vary teaching procedures and format in order to fit the teaching situation. A few students are especially artistic or musically talented.

Creative ability does not exclusively apply to the creative arts, however (Torrance, 1974). Creativity also refers to "a constellation of general abilities" (Torrance, 1974, p. 9), including creative thinking, a learned or inherited trait which is possessed to some degree by all human beings (Ausubel, 1963; Torrance, 1974).

Creative thinkers like to discover. They actively look for problems to solve (Edwards, 1986). They are independent, curious, flexible, and more aware of potentials that might go unnoticed (Torrance, 1974; Weisberg & Springer, 1961). Creative thinkers have a good self-image, the capacity and initiative to break away from the usual sequence of thought, and a desire to excel (Dauw, 1965; Simpson, 1922). They are emotionally sensitive to problems and disharmonies (Dauw, 1965; May, 1975). They like to investigate, make guesses, and search for solutions (Torrance, 1974). Creative thinkers have the "ability to sense deficiencies, elaborate, and redefine" (Torrance, 1974, p.9).

It is not surprising that a few long-term studies suggest that more creative novices become better teachers (Torrance & Hansen, 1965; Strom & Larimore, 1970; Torrance, Tan, & Allman, 1970). "Much of the essence of creative thinking . . . is captured in the process of asking and guessing" (Torrance, 1974, p.11), two basic elements of reflecting about teaching. In fact, activities associated both with creative thinking and reflection display many commonalities (e.g., assessing experiences, formulating a problem, creating alternative methods) (Korthagen & Verkuyl, 1987). It is quite possible that more creative novices may consider reflecting about teaching an especially desirable type of activity. Searching for solutions, determining connections, conceptualizing, and brainstorming to solve problems may correspond to creative novices' natural and habitual mode of thinking.

Personality Types

Prospective teachers also have different personalities. Some novices are especially patient with routine and details. They like a well-ordered lifestyle. Others prefer spontaneity and flexible schedules. They enjoy new and changing situations. Some prospective teachers focus on the people around them. They are gregarious, out-going, and talkative. Others prefer to deal in the more private world of ideas. They are unassuming, quiet, introspective and reserved. Additionally, novices vary in their trustfulness, open-mindedness, conservatism, leadership abilities, impulsivity, enjoyment of life, and social awareness. In short, each education major is a composite of myriad, distinctive, inborn and environmental personality characteristics.

There is little doubt that personality traits exert a powerful influence on human behavior and encompass "a broad range of activity" (Myers & McCaulley, 1986, p. 4). To a large extent, personality attributes determine how individuals interpret and deal

with life; what they consider important, and how they make decisions (Lawrence, 1986). Pervasive aspects of personality affect individual's cognitive functioning, such as thinking, styles of information gathering, conceptualizing, perceiving, understanding, and modes of decision making (Jung, 1971; Kiersey & Bates, 1978; Lytton, 1978). Personality characteristics also influence people's affective dimensions, such as beliefs, "wants, motives, purposes,aims, values, needs, drives, impulses [and] urges" (Kiersey & Bates, 1978, p.2). Furthermore, the conscious, rational portion of personality influences individuals' interpersonal behaviors (Gough, 1987). Qualities of empathy, open-mindedness, responsibility, leadership, flexibility, and conscientiousness, all indicative of ego strength, relate to personality characteristics (Gough, 1987; Lytton, 1972).

It is reasonable to assume that attributes of novices' personalities may also influence their predispositions or disinclinations for reflective thinking. For instance, more open-minded, flexible, empathic individuals may be reflective by nature. In fact, Jungian personality typology describes certain individuals as having long range vision, curiosity about new ideas, and an inborn preference for seeing possibilities beyond what is present (Jung, 1971; Myers and McCaulley, 1986). These attitudes are salient to reflective inquiry. In contrast, other individuals are described as viewing situations in permanent, concrete terms, concerned with the here and now, blind to facts that they wish were not true, and sweeping "their problems under the rug instead of finding good solutions" (Myers & McCaulley, 1986, p. 24). Student teachers with some of these personality characteristics may be more interested in displaying their pedagogical knowledge and skills rather than examining why events occurred or pondering what they could have done differently.

Rationale for the Study

When we take prospective teachers' experiences, abilities, and personalities into account, it is evident that a single reflective inquiry field placement "represents a very small portion of their formal preparation for teaching and an even smaller part of their socialization to teaching" (Zeichner & Liston, 1981-82, p.41). Clearly, in order to understand why some students can reflect, or learn to reflect, while others do not, it is time to study psychological and personal characteristics of the reflector.

Methodology

The subjects were 16 elementary education majors enrolled in reading/language arts courses designated as an inquiry-oriented early field experience. All course activities were conducted at an inner-city elementary school two mornings each week. Dialogue journals were chosen as the primary mode of reflection. Journals

are known to promote and document student teachers' reflective thinking (Charvoz, Crow, & Knowles, 1988; Richards, & Gipe, 1987; Yinger, & Clark, 1981). Subjects wrote weekly in their journals and the supervisors wrote responses weekly as well. During the fourth week of the semester, tentative classifications of students' reflectivity were made based on dialogue journal entries using a constant comparative method of analysis (Glaser & Strauss, 1975). The researchers continued to analyze these journals weekly for evidence of reflective thinking. At midsemester the 16 subjects were classified as either "reflective" or "nonreflective" based upon a series of individual interviews which included questions concerning strategies and methodology in teaching (e.g., "When do you think about your lessons, the ones you taught and the ones you are going to teach?"). (See Appendix B for all novices' responses to this question.) At the semester's end, each dialogue journal was thoroughly reviewed and assigned a value designating the quantity and quality of reflective statements. Quality statements were determined by the richness of the descriptions (see Sadie's 4/20/88 journal entry, Appendix A), evidences of altruistic thinking (e.g., student and school-related concerns) (see Betsy's 2/17/88 journal entry, Appendix A), and evidences of formulating a problem and generating solutions (see Betsy's 1/27/88 journal entry, Appendix A). The number of these statements was recorded. If there were no or few reflective statements a '1' was assigned; if there was evidence that the student learned to reflect they were assigned a '2'; and if the student entered knowing how to reflect they were assigned a '3'. At the end of the semester, each subject also responded to: Rotter's Generalized Expectancies for Internal Versus External Control of Reinforcement (1966); the Torrance Verbal Test of Creative Thinking, Form A (1974); the California Psychological Inventory (1987); and the Myers-Briggs Type Indicator, Form G (1977). (See Appendix C for description of these instruments.) Data were also recorded for each subject's prior professional experience and grade point average (GPA). These data sources provided a total number of 42 different measurements for each subject. (Table 3 refers to these 42 measurements as items.)

Results

A Q-technique factor analysis was selected as the most appropriate procedure for analyzing the data. Three factors were extracted. (See Table 1 for eigenvalues used for factor selection.) While the factors are not univocal, they are suggestive of some model for explaining reflective ability. Factor 1 was identified as the nonreflective group since the majority of the individuals in Factor 1 were considered to be nonreflective according to the qualitative evaluation of the subjects. Factor 2 was titled reflective since the majority of these individuals were found to be reflective. Factor 3 was discarded since only 2 individuals existed within this group and the factor could not be interpreted

(See Table 2 for factor matrix.) In order to further explore the results, a series of factor scores were calculated for each factor. Factor scores with an absolute value greater than 1.00 were noted since these factor scores would have the greatest contribution to the creation of the factor. Factor scores for Factor 1 (Nonreflective) (see Table 3) indicate the following as contributing to the creation of the factor: low Verbal Creative Thinking score (Torrance); few reflective journal statements; no, or a limited amount of, prior professional experience; lower GPAs; low scores on the Introvert, Sensate, Judgment, and Feeling scales on the Myers-Briggs Type Indicator; non-"Alpha" personality types measured by the California Psychological Inventory (CPI), and low scores on the Dominance, Sociability, Independence, Empathy, Self-acceptance, Flexibility, Creative Potential, and Social Presence scales (CPI). Factor scores for Factor 2 (Reflective) (see Table 4) indicate the following as contributing to the creation of the factor: high Verbal Creative Thinking score (Torrance); higher Internal locus of control (Rotter); and low scores on the Thinking and Judgement scales on the Myers-Briggs Type Indicator. It is noteworthy that the Torrance Verbal Test of Creative Thinking scores are useful in interpreting both factors. (Refer to Appendix D for student profiles which provide examples of interpretations for the Myers-Briggs Type Indicator and the California Psychological Inventory.)

Conclusions

Are there psychological and personal characteristics that describe reflectors? The results from this research indicate that there may be measurable psychological and personal determinants (characteristics) which describe "reflectors." The reflectors in this study can be described as people who "make decisions by attending to what matters to others, they have an understanding of people, a concern with the human as opposed to the technical aspects of problems, a need for affiliation, a capacity for warmth" (Myers & McCaulley, 1986, p. 13). They are also more "spontaneous, curious, and adaptable, open to new events and changes, and aiming to miss nothing" (Myers & McCaulley, 1986, p. 14). They are attuned to the values of others as well as their own. These reflectors also tend to adapt well to changing situations, tend to be curious and welcome new ideas about people or situations. (See Appendix D for a more complete discussion of the profiles for three selected subjects.) These reflectors also have higher scores on the Torrance Verbal Test of Creative Thinking. According to Torrance, creative thinking is " a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies...and finally communicating the results" (1974, p. 8). These "reflectors" also have higher GPAs, and more prior

professional experiences than "non-reflectors." They are self-confident, display initiative--they are the "doers". Lastly, these reflectors can be described as having an internal locus of control meaning they believe that they are in control of themselves and their actions rather than external forces.

This last finding is consistent with the conclusions of other studies dealing with reflective teacher education. Korthagen (1988) found that the more reflective students were internally oriented, meaning they used "their own knowledge and values to examine and evaluate their practice [teaching]" (p. 4). Similarly, results of a study by Borko, Livingston, McCaleb, and Mauro (1988) led them to conclude that "internal attributions and personal responsibility for classroom events are related to successful teaching" (p. 82). An internal locus of control appears to be a definite psychological characteristic of reflectors.

Calderhead (1988) has asked the question "Does a student's sense of control encourage analysis, reflection and the motivation to succeed, or does success in the classroom lead to student attributions of self-effectiveness?" (p. 5) Results of this study would seem to support the first premise, (internal locus of control) since the subjects in this study were not always successful in the classroom. However, the point to be made here is that the subjects were getting experience teaching. Since reflection is a metacognitive skill; that is, knowing what you know (awareness) and being able to monitor (self-question, integrate new and old knowledge, compare, relate and evaluate) and regulate (take action) your own cognitive processes, it follows that reflection requires having a knowledge base about children (people) and about what classrooms are like--in short, experience.

A definitive answer to Calderhead's question may not be as important as providing teacher education programs "that recognize the complexity and individuality of [prospective] teachers" (Bugher, Clarke, & Taggart, 1989, p. 95). As Korthagen (1988) states, "as teacher educators, we must consider the plight of the less-reflective students" (p. 48). Unless we are willing to deny entrance to students who do not possess the characteristics of whatever the program defines as the "effective reflector/teacher," then teacher education programs must provide alternative course structures, designs, and/or opportunities that encourage and enhance the psychological and personal characteristics asscciated with reflection. (This study suggests that there are at least three conditions of reflectiveness.)

Alexander (1984) sums the (ideal) teacher education program up well, "...Learning to teach must be a continual process of hypothesis testing framed by detailed analysis of the values and practical constraints fundamental to teaching...students should be encouraged to approach their own practice with the intention of testing hypothetical principles drawn from the consideration of these different types of knowledge" [speculative theory, findings of empirical research, craft knowledge of practicing teachers] (p.

146).

Results of this study suggest that there may be psychological and personal characteristics of prospective teachers that distinguish reflectors and non-reflectors. If this is indeed the case, then alternative course structures and/or designs that enhance the psychological and personal characteristics associated with reflectors are especially needed for prospective teachers who are not predisposed toward reflection. The results of this study also suggest that teacher education programs encourage and promote creativity according to Torrance. For example, brainstorming, divergent thinking, and problem-solving activities in an overall program which helps students develop their creative potential, are implied. If teacher educators hope to develop teachers who are also reflectors we must further describe the reflector. Research is also needed as to how reflective processes might be developed in initially non-reflective students. Such activities as confronting students with their practices and aspects of their thinking through videotaped lessons with children might be a possibility. Critical analysis of both the practical and ethical dimensions of education must be encouraged. Hursch (1988) suggests combining foundations and methods classes to achieve this goal. Lastly, teacher educators must reevaluate their teacher education programs to insure that they encourage development of reflective abilities.

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Appendix A

Journal Excerpts

Selected Excerpts from Betsy's Journal, an initially reflective student:

1/15/88 "I need to structure my very first lesson so that the children do not lose interest. My goal is to get them excited about learning. Now, this week, I'll try to figure out how."

1/27/88 "My biggest concern at this moment is my need for more self-discipline. I must wake up early enough to 'get my act together'. This will be my biggest challenge. As for the neighborhood, I am quite used to it. For two years I was a foster mother for an adoption agency near here. As a pastor's wife I have worked with people in all kinds of circumstances. There are risks. However, few things in life are accomplished without them."

2/1/88 "I love to read. Why doesn't everyone? Maybe it's because they have never tried it just for fun! Maybe some mean teacher in first grade made it seem like a chore. Perhaps they're afraid to try. Whatever the reason, it is a fact that not every adult likes to or can read. My father reads only when he has to -- things like the phone directory or a tax notice. My mother only reads newspapers (small town social gossip paper only). I have never seen either one of them read a book or magazine. How did I turn out so different? I think my teachers made the difference. We did round-robin reading but I was a good reader and did not mind it. I fell in love with Shakespeare in high school and college. In fact, just call me a Hamlet. I love to ponder. I hope here I can pass this love of reading on to my students. I am trying to use the most interesting books available to me to encourage and develop their love of reading."

2/10/88 "Children must be encouraged to write -- and never humiliated or rejected for doing their best as I was as a child. I hope here I can be a positive influence on the students. I want to give them encouragement to be creative -- to think for themselves. Some of these kids want to copy someone else's poems and change three words and sign their name on it. I have tried and tried to get them to come up with new and original material. So I plan to try using free verse next week encouraging creativity. Now, what else can I do? I've got to think about it."

2/17/88 "These children are so sweet. Like all children they need love and attention and encouragement. They also need guidance and motivation. I know that many do not get enough of any of these needs. Some don't even have all of their physical needs met. How sad. However, I have observed that the suburban children of the

80's are also starving for attention. Many parents are so busy with their careers that the children feel like a nuisance -- a hindrance to mom and dad's climb up the executive ladder. What a horrible sacrifice! I wish all parents, rich and poor, black and white, could realize what a great treasure our children are. And they are our responsibility.

I like working with these children. Like all children, they need encouragement to reach for their goals. They need love and attention. They need to be told over and over that they can achieve. So one of my future lesson plans with them will involve career research to find out how to become what they want to be. I'm still gathering reading materials for this future lesson."

3/7/88 "The students understood a surprising amount from my reading of The Raven. This was my purpose -- to see how much they would get(mood, ideas, theme, etc.) from a poem whose vocabulary was a little beyond their grasp. John even picked up on the narrator's grief for Lenore. These kids are great.

I chose Silverstein to arouse interest in poetry. We compared and contrasted the work of Silverstein and Browning. They understood the mood differences. They said Browning's poem was peaceful and Silverstein's was funny. When I read Poe, they said it was scary. But, I worry what they'll read when we're gone. Who will read poetry with them?"

3/16/88 "I was really worried that this might be too difficult for them,since they have trouble with rhyming words (hint: that is my purpose for doing it -- they need the practice!). I started with the easy ones and gradually increased the difficulty. They caught on very quickly. They even came up with some good ones of their own. I know you'll ask why. I think the reason the lesson went well was because of the way I ordered the lesson, progressing from easy to difficult. I also was enthusiastic about the game to motivate them."

5/2/88 "These little dolls were perfect for acting out the story. This concrete, hands on activity really helped them increase comprehension. The fact that the dolls were exactly like the pictures helped them visualize the plot. Kids need concrete activity like this. I had no trouble keeping their attention because they were so interested in the dolls.

Another thing I want to talk about is the territorial nature of some of the children. They don't want their neighbor to put a finger on their side of the table. Maybe it's the crime rate in their neighborhood and they feel protective. But I've thought and thought about it and that table is really community property. It belongs to the group. So I have to figure out -- I have to come up with a plan to help these children feel that the table belongs to all of them. I know I can come up with a solution for this.

Selected Excerpts from Sadie's Journal, an initially non-reflective student who learned how to reflect about teaching by mid-semester:

1/20/88 "This lesson is still on-going and it's the second week already. Getting started was difficult. You will ask me why? Well, I don't know!!!

1/25/88 "I am a lost puppy!"

2/1/88 "It's always difficult with anything I do at first to have a definite aim. What do you do with a boy who has no desire to participate and who doesn't care if he is ejected from the group and has to sit alone? How do you reach him?"

2/10/88 "You know, I share with these children the fear of failure and of being wrong. I don't often volunteer answers unless I'm almost sure I'm right. I'm really trying to work on my kids to let them know that it is OK to take chances. I'm also working on myself, but it's not easy."

3/7/88 "But...so many of them are insecure, have low self-esteem and low self-confidence. If only, we could wipe out this problem--and poverty--and every other negative problem in the world. Is this what you want? It's how I'm thinking."

3/16/88 "I try to reflect during lessons but unless a problem is obvious, I usually don't figure out the whys until after the lesson is over and I'm at lunch. It's hard to keep everyone on path, give out materials, and think too! Thinking why takes time and I have to get myself to the stage where it's more of an automatic response. I often experience novel whys and the first time it surfaces as the cause--it's not so easy and quick for me to pick up. Does this come with practice? Also--I need to figure out a plan for group discipline. I'll do it, I know.

4/20/88 Compared to the beginning of the semester I'm not concerned anymore about my ability to be a good teacher. I am capable. I am confident. But, how can I help these children? I've helped myself it seems, but what about them."

5/2/88 "This semester has been very stressful with 17 hours, a young daughter, and serious marital problems. But--I learned to reflect. It gives me control over my life! As you said earlier, Dr. Richards, 'It gives you power!'. As you mentioned, I'm a deep thinker. I always have been. I like to think and analyze things and people. I also think about the way I feel about things and people and the consequences of my actions. But, up until this semester I never seriously or consistently asked myself why. Because of the emphasis on reflective thinking this semester, I've

come to understand the importance of determining why something went wrong, for example, not just noting that it did go wrong. For example, instead of saying that a get together was terrible because nobody wanted to mingle, I now probe further and want to know why the people didn't mingle. This journal has been a big help in facilitating the development of critical thought processes as well as everything you ever said about reflecting. I tried my hand at reflecting in this journal at the beginning of the semester and when I didn't go far enough, you asked why or some other question to get me to analyze something further. This helped to focus me in on areas where I had assumed I didn't need to go further, and I began to look for these types of situations (and any other situation that applied) in my future entries to apply what I had learned. Of course, this ability to reflect expands into all areas of a person's life, and throughout this semester--as I have been developing and improving my reflecting--I've applied this skill in all areas of my life. Now I find myself asking why after almost everything I write in this journal, as well as after much of what I say and do, and about the consequences because of what I said and did. And if I've answered that question, then I ask why about my new answer (as long as I'm in a normal state of mind, i.e., enough sleep, etc.). I keep going until I feel I've totally uncovered why something happened. Sometimes, I feel like I question myself to death, but then, I turn around and think about all that I'm learning because of my ability to reflect, and I really feel good about myself--good that I have such positive control over my life."

Selected Excerpts from Allison's Journal, a student who demonstrated little tangible evidence of reflective thinking throughout the semester:

1/27/88 "Reflections: Although the children participated, they did not enjoy creative writing. They participated begrudgingly."

2/1/88 "Reflections: This lesson went poorly! The children never understood the difference and I could never explain it to make them understand."

2/15/88 "Reflection: This lesson was very interesting because I found out who had friends and who didn't. Everyone had a different definition for a friend."

2/22/88 "Reflections: This concept was a little complex but the children basically understood."

3/7/88 "Reflections: This lesson turned out poorly because the children were bored by the story and didn't want to participate. Therefore, I made them rewrite the ending."

4/4/88 "Reflections: This lesson was a lesson in behavior management. It had to be done because I was losing control of the class. After this lesson, I had their complete and undivided attention."

4/11/88 "Reflections: The lesson went great. They loved the 'stupids' and why did you ask me why they liked the 'stupids' last week? -- because they are funny and silly like third graders are, I guess. What did you mean by that? These are my reflections. I don't know what more you want me to say."

5/2/88 "Reflections: This lesson did not go well because the children did not enjoy creating their own fairy tale which turned out to be gruesome."

Appendix B

Novices Responses to the Question Posed Midsemester, "When do you think about your lessons-the ones you taught and the ones you are going to teach?"

Novice #1 "I try to reflect right then and there. When something goes wrong, I sit back and think and if it's not going the way I want, I change it, modify it. I'm always thinking about my lessons."

Novice #2 "When do I what?"

Novice #3 " A day later I guess. I haven't really thought of it."

Novice #4 "Going to sleep, driving home-usually I'm too busy."

Novice #5 "Mostly later on."

Novice #6 "I know what you mean-reflecting about teaching. I am always thinking and reflecting. I've been that way since I've been seven years old. I'm a Hamlet.

Novice #7 "Sometimes not until 10:00 because of work. I'm too busy to reflect."

Novice #8 "Sometimes-I don't really know."

Novice #9 "Now I notice major problems immediately, and I worry about them. Like, why things went wrong. In fact, it seems I'm doing a lot of thinking about my teaching now."

Novice #10 "I'm waiting until spring break. I don't have enough experience to think now."

Novice #11 "A day later, but I'm aware of it right away if it's going wrong. So I go over it to try to find out why it went right or wrong."

Novice #12 "After the fact do you mean? What do you mean?"

Novice #13 "All week, right afterwards, Sunday for about 2-3 hours. I don't have time to when I teach."

Novice #14 "Right after I teach and on Saturday and Sunday nights."

Novice #15 "I'm one of those "shower" people you spoke of. I reflect in the shower. I don't have the experience to dwell on it."

Novice #16 "On Sundays. When something doesn't work, I try to remember that. I don't like to do it when I'm teaching. I like to go with the flow."

Appendix C

Instruments

Generalized Expectancies for Internal Versus External Control of Reinforcement (Rotter, 1966) measures the construct of locus of control. Locus of control indicates individuals' beliefs about "the relationship between one's own behavior and its consequences" (Rotter, 1966, p.2). Persons with a high internal locus of control score generally believe that they are able to make decisions which affect outcomes. Conversely, persons with a high external locus of control score generally believe that outside forces such as fate, luck or chance determine outcomes.

This instrument consists of 29 forced-choice items. Rotter (1966) reports moderate to good reliability and validity coefficients ranging from .49 to .83.

The Torrance Verbal Test of Creative Thinking, Form A (Torrance, 1974) measures individuals' abilities to think in a fluent, flexible, original, and elaborative way. This instrument contains seven subtests (Asking, Guessing Causes, Guessing Consequences, Product Improvement, Unusual Questions, Unusual Uses, and Just Suppose). Subjects' answers are scored for number of appropriate responses and originality of responses.

The Ninth Mental Measurements Yearbook (Mitchell, 1985) reports high reliability and validity coefficients ranging from .60 to .99 with most scores in the .90s, and subtest intercorrelations ranging generally from .30 to .50.

The California Psychological Inventory (Gough, 1987) measures the following 24 personality variables: achievement via conformance, achievement via independence, capacity for status, communality, dominance, empathy, femininity, flexibility, good impression, independence, intellectual efficiency, leadership, managerial interests, psychological mindedness, responsibility, self-acceptance, self-control, sociability, socialization, social maturity, social presence, sense of well-being, tolerance, and work orientation.

The Ninth Mental Measurements Yearbook (Mitchell, 1985) reports that the California Psychological Inventory is a widely known and useful personality instrument, although little research has investigated the complex interactions of the different personality scales within the instrument. The California Psychological Inventory is not based upon any major personality theory.

The Myers-Briggs Type Indicator (Briggs & Myers, 1977) measures 4 personality factors based upon the dichotomies of extrovert/introvert, sensing/intuitive, thinking/feeling, and

judging/perceiving. The theoretical foundation of the Myers-Briggs Type Indicator is Jung's (1971) theory of type. This instrument provides information about individuals' styles of information gathering and decision-making (i.e., how persons become aware of things, people, happenings, and ideas, and all of the ways persons come to conclusions about what has been perceived).

The Ninth Mental Measurements Yearbook (Mitchell, 1985) reports that validity is moderate based upon statistically significant correlations with similar tests, and that reliability is good based on correlation coefficients of .87.

Appendix D

Psychological and Personal Profiles of Betsy, Sadie, and Allison

Betsy: An Initially Reflective Novice

Initially, and throughout the semester, Betsy's journal entries were reflective in nature (see Appendix A). Betsy's profile as reported on the California Psychological Inventory, places her at level 6 in the Alpha quadrant. Alpha's cathexes are centered on the shared interpersonal world and on adherence to norms. Alphas are the doers, the people who carry out the sanctioned mandates of the culture. At their best, Alphas are charismatic leaders and investigators of constructive social action. At their worst (e.g., levels 1 and 2) they are self-pitying, defensive, apathetic, and manipulative.

Level 6 suggests a distinctly favorable realization of Betsy's potential. For persons at this level one can expect superior initiative and self-confidence, along with good leadership skills. Betsy scored high on the scales which measure socialization, achievement, responsibility, good impression, tolerance, and self-control. Betsy's managerial potential is reported as somewhat above average. Her work orientation is reported above average in self-discipline, conscientiousness, and reliability as a worker. Her leadership ability is reported as somewhat above average. Betsy's social maturity index is high. She can be expected to accept rules and discipline easily and at the same time be able to think independently and demonstrate an awareness of the need for change. Her creative potential is reported as about average (California Psychological Inventory, Gough, 1987: scored 6-01-88).

Betsy has had considerable experience working with groups of children. She has been a foster parent, is the mother of two teenagers, and as the wife of a minister has led many church youth organizations.

Betsy's grade point average is high (3.97). Her creative thinking score (Torrance Verbal Test of Creative Thinking, Form A, Torrance, 1974), is exceptionally high. Her locus of control score (Rotter, 1966) is exceptionally low, (1), signifying high internal direction and a belief that she can influence events in her life by her behavior.

Betsy's personality type (Myers-Briggs Type Indicator, Form G, Briggs & Myers, 1977), is classified as Extrovert (E), Intuitive (N), Feeling (F), and Perceiving (P). People with ENFP preferences are enthusiastic innovators, always seeing new possibilities and new ways of doing things. They have considerable imagination and initiative for starting projects. They are stimulated by difficulties and most ingenious in solving new problems and coming up with new ways to do things.

ENFP types show a concern for people. They are skillful in

handling people and often have a remarkable insight into the possibilities and development of others. They can be inspired and inspiring teachers. ENFPs are highly rated as student teachers (von Fange, 1961). Teachers with an -NF- preference view their role as encouraging, inspiring and motivating students. ENFPs are always drawn to the exciting challenges of new possibilities (Lawrence, 1986; Myers & McCaulley, 1987).

Betsy describes herself as a Hamlet who has reflected about everything since about the age of seven. Her response to the question, "When do you think about your lessons, the ones you taught and the ones you are going to teach?" was, "I know what you mean -- reflecting about teaching. I am always thinking and reflecting. I've been that way since I've been seven years old. I'm a Harlet."

Sadie: A Novice Who Became Reflective about Teaching as the Semester Progressed.

Initially, Sadie wrote in her journal about her self-concerns and anxieties (see Richards & Gipe, 1987). During the second month of the semester Sadie began to write in an altruistic and problem-solving manner. Throughout the remainder of the semester, Sadie's journal entries continued to be reflective in nature (Appendix A).

Sadie's profile as reported on the California Psychological Inventory, places her at level 6 in the Beta quadrant. Betas are centered on the internal world and on the acceptance of norms and precepts. Betas are the preservers of value, the sources of wisdom, and the nurturers and restorers of the tribal laws. At their best, they are inspirational models of goodness and insight. At their worst, they are conformists, constricted, fearful, and lacking in energy. Level 6 suggests a distinctly favorable realization of potential. For persons at this level, one can expect good intellectual ability, self-reliance, dependability, and a reflective temperament. Sadie scored high on the scales which measure socialization, achievement, responsibility, and self-control.

Sadie's managerial potential is reported as somewhat above average in self-discipline, conscientiousness, and reliability as a worker. Her leadership potential is reported as somewhat below average. Her social maturity score is high. Sadie can be expected to accept rules and discipline easily and at the same time be able to think independently and demonstrate an awareness of the need for change. Sadie is reported as not an innovator -- strongly preferring traditional and time-tested ideas and practices (California Psychological Inventory, Gough, 1987: scored 6-01-88).

Although Sadie is the mother of a small daughter, she has had no experience working with groups of children. Her grade point average is high (3.592). Her creative thinking score (Torrance Verbal Test of Creative Thinking, Form A, Torrance, 1974) is

exceptionally high. Her locus of control score (Rotter, 1966) is low, (4), signifying high internal direction and a belief that she can influence events in her life by her behavior.

Sadie's personality type (Myers-Briggs Type Indicator, Form G, Briggs & Myers, 1977) is classified as Introvert (I), Sensate (S), Feeling (F), and Judging (J). People with ISFJ preferences are extremely dependable and devotedly accept responsibilities beyond the call of duty. They have a complete, realistic, and practical respect for the facts. When they see from the facts that something needs to be done, they pause to think about it. If they decide that acting will be helpful, they accept the responsibility. ISFJs are thorough, painstaking, hard-working, and patient. They can and will do the little things that need to be done to carry a project through to completion. Teaching is attractive to ISFJs. They are practical, serious, quiet, can predict how others will feel, and are aware of other people's feelings. Teachers with an -SF- preference view their role as serving, instructing, disciplining, and encouraging students (Lawrence, 1986; Myers & McCaulley, 1987).

Sadie's response to the question, "When do you think about your lessons -- the ones you taught and the ones you are going to teach?" was, "Now I notice major problems immediately and I worry about them. Like, why things went wrong. In fact, it seems I'm doing a lot of thinking about my teaching now."

Allison: A Novice Who Showed No Evidence of Reflective Thinking Throughout the Semester.

Allison's journal entries showed no evidence of reflective thinking throughout the semester (Appendix A).

Allison's profile as reported on the California Psychological Inventory, places her at level 2 in the Gamma quadrant. Gammas' cathexes are centered on the shared, manifest world and on personal as opposed to traditional values. Gammas are the doubters, the skeptics, those who see and resist the imperfections and arbitrary features of the status quo. At their best, they are innovative and insightful creators of new ideas, new products, and new social forms. At their worst, they are rebellious, intolerant, self-indulgent and disruptive.

Level 2 suggests a distinctly below average realization of potential. For persons at this level one can expect problems, such as self-indulgence, rejection of rules, indifference to the rights and feelings of others, and disruptive tendencies in behavior. Allison scored low on the scales which measure achievement, empathy, tolerance, good impression, socialization, and well-being. Allison's work orientation is reported as considerably below average in managerial potential and somewhat below average in self-discipline, conscientiousness, and reliability as a worker. Allison's leadership potential is reported as above average. Her social maturity index is evaluated as low. Persons with a low social maturity index find it hard to accept rules and constraints

of everyday life (California Psychological Inventory, Gough, 1987: scored 6-01-88).

Allison has had no experience working with children. Her grade point average is 2.9. Her creative thinking score (Torrance Verbal Test of Creative Thinking, Form A, Torrance, 1974) is low. Her locus of control score (Rotter, 1966) is extremely high, (18), signifying little internal direction and a belief that to a large extent her personal success is not contingent upon her behavior but is attributable to fate, luck or chance.

Allison's personality type classification (Myers-Briggs Type Indicator, Form G, Briggs & Myers, 1977) is Extrovert (E), Sensate (S), Thinking (T), and Perceiving (P). ESTPs rely on what they see, hear, and know first-hand. They may decide things too slowly (Lawrence, 1986). They look for a satisfying solution and are sure that a satisfying solution will turn up.

ESTPs like to make decisions with their thinking rather than with their feeling. Thinking gives them more grasp of underlying principles, helps with math and theory, and makes it easier for them to get tough when the situation calls for toughness. ESTPs deal with a situation by never taking the hard way when an easier one will work. Their expert sensing may show itself in a gift for machinery or the ability to recognize quality, line, color, texture, and detail or in a capacity for exact facts.

ESTPs enjoy their material possessions and get fun out of life. Being realists, they get more from first-hand experience than from study, are more effective on the job than on written tests, and are doubly effective when on familiar ground. Seeing the value of new ideas, theories, and possibilities may come a bit hard because intuition is their least developed process. Teachers with an -ST- preference view their role as setting an example, and sharing knowledge and experience with students (Myers & McCaulley, 1987).

Allison's response to the question, "When do you think about your lessons -- the ones you taught and the ones you are going to teach?" was, "When do I what?"

Table 1

Factor Selection Criteria (Eigenvalues)

Item #	Eigenvalue	Variance	Cumulative Variance
P1	13.20715	82.5	82.5
P2	.98423	6.2	88.7
P3	.62681	3.9	92.6
P4	.54059	3.4	96.0
P5	.15845	1.0	97.0
P6	.12229	.8	97.7
P7	.11849	.7	98.5
P8	.07144	.4	98.9
P9	.04598	.3	99.2
P10	.03446	.2	99.4
P11	.02978	.2	99.6
P12	.02026	.1	99.7
P13	.01466	.1	99.8
P14	.01195	.1	99.9
P15	.00964	.1	100.0
P16	.00380	.0	100.0

Table 2

Varimax Rotated Factor Matrix

	FACTOR 1	FACTOR 2
P2	.85190	.34140
P4	.83173	.38509
P7	.76487	.53152
P16	.75669	.52018
P5	.73691	.41136
P12	.65427	.33807
P8	.63581	
P14	.61310	.41270
P6		.90599
P1	.41449	.82496
P9		.81278
P13	.56576	.76562
P3	.58132	.75507
P15	.65096	.69095

Table 3

Items Sorted on Factor Scores For Factor I

Item Name	Item No.	Factor I	Factor II
Torrance Test of Creativity	2.	-2.56323	5.19297
Myers-Briggs Introvert	6.	-1.41070	-.79472
Dialogue Journals	5.	-1.32521	-.82448
Prior Professional Exp.	1.	-1.28968	-.85140
Grade Point Average	3.	-1.24429	-.83161
Myers-Briggs Sensate	8.	-1.20572	-.71862
CPI ABGD Personalities	42.	-1.17509	-.98279
Myers-Briggs Judging	13.	-1.14930	-1.08749
Myers-Briggs Feeling	10.	-1.10948	-.60497
Myers-Briggs Thinking	11.	-.90539	-1.10943
Myers-Briggs Intuitive	9.	-.70018	-.73891
Myers-Briggs Perceptive	12.	-.66116	-.37500
Locus of Control	4.	-.65231	-1.00684
CPI Self-Control	26.	-.48783	.25232
CPI V2 Norm Favoring	15.	-.45217	.28228
Myers-Briggs Extrovert	7.	-.41182	-.71044
CPI Feminine/Masculine	36.	-.25789	-.30185
CPI Socialization	25.	-.22319	.42153
CPI V1 Internality	14.	-.09872	-.81390
CPI Responsibility	24.	-.02632	.25960
CPI Good-Impression	27.	.04053	.07678
CPI Communality	28.	.04314	.91135
CPI Ach. via Conformity	31.	.13651	.24485
CPI Well-Being	29.	.16735	.60544
CPI Social Maturity	40.	.36077	.34888
CPI Managerial Potential	37.	.37894	.32644
CPI Work Orientation	38.	.38616	.23938
CPI Tolerance	30.	.48132	.39896
CPI V3 Realization	16.	.48639	.46103
CPI Intellectual Efficiency	33.	.70761	.15673
CPI Psychological Mindedness	34.	.71838	.01024
CPI Ach. via Independence	32.	.87277	.10480
CPI Capacity for Status	18.	.98203	.28884
CPI Leadership Potential	39.	.98897	.39853
CPI Dominance	17.	1.04834	.40019
CPI Sociability	19.	1.08948	.50980
CPI Independence	22.	1.19695	-.29468
CPI Empathy	23.	1.23131	.33728
CPI Self Acceptance	21.	1.24506	.23287
CPI Flexibility	35.	1.38732	.20001
CPI Creative Potential	41.	1.59731	-.85241
CPI Social Presence	20.	1.80305	.23844

Table 4

Factor Scores Sorted on Factor 2

Item Name	Item #	Factor I	Factor II
Myers-Briggs Thinking	11.	-.90539	-1.10943
Myers-Briggs Judging	13.	-1.14930	-1.08749
Locus of Control	4.	-.65231	-1.00684
CPI ABGD Personalities	42.	-1.17509	-.98279
CPI Creative Potential	41.	1.59731	-.85241
Prior Professional Exp.	1.	-1.28968	-.85140
Grade Point Average	3.	-1.24429	-.83161
Dialogue Journals	5.	-1.32521	-.82448
CPI V1 Internality	14.	-.09872	-.81390
Myers-Briggs Introvert	6.	-1.41070	-.79472
Myers-Briggs Intuitive	9.	-.[illegible]018	-.73891
Myers-Briggs Sensate	8.	-1.[illegible]0572	-.71862
Myers-Briggs Extrovert	7.	-.41182	-.71044
Myers-Briggs Feeling	10.	-1.10948	-.60497
Myers-Briggs Perceptive	12.	-.66116	-.37500
CPI Feminine/Masculine	36.	-.25789	-.30185
CPI Independence	22.	1.19695	-.29468
CPI Psychological Mindedness	34.	.71838	.01024
CPI Good-Impression	27.	.04053	.07678
CPI Ach. via Independence	32.	.87277	.10480
CPI Intellectual Efficiency	33.	.70761	.15673
CPI Flexibility	35.	1.38732	.20001
CPI Self Acceptance	21.	1.24506	>£287
CPI Social Presence	20.	1.80305	.23844
CPI Work Orientation	38.	.38616	.23938
CPI Ach. via Conformity	31.	.13651	.24485
CPI Self-Control	26.	-.48783	.25232
CPI Responsibility	24.	-.02632	.25960
CPI V2 Norm Favoring	15.	-.45217	.28228
CPI Capacity for Status	18.	.98203	.28884
CPI Managerial Potential	37.	.37894	.32644
CPI Empathy	23.	1.23131	.33728
CPI Social Maturity	40.	.36077	.34888
CPI Leadership Potential	39.	.98897	.39853
CPI Tolerance	30.	.48132	.39896
CPI Dominance	17.	1.04834	.40019
CPI Socialization	25.	-.22319	.42153
CPI V3 Realization	16.	.48639	.46103
CPI Sociability	19.	1.08948	.50980
CPI Well-Being	29.	.16735	.60544
CPI Communality	28.	.04314	.91135
Torrance Test of Creativity	2.	-2.56323	5.19297