SELF-EVALUATION OF REFLECTIVE THINKING

AMONG PRE-SERVICE AND IN-SERVICE
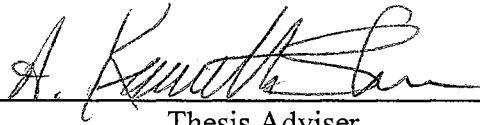
TEACHERS

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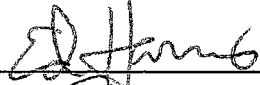University of Central Oklahoma
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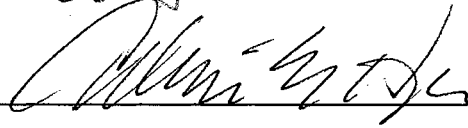SELF-EVALUATION OF REFLECTIVE THINKING

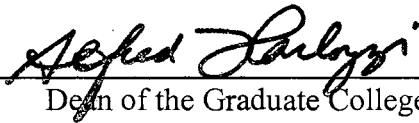AMONG PRE-SERVICE AND IN-SERVICE

TEACHERS

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CHAPTER I

Introduction

Quality teacher education programs are necessary to place qualified instructors in elementary and secondary classrooms (Darling-Hammond, 2000; Shanker, 1996). National standards are set by the National Council for Accreditation of Teacher Education (NCATE) and the International New Teacher Assessment and Support Consortium (INTASC) to assist colleges and universities in creating effective programs. Evaluation of teacher candidates' reflection on these standards is mandated as a means to assess the candidate's ability to become an effective teacher (NCATE, 2000). When empirical evidence can be found, candidates' ability is shown at a low level of reflection (Allen, 1998; Gustafson & Bennett, 1997; Toh, 2001).

Some researchers believe the low level of reflection may be a result of the inability to teach reflective thinking because it is simply a developmental level/stage the candidate must reach on his/her own through life experiences (Bowen, 1989; Brabeck, 1984; Collier, 1999; Kitchener, 1983). For example, Greenwood (1991) states that the reflective process is a "multiple, diversifying, sense-making process" that occurs over long periods of time (p. 104).

Others are of the opinion that individuals can be taught reflective thinking and have listed the strategies used to accomplish this task (Henley, Anderson & Schick, n.d.;

Reiman, 1999; Zeichner & Liston, 1987). One such strategy is to provide the needed

conditions for reflective thinking to take place (Sprinthall & Thies-Sprinthall, 1983).

Research to gather empirical data is needed to confirm this speculation.

Statement of the Problem

Reflection or reflective thinking of a teacher education candidate appears to be

possible only as a result of life experiences (Bowen, 1989; Brabeck, 1984; Collier, 1999;

Kitchener, 1983). However, some scholars disagree with this assumption. They believe

reflective thinking is not necessarily a result of life experiences only but also a skill that

can be taught (Henley, Anderson & Schick, n.d.; Reiman, 1999; Zeichner & Liston,

1987). Sprinthall and Thies-Sprinthall (1983) would explain the existence of these two

conflicting views by arguing that candidates have not been given proper support for

development of reflective thinking skills. The problem studied here is the amount of

change, if any, in self-evaluation of reflective thinking attributes when needed conditions

are provided.

Definition of Terms

To discuss the issue of self-evaluation of reflective thinking skills, the following

terms and definitions were used:

Teacher candidates. Individuals who participate in a teacher education program. In this

case, those who are involved in the student teaching internship.

Needed conditions for action/reflection These include (1) roletaking, (2) reflection, (3) balance, (4) continuity, and (5) support and challenge (Sprinthall & Thies-Sprinthall, 1983).

Perception/self-evaluation/self-efficacy. "Cognitive judgments of one's capabilities with regard to specific tasks, problems, or activities" (Hackett & Betz, 1992, p. 237).

Reflective thinking/reflection. The ability to make an impact on the cognitive-structural level of the adult learner.

Experienced teachers. Teachers with one or more years experience teaching students in a P-12 school district.

Digital Video Editing. The process of adding captions to the video-taped teaching experience of the teacher candidates via a digital editing process using I-movie®.

Purpose of the Study

To begin, this study examined change in teacher candidates' perceptions about their reflective thinking ability by providing the needed conditions for action/reflection (Sprinthall & Thies-Sprinthall, 1983) using a process of digital video editing. Next, the study compared the candidates' levels of reflection before and after the intervention to the levels of reflection of experienced teachers.

Significance of the Study

The significance of this study is in its ability to add to the knowledge bases of theory, practice and research in the area of enhancing reflective thinking skills.

Theory

In recent years, state and national accrediting organizations have required teacher education programs to use multiple assessments to determine the strength of their programs. Portfolio assessment is a new addition to the traditional standardized testing methods commonly used for this purpose. The worthiness of evaluating teacher education candidates by means of measuring their reflective ability is widely accepted and even promoted by national standards setting organizations. The reflections within the portfolio are purported to predict whether or not a teacher candidate will become an effective teacher. Yet, when poring through the available research, little information is found to confirm this notion. Furthermore, it is debated whether or not the skill of reflective thinking can be "taught."

Practice

This study was designed to aid in determination of whether or not a candidate's ability to reflect on the teaching/learning process can be improved. It is predicted that as teacher candidates develop their ability to reflect on their teaching techniques, they are

better able to lead their P-12 students to success. In other words, a reflective teacher is more successful in helping P-12 students learn. When instructors of teacher education classes help the candidates to become more adept in their reflective thinking skills, the candidates will become better teachers. Therefore, if providing the needed conditions enhances a candidate's ability to reflect, those persons preparing teacher education candidates may wish to adopt this process.

Research

As a researcher, my interest lies in discovering if reflective thinking skills can be "taught" to teacher education candidates. This study design is based upon the strategies identified by Sprinthall and Thies-Sprinthall (1883) to attempt to accomplish this task. Empirical data gathered will confirm whether or not these strategies might work.

Limitations

Limitations associated with research studies may have an effect on interpretation or generalizability of the results. These limitations typically occur due to the design constraints involving method of sampling, measurement problems, or misspecification of the relationship expected and observed. Limitations of this study include:

1. Implications are only indicative of a relatively homogeneous population in a rural area of the southwestern United States.

2. The sample size is small (n=13) for the experimental and control groups.

3. A single method of evaluation is used, i.e. self-evaluation.

4. While many avenues are available to provide the "needed conditions," video-editing is the method used in this study.

Theoretical Perspective/Framework

Teaching/Learning Framework

Based upon the concepts found in the theories of Piaget, Vygotsky, and Mead, Sprinthall and Thies-Sprinthall (1983) identify five "needed conditions for adult development: action/reflection." (See Table 1.) These conditions appear to be necessary for adult development in the moral, conceptual, and ego domains as documented in a series of studies.

Table 1.

The Teaching/Learning Framework.

Conditions for Adult Development

1. Roletaking (or significant experience)
2. Reflection (on experience)
3. Balance (between reflection and experience)
4. Continuity (continuous interplay of action and reflection)
5. Support and Challenge (by an instructor)

The first condition, *roletaking* (action), is an experience for the teacher education candidates in a real world context, i.e. student teaching. This is different from role-playing. During student teaching, candidates are placed in an actual classroom with

genuine students. They are not teaching their peers who are pretending to be students. Roletaking must take place prior to reflection, as it shapes a candidate's reflection.

Within the action/reflection framework, the second condition, *reflection,* refers to the ability to make an impact on the cognitive-structural level of the adult learner.

> The pedagogy of action and guided reflective discourse makes demands
>
> on teachers' minds, on how they come to know and feel, on how they
>
> relate to learning, students and values and on the very complexity of the
>
> consciousness across epistemological, moral/ethical, and
>
> interpersonal/intrapersonal domains. (Reiman, 1999, p. 603)

Roletaking (action) and reflection must remain in *balance,* the third condition. If the candidate continues in his/her role without taking the time to reflect, then little is gained. On the other hand, if a candidate reflects, but does not have the opportunity to resume the role of "teacher," once again, little is gained.

This continuous interplay of roletaking (action) and reflection constitutes the fourth condition, *continuity.* Generally speaking, this means that the candidate must be involved in roletaking, and then be directly involved in reflecting upon the action that occurred. Soon afterward, the candidate must once again assume the role of "teacher" to act upon the recent reflection. Too much time between roletaking (action) and reflection, or visa versa, will delay the growth process.

Sensitive, caring instructors must provide the final condition, *support and challenge.* Essentially, by applying Vygotsky's (1978) zone of proximal development (ZPD) to adult learning, both support (encouragement) and challenge (new learning) are provided. The amount of either, however, is dependent on the candidate's own cognitive-

developmental growth pattern. The instructor(s) must recognize the learner's

(candidate's) development level and then gradually promote growth.

Reflective Thinking Pyramid

The "Reflective Thinking Pyramid" (Taggart and Wilson, 1998), represents three

levels of reflective thinking: technical, contextual, and dialectical. (See Figure 1.) Each

level represents various characteristics of reflective thinking. "Practitioners reflecting at

the technical level function with minimal schema from which to draw when dealing with

problems" (Taggart & Wilson, 1998, p. 2). Novice reflectors are generally considered to

be at this level. At the contextual level, individuals use self-reflection to "interpret and

inform practice and establish congruency between theory and practice" (Taggart &

Wilson, 1998, p. 4). The highest level is the dialectical level. Here individuals use critical

reflectivity to contemplate ethical and political matters in their profession.

The *Profile*, a self-evaluation tool designed to explore an individual's current

level of reflective thinking, corresponds to the "Reflective Thinking Pyramid." The

following scale of totals is used to determine an appropriate level of reflection.

Dialectical level = 105-120

Contextual level = 75-104

Technical level = Below 75

DIALECTICAL
LEVEL

105-120

CONTEXTUAL
LEVEL

75-104

TECHNICAL LEVEL

Below 75
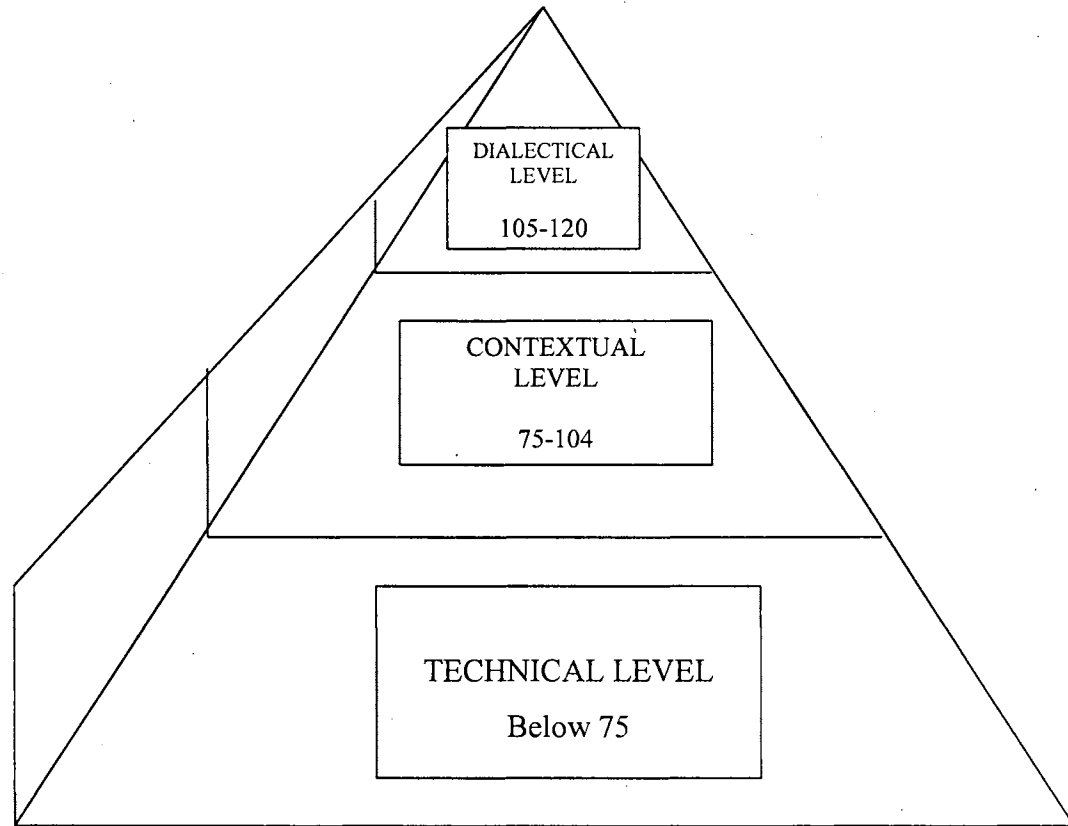
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Figure 1. Reflective Thinking Pyramid

Research Questions/Hypotheses

This study seeks to establish a relationship between support during the process of reflection and the level of perceived reflective thinking skills based on the following research questions:

1. In what way does providing teacher candidates with the needed conditions for action/reflection (Sprinthall & Thies-Sprinthall, 1983) change the self-evaluation/perception of their reflective thinking skills?

$H_0 1$: No difference will be found in pre- and post-training self-

evaluation/perception of reflective thinking skills among teacher candidates.

2. What relationship exists between those who received treatment and those who did not?

$H_0 2$: No difference will be found in the self-evaluations/ *perceptions of reflective thinking skills of posttest scores of the* experimental and control groups.

3. What relationship exists between experimental teacher education candidates' self-evaluation/perception of reflective thinking ability post scores and experienced teachers' self-evaluation/perception of reflective thinking scores?

$H_0 3$: No difference will be found in self-evaluation/perception of reflective thinking skills of the experimental group post scores and the experienced teachers' scores.

Summary

If our nation desires a quality education for the citizens of the United States, it must place fully prepared and qualified teachers into the classrooms. An essential part of this professional preparation today involves the portfolio evaluation process for the teacher education candidates as evidence of a strong teacher education program. The reflections in candidates' portfolios are designed to indicate a candidate's success in understanding the content and pedagogy involved in the teaching profession. Now a plan is needed to help the candidates hone their reflective thinking skills.

CHAPTER II

Review of the Literature

This chapter reviews aspects of a quality teacher, particularly reflective thinking skills. The standards set forth by a national accrediting agency for teacher preparation include guidelines concerning a teacher candidate's opportunities to learn content and pedagogy, as well as his/her ability to demonstrate the knowledge he/she gained through reflections placed in a professional portfolio. It also discusses the difficulty in evaluating the reflections due to the numerous definitions currently in the literature and the lack of specific requirements. There are two basic positions towards reflective thinking. The first says reflective thinking is developmental, and the second, that reflective thinking skills can be taught. Lastly, this chapter looks at how technology might be used to improve a candidate's ability to reflect, and the utilization of self-assessment as a tool to measure growth.

Background

Quality Teachers

Quality education in the PreK-12 environment requires placing qualified instructors in elementary and secondary classrooms. Teacher qualifications, as indicated by degrees earned, certification and experience, have the highest positive correlation to student achievement with the greatest correlation being the teacher's "knowledge of teaching and learning" (Darling-Hammond, 2000). Shanker (1996) feels that strengthening the profession is the basis for assuring the quality of professional educators. One of the most important steps of developing quality teachers is to "require rigorous training to acquire the knowledge and skills necessary to practice the profession" (Shanker, 1996, p.221). Hence, teacher education programs are critical components in developing quality teachers.

The findings of the National Center for Research on Teacher Learning (NCRTL) indicate that, in order for teachers to promote active learning for their students, they must have both subject matter and pedagogical content knowledge (NCRTL, n.d.). Teaching active learning (engagement) includes: (a) activities focused on reasoning and the evaluation of evidence; (b) empowering students to speculate just what a problem is and how it might be solved; and (c) enabling students to clarify and expand on ideas. These goals are met as prospective teachers "learn to talk about and reflect upon their own thinking, questioning, negotiating, and problem-solving strategies" (NCRTL, n.d.). The most important aspect is that teacher candidates need to experience this kind of teaching

themselves in order to successfully adopt the pedagogy. In other words, the instructors

must "walk the talk," i.e. to model this process of reflection and active engagement.

Standards

With this in mind, The National Council for Accreditation of Teacher Education

(NCATE) aligns their standards with the International New Teacher Assessment and

Support Consortium (INTASC). These standards call for teacher candidates to be

properly trained in areas of content knowledge and pedagogy. The standards go on to

articulate that candidates need to be "reflective practitioners," i.e. to demonstrate the

ability to reflect on their teaching experiences (NCATE, 2000).

Teacher preparation begins by providing opportunities for candidates to learn

content knowledge and pedagogy. As candidates progress through the teacher education

program, they create a portfolio. The professional portfolio, a collection of thoughtfully

selected artifacts and reflections (Brown & Irby, 1997), allows teacher candidates to

demonstrate an understanding of what they will need to know in order to create

successful learning environments for their students. Criteria for the portfolio also

establish a means for the candidates to demonstrate the knowledge, skills, and

dispositions they have acquired through the opportunities afforded in the teacher

education program. The portfolio provides a connection to the contexts and personal

experiences of its creator, and is considered to be an authentic and dynamic method of

assessment that shifts ownership and responsibility for learning to the learner. In addition,

the portfolio process allows an opportunity for the candidate to demonstrate flexible

thinking. Most of all, the individual's knowledge and understanding of this process offers support to the candidate as he/she becomes a life-long learner (Krause, 1996).

History of Reflection

The crux of the portfolio is reflective thought, the act of serious thought or contemplation process the candidate goes through as he/she prepared his/her portfolio. John Dewey introduced this concept in the 1910. His basic assumption is that learning improves as the process of reflection is utilized (Shermis, 1999).

The concept of reflective thought has been researched and developed since Dewey advocated it. An example of that is found in the work of Merriam and Caffarella (1999). They summarize what they have determined as the three major assumptions underlying reflective practice as: (a) problem finding and problem solving, (b) making judgments for particular situations, and (c) taking action based on the first two. Similar categories are defined by Boud, Keogh and Walker (1985); Kemmis (1985); Schön (1983); and Russell and Johnstone (1988). Yet another expert in the field of reflection, Mezirow (1978) introduces a different aspect of the concept, transformative learning. Mezirow interjects that when individuals critically reflect on their assumptions and beliefs, and they intentionally make and implement plans that bring about new ways of thinking about their world, then transformative learning occurs. This is precisely what teacher education programs hope to achieve. They hope to transform teacher candidates into effective teachers.

Portfolio artifacts, coupled with reflection, allow insight beyond the performance itself of the preservice teacher by examining the choices for his/her actions (Cole, 1992; Gilman & Hassett, 1995). Therefore, the reflection process should help to determine whether or not a candidate will become a successful teacher.

Reflection as Assessment

Although the usefulness of reflections gathered in a portfolio in teacher education appears to be well established, teacher educators may want to consider the fairness and appropriateness of its use before accepting it without question. Theoretical support for portfolios is strong, but empirical support is sparse (Borko, Michalec, Timmons, and Siddle, 1997). Reiman (1999) indicates that the "goal of developing more reflective teachers to act effectively and responsibly is unrealized due to lack of theory and lack of testing."

While INTASC and NCATE require that levels of reflection be demonstrated, there is not a uniform definition accepted, or a uniform way to determine these levels. The prevailing problem seems to be the lack of a universal concept of just what this reflective process should contain. Specific criteria have not been developed thus causing this problem.

Defining Reflection

In 1988, Regie Routman "took educators by storm" (Glazer, 2004) in a session at the annual meeting of the International Reading Association when she told educators to "reflect upon your teaching." This spurred a great deal of interest in the concept of reflective thinking, which has in turn produced a number of definitions. Taggart and Wilson (1998) compiled the following list of eight prominent reflective thinking definitions:

1. Reflective learning is problem raising and problem solving. Fact-gathering is combined with deductive processes to construct, elaborate and test hypothesis. (Bigge and Shermis, 1992)

2. [Reflective thinking is] our attempts to understand and make sense of the world. (Brubacher, Case, and Reagan, 1994, p.36)

3. [Reflective thinking is] active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends. (Dewey, 1933, p. 9)

4. Reflection...refers to the capacity of a teacher to think creatively, imaginatively and at times, self critically about classroom practice. (Lasley, 1992, p. 24)

5. [Reflective thinking is] a disciplined inquiry into the motives, methods, materials and consequences of educational practice. It enables practitioners to

thoughtfully examine conditions and attitudes which impede or enhance

student achievement. (Norton, 1994, p. 139)

6. [Reflective thinking is] a way of thinking about educational matters that

    involves the ability to make rational choices and to assume responsibility for

    those choices. (Ross, 1989, p. 22)

7. [Reflective thinking is] a process involving decision-making in a socio-

    political context, identification of problems, a search for satisfactory answers,

    and investigation of social problems realized in living.

8. It [the cycle of inquiry] is initiated by the perception of something troubling or

    promising, and it is determined by the production of changes one finds on the

    whole satisfactory or by the discovery of new features which give the situation

    new meaning and change the nature of questions to be explored. (Schön,

    1983, p. 151)

This list illustrates the frustration teacher education candidates face when trying to

comprehend what they are being asked to when they are asked to "reflect" on the

teaching competencies.

Measuring Reflection

Stein (2000) believes "a weakness in the use of critical reflection is the lack of

consistent way to ensure the depth and outcome of critical reflection" (p. 2). The

following paragraph discuss some of the relevant theories.

Schön's (1987) model of the "reflective practioner" and van Manen's (1977)

hierarchical levels of reflection are forerunners in this area of study. Similar levels of

reflection are identified by Hatton and Smith (1995); Kember, D., Jones, A., Loke, A.,

McKay, J., Sinclair, K., Tse, H., Webb, C., Wong, F., Wong, M., & Yeung, E. (1998);

Wellington (1996), and Zeichner (1992). Sparks-Langer, Colton, Simmons, Starko and

Pasch (1990) have developed a coding scheme to "evaluate students' ability to reflect on

the pedagogical principles underlying teaching decisions, contextual factors affecting the

application of the principles, and moral, ethical, or political issues surrounding a teaching

experience" (p. 27). Other means of examining reflection has been the identification of

"variables that may effect a learner's reflection processes" (Gustafson & Bennett, 1997);

a "set of attitudes and abilities to be a reflective practitioner," (Rodriguez, 1996); and the

self-assessing *Profile* which correlates to the *Reflective Thinking Pyramid* (Taggart &

Wilson, 1998). Yet, none of these frameworks are adopted by the national organizations

(i.e. NCATE, INTASC) as the official way to measure reflection.

Validation of the effectiveness of reflective practice comes primarily from two

methodologies – case study and survey. A survey to determine the impact of portfolio

assessment impact on preservice teachers' knowledge and attitudes conducted by

Mokhtari, Yellin, Bull and Montgomery (1996) shows the majority of students

responding positively to the use of portfolio. This agrees with the notion that a primary

benefit of the reflection process is to build a candidate's reflective thinking skills. Helen

Freidus (1997, 1998) has researched the benefits of reflective practice in portfolio and

narrative process through case study methodology. Her findings indicate that reflective

practice develops in the context of conversations occurring in an environment of trust.

Positions on Reflection

Teacher education programs, based on standards, have historically emphasized presenting the knowledge and pedagogy necessary to teaching, and assessing candidates' comprehension on what they learned. Programs have not concentrated on teaching candidates *how* to reflect. If reflection is so critical, one would think teacher education programs would be assisting candidates in developing this skill.

Developmental Position

Perhaps teacher education programs do not teach this because reflection cannot be taught, only measured. David Greenwood (1991, p. 104) states the reflective process is a "multiple, diversifying, sense-making process" that occurs over long periods of time. Collier (1999, p. 179) notes, "Reflective practice is a unique and individual developmental process." Reiman (1999) examines reflective practice in relation to important elements of Vygotsky's and Piaget's theories. He notes that teachers vary in their ability to reflect on experiences. So, if the reflective process entails the process of cognitive development, as Kitchener (1983) and others (Bowen, 1989; Brabeck, 1984) argue, then what teacher educators are assessing in a candidate's portfolio reflection is their level of cognitive development and not necessarily their understanding of the competencies/standards of effective teachers. It has already been shown that performance (GPA) and level of reflection have a positive correlation (Sparks-Langer, et.al, 1990;

Toh, 2001). Critical thinking skills developed during reflection may be necessary for the development of higher-level thinking, i.e. critical reflection. Guaranteeing the development of reflective thinking skills is another matter.

Teachable Position

If the reflective process is considered a form of critical thinking, then it may be conceptualized as a metacognitive approach to problem solving. This approach is a systematic technique that needs to be taught to teacher candidates if they are to be assessed on this method. Strategies for the development of reflective teachers have been designed by Zeichner and Liston (1987) (four varieties of reflective teaching practice); Henley, Anderson and Schick (n.d.) (steps to enhance development); Hatton and Smith (1995) (strategies designed to foster reflection); and Reiman (1999) (outline cognitive-developmental growth for adults); among others. While most used only journal writing and/or interviewing (Henley, Anderson & Schick, n.d.; Reiman, 1999), others use technology to aid the process (Bliss & Mazur, 1996; Daniel, 1996; Hatton & Smith, 1995; Kompf & Bond, 1995; Kottkamp, 1990; Sherin, 2000; Spurgeon & Bowen, 2002; Trimble, 1996).

Teaching Reflective Thinking

The framework chosen to teach reflective thinking for this study is the "needed conditions for adult development: action/reflection" (Sprinthall & Thies-Sprinthall, 1983). As discussed in Chapter One, Sprinthall and Thies-Sprinthall (1983) identify five needed conditions. They are: roletaking, reflection, balance, continuity, and support and challenge.

Use of Technology

Using technology to assist students' learning is an accepted practice. Video-taping, specifically, is identified as being used a number of times with teacher education candidates (Daniel, 1996; Kompf & Bond, 1995; Kottkamp, 1990; Sherin, 2000; Sprugeon & Bowen, 2002; and Trimble, 1996) and career teachers (White, 1987). Summarized in the words of Komph and Bond (1995), "The outcomes and evaluations drawn from external sets of information may bring about a more informed mode of reflection" (p. 13).

However, videotaping also has drawbacks. The equipment is not readily available to many, its presence is more obtrusive, and it may affect behavior of those being taped. So a true representation may not be gleaned for the candidate.

Measuring Perceptions

Newman and Schwager (1992, p. 127) prove the idea that "children who perceive themselves as academically competent tend to display high levels of task engagement and have high achievement." The results were the same whether perceived academic competence, beliefs of agency or capacity, or measures of self-concept of ability were used. In 1987, Lent, Brown and Larkin compared two alternate theoretical models for predicting career and academic behavior with a self-efficacy model. They prove that self-efficacy is more predictive than interests of academic achievement and persistence. According to Hackett and Betz (1992), this is in keeping with the situation-specific nature of the self-efficacy construct, in which self-efficacy is defined as "cognitive judgments of one's capabilities with regard to specific tasks, problems, or activities" (p. 237). Furthermore, Brown (1999) says that [a candidate's] "contribution to self-efficacy is embedded in reflection" and that "Self-assessment...offers students opportunities to make meaning of what they have learned and enhance their career development" (p. 4).

Students' perceptions are often assessed through interviews or surveys using a numerical scale or giving a verbal answer. Validity is a major concern with self-reports. Two potential sources of invalidity include (1) subjects who may not be able to judge their own ability, i.e. young children, and (2) subjects who distort their competence to gain favorable judgments by others or uphold their self-esteem. Assor and Connell (1992) give a list of suggestions for improving the validity of self-reports (p. 42-44), they include items such as, let the participant know that any answer is acceptable, use of a Likert-type scale of at least 4 points is better, tell participants who will see/not see the

results, using groups of more than 30 can be problematic and so forth. However, they find "no empirical justification for viewing self-reported appraisals of academic competence and efficacy as invalid measures of performance affecting self-appraisals" (p. 43).

Some researchers advocate the self-assessment methodology because they can: (a) cut loss of instructional time and cost; (b) evaluate hard-to-assess constructs; and (c) deliver information most people feel is useful for self knowledge (Harrington, 1995).

Administrator's Viewpoint

Professional development is an on-going process in education. In his book, *Professional Development for School Improvement,* Stephen Gordon (2004) discusses several frameworks for professional development including reflective inquiry, which is relevant to this study. Assisting teachers to be reflective practitioners through reflective inquiry is one method to improve learning for P-12 students. When preservice teacher candidates already have this skill, their ability to be effective teachers begins on the first day they step into a classroom, which is advantageous for a school administrator.

Summary

To bring quality education to every child in PreK-12 schools, educators need to place qualified teachers in every classroom. National organizations (i.e. NCATE, INTASC) for teacher preparation programs are attempting to lead the way in this effort

by establishing standards and criteria to accomplish this goal. NCATE and INTASC guidelines call for teacher candidates to reflect on their ability to meet the effective teacher competencies. It is through these reflections that teacher candidates are evaluated. However, some scholars debate that a person's ability to reflect depends on his/her developmental level of cognition. The ability to reflect does not necessarily assess how well a candidate meets a competency. Rather, it simply measures his/her level of cognitive ability to reflect. Various means of enhancing reflection have been tried, including the use of technology, such as videotaping, but most have focused on the use of narratives.

Because no exact guidelines are established to determine the level of reflection, case study and surveys are primarily used. Self-efficacy (or self-evaluation) is a considered a valid means of determining a persons ability to achieve, particularly when the survey and skill are one and the same. Using the *Profile* (Taggart & Wilson, 1998), this study was designed to determine whether teacher education candidates' reflective skills were improved when provided with the "needed conditions" (Sprinthall & Thies-Sprinthall, 1983). It was also designed to examine the association between the perception of teacher candidates' reflective skills and those of experienced teachers.

CHAPTER III

Methodology

This study was designed to determine whether teacher education candidates'

reflective skills were improved when the "needed conditions" (Sprinthall & Thies-

Sprinthall, 1983) were provided. It also examined the association between the perception

of teacher candidates' reflective skills and those of career teachers. This chapter gives the

details of participants, dependent and independent variables, instrumentation, and study

procedures of the self-evaluations of the experimental group, control group, and a group

of experienced teachers. Chapter three also provides information regarding the data

analysis procedure for statistical and practical significance of the results.

Participants

The population was teacher candidates in the Teacher Education program at an

Oklahoma regional university. Participants initially were 30 student teachers in P-12

classrooms in the fall 2003 semester. Participants were randomly assigned to one of two

groups: experimental (Group A) and control (Group B). Two female participants from

Group A were obliged to drop out when the public school administration opted not to

allow the intrusion of video-taping in the classroom of the student teacher. One male and

one female in Group B did not complete the study due to personal illness and pregnancy related illness, respectively.

A third group, a non-random sample of 54 experienced teachers (Group C), representing six public school districts from the Northwest region of Oklahoma was also asked to complete the same survey instrument and demographic survey as the experimental (A) and control (B) groups.

Variables

A dependent variable is an attribute that is influenced by an independent variable, and may be called the outcome, effect, etc. For this study, the dependent variable is the score of the participant on the self-evaluation instrument, the *Profile of Reflective Thinking Attributes (Profile)*. This score is dependent up the influence of the "needed conditions" (Sprinthall & Thies-Sprinthall, 1983) to assist teacher candidates' development of their reflective thinking skills. The "needed conditions," then, is the independent variable. Scores from the *Profile* correlate to the levels of reflection illustrated on the "Reflective Thinking Pyramid," thus a determination may be made regarding the influence of the "needed conditions" on an individual's level of reflection.

Instrumentation

The instrument used to measure the dependent variable, self-evaluation of reflective thinking, was the *Profile (Profile)*. (See Appendix A) The *Profile* is correlated to the *Reflective Thinking Pyramid* (p. 11). Items on the *Profile* were created from a list of teacher attributes believed to be evidence of reflective thinking found through research. Its purpose is to determine a baseline level of reflection so that growth might be documented (Taggart & Wilson, 1998).

Validity of the Instrument

Validity refers to the degree to which a test measures what it says it measures so that researchers can draw meaningful and justifiable inferences from scores about a sample. Construct validity indicates whether a test measures a construct accurately. Some aspects of construct validity include content validity, criterion validity, and concurrent validity.

Content validity is the "extent to which experts believe that the instrument of assessment addresses the research objectives" (Wiseman, 1999, p. 541). A panel of five experts comprised of four professors and one instructor in the teacher education program established that the attribute instrument addressed the studies objectives of determining self-evaluation of ability to reflect, thereby establishing content validity, also known as face validity.

Criterion related validity, the relationship between the participant's performance on the instrument and the subject's actual performance, and concurrent validity, when one test is proposed as a substitute for another, were not considered in this study.

Reliability of the Instrument

Reliability refers to the consistency of a measurement. Similar to validity, there are three types of measures that could be used for reliability, i.e. stability, homogeneity or internal consistency, and equivalence. Stability reliability means that the instrument produces the same results with repeated testing. Equivalence is when the instrument produces the same results with an equivalent instrument is used. Internal consistency, chosen for this study, is the degree to which the individual items that constitute a test correlate with one another or with the test total. While the coefficient alpha has values from 0 to 1.0, the general rule of thumb is that it must be above 0.70 to be judged adequate (Hatcher & Stepanski, 1994). Chronbach's alpha, used to assess the internal reliability of constructs of the *Profile* attribute instrument, yielded a coefficient of 0.84 (Kessell & Miller, 2001).

Procedure

The first step of this quantitative study was to meet with all 30 of the P-12 student teachers to present the concept of the study. During the third week of the fall 2003 semester, the student teachers listened to the explanation of the study, i.e. to explore the

effects on teacher candidates' ability to reflect. Information about the project including the advantages (an additional professor to give support, undertaking the process of self-evaluation through video-editing, and having an artifact for their undergraduate portfolio), disadvantages (time to complete a pre and post survey, time to edit and time to meet with the professor providing support), and the opportunity to express any questions or concerns during the duration of the study was given at this time. These details of the study were given verbally and/or on the consent form (See Appendix B.) All 30 student teachers consented to participate. After consent forms were signed, students were randomly selected for assignments to Group A (experimental group) and Group B (control group).

Later that same day, all 30 student teachers completed the *(Profile)* instrument (Taggart & Wilson, 1998), as well as a demographic survey (Appendix C). Students listed an identification number of their own choosing on the instrument so that the pre and post scores could be correlated, yet kept confidential.

A group of experienced teachers (Group C) was also asked to complete the *(Profile)* and the demographic survey. All volunteers were participants at a regional professional development conference. Consent forms and surveys were distributed after a brief introduction by the researcher. Both forms were then voluntarily completed, and returned to a person other than the researcher. Approximately one-half of those present, or 54 teachers with P-12 experience, completed the forms. Their responses provided the data for comparison between teacher candidates and experienced educators.

One week following the initial meeting, the 15 teacher candidates from Group A attended a study session with direct instruction from the researcher. The first topic was

the Oklahoma Criteria for Effective Teaching and Administrative Performance (Oklahoma Criteria) (See Appendix D). Enacted by the Oklahoma Legislature, the Oklahoma Criteria is mandated to be used by all Oklahoma school districts when evaluating their teachers. The Oklahoma Criteria have the following components: Section I: Practice. Part A - Teacher Management Indicators (preparation, routine, discipline, and learning environment)and Part B - Teacher Instructional Indicators (establishes objectives, stresses sequence, relates objectives, involves all learners, explains content, explains directions, models, monitors, adjusts based on monitoring, guides practice, provides for Independent practice, establishes closure); Section II: Products. Part A – Teacher Product Indicators (lesson plan, student files, grading patterns) and Part B – Student Achievement Indicators. Items were examined allowing for group input to interpret what each meant. When all were comfortable with the meanings, the researcher moved to the topic of the reflective teaching process (see Appendix E).

The second topic, the process of reflective thinking was examined in a fashion similar to that of the Criteria. The primary role of this process is to observe one's own behavior and think about goals, methods, and reasons for one's choices in relation to the success of learning for P-12 students. The necessary attitudes and abilities to be a reflective teacher were highlighted one-by-one with time for questions and answers after each. Because of prior experience with writing reflective commentary for their portfolios, candidates appeared to believe they had a good concept of this process, as few questions were asked.

The researcher then introduced the "needed conditions" identified by Sprinthall and Thies-Sprinthall (1983), going through the same process as the other two topics. (See

Chapter I.) This was new information for the candidates and they seemed to listen attentively to the explanation of the conditions. Naturally, the most interest and questions came when the researcher described the following steps of their participation as the experimental group.

Group A participants were asked to choose a lesson plan they created based on Part B (Teacher Instructional Indicators) of the Oklahoma Criteria. After choosing the lesson plan and a time for its presentation during their student teaching experience, a videographer went to their P-12 classroom and videotaped their lessons. This person then assisted the student teaching participants in the video-editing process almost immediately after the video-taping session. This was generally done at the school site for the convenience of the candidate. Some candidates, student teaching in the same town as the university, chose to use the university as the site for video-editing. During this video-editing process, the participant identified each indicator of the Oklahoma Criteria in the lesson s/he taught as evidenced by the film. In some cases, not all indicators were taught. The participant wrote about this in his/her reflective commentary of the competency. (These reflective commentaries, along with the videotaped lesson artifact, were eventually placed in the participants' teacher candidate portfolios.)

Approximately mid-way through the semester, or near the eighth week, Group A participants met again with the professor for a question and answer session to provide the needed conditions of "balance, continuity, and support and challenge." The teacher candidates were asked to write one or two questions/comments/concerns on a 3 x 5 card to eliminate any anxieties that might occur. When read aloud, the questions/comments/concerns were discussed within the group and subsequently

addressed by the professor. The items were quite particular to the candidates' personal situation, but primarily included classroom management and teaching strategies (see Appendix F). Participation became lively after a few minutes when candidates became comfortable with the situation and gained confidence that no identification would be revealed. Further contact, i.e. e-mails, phone calls, with the professor was encouraged. These contacts consisted mostly of setting times to have the lesson filmed. Participants also had questions about portfolio artifacts and/or reflections, and sent statements of confirmation regarding the Oklahoma Criteria documented on the video.

At the end of the semester, the student teachers again completed the *Profile* self-evaluation instrument. Only 26 student teachers remained in the study, as noted earlier. At the same time as the completion of the *Profile,* participants were also given a handout and the opportunity to identify any thoughts/concerns/questions about their participation in the study. Group B participants had few comments, but those who responded said it was not obtrusive to their student teaching experience. Comments from Group A were positive; mostly stating the process was helpful (Comments can be found in Appendix G).

Data Analysis Procedure

The statistical test chosen for the analysis of data was determined by using the seven criteria outlined by John Creswell (2002). The comparison of the criteria to the proposed study shows (a) type of question – group comparison, (b) number of independent variables (IV) – one, i.e. score on the *Profile*, (c) number of dependent

variables (DV) – one, i.e. treatment with needed conditions, (d) number of covariates - 0, (e) continuous or categorical IV - categorical, (f) continuous or categorical DV - continuous, and (g) type of distribution of scores – normal, a t-test or analysis of variance test to be the appropriate statistical test.

To determine whether a statistically significant difference existed between the two means, pretest and posttest, a within-subject two-tailed t-test was used with a level of significance set at .05 for the first research question (change in the pretest and posttest scores of Group A and Group B).

To determine whether a statistically significant difference existed between independent samples, an analysis of variance test (ANOVA) with an alpha of .05 was used to analyze the data for the last two research questions (Group A vs. Group B; Group A vs. Group C).

Summary

Student teachers at an Oklahoma regional university and experienced teachers from the same geographical locale completed the *Profile* self-evaluation to allow the researcher to explore the possibility of enhancing the reflective thinking skills of teacher education candidates. A two-tailed t-test and ANOVA with an alpha of .05 were used to determine statistical significance in the findings.

CHAPTER IV

Presentation and Analysis of the Data

This study used quantitative measures to determine if changes occur in teacher

candidates' perceptions about their reflective thinking ability when "needed conditions

for adult development" (Sprinthall & Thies-Sprinthall, 1983) were provided. The study

also examined the relationship existing between teacher education candidates who

received all "needed conditions" (Group A) and those who received only the first two

"needed conditions" (Group B). A final relationship was examined between teacher

education candidates who received all "needed conditions" (Group A) and experienced

teachers (Group C).

Demographic Data

Study participants were from the northwest region of Oklahoma. The majority of

residents of this rural area are of European ancestry, as were the majority of participants

for this study. Group A participants ranged from 22-36 years of age, while Group B

participants ranged in age from 21-46 years. Neither group had any experience as

professional educators. Participants in the Experienced Teachers Group (C) ranged in age

from 25-61, and had from one to 33 years experience in the classroom. All groups had a larger number of female participants, as is common in the field of education. (See Table 2).

Table 2.

Participant Demographics

Demographic	Group A	Group B	Group C
Number	13	13	54
Gender			
Male	3	4	11
Female	10	9	43
Ethnicity			
Caucasian	11	9	53
Hispanic	0	0	1
No response	2	4	0
Age			
Age 25 and older	3	8	54
Under age 25	10	5	0
Years Experience			
Zero	13	13	
1-10			21
11-20			18
21-30			12
30+			3

Within-subjects Results

To determine whether a statistically significant difference existed between the two means, pretest and posttest, a within-subjects two-tailed *t*-test was used with a set alpha of .05. A positive result was seen when comparing the pre and post evaluation of both groups of teacher candidates who participated in the study.

Group A participants' within-subjects *t*-test results showed a significant statistical difference as a result of the intervention, i.e. providing the "needed conditions" of roletaking, reflection, balance, continuity and support and challenge; therefore H_0 (No difference is found in pre- and post-training perceptions of reflective thinking skills perceptions) was rejected (see Table 3). Twelve of the 13 participants had an improved perception of his/her reflective thinking skills ranging from a one to 28 point increase. Only one candidate in Group A had a lower posttest self-evaluation score (-3).

Table 3.

Comparison of within-subjects pre and post tests

Variance	A	(B)
t-value	3.714	(2.684)
df	12	(12)
p-value	<.01	(.02)

In addition to the significant statistical difference, Group A participants reported the process of video-editing (needed conditions of balance, continuity, support and challenge) as helpful. At the completion of the study and representative of the student teacher comments, one participant reported, "The video didn't bother me or my students.

It helped me, because I could see what I was doing instead of someone just telling me". Another said, "I was very nervous about the video, but I am really glad that I participated. . . . I have seen areas for improvement and worked on them after editing. I think all teachers should be videoed for a self-evaluation" (see additional students comments in Appendix G).

While not directly hypothesized, Group B participants' within-subjects t-test results showed a significant statistical difference as well, even though they received only the first two "needed conditions". (See Table 3.) These conditions included roletaking (student teaching) and reflection. Both are program requirements. Eleven of the 13 participants in Group B had an increased self-evaluation score ranging from two to 22, with two of its members having a lower posttest score (-3 and –14).

Between-subjects Results

The mean scores for the *Profile* for Groups A, B, and C are shown below in Table 4. A difference can be seen between the pre and posttests of both Group A and Group B. These differences indicate an increase in the perception/self-evaluation of the candidates' reflective thinking ability for both groups. The similar pre-test scores between the two groups confirm the equality of the groups at the onset of the study.

Table 4.

Profiles of Reflective Thinking Attributes Results

	Pretest		Posttest		F	p
Group	M	SD	M	SD		
A	90.615	8.678	99.77	8.825	0.233	>.05
B	92	9.15	99.46	6.89		
C	na	na	98.33	7.905		

The second part of the study examined the relationship between the two groups of teacher candidates, while the final part of the study looked at reflective thinking skills from a dimension outside the teacher education program itself. To test $H_0 2$ (No difference is found in self-evaluations/perceptions of the reflective thinking skills between the experimental [a] and control [b] groups) and $H_0 3$ (No difference will be found in self-evaluation/perception of reflective thinking skills of the post experimental group [A] scores and the experienced teachers [group C] scores), the experimental participants (Group A), and control participants (Group B) and participants (Group C) who were involved in teaching and reflecting on a daily basis throughout their experience as a P-12 teacher were compared. Data to evaluate the effects of different types of experiences that might influence reflective thinking skills were analyzed with a single-factor between-subjects ANOVA design, where participants were nested in the types of experience, i.e. they participated in only one of the groups given a particular condition. Table 4 contains the ANOVA results [$F(2,77)=0.233$; $p>.05$] which indicate the variance due to the experimental treatment is not significant, thereby accepting $H_0 2$ and $H_0 3$. This indicates that even a small amount of intensive classroom experience coupled with reflection can make a difference for preservice teachers.

Levels of Reflection

The *Reflective Thinking Pyramid* (Taggart and Wilson, 1998), used for this study,

illustrates three levels of reflection. The levels (and scale of totals) includes (a)

Dialectical level (105-120); (b) Contextual level (75-104); and (c) Technical level (Below

75). Table 5 shows the results of the scores from the *Profile* when correlated to the

Reflective Thinking Pyramid for each administration of the survey. Group A participants'

scores showed that the overall perception of their abilities was raised. When completing

the pretest, no candidates scored at the highest (Dialectical) level. After their experience

with the needed conditions, however, none were at the lowest (Technical) level, and three

candidates now scored at the highest (Dialectical) level.

Table 5.

Profile Scores/Reflective Thinking Pyramid Correlation

| | Group A | | Group B | | Group | |
	Pre	Post	Pre	Post	Pre	Post
Technical	1	0	0	0	na	0
Contextual	12	10	12	10	na	40
Dialectical	0	3	1	3	na	14

Participants' scores in Group B also showed an increase in perceptions of their

reflective thinking ability. Within this group, no candidates scored at the lowest level

during the pretest. And, two candidates who previously scored at the middle (Contextual)

level, now scored at the highest (Dialectical) level. (See Table 5.)

Table 6.

Reflective Thinking Pyramid Results

	A n (percent)	B n(percent)	C n(percent)
Technical	0 (0)	0 (0)	0 (0)
Contextual	10 (77)	10 (77)	40 (74)
Dialectical	3 (23)	3 (23)	14 (26)

A comparison of the groups *after* experience occurred showed the self-evaluation of all groups was similar. Nearly one-fourth of participants from 12 weeks to 33 years experience, believed they had the attributes necessary to be reflective at the Dialectical Level. (See Table 6.)

Summary

The data collected from the participants by means of self-evaluation and demographic surveys was reported in this chapter. In addition, commentary of the participants, both verbal and written, was included to bring an added flavor to the picture. Results of the study indicate that providing teacher candidates with the needed conditions for action/reflection (Sprinthall & Thies-Sprinthall, 1983) can have a positive change in the self-evaluation/perception of their reflective thinking skills. However, no significant difference was found between the control and experimental groups when examining their self-evaluation scores. And likewise, there was not a significant difference between the posttest scores of the experimental group and the scores of the experienced teachers. The

perceived levels of reflection for preservice teachers who completed student teaching

were comparable to the perceived levels of reflection of teachers with more experience.

CHAPTER V

Summary, Conclusions, and Recommendations

Included in this final chapter are reviews of the research problem and the methodology used, the findings with a comparison to the literature, conclusions, and recommendations for practice and additional research.

Review of the Problem

Teacher education programs strive to prepare a variety of individuals to teach in P-12 schools year after year. As a part of their preparation, the National Council for Accreditation of Teacher Education (NCATE) requires teacher candidates to *reflect* on standards considered necessary to be an effective teacher. The concept of reflection was introduced in 1933 by Dewey, and reportedly assists individuals in decision-making. The underlying presumption is that a reflective teacher is more effective in teaching P-12 students than one who does not exhibit such skills.

This study investigated a possible change in teacher candidates' perceptions of their reflective thinking skills (ability to reflect) when the "needed conditions for action/reflection" (Sprinthall & Thies-Sprinthall, 1983) were provided. The intention was to establish whether or not reflection could be "taught," so that teacher education

programs could better prepare individuals serving our school systems. The candidates' levels of reflection were also compared to the level of reflection of experienced teachers to determine if the levels of reflections of the two groups were equivalent once the intervention occurred.

Review of Methodology

Thirty teacher education candidates and 54 experienced teachers from the northwestern region of Oklahoma participated in this study. The *Profile* (Taggart & Wilson, 1998), a self-evaluation of reflective thinking skills was completed by an experimental group (A), a control group (B), and a group (C) of experienced teachers. The experimental group (A) was subjected to the five "needed conditions for action/reflection" identified by Sprinthall and Thies-Sprinthall (1983). These include roletaking, reflection, balance, continuity, and support and challenge. The control group (B) was subjected to the first two needed conditions, roletaking and reflection only, as they are required by the traditional student teaching course. Group C, experienced teachers, had no intervention whatsoever. Pre- and posttest scores for groups A and B were first assessed quantitatively using a within-subjects two-tailed *t*-test. Group A and Group B posttest scores and Group C scores were also analyzed using a single-factor between-subjects ANOVA design. The hypotheses and results are summarized next.

Summary of the Findings

$H_0 1$: No difference will be found in pre- and post-training self-evaluation/perception of reflective thinking skills among teacher candidates.

This study was designed to discover if changes occur in teacher candidates' self-evaluation of reflective thinking skills when the needed conditions were provided. The data show an increase in the self-evaluation scores of the teacher candidates, the experimental group, who were provided the five "needed conditions". However, coincidentally, the data also indicate that the self-evaluation scores of the control group improved, even though they only received the first two "needed conditions" (roletaking, i.e. student teaching, and reflection).

While a number of other studies have been conducted to promote the reflective abilities of individuals using various means, i.e. professional development schools, journaling, reflective coaching, and assorted critical reflection activities (Dinkleman, 2003; Reagan, Case, & Brubacher, 2000; Rodriguez & Sjostrom, 1998; Rowley & Hart, 1996; Taggart & Wilson, 1998; Thomas, 1998; Toh, 2001; and Zeichner, 1992), this study implemented the "needed conditions" using digital editing to promote reflection. With the exception of Toh, all studies were qualitative and indicated that level of reflective skills had been increased, similar to this study. Toh's (2001) quantitative study, which measured the level of reflection of teacher candidates' participation in journaling during a six-week practicum, did not assess changes in levels of reflection. Simply a measure of that level, it showed low levels of reflection when measured by two

independent raters. According to the self-evaluations of this current study, the teacher

education candidates believed themselves to be above the lowest level.

H_02: No difference will be found in the self-evaluations/perceptions of reflective thinking

skills of posttest scores of the experimental and control groups.

To test the second hypothesis, the *Profile* survey scores of the teacher candidates

in the experimental group (A) were compared to the survey scores of the control group

(B) to determine the worthiness of providing the *balance, continuity, and support and*

challenge (the final three "needed conditions"). No statistical significance could be

established when comparing the experimental and control groups' scores.

It appears that the first two "needed conditions for adult development"

(experienced by both Group A and Group B) are the more critical conditions, while the

remaining three "needed conditions" (experienced only by Group A) serve to enhance the

development of reflective thinking skills to a lesser degree.

H_03: No difference is found in self-evaluation/perception of reflective thinking skills of

the post experimental group (A) scores and the experienced teachers (Group C) scores.

Finally, the *Profile* survey posttest scores of the teacher candidates' were

compared to the survey scores of a group (C) of experienced teachers. Again, no

statistical significance was found, indicating that even a small amount of time spent as a

teacher in an actual classroom with reflection on that experience, makes a difference in

the perception of one's ability to be a reflective thinker.

Related Literature

Studying the scores of all groups, the results are extremely individualized; neither age nor experience could be correlated to the self-evaluation scores (See Appendix H). Particularly fascinating, considering the emphasis on self-reflection, were the scores of two National Board Certified teachers who participated in the study (see Appendices C and H for survey and answers). They had scores of 96 and 99, mid-level. Allen (1998), Collier (1999), and Reiman (1999) all related similar findings. Their studies also indicate that teachers vary in their ability to reflect, and they state that reflective practice is a uniquely individual process.

Levels of Reflection

Finally, the *Profile* survey results were correlated to the *Reflective Thinking Pyramid* to determine the *level* of reflection for each group. The pyramid is divided into three levels – Technical (lowest), Contextual (middle), and Dialectical (highest). Both of the teacher candidate groups – experimental (A) and control (B) - had an increase in the level of reflection as a group. However, most individuals only moved within the middle (Contextual) level which has a range of 75-104. The percentage of distribution within the levels of reflection was relatively equivalent among the three groups (A, B, and C) when compared *after* the teaching experience occurred. Namely, 74-77 percent of all participants fell into the Contextual (middle) level of the *Pyramid* with the other 23-26 percent at the Dialectical (highest) level.

Conclusions

The results of this study confirm the speculation that perceptions of reflective thinking skills are influenced when the needed conditions are provided to teacher education candidates. Interestingly, though, the current design of the student teaching internship, which includes only two of the five identified "needed conditions" - roletaking and reflection - apparently enhances teacher candidates' ability to think reflectively to levels similar of those of experienced teachers without additional augmentation. When a comparison of the experimental and control groups was made, the intervention (the remaining three "needed conditions" of balance, continuity, and support and challenge via digital video editing coupled with additional study sessions with a teacher education professor) did not result in a significant increase in reflective thinking ability.

Teacher candidates' opportunities to be involved with P-12 students and to reflect upon those encounters appears to make the greatest difference in their perceived level of reflection. You might say, "Practice makes perfect."

Recommendations

Application

The increased scores between the pretests and posttests in this study show that individuals believe their own reflective thinking skills have been enhanced. The needed

conditions of roletaking and reflection, experienced by both the experimental (A) and control (B) groups appeared to be the most influential of the five conditions identified by Sprinthall and Thies-Sprinthall (1983), suggesting that teacher education programs may want to consider more extensive opportunities for teacher candidates in a P-12 classroom.

One adaptation could be to plan each field experience for a more extensive period of time in the classroom. For example, the beginning field experience, typically 30 hours of total time with the teacher candidate visiting a classroom an hour or two each week, could become a full day experience, thus enabling the candidate to see what happens throughout the day, not just between 1:00 and 2:00 p.m. As teacher candidates progressed through the program, field experiences opportunities could be increased proportionally, eventually incorporating more days of actual teaching during the student teaching internship.

Offering the needed conditions of roletaking, reflection, balance, continuity, and support and challenge resulted in a greater increase in *Profile* scores for experimental group (A) than for control group (B). Thus, a second consideration for adaptation would be to insure the incorporation of the remaining conditions into courses that have field experiences associated with them. For example, the student teaching internship could include times when the student teachers would formally meet with the instructors and/or mentors to critically examine their performance as a teacher.

Group A participants found the process of critiquing themselves via the videotaping experience to be quite helpful when trying to improve classroom performance. Basically, the old saying, "a picture paints a thousand words," still holds true. When/if the equipment is available, and the situation would not be disruptive to the

P-12 learning experience, this would be another way to help teacher candidates become more successful teachers.

Research

This study's small population may mitigate against reaching to broad of a conclusion. The number of participants should be increased in a similar study to see if similar results can be reached. A larger body of teacher education candidates, possibly from a variety of geographical areas, would boost the support for the conclusions drawn from this study.

Even though this study followed the suggestions for improving the validity of self-assessments, there is still a risk that individuals may not be able to judge their own ability and/or they may distort their competence to gain favorable judgments by others. While this study showed individuals perceived reflective thinking skills to be at the middle to highest levels on the *Reflective Thinking Pyramid* (Taggart & Wilson, 1998), Toh's (2001) study found reflections to be at low levels when assessed by an independent rater using an adapted model of levels of reflection designed by Sparks-Langer, et al. (1990). The difference may be due to self-assessment versus an independent rater's assessment, or it may have been a result of the difference between these two scales.

And finally, the student teachers participating in this study had a significant increase in their perceived reflective thinking skills. However, NCATE has mandated the incorporation of reflection into a candidate's preparation, and the state of Oklahoma has required portfolios to provide evidence of this reflection at various points that a candidate

progresses through a teacher education program. To verify that the student teaching internship makes the most difference in reflective thinking skills, a three-part study in recommended. The teacher candidates would be surveyed during the first teacher education course, then just prior to student teaching, and finally at the conclusion of student teaching. As Allen (1998) emphasized, we need to "pinpoint" when teachers can expect to "effectively reflect."

If a reflective teacher were a more effective teacher, as seems to be supported by the premise of the NCATE requirement, a more important study would be to correlate the level of reflective thinking skills of a teacher to P-12 learning. This correlation would be difficult, however, because of the factors that influence student learning, such as cognitive abilities, physical abilities, and the various environments that the child encounters.

Value of the Research

After reviewing of the literature, and conducting this study, the debate over whether reflective thinking is merely a level of development or a cognitive process that can be enhanced will likely continue. Both viewpoints hold seemingly defensible arguments. Just as with any other personal characteristic, i.e. playing sports, singing, painting, working math equations, the natural abilities of individuals to be reflective thinkers varies considerably, but can be enhanced.

The purpose of this study was to determine whether or not reflective thinking skills could be improved. According to this quantitative research, they can. Comments

from the participants of the study were also quite positive concerning the use of critiquing a video taped lesson. However, this is not the only method that might be successful.

The research reminds us that any skill varies with each individual. However, some minimum level of skill is desired in those who teach students. Instructors in teacher education programs must address the needs of those learners individually as well.

An extensive teaching experience with P-12 students coupled with reflection was determined to be the most important factor to the development of reflective thinking during this study. As teacher education programs institute field experience components, they need to be cautious that the experiences are designed for maximum effectiveness.

A Final Thought

Teacher education programs and professional development planning incorporates the development of reflective practioners. With the current political climate and federal legislative agenda, often teachers are being told what to teach and how to teach it. Schools have adopted many programs that are scripted, such as Saxon math or phonics, and mandated reading programs, e.g., Literacy First, leaving teachers limited in their opportunities to practice the skill of reflective teaching.

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Appendix A

Self-evaluation Instrument

Form 2.1 Profile of Reflective Thinking Attributes

To explore your current level of reflective thinking, respond to the following questions. For each statement, circle the number of the indicator that best reflects your agreement:

4 = Almost always
3 = On a regular basis
2 = Situational
1 = Seldom

When confronted with a problem situation,

1.	I can identify a problem situation	4	3	2	1
2.	I analyze a problem based upon the needs of the student	4	3	2	1
3.	I seek evidence which supports or refutes my decision	4	3	2	1
4.	I view problem situations in an ethical context	4	3	2	1
5.	I use an organized approach to problem solving	4	3	2	1
6.	I am intuitive in making judgments	4	3	2	1
7.	I creatively interpret situations	4	3	2	1
8.	My actions vary with the context of the situation	4	3	2	1
9.	I feel most comfortable with a set routine	4	3	2	1
10.	I have strong commitment to values (e.g., all students can learn)	4	3	2	1
11.	I am responsive to the educational needs of students	4	3	2	1
12.	I review my personal aims and actions	4	3	2	1
13.	I am flexible in my thinking	4	3	2	1
14.	I have a questioning nature	4	3	2	1
15.	I welcome peer review of my actions	4	3	2	1

Note: From Promoting Reflective Thinking in Teachers (p.45-46), by G. L. Taggart and A.P. Wilson, Thousand Oaks, CA: Corwin Press, Inc. Copyright 1998 by Corwin Press. Reprinted with permission.

Form 2.1 Continued

When preparing, implementing, and assessing a lesson,

16.	Innovative ideas are often used	4	3	2	1
17.	My focus is on the objective of the lesson	4	3	2	1
18.	There is no one best approach to teaching	4	3	2	1
19.	I have the skills necessary to be a successful teacher	4	3	2	1
20.	I have the content necessary to be a successful teacher	4	3	2	1
21.	I consciously modify my teaching to meet student needs	4	3	2	1
22.	I complete tasks adequately	4	3	2	1
23.	I understand concepts, underlying facts, procedures, & skills	4	3	2	1
24.	I consider the social implications of so-called best practice	4	3	2	1
25.	I set long-term goals	4	3	2	1
26.	I self-monitor my teaching	4	3	2	1
27.	I evaluate my teaching effectiveness	4	3	2	1
28.	My students meet my instructional objective when evaluated	4	3	2	1
29.	I use a journal regularly	4	3	2	1
30.	I engage in action research	4	3	2	1

Tally the number of the circled indicators, write the number of each tally below, multiply by the indicator number, then total each of the subtotals to reach an overall score.

Indicator 4 × _____ = _____

Indicator 3 × _____ = _____

Indicator 2 × _____ = _____

Indicator 1 × _____ = _____

Total _____

Appendix B

Consent Form

I,_____, hereby authorize or direct Beverly Warden, or associates or assistants of his or her choosing, to perform the following treatment or procedure.

I have been asked to complete the Profiles of Reflective Thinking survey by a doctoral student in the School of Educational Studies at Oklahoma State University. If chosen by random selection, I may be asked to participate in an activity whereby the "needed conditions for action/reflection" (Sprinthall & Thies-Sprinthall, 1983) will be present.

The purpose of this research project, "Can Reflective Thinking Skills be improved when the Needed Conditions are provided?" is twofold: (1) the information collected from the survey will be used by the researcher to create a dissertation about reflective thinking, and (2) the information collected by the researcher may be used in the scholarly publications of the researcher and/or the dissertation advisor.

I understand that participation is voluntary and that I will not be penalized if I choose not to participate. I also understand that I am free to withdraw my consent and end my participation in this project at any time without penalty after I notify the project director (Beverly Warden, 1051 Eighth Street, Alva, OK 73717; Telephone(580) 327-3657, or e-mail bjwarden@nwosu.edu.)

I understand that the survey, which should take approximately 20 minutes to be completed, will be conducted according to commonly accepted research procedures and that information taken from the survey will be recorded in such a manner that participants cannot be identified directly or through identifiers linked to the participants.

I understand that the survey will not cover topics that could reasonably place the participant at risk of criminal or civil liability or be damaging to the participant's financial standing or employability or deal with sensitive aspects of the participant's own behavior such as illegal conduct, drug use, sexual behavior or use of alcohol.

I may contact the dissertation advisor, Dr. Kenneth Stern, College of Education, School of Educational Studies, 311 Willard Hall, Oklahoma State University, Stillwater, Oklahoma 74078; Telephone (405) 744-8929; e-mail aks9445@okstate.edu, should I wish further information about the research. Additional information may be obtained from Sharon Bacher, IRB Executive Secretary, Oklahoma State University, 415 Whitehurst, Stillwater, OK 74078; Telephone (405)744-5700; e-mail sbacher@okstate.edu.

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.
Date: _____   Time: _____(a.m./p.m.)

_____

Name (printed)   Signature

I certify that I have personally explained all elements of this form to the subject or his/her representative before requesting the subject or his/her representative to sign it.

Signed: _____
                    Project director or authorized representative

Appendix C

Demographic Survey

Dear Participant,

In the quest to uncover the importance of reflective thinking in relation to effective teaching, the following demographic information would be greatly appreciated.

1. How many years have you taught in a K-12 classroom? _____

2. What grade level has this experience primarily occurred? _____

3. What is your gender? _____

4. What is your age? _____

5. How would you describe your ethnicity? _____

6. Is there other background information you would like to share with the researcher? _____

7. Please complete the *Profiles of Reflective Thinking* on the following page.

Thank you for your willingness to share your experiences. All information will remain confidential.

Appendix D

Oklahoma Criteria

<u>OKLAHOMA CRITERIA FOR EFFECTIVE TEACHING</u>

<u>AND ADMINISTRATIVE PERFORMANCE</u>

(70 O. S. § 6-101.10 AND § 6-101.11)

I.   **Practice**

   A. **Teacher Management Indicators**

      1. **Preparation**--The teacher plans for delivery of the lesson relative to short-term and long-term objectives.

      2. **Routine**--The teacher uses minimum class time for non-instructional routines thus maximizing time on task.

      3. **Discipline**--The teacher clearly defines expected behavior (encourages positive behavior and controls negative behavior).

      4. **Learning Environment**--The teacher establishes rapport with students and provides a pleasant, safe and orderly climate conductive to learning.

   B. **Teacher Instructional Indicators**

      1. **Establishes Objectives**--The teacher communicates the instructional objectives to students.

      2. **Stresses Sequence**-The teacher shows how the present topic is related to those topics that have been taught or that will be taught.

      3. **Relates Objectives**--The teacher relates subject topics to existing student experiences.

      4. **Involves All Learners**--The teacher uses signaled responses, questioning techniques, and/or guided practices to involve all students.

5. **Explains Content**--The teacher teaches the objectives through a variety of methods.

6. **Explains Directions**--The teacher gives directions that are clearly stated and related to the learning objectives.

7. **Models**--The teacher demonstrates the desired skills.

8. **Monitors**--The teacher checks to determine if students are progressing toward stated objectives.

9. **Adjusts Based on Monitoring**--The teacher changes instruction based on the results of monitoring.

10. **Guides Practice**--The teacher requires all students to practice newly learned skills while under the direct supervision of the teacher.

11. **Provides for Independent Practice**--The teacher requires students to practice newly learned skills without the direct supervision of the teacher.

12. **Establishes Closure**--The teacher summarizes and fits into context what has been taught.

II. **Products**

A. **Teacher Product Indicators**

1. **Lesson Plan**--The teacher writes daily lesson plans designed to achieve the identified objectives.

2. **Student Files**--The teacher maintains a written record of student progress.

3. **Grading Patterns**--The teacher utilizes grading patterns that are fairly administered and based on identified criteria.

B. **Student Achievement Indicators**--Students demonstrate mastery of the stated objectives through projects, daily assignments, performance and test scores.

REFLECTIVE TEACHING A PROCESS

Observe your own behaviors and think about Goals, Methods, and Reasons for choices

Needed Attitudes

- Be introspective
- Be open-minded about theory and practice
- Be willing to take responsibility for decisions and actions

Needed Abilities

- View situations from other perspectives
- Find information that is more effective
- Use compelling evidence to

Appendix F

Midterm Comments

MIDTERM COMMENTS

Students, meeting during their lunch break of a midterm seminar, were asked to write a question/concern about their student teaching experience thus far.

GROUP A (experimental group) ONLY
Questions or concerns:
1. Have problem with running out of time
2. Thinking of ways to bring the group back together
3. I wish I had fewer cooperating teachers
4. How much substituting is okay to do?
5. What do you do when your cooperating teacher wants you to teach how she does?
6. Also, all information is presented the same – no variation in strategies.
7. What do I do with a student who constantly makes noises. When you tell them to stop, they do it louder.
8. I was wondering how long you are actually supposed to teach the whole class by yourself.
9. I have a handicapped student in my 3rd and 4th physical ed. Class. What do I do with him?
10. Individualized spelling
11. I have a student with ADHD who touches everything.
12. I haven't had any behavior problems except some talking until yesterday. One 6th grade girl was mad at the girl beside her and took it out on me.
13. I have a student diagnosed with obsessive/compulsive disorder and didn't take his meds. on Wed. and he acted totally different.
14. Many Ed. Teachers do no understand the difference of classroom teachers and phys. ed. For example, lesson plan preparation.
15. All the so-called "trouble makers" are very good for me. I have not had any real problems with behavior. But except for a few things, we've pretty much just done what she had already planned. I was curious if anyone else had encountered this. (By the way, we have Saxon Math & Phonics, so those lessons are pre-planned.)
16. In Kindergarten with Saxon Phonics and math, I don't feel like I have closure where I relate back to the objectives.
17. My last class hour of the day is entirely freshman. What are some good ways to settle them down at the beginning and towards the end of class?

These items were the basis of a brainstorming activity. All students participated in a lively discussion once the ball started rolling.

Appendix G

Final Comments

All students were given a handout with the following directions:
Please include any thoughts/concerns/questions about your participation in the study and/or reflections. As always, this will be kept confidential.
A1 – no response
A2 – It was helpful because it showed me what I needed to work on. It was funny to see myself teach and was fun.
A3 – My only problem was getting my file opened to view the recorded session. Every computer I used would play sound, but I got no picture. I'm guessing the computers I used did not have the most up to date software to open such a file from my CD.
(Researcher's note - never called for help)
A4 – Painless, I didn't worry about it. The video didn't bother me or my students. I helped me, because I could see what I was doing instead of someone just telling me.
A5 – I don't have anything to say at the time. I felt fine being in a research study. No real work. Not real helpful.
A6 – I thought it was helpful because the results of my video were used in my portfolio. My participation brought more meaning in evaluating my teaching process. I'm continuing in my process and development as a teacher. I still feel that I could learn more.
A7 – At first, I was really nervous about the video, but after it was over and done with I was really glad that I got chosen to do it. I thought doing this video was really helpful because I got to see all of the things that I did right when teaching a lesson and I got to see all of the things that I needed to work on.
A8 – I wasn't looking forward to being videotaped but I really enjoyed it. It was a good experience for me so that I could look at my teaching and see what I could improve. Writing the reflection allowed me to put into words what I could improve on and what I learned.
A9 – The video was helpful. It gave me the opportunity to see myself "in action" and evaluate myself.
A10 – I don't really understand how the CD helped me with learning to write a reflection it really felt like more work. I was glad to help but I didn't feel it was helpful to me at all, Hopefully it helped you.
A11 – I was happy to help Mrs. Warden in her study; however, I did find it difficulty to schedule time to be videoed. I wasn't happy about being videoed or having to watch myself, but after it was over I did find it helpful in evaluating my instruction. My experience was a good one. Good luck with you analysis.
A12 – I was very nervous about the video, but I am really glad that I participated. I realized some things that I was doing in front of the classroom that I would not have if I had not been videoed. I have seen areas for improvement and worked on them after editing. I think all teachers should be videoed for a self-evaluation.
A13 – I enjoyed being part of the study. It is important that what I experience has meaning. Reflecting on how and what I did helped me to improve my lesson. Being

taped make me nervous but I felt better as I was being taped. I would gladly participate again.

GROUP B

B1 – no response
B2 – no response
B3 – no comment
B4 – The study is a good idea, but this semester was very busy, so I did not think much about this.
B5 – It really didn't bother me at all.
B6 – It would be interesting to see your results!!!
B7 – no response
B8 – no response
B9 – My part was painless. I hope the information received is worthwhile and helps future teachers/students.
B 10 – Very painless and non-stressful.
B11 – My head is mush I can't reflect.
B12 – no response
B13 – no response

Appendix H

Instrument and Survey Results

Group, number	Years Exp.	Grade Level	Gender	Age	Ethnicity	Other	Pre	Post	Diff.
A1	0		M	22	NA	NA	71	99	28
A2	0		M	23	Cau	NA	84	90	6
A3	0		M	23	Cau	NA	94	95	1
A4	0		F	22	Cau	NA	93	103	10
A5	0		F	23	Cau	NA	96	107	11
A6	0		F	23	Cau	NA	87	95	8
A7	0		F	23	Cau	NA	91	95	4
A8	0		F	23	Cau	NA	88	114	26
A9	0		F	23	Cau	NA	94	99	5
A10	0		F	23	Cau	NA	92	97	5
A11	0		F	28	Cau	NA	80	86	6.
A12	0		F	32	NA	NA	104	101	-3
A13	0		F	36	Cau	NA	104	116	12
Group, number	Years Exp.	Grade Level	Gender	Age	Ethnicity	Other	Pre	Post	Diff.
B1	0		M	23	Cau	NA	85	105	20
B2	0		M	30	NA	NA	103	106	3
B3	0		M	31	NA	NA	93	95	2
B4	0		F	21	NA	NA	85	96	11
B5	0		F	22	Cau	NA	106	92	-14
B6	0		F	23	Cau	NA	80	90	10
B7	0		F	23	NA	NA	90	100	10
B8	0		F	25	Cau	NA	103	100	-3
B9	0		F	27	Cau	NA	81	94	13
B10	0		F	33	Cau	NA	99	117	18
B11	0		F	39	Cau	NA	79	101	22
B12	0		F	43	Cau	NA	92	95	3
B13	0		F	46	Cau	NA	100	102	2
Group, number	Years Exp.	Grade Level	Gender	Age	Ethnicity	Other	Pre	Post	Diff.
C1	1	Sec	M	28	Cau			90	
C2	1	Elem	F	25	Cau	NWOSU		94	
C3	1	Sec	F	25	Cau			107	
C4	2	Elem/sec	M	55	Cau			88	
C5	2	Sec	F	37	Cau			98	
C6	2	Sec	F	48	Cau	prof		83	
C7	3	Sec	M	54	Cau			102	
C8	3	Elem	F	33	Cau			105	
C9	3	MS	F	25	Hisp.			101	

C10	3	MS	M	55	Cau			94	
C11	4	Ms	M	27	Cau			105	
C12	4	Sec	M	26	Cau			93	
C13	5	Sec	F	30	Cau			92	
C14	6	Ms	M	46	Cau			95	
C15	7	Sec	F	51	Cau			102	
C16	7	Sec	F	53	Cau			108	
C17	7	Sec	F	33	Cau			112	
C18	7	Elem	F	36	Cau			85	
C19	7	Sec	F	32	Cau	Fm.St.		110	
C20	8	Elem/sec	F	33	Cau			91	
C21	10	Sec	F	55	Cau			108	
C22	11	Ms	F	50	Cau			105	
C23	11	Sec	F	54	Cau	Philo		89	
C24	12	Elem	F	38	Cau	NBCT		96	
C25	13	Sec	F	40	Cau			105	
C26	14	Elem	F	36	Cau			94	
C27	14	Sec	F	42	Cau	PS,CT		99	
C28	14	Elem	F	36	Cau			108	
C29	15	Elem	F	51	Cau			86	
C30	15	Sec	F	43	Cau			101	
C31	15	Elem	F	50	Cau			100	
C32	15	Elem	F	48	Cau	NBCT		99	
C33	16	Elem/sec	F	49	Cau			109	
C34	17	Sec	M	63	Cau			103	
C35	18	Elem	F	55	Cau			96	
C36	19	Elem	F	47	Cau			99	
C37	19	Elem	F	50	Cau			108	
C38	20	Sec	M	44	Cau			93	
C39	20	Elem	F	45	Cau			115	
C40	21	Sec	M	44	Cau	NWres.		100	
C41	21	Ms	M	45	Cau	M.Ed.		103	
C42	21	Sec	F	45	Cau			95	
C43	21	Elem	F	47	Cau	Sm.tn		101	
C44	22	Sec	F	46	Cau			88	
C45	23	Elem/sec	F	48	Cau			97	
C46	23	Ms	F	56	Cau			102	
C47	24	Elem	F	45	Cau			90	
C48	25	E;e,	F	55	Cai			93	
C49	25	Ms	F	52	Cau			85	
C50	26	Sec	F	47	Cau			82	
C51	30	Elem	F	59	Cau			94	
C52	31	Sec	F	53	Cau			98	
C53	32	Sec	F	55	Cau			111	
C54	33	Elem	F	61	Cau			103	

Appendix I

Institutional Review Board Approval

Oklahoma State University
Institutional Review Board

Protocol Expires: 9/10/2004

Date: Thursday, September 11, 2003   IRB Application No   ED0423

Proposal Title: Changes in Self-eval. Of Reflective Thinking Attributes When Needed Conditions are
Provided

Principal
Investigator(s):

Beverly Warden   Ken Stern
1051 Eighth Street   311 Willard
Alva, OK 73717   Stillwater, OK 74078

Reviewed and
Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Dear PI :

Your IRB application referenced above has been approved for one calendar year. Please make note of
the expiration date indicated above. It is the judgment of the reviewers that the rights and welfare of
individuals who may be asked to participate in this study will be respected, and that the research will be
conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol
    must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar
    year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are
    unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved projects are subject to monitoring by the IRB. If you have questions about the
IRB procedures or need any assistance from the Board, please contact Sharon Bacher, the Executive
Secretary to the IRB, in 415 Whitehurst (phone: 405-744-5700, sbacher@okstate.edu).

Sincerely,

Carol Olson, Chair
Institutional Review Board

VITA (2)

Beverly Warden

Candidate for the Degree of

Doctor of Education

Dissertation: SELF-EVALUATION OF REFLECTIVE THINKING AMONG
PRE-SERVICE AND IN-SERVICE TEACHERS

Major Field: Educational Administration

Biographical:

Education: Bachelor of Science Degree: May 1979, Northwestern Oklahoma State
University, Alva, Oklahoma, Major: Elementary Education, Minor:
Physical Education. Masters of Education Degree: July 1994, University
of Central Oklahoma, Edmond, Oklahoma, Major: Reading, Courses for
certification in Educational Administration, University of Central
Oklahoma, Edmond, Oklahoma and Kansas Newman University, Wichita,
Kansas. Completed the requirements for the Doctorate in Education
degree at Oklahoma State University, July 2004.

Credentials: Standard Oklahoma Teaching Certificate, Superintendent, Secondary
Principal, elementary Principal, elementary Education, Reading Specialist,
Physical Education – middle school, Science – middle school, social
Studies – middle school.

Professional Experience: Northwestern Oklahoma State University, Assistant
Professor of Education 1999-present, Rosary Catholic School, Principal
1996-1999; St. Mary Catholic School, Principal/teacher 1992-1996; St.
Elizabeth Ann Seton School, 4th grade teacher 1991-1992; St. Mary
Catholic School, Principal/teacher 1989-1991; Yarbrough Public Schools,
2nd grade teacher 1986-1989; Lawton Public Schools, Elementary PE
teacher 1985-1986; Cache and Lawton Public Schools, substitute teacher
1983-1985; Jet-Nash Public Schools, 4th grade teacher 1979-1983.