

Cases in Teacher Education: Beyond Reflection into Practice

Joanne M. Malkani
University at Albany, SUNY
Albany, New York

James D. Allen, Ph.D.
The College of Saint Rose
Albany, New York

Abstract

A major reason for the use of cases in teacher education is based on the assumption that preservice teachers, via discussion of cases, will reflect on how educational theory can inform practice and when these students enter the classroom they will be better prepared for the realities of the classroom and will critically analyze their practices to improve students' learning by applying sound theories to classroom situations. Research supports that preservice teachers do become more reflective about teaching and classroom issues when exposed to cases (Allen, 1994; Lundberg, Levin & Harrington, 1999; Moje & Wade, 1997). However, it is unclear if students exposed to cases behave differently once they enter the classroom than those students not exposed to cases. In our use of cases to develop good reflective-practitioners, we seem successful in the "reflective" part, but do cases have enough "staying power" to also be successful in developing the "practitioner" part? That is the purpose of this study.

This study investigated the longitudinal effects of using case studies (compared to another reflective learning activity and traditional instruction) in an undergraduate educational psychology course on the subsequent student-teaching practices of preservice teachers. Eighty-two students and their cooperating and supervising teachers were surveyed regarding the student-teachers' levels of reflection-in-practice during their student-teaching experience. Both qualitative and quantitative data were analyzed from 261 surveys. Findings indicate that students from case study and reflective journal groups demonstrated more reflective-practitioner qualities than students from the traditional lecture group.

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Introduction

The use of cases in teacher education and educational psychology courses has gained a strong foothold during the last 15 years. A primary purpose of their integration into teacher preparation courses has been to develop preservice teachers into reflective practitioners. The assumption is that preservice teachers, via discussion of cases, will reflect on how educational theory can inform practice. When they enter the classroom students will be better prepared for the realities of the classroom and will critically analyze their practices to improve students' learning by applying sound theories to classroom situations.

Two primary and developmental steps need to be considered regarding case pedagogy. The first step involves the development of students' critical and reflective thinking abilities. Preservice teachers enter education courses with "naïve" theories of teaching (Anderson, Blumenfeld, Pintrich, Clark, Marx, & Peterson, 1995; Bird, Anderson, Sullivan, & Swidler, 1993). They think from a student's perspective and we, as teacher-educators, try to get them to think from a teacher's perspective – a perspective grounded in relevant educational principles and theories. Cases are a good pedagogical vehicle to achieve this development in reflective thinking and critical analysis. Research supports that preservice teachers do become more reflective about teaching and classroom issues when exposed to cases (Allen, 1994; Lundberg, Levin & Harrington, 1999; Moje & Wade, 1997; Razvi & Allen, 2005). This is a positive outcome. However, the second step may be the more important step and one that we have gathered very little data. This step involves looking to see if students exposed to cases behave differently than those students not exposed to cases once they enter the classroom. In our use of cases to develop good reflective-practitioners, we seem successful in the "reflective" part, but do cases have enough "staying power" to also be successful in developing the "practitioner" part? That is the focus of this study.

The overarching research question of this study is: Do pre-service education students who explore cases in their educational psychology courses perform differently in their student-teaching experiences than students who are not exposed to cases? That is, do students not only become more reflective during the education course in which cases are discussed, but do they retain that reflective and critical way of thinking and integrate it into their student-teaching experiences?

Theoretical Perspective

A major mission of educational psychology is "to develop teachers ... who can take their knowledge base in educational psychology and use it so that they can (1) analyze the problems they face in the classroom, (2) develop creative strategies for solving these problems, and (3) ensure that the strategies are practical in terms of the demands of the classroom environment" (Sternberg, 1995, p. 11). Since the primary focus of most educational psychology courses is to provide a theoretical and research foundation for students to use as a base to develop their personal teaching practices, cases provide a vehicle for students to reflect on realistic classroom dilemmas and apply the psychological theories and research findings they are learning in their courses (Silverman, Welty, & Lyon, 1996).

Furthermore, it is common for educational psychology texts to note the importance of teachers being reflective practitioners and effective decision makers (e.g., Ormrod, 2006; Snowman & Biehler, 2006; Woolfolk, 2005). Woolfolk (2005) describes reflective teaching as "thoughtful and inventive" with an emphasis on how teachers plan, solve problems, create instruction, and make decisions (p. 5). As Levin (1995) notes, case-based instruction has been suggested as one method to help develop reflective pedagogical thinking of preservice teachers. Wasserman (1993) describes how traditional teacher preparation courses often fail to prepare preservice teachers adequately for the transition from theoretical knowledge to classroom application due to the failure to help education students learn how to "make meaning" of

classroom situations. She suggests that students must be given the opportunity to apply critical analysis to make meaning of classroom dilemmas by developing skills of observation, comparison, extraction of main ideas, intuition, and application of facts and principles as applied in case studies. Research based on preservice and inservice teachers viewing a video recorded vignette of a classroom suggest that “making meaning” of classrooms is a cognitive process that develops as students and teachers gain more education and experience with teaching situations and reflect on them (Copeland, Birmingham, DeMeulle, D’Emidio-Caston, & Natal, 1994).

The literature on reflection is extensive (e.g., Hatton & Smith, 1995; Schon, 1987; Zeichner & Liston, 1996). Hatton & Smith (1995) summarize four key issues that are used to define reflection. The first distinguishes "reflective thinking" from "reflective action" but emphasizes the cyclic nature between thinking about problems and taking actions to solve them. The second considers "when" the thinking and action occurs. Is the action concurrent with the reflective thinking, such as Schon (1987) describes as "reflection-in-action", or does the action occur after an extended time for deliberation of possible alternatives? The third issue is the relationship between reflection and problem solving. Reflection may be directed outward toward solving a specific educational problem, but it can also be directed inward as a self-assessment of one's actions after experiencing an event. The fourth relates to "critical reflection" which includes the moral, ethical, socio-historical, and politico-cultural considerations that are related to any action. The emphasis here is clearly on the connection between cognitive reflection and the ACTING on that reflection.

McAninch (1994), based on the work of Merseth (1991) and Feiman-Nemser (1990), describes five categories of case methods representing various conceptual orientations. (1) In the "academic" orientation cases are seen as a way to represent theoretical knowledge and help build a common knowledge base for future teachers as they enter the profession. (2) The "practical" orientation uses cases based on real occurrences that teachers have encountered in the complex

environment of the classroom. (3) The “technical” orientation is focused on helping preservice teachers to learn specific skills and teaching behaviors that have been shown to work in the classroom. (4) The "personal" orientation attempts to have students reflect on their own experiences to encourage personal/professional growth. (5) The “critical/social” orientation addresses broad social issues and critically analyzes the teacher's role in the classroom, school and community. These categorizations of case methods help to illustrate the various ways cases can be used to prepare teachers, and in the reality of practice all can occur simultaneously and are often addressed concurrently during a case study discussion. But again, an important question to ask is do pre-service teachers not only develop a cognitive understanding of these orientations during their exposure to cases in education courses, but do they also eventually ACT on these orientations once they enter the classroom as student-teachers?

Students are likely to find educational psychology principles and concepts more meaningful and retain these principles and concepts longer if they are actively generating their own understanding of them (Wittrock, 1986). The application of this information in "making meaning" of classroom situations by analyzing case studies of teaching dilemmas should enable preservice educators to become more "intelligent" professional decision makers when they enter real classrooms as teachers (Wasserman, 1993). Theoretically, therefore, we should expect that students engaged in case study analyses should develop a well-defined and reflective "teaching" schema, with more connections to educational psychology principles and concepts and more ways to apply these concepts than students who are not exposed to cases. Along with strong theoretical arguments based on cognitive psychology for why cases should help students link educational theories and principles to practice and become better teacher-practitioners, there has been research to confirm that preservice teachers become more reflective through exposure to case discussions (Allen, 1995; 1994; Lundberg et al., 1999; Moje & Wade, 1997; Wade & Moje, 1997). However, there is little research regarding if those reflective abilities transform, or

transcend, into practice once students enter classrooms as teachers (Levin, 1995; Lundberg & Fawver, 1994; Shulman, 1992).

Part of the problem is the lack of longitudinal research that follows a group of pre-service teachers from the time they explore cases in their education classes through their student teaching experiences. This study is the latest parts of a longitudinal study to answer the following series of questions related to the effect the use of cases in an educational psychology have on students as they prepare to become classroom teachers:

1. Do students in courses where case studies are used learn the same amount of content as students in more traditionally taught educational psychology courses?
2. Do students in case study classes exhibit more positive affects and greater levels of motivation as they learn educational psychology content than students in more traditionally taught classes?
3. How effective are case studies as a pedagogical method in helping students become more reflective in their thinking about the role of teachers in the classroom?
4. Do students who have analyzed case studies perform and act any differently during student teaching (i.e., become more reflective practitioners) than students who have not analyzed cases?

Previous research has addressed the first three questions (Allen, 1995; Allen, 1994; Razvi & Allen, 2005). The research reported here attempts to answer the fourth question.

Methods & Data Sources

Subject-Participants

This study covered a span of 2½ years over 5 academic semesters. The study began with 106 preservice teachers enrolled in five sections of an undergraduate educational psychology course. The students were divided into three groups based on the primary instructional methods

used in each section. The Case Study Group (CSG, $n = 38$) were in sections where during the semester six (6) case studies were read, discussed, and analyses written to investigate how educational psychology principles could be applied to classroom dilemmas. The Integrative Log Group (ILG, $n = 45$) were in sections where students wrote weekly reflections in a journal to log connections between educational psychology principles and student learning. The Traditional Lecture Group (TLG, $n = 23$) were presented educational psychology principles in a traditional lecture format. Data to measure differences in levels of reflection and content knowledge learned were analyzed and indicated that the CSG and the ILG scored significantly higher on reflective measures than the TLG, and the CSG learned significantly more content than both the ILG and the TLG (Allen, 1995; 1994). A majority ($N = 82$) of these students were tracked over the next 4 semesters as they completed their student-teaching experience to see if these differences among students carried over in terms of being more reflective in their teaching practices. The number of students from each group that data were obtained included: CSG ($n = 25$), ILG ($n = 40$), and TLG ($n = 17$). Each student completed two consecutive 7 week student teaching assignments under the guidance of their cooperating classroom teachers and college supervising teachers. Surveys were sent to all 82 students and their cooperating and supervising teachers for each student-teaching experience. A total of 261 completed surveys were returned, 60 from student-teachers, 98 from cooperating teachers, and 103 from college supervisors.

Data Collection and Analysis

A survey was constructed to collect data on student-teachers' levels of reflective behavior during their student-teaching (see Appendix A). The survey included 56 Likert scale items and 5 open-end response items. Thirty-two of the Likert items related to different aspects of reflective teaching as described in the literature (Hatton & Smith, 1995). Six items (R1) corresponded to "technical reflection" which related to reflecting on the technical aspects of teaching such as development of lesson plans. Seven items (R2) corresponded to "descriptive reflection" which

related to students' ability to reflect on their own actions and their effect on classroom events. Eleven items (R3) related to "dialogic reflection" which related to seeking perspectives from others about classroom situations. Four items (R4) corresponded to "critical reflection" related to reflecting on established practices. Four items (R5) corresponded to "reflection-in-practice" in which students reflected on their teaching practices while actually teaching and made immediate changes to adjust their teaching. There was also one item (R0) that related to reflection "in general." These 33 items (R0-R5) were totaled to also provide a "total" reflection score (RT). The five open-ended questions asked for examples related to these 5 types of reflective practices. Parallel forms of the survey were constructed for student-teachers, their cooperating teachers, and their college supervising teachers. Quantitative analyses were conducted on the Likert scale items using Analysis of Variance and T-test procedures with SPSS for Windows.

A qualitative analysis was conducted to identify the responses to three of the open-ended questions that inquired both directly and indirectly about reflective practices for each of the three groups: case study, integrative log, and traditional lecture. The open-ended questions were generated from the quantitative part of the survey; therefore, the open-ended questions represented specific aspects of reflection just as the Likert-items did on the survey. Although there were five open-ended questions, two were not included in this analysis due to the nature of the responses received. For example, question #2 asked participants to comment on a difficult decision the student teacher encountered, what factors were considered during the decision making process, and the outcome of the decision. After a review of the responses from all the student teacher participants, the responses were so varied that it was difficult to make a comparison between the three groups. There seemed to be differences in interpretation of how a "difficult situation" was defined. Similarly, question #3 asked respondents to report on an integrated lesson the student teacher created and implemented. The majority of each of the three groups (case study, integrative log, and traditional lecture) used an eclectic or integrative

approach. Therefore, there seemed to be little difference between the groups regarding whether or not they presented an integrated lesson. Consequently, open-ended questions 1, 4 and 5 were analyzed for this study.

During the initial coding the researcher was blind to the affiliation (e.g., case study group, integrative log group, and traditional lecture group) of each subject-participant. Data was organized on a grid that indicated the participants (e.g., student teacher, cooperating teacher, supervising teacher) and their responses to each question. During data collection, each participant was assigned a coding number. During the data analysis, each grid indicated the coding numbers of the participants in order to allow the coder to make comparisons between the responses of the participants.

This analysis had two main purposes. First, the data was examined to determine if any differences between the reflective abilities of the student teachers from the three different groups could be identified. Second, in order to strengthen the reliability of the responses from the student teachers, the surveys of their supervising teachers and cooperating teachers were also taken into account.

Glaser and Strauss's (1999) grounded theoretical approach implementing constant comparative method was implemented during data analysis. This method was chosen due to the limited amount of research conducted on how cases influence teaching practices. Therefore, it was decided that it would be best to see what themes would emerge from the data than to use a predetermined theory to guide the analysis. Two stages of coding, open and axial were conducted (Creswell, 1998). First, open coding was used to identify codes for the responses to the questions, and then axial coding was used to group the open codes in one of the reflective categories (Hatton & Smith, 1995) that were used to create the quantitative survey.

The survey responses from all the student teachers were first analyzed, and then the surveys from the supervising teachers and cooperating teachers that corresponded to the student

teachers were also examined. It is important to note that not all student teachers, supervising teachers, and cooperating teachers who were asked to fill out the surveys submitted them fully completed or at all. After the open and axial coding processes were conducted for the student teacher responses, the additional surveys from the cooperating and supervising teachers were then examined and comparisons were made.

Findings

Quantitative Findings

Analysis of the quantitative data reveals that there were differences ($p = 0.096$) in the “total” level of reflective practice (RT) between the three groups with both the CSG and the ILG demonstrating more reflection in their practice teaching than the TLG. The area of reflection that was of greatest significance ($p = 0.04$) was “dialogic reflection” (R3). There were also significant differences ($p = [0.01; 0.001; 0.007; 0.018]$) in reflective practice (RT; R5; R3; R1 respectively) related to the semester in which students did their student teaching with higher levels in semesters closest to course completion. Significant differences ($p = [0.02; 0.04]$) were also respectively noted on levels of “critical reflection” (R4) and “overall” reflection (R0) with “returning” students (age > 25) showing higher levels than “traditional” age students. Significant differences ($p = [0.000 - 0.046]$) were found on all but one area (R2- “descriptive reflection”) of student reflection between the three rating groups with student teachers rating their levels of reflection highest, and supervising teachers rating students’ levels of reflection the lowest.

These quantitative findings suggest that reflective learning activities, such as cases and reflective journals, help develop not only reflective and critical thinking abilities of preservice teachers, but also carry into students’ teaching experiences in some ways, especially if the student teaching experience occurs within a year of the course in which these practices are used. However, it appears that it is the “reflective” part of pedagogical practices that may be more important than the form. That is, case studies do seem to help students to be “reflective-

practitioners” but so do other reflective pedagogical practices such as reflective journal writing. It also appears that the more “mature” the student, the more likely they will be reflective-practitioners. The qualitative data provides more specific information.

Qualitative Findings

The major themes emerging from the qualitative analysis of the data compliments the quantitative data, for example, reasons student teachers reflect on their teaching practices and how they reflect on incorporating educational theories into their teaching.

Question 1: *In the space below, please give an example of the following: An instance that shows whether or not you are a reflective teacher.*

This statement is directly asking about the reflective practices and abilities of the student teachers. This question represents General Reflection (R0), in the sense that it asks about the ability of the student teacher to be reflective which relates to question # 42 on the Likert scale questions which asks: *Is the student teacher reflective in his/her approach?* The CSG and ILG responses indicated similar rates of descriptive reflection (R2) and dialogic reflection (R3) in their responses than the TLG. Table 1 (Appendix B) lists each of the types of reflections that were identified from the student teacher responses as well examples from the surveys that represent the specific types of reflection. This table also indicates the participants that provided responses representing a particular type of reflection.

Table 2 (Appendix C) provides the frequencies and percentages of each reflection identified in the student teacher responses for Question #1. The results fit with the quantitative results in that the CSG and the ILG indicated more dialogical reflection than the TLG group. The CSG had the highest percentage of R3. Table 2 indicates that the CSG group was the only group that provided responses representing just R3. However, the ILG group did provide responses that combined both R2 and R3. The majority of responses given by the TLG group indicated a combination of both descriptive (R2) and reflection-in-practice (R5).

Question 4: *In the space below, please give an example of the following: Educational theories or principles the student teacher has referred to in lesson plans or in conversations with you.*

Question 4 asked about the educational principles and theories student-teachers used in their teaching practices. This is an indirect question about reflection because although it does not specifically ask about the student's reflective abilities, it does assume that if students are reflective by nature they are more likely to draw upon previously learned coursework related to teaching when teaching in the classroom, in other words, relating theory to practice. This question represents Dialogic Reflection (R3). Question 4 fits with such questions like #15 on the Likert measure which asks: *Does the student teacher refer to educational theories or principles in conversations with you?* The manner in which this question was analyzed was that since it was implied from the question that the responses to this question were based on dialogic reflection, the type of topics that were discussed were analyzed. See Table 3 (Appendix D) for a list of the topics discussed by the three groups as well as how they correspond to the various types of reflection. The majority of the responses for each of the groups (CSG, ILG, TLG) indicated responses reflecting a combination of both R1 and R2. However, the ILG also provided one responses indicative of R4. The participant asked about the technology practice of his placement. See Table 4 (Appendix E) for detailed results.

Question 5: *In the space below, please give an example of the following: Important questions the student teacher has asked you regarding the class or teaching in general.*

Question 5 is also another indirect question pertaining to reflection. This question is again making the assumption that students who are highly reflective will ask questions that are relevant to improving their teaching, such as inquiring about instructional techniques, improving student engagement, understanding the background of students, and understanding the policy of the school to name a few. The complete list of topics discussed is listed in Table 5 (Appendix F).

Since this question, like Question #4 is indicative of R3 (dialogic reflection), the topics discussed in the questions posed by the student teachers were analyzed.

The results were similar to those of Question 4. The majority of responses for each of the three groups reflected R1 & R2. However, R4 was also indicated in responses by CSG and ILG. See Table 6 (Appendix G) for detailed results.

The second phase of research of the data analysis consisted of examining the data between the groups of professional participants (e.g., student teacher, supervising teacher, and cooperating teacher). The surveys that were analyzed consisted of surveys in which the student teacher (ST), supervising teacher (SupT), and cooperating teacher (CT) all submitted surveys based on the same student teaching experience. A total of 27 sets (CSG = 11 surveys; ILG = 10 surveys; TLG = 6 surveys) of surveys were analyzed, however, the data focused on 22 student teachers, since some of the student teachers submitted surveys for both student teaching experiences. The various examples of reflective behavior and thinking identified in the supervising and cooperating teachers' surveys were similar to the open codes generated from the student teacher data. The open codes themselves were not used to make comparisons; rather the types of reflections generated from the open codes were used since the respondents may have been focusing on different experiences or conversations when answering the questions on the survey.

Table 7 (Appendix H) consists of tables that contain the types of reflections identified in responses to questions 1, 4, and 5 of the survey based on a set of surveys. The findings for question #1 indicate the majority of participants regardless of position (student teacher, cooperating teacher, supervising teacher) indicated student teachers were most likely to demonstrate descriptive reflection (R2) more than technical reflection (R1), dialogic reflection (R3), or reflection in practice (R5). The responses from participants for the CSG had the most consistency, especially in regards to identifying topics of R2 across all three professional groups

(ST, CT, SupT). However, it should be taken into consideration that even though there may not have been consensus on the type of reflection indicated in the responses among ST, CT, and SupT, the participants may have identified other forms of reflection used by the student teacher; therefore, reflection may have been identified. For question #4, R1 & R2 were identified for CSG and ILG with R2 also being identified for the TLG. R1 & R2 were primarily indicated for questions 4 and 5 for the ILG and TLG with R2 being identified for the CSG. Therefore, there were similar types of reflection indicated by the ST, CT, and SupT regardless of being in the CSG, ILG, and TLG.

Limitations

Although there was a favorable return rate of surveys, there was a small amount of surveys that corresponded to each other. In other words, there was a limited amount of information to make comparisons between student teachers, cooperating teachers, and supervising teachers for the same student teaching experience. Even when responses were provided by the student teacher, cooperating teacher, and supervising teacher for the same field experience, the events that each participant focused on may have been different which provided challenges when attempting to make comparisons among the qualitative data.

Educational Implications and Suggestions

To our knowledge, this study is the first longitudinal study to investigate if the use of case studies has a lasting effect on preservice teachers in terms of developing into reflective practitioners. Although the use of cases has been supported extensively on theoretical and philosophical grounds and to a limited extent by research on their effect on increasing students' reflective and critical thinking abilities when used in education courses, the important question of their use having a lasting effect and influence on the practice of teaching has not been investigated. This study combining both quantitative and qualitative methods, although limited, begins to answer that question and suggests that cases have the potential for affecting classroom

teaching practices, but so might other forms of reflection-on-practice classroom activities.

Therefore, further research is needed in this area in order to make comparisons among various types of pedagogical tools that encourage and promote reflection.

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Appendix A: Student Teaching Survey

Student Teacher: _____

Supervising Teacher: _____

Cooperating Teacher: _____

Student Teaching Instrument

	<u>Scale</u>			
	1 (Never)	2 (Sometimes)	3 (Frequently)	4 (Always)
	<u>Circle One</u>			
(R1) 1. Does the student teacher write well-developed lesson plans?	1	2	3	4
(R2) 2. Does the student teacher have a clear rationale for teaching his/her lessons?	1	2	3	4
(R3) 3. Does the student teacher seek advice by asking you questions?	1	2	3	4
4. Does the student teacher integrate lessons across the content areas?	1	2	3	4
5. Does the student teacher manage the class effectively?	1	2	3	4
(R3) 6. Is the student teacher flexible in his/her approach?	1	2	3	4
(R1) 7. Does the student teacher have clear criteria for assessing the students' progress?	1	2	3	4
8. Does the student teacher show a mastery of the content material?	1	2	3	4
(R2) 9. Does the student teacher report accurate, through description of class events to you?	1	2	3	4
(R3) 10. Does the student teacher consider multiple solutions by students to problems?	1	2	3	4
(R1) 11. Does the student teacher individualize lessons for the students?	1	2	3	4
12. Is the student teacher patient?	1	2	3	4
13. Are the student teacher's classes student-centered?	1	2	3	4
(R1) 14. Does the student teacher consider educational theories or principles in developing his/her lesson plans?	1	2	3	4
(R3) 15. Does the student teacher refer to educational theories or principles in conversations with you?	1	2	3	4
(R3) 16. Does the student teacher consider multiple alternatives to difficulties in class?	1	2	3	4
(R3) 17. Does the student teacher involve you in his/her decisions?	1	2	3	4
(R1) 18. Does the student teacher observe the students carefully?	1	2	3	4
(R3) 19. Does the student teacher offer suggestions for self-improvement?	1	2	3	4
20. Is the student teacher aware of learning trends in his/her classroom?	1	2	3	4
21. Is the student teacher aware of social interactions in his/her classroom?	1	2	3	4
22. Is the student teacher disorganized?	1	2	3	4
(R2) 23. Does the student teacher accept responsibility for his/her decisions?	1	2	3	4
(R3) 24. Does the student teacher involve parents in his/her decisions?	1	2	3	4
25. Do students respond well to the student teacher?	1	2	3	4

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	<u>N</u>	<u>S</u>	<u>F</u>	<u>A</u>
(R2) 26. Does the student teacher make impulsive decisions?	1	2	3	4
(R2) 27. Does the student teacher refer to resources outside the classroom?	1	2	3	4
28. Is the student teacher creative?	1	2	3	4
29. Does the student teacher focus on the students' strengths?	1	2	3	4
30. Does the student teacher make use of teachable moments?	1	2	3	4
31. Does the student teacher use a variety of materials in teaching?	1	2	3	4
32. Does the student teacher use the instructional time wisely?	1	2	3	4
(R5) 33. Does the student teacher implement your suggestions?	1	2	3	4
34. Does the student teacher follow up on student responses?	1	2	3	4
(R5) 35. Does the student teacher incorporate student interests into lessons?	1	2	3	4
36. Does the student teacher keep the students involved academically?	1	2	3	4
37. Are the student teacher's students active in their learning during his/her lesson?	1	2	3	4
38. Does the student teacher teach learning strategies?	1	2	3	4
(R3) 39. Does the student teacher discuss trends or research in education with you?	1	2	3	4
(R4) 40. Does the student teacher have a well-developed philosophy of teaching?	1	2	3	4
(R5) 41. Does the student teacher handle situations in an inflexible way?	1	2	3	4
(R0) 42. Is the student teacher reflective in his/her approach?	1	2	3	4
43. Does the student teacher engage students in higher-level thinking?	1	2	3	4
(R4) 44. Does the student teacher consider how his/her values affect his/her students?	1	2	3	4
(R4) 45. Does the student teacher consider the values of the students?	1	2	3	4
(R4) 46. Does the student teacher question established ways of doing things?	1	2	3	4
(R2) 47. Does the student teacher question his/her own actions?	1	2	3	4
(R3) 48. Does the student teacher consider his/her students' complaints?	1	2	3	4
49. Do the student teacher's personal problems affect his/her teaching?	1	2	3	4
(R3) 50. Does the student teacher ask you questions about the students?	1	2	3	4
(R2) 51. Does the student teacher learn from his/her mistakes?	1	2	3	4
(R1) 52. Does the student teacher take atypical students into consideration?	1	2	3	4
53. Does the student teacher assess students in a holistic way?	1	2	3	4
(R5) 54. Does the student teacher change lesson plans in the middle of his/her lessons?	1	2	3	4
55. Does the student teacher treat students consistently?	1	2	3	4
56. Does the student teacher enjoy teaching?	1	2	3	4

In the space below, please give an example of the following:

Q1: An instance that shows whether or not the student teacher is a reflective teacher:

Q2: A difficult decision the student teacher made regarding his/her class:

(A) What factor went into the decision?

(B) How did the students, parents, and faculty react to the decision?

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In the space below, please give an example of the following:

Q3: A lesson or unit showing evidence of an integrated curriculum or an eclectic approach:

Q4: Educational theories or principles the student teacher has referred to in lesson plans or in conversations with you:

Q5: Important questions the student teacher has asked you regarding the class or teaching in general:

Additional Comments:

Appendix B

Table 1: Responses to Question 1 based on Student Teacher Surveys

	Case Study (Participants, n=14) (Surveys, n=21)	Reflective Log (Participants, n=19) (Surveys, n=25)	Traditional Lecture (Participants, n=7) (Surveys, n=9)
Tries to present information in a meaningful manner (e.g., helps students relate new information to previously learned information; presents information students can relate to and is engaging; considers motivation, students' needs, individualized instruction) R1 Technical Reflection R2 Descriptive Reflection	42, 132, 229	16, 57	
Written reflection (e.g., journal, written evaluation of lesson) R2 Descriptive Reflection R3 Dialogic Reflection	72, 258, 260	9, 39 (96), 116	
Visual representation (e.g., videotaped lesson) R2 Descriptive Reflection	51, 259	95, 164	
Discussion (e.g., discusses lessons, tips, etc with Supervising Teacher and/or Cooperating Teacher) R2 Descriptive Reflection R3 Dialogic Reflection	53, 79 (93), 208, 248 , 259	131, 164 , 194, 224	240
General reflection before, during, or after teaching R2 Descriptive Reflection R5 Contextualization of Multiple Viewpoints or "Reflection-in-action"	108 , 146, 172, 186, 248	11, 27 (115), 29 (114), 64, 82, 133, 190	1, 185, 191, 200, 234 (235)
Incorporation of information learned in school and through experience in lessons R3 Dialogic Reflection	107		
Drawing upon expert's teaching (e.g., thinking about how CT teaches) R2 Descriptive Reflection	108		
Being aware of students' responses in order to adjust lessons accordingly (e.g., students struggling, student discussion dwindling) R2 Descriptive Reflection R5 Contextualization of Multiple Viewpoints or "Reflection-in-action"	112 (113), 228		161, 162
Blank		31, 88 (143), 202 (203)	
Cannot Recall		36	

*A **bolded number** indicates that the responses of that participant fell into more than one reflection category.

**A number in parentheses after another number indicates that the same participant submitted two surveys and their responses on each survey represented the same type of reflection.

Appendix C
Table 2: Summary for Question 1

	Case Study	Reflective Log	Traditional Lecture	Case Study	Reflective Log	Traditional Lecture
R2 Descriptive Reflection	14%	8%	0%	3 [51, 108, 259]	2 [95, 164]	
R3 Dialogic Reflection	5%	0%	0%	1 [107]	0	
R1 Technical Reflection R2: Descriptive Reflection	14%	8%	0%	3 [42, 132, 229]	2 [16, 57]	
R2 Descriptive Reflection R3 Dialogic Reflection	43%	32%	11%	9 [53, 72, 79 (93), 208, 248 (258), 259 (260)]	8 [9, 39 (96), 116, 131, 164, 194, 224]	1 [240]
R2 Descriptive Reflection R5 Contextualization of Multiple Viewpoints or "Reflection-in-action"	38%	36%	88%	8 [108, 112 (113), 146, 172, 186, 228, 248]	9 [11, 27 (115), 29 (114), 64, 82, 133, 190]	8 [1, 161, 162, 185, 191, 200, 234 (235)]
Blank	0%	20%	0%		5 [31, 88 (143), 202 (203)]	
Cannot Recall	0%	4%	0%		1 [36]	

The percentages are based on surveys not participants since each survey represented a separate student teaching experience. The last three columns on this chart indicate the frequencies of responses with the frequency being the number outside of the brackets, and the numbers inside the brackets indicate the specific participants. The number with a number in parentheses next to it indicates that same participant responded twice indicating the same type of reflection in both responses.

Appendix D

Table 3: Responses to Question 4 based on Student Teacher Surveys

	Case Study (Participants, n=14) (Surveys, n=21)	Reflective Log (Participants, n=19) (Surveys, n=25)	Traditional Lecture (Participants, n=7) (Surveys, n=9)
Classroom Management (Behavior Modification) R1: Technical Reflection R2: Descriptive Reflection	72, 79, 112 (113) , 132, 186, 172, 229, 248	9, 11 , 31, 39, 64, 131, 194	185 , 234
Planning & Instruction (individualized instruction, Bloom’s Taxonomy, hands on activities) R1: Technical Reflection R2: Descriptive Reflection	42, 51 , 53, 107 (108) , 112 (113) , 132, 228 (229) , 146 (208), 248 (258) , 259 (260)	9, 11 , 27 (115), 29 (114), 36, 57, 64, 95 , 116, 131, 194 , 202	1, 161, 162, 191 (240), 200
Assessment (grading, authentic assessment) R1: Technical Reflection R2: Descriptive Reflection	172, 228 (229)	133, 190	
Motivation R1: Technical Reflection R2: Descriptive Reflection	51, 172		
Interactions R1: Technical Reflection R2: Descriptive Reflection	107 (108)	9, 95	185
Teaching Philosophy (art & science) R1: Technical Reflection R2: Descriptive Reflection	229		
School Policy & Procedures R1: Technical Reflection R2: Descriptive Reflection R4: Critical Reflection		96	
Blank	93	88 (143), 203	235

*A **bolded number** indicates that the responses of that participant fell into more than one reflection category.

**A number in parentheses after another number indicates that the same participant submitted two surveys and their responses on each survey represented the same type of reflection.

Appendix E

Table 4: Summary for Question 4 based on Student Teacher Surveys

	Case Study	Reflective Log	Traditional Lecture	Case Study	Reflective Log	Traditional Lecture
R1: Technical Reflection R2 Descriptive Reflection	95%	84%	88%	20 [42, 51, 53, 72, 79, 107 (108), 112 (113), 132, 146 (208), 172, 186, 228 (229), 248 (258), 259 (260)]	21 [9, 11, 27 (115), 29 (114), 31, 36, 39 (96), 57, 64, 95 (131), 96, 116, 131, 133, 190 (194), 202]	8 [1, 161, 162, 185, 234, 191 (240), 200]
R1: Technical Reflection R2 Descriptive Reflection R4 Critical Reflection	0%	4%	0%		1 [96]	
Blank	5%	16%	11%	1 [93]	4 [88 (143), 203, 224]	1[235]

The percentages are based on surveys not participants since each survey represented a separate student teaching experience. The last three columns on this chart indicate the frequencies of responses with the frequency being the number outside of the brackets, and the numbers inside the brackets indicate the specific participants. The number with a number in parentheses next to it indicates that same participant responded twice indicating the same type of reflection in both responses.

Appendix F

Table 5: Responses to Question 5 based on Student Teacher Surveys

	Case Study	Reflective Log	Traditional Lecture
	(Participants, n=14) (Surveys, n=21)	(Participants, n=19) (Surveys, n=25)	(Participants, n=7) (Surveys, n=9)
Behavior Issues (Student not doing work, classroom management) R1 <i>Technical Reflection</i> R2 <i>Descriptive Reflection</i>	146 (208), 228 (229) , 248 (258) , 259	27 (115) , 39 (96), 133, 190 (194), 224	161, 185
Planning & Instruction R1 <i>Technical Reflection</i> R2 <i>Descriptive Reflection</i>	107 (108), 228 (229) , 248 (258) , 260	11, 57, 64 , 164, 202, 224	161, 185 , 200, 224
School Policy/Legal/Medical Issues R1 <i>Technical Reflection</i> R2 <i>Descriptive Reflection</i> R4 <i>Critical Reflection</i>	42, 132	57, 64, 95, 133	
Background R1 <i>Technical Reflection</i> R2 <i>Descriptive Reflection</i>	51 , 113, 259	9, 29 (114), 31	234 (235)
Drawing upon expertise (Conversation w/Cooperating Teacher) R3 <i>Dialogic Reflection</i>	53	27 (115)	162, 235
General questions (All questions are important, typical student characteristics, medical questions) R3 <i>Dialogic Reflection</i>	72, 51	16	
Assessment R1 <i>Technical Reflection</i> R2 <i>Descriptive Reflection</i>	172	64	191
Feedback on ST R2 <i>Descriptive Reflection</i> R3 <i>Dialogic Reflection</i>		29	
Blank/ Response Not Relevant to Question	79 (93), 112, 186	36, 82, 88 (143), 116, 131, 203	1, 240

*A **bolded number** indicates that the responses of that participant fell into more than one reflection category.

**A number in parentheses after another number indicates that the same participant submitted two surveys and their responses on each survey represented the same type of reflection.

Appendix G

Table 6: Summary for Question 5 based on Student Teacher Surveys

	Case Study	Reflective Log	Traditional Lecture	Case Study	Reflective Log	Traditional Lecture
R3 Dialogic Reflection	14%	12%	22%	3 [51, 53, 72]	3 [16, 27 (115)]	2 [162, 235]
R1 Technical Reflection R2 Descriptive Reflection	62%	68%	77%	13 [51, 107 (108), 113, 146, 172, (208), 228 (229), 248 (258), 259 (260)]	17[9, 11, 27 (115), 29 (114), 31, 39 (96), 57, 64, 133, 164, 190 (194), 202, 224]	7 [161, 185,191, 200, 224, 234 (235)]
R1 Technical Reflection R2 Descriptive Reflection R4 Critical Reflection	10%	16%	0%	2 [42, 132]	4 [57, 64, 95 133]	
R2 Descriptive Reflection R3 Dialogic Reflection	0%	4%	0%		1 [29]	
Blank/ Response Not Relevant to Question	19%	28%	2%	4 [79 (93), 112, 186]	7 [36, 82, 88 (143), 116, 131, 203]	2[1, 240]

The percentages are based on surveys not participants since each survey represented a separate student teaching experience. The last three columns on this chart indicate the frequencies of responses with the frequency being the number outside of the brackets, and the numbers inside the brackets indicate the specific participants. The number with a number in parentheses next to it indicates that same participant responded twice indicating the same type of reflection in both responses.

Appendix H

Table 7: Comparisons between ST-CT-SupT for Questions #1, #4, #5

Question 1

Case Study (11 surveys)	ST-CT-SupT	ST-SupT	ST-CT	CT-SupT
R1				
R2	4 [51, 72, 79, 186] 36%	1 [229] 10%	4 [112 (113), 146, 228] 36%	
R3	2 [53, 79] 18%			
R5	1 [186] 10%		2 [112 (113)] 18%	
Reflective Log (10 surveys)				
R1				
R2	2 [29, 224] 20%	1 [39] 10%	5 [11, 16, 27 (115), 57] 50%	1 [36] 10%
R3	1 [224] 10%	1 [39] 10%		2 [29, 57] 20%
R5			2 [11, 115] 20%	
Traditional Lecture (6 surveys)				
R1				1 [234] 16%
R2	1 [234] 16%	3 [1, 161, 191] 50%	2 [200, 235] 33%	
R3				
R5		3 [1, 161, 191] 50%	1 [235] 16%	

Question 4

Case Study (11 surveys)	ST-CT-SupT	ST-SupT	ST-CT	CT-SupT
R1	2 [79, 112] 18%	4 [51, 53, 113, 186] 36%	4 [72, 146, 228 (229)] 36%	
R2	2 [79, 112] 18%	4 [51, 53, 113, 186] 36%	4 [72, 146, 228 (229)] 36%	
R4				
Reflective Log (10 surveys)				
R1	2 [36, 57] 20%	1 [29] 10%	3 [11, 27 (115)] 30%	
R2	1 [57] 10%	1 [29] 10%	3 [11, 27 (115)] 30%	
R4				
Traditional Lecture (6 survey)				
R1		1 [191] 17%	1 [200] 17%	
R2	1 [234] 17%	1 [191] 17%	1 [200] 17%	
R4				

Question 5

Case Study (11 surveys)	ST-CT-SupT	ST-SupT	ST-CT	CT-SupT
R1			1 [229] 10%	2 [72, 112] 18%
R2	1 [113] 10%	1 [51] 10%	1 [229] 10%	2 [72, 112] 18%
R3		2 [51, 53] 18%		2 [113, 146] 18%
R4				
Reflective Log (10 surveys)				
R1	3 [11, 57, 115] 30%	2 [27, 29] 20%	2 [39, 224] 20%	
R2	3 [11, 57, 115] 30%	2 [27, 29] 20%	2 [39, 224] 20%	
R3				1 [11] 10%
R4		1 [57] 10%	1 [11] 10%	
Traditional Lecture				
R1	1 [191] 10%	1 [161] 10%	1 [234] 10%	
R2	1 [191] 10%	1 [161] 10%	1 [234] 10%	
R3				
R4				

The percentages are based on surveys not participants since each survey represented a separate student teaching experience. The last three columns on this chart indicate the frequencies of responses with the frequency being the number outside of the brackets, and the numbers inside the brackets indicate the specific participants. The number with a number in parentheses next to it indicates that same participant responded twice indicating the same type of reflection in both responses.