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ABSTRACT

This study analyzed 42 preservice teachers' reflection levels during their Master of Education program. Participants completed three types of reflective journal writing (reflections on selected readings, class discussions, and early field and student teaching experiences). The 21 control students received a 30-minute orientation that provided guidelines for writing class journals. For the field journals, control students were told to reflect on any event and explain what had happened, how they handled it, and how it could have been improved. The 21 experimental students received a 3-hour orientation that included detailed discussion on reflective thinking and practice, cognitive processes, the importance of reflection, and reflective theory. They completed four reflective teaching lessons and received guided questions for their reflection in class journals. They were given guidelines for reflection in their field journals that were much more detailed than the guidelines given to the control students. All students handed in their class journals and reading journals weekly for 5 weeks and their field journals at several points in time. Researchers scored all journal entries for levels of reflection. Results indicated that when preservice teachers engaged in reflective activities, their levels of reflection improved considerably. Participants who received specific training on reflective thinking were more reflective. The study also showed that even though preservice teachers can achieve the higher levels of reflection, they still do not reach the highest level. (Contains 7 tables and 18 references.) (SM)

REFLECTION AND THE PRESERVICE TEACHER

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REFLECTION AND THE PRESERVICE TEACHER

Teacher reflection has been a topic of interest in teacher education since the 1980s (Bolin, 1989). Although the concept of teacher reflection was first introduced at the turn of the century by Dewey, his ideas have provided a foundation for much of the subsequent theoretical work. Today teacher reflection is considered to be a very important component of preservice teacher education. This exploratory study's objective was to systematically analyze the level of reflection which preservice teachers achieved by the end of their Master of Education program.

Theoretical Framework

Based on definitions given by Goodman (1984), Ross (1987, 1989), and Zeichner and Liston (1987), reflection can be viewed as a way of thinking about educational matters that involves the ability to make rational choices and to assume responsibility for those choices. Van Manen (1991) asserts that reflection can take place only if preservice teachers or teachers in general have the time to think about their teaching in terms of what was done, what could have been done, and what should be done. This carries the connotation of deliberation, making choices, and reaching decisions about a course of action. Shulman (1987) defines the process as reviewing, reconstructing, reenacting, and critically analyzing one's own and the class's performance. Cruickshank and Applegate (1981) define reflection as helping teachers think about what happened, why it happened, and what else they could have done to reach their goal. The process of reflection, as explained by Valverde (1982), is one in which teachers or preservice teachers ask value-laden questions about themselves as teachers, what they are doing, why they are doing it, and whether they are satisfied with their actions and decisions.

The development of preservice teacher thinking requires more than mastery of certain teacher behaviors associated with student achievement; rather, it involves student teachers in critical, reflective thinking about their work (Bolin, 1988). Dewey (1904) believed that people should be taught how to think by being involved in thinking, and that it could be even more important to prepare preservice teachers to think about their work than to teach strategies they would master for future application. By encouraging teachers to think about and reflect upon their work, ordinary thinking can be turned into critical thinking. Like Dewey, Kuhn (1986) believes that the only way to improve teachers' thinking is to involve them in it. This suggests that in order to improve preservice teachers' reflectivity, it is necessary to involve them in relevant exercises and opportunities to engage in reflective thinking.

Sparks-Langer et al. (1990) point out that asking the "why" question is essential in the development of reflection in preservice teachers. If students do not understand why something worked or did not work, they will have difficulty figuring out what to do next. Related to this, Smyth suggests that there are four forms of action that should be used to engage preservice teachers in reflection: describing (what do I do?), informing (what does it mean?), confronting (how did I come to be like this?), and reconstructing (how might I do things differently?). Such opportunities to engage in reflective thinking help preservice teachers link theory to practice, allowing them to try to balance learning styles and teaching styles with content, and thus challenge their own practices and assumptions as they strive for improvement.

Student teachers tend to be more reflective if the experiences upon which they are expected to reflect are real (Dewey, 1933). Preservice teachers need to have opportunities to reflect upon practice through observation in field experiences and in real school settings (Roth, 1989). This

enables them to analyze and interpret field experiences from a different perspective, discover assumptions, and arrive at implications for classroom practice (Bainer & Cantrell, 1993). Preservice teachers can be trained in reflection for self-development and self-monitoring. By starting this training early in the teacher education program, and by using a well structured format, preservice teachers can be helped to develop effective reflective abilities, learning how to reflect about their teaching in an objective and analytical way under controlled clinical teaching conditions (Bainer & Cantrell, 1992; Cruickshank et al., 1981). Activity and interaction serve as the support base for the thinking process leading to reflection.

Method

Subjects

The subjects of the study were 42 elementary school preservice teachers in a Master of Education (M.Ed.) teacher education program at a large mid-western university who were taking part in a two-quarter practicum experience followed by student teaching. The control group consisted of 21 students: four were males; sixteen were females. The subjects were at a typical age for university graduate students (range = 22-24 years), with the exception of four nontraditional students (ages 27 years, 30 years, 35 years, and 39 years). The experimental group consisted of an equal number of students: three were males; eighteen were females. Ten subjects were at a typical age for university graduate students (range=22-24 years), but eleven students were nontraditional students (ages 26 years, 27 years, 2-30 years, 32 years, 33 years, 37 years, 38 years, 2-41 years, and 42 years).

All students met the six criteria of the selection process (i.e., GPA >2.75; adequate GRE;

three letters of recommendation; writing sample; and a BA or BS degree) for admittance into the Master of Education Program. During the study, subjects were enrolled in methods courses in social studies, science, math, and literacy, as well as a field experience. It was during the class sessions and field experiences that data were collected.

Instruments

The subjects involved in the study were engaged in reflective journal writing each quarter, of three types: reflections on selected readings, class discussions, and early field and student teaching experiences. The levels of reflection of the journal entries for course readings were determined by using the following instruments: Ross (1989) "Criteria for Assessing Levels of Reflection," which was applied to the reflections on selected readings because its framework addresses reflection with readings and Zeichner & Liston (1985) "Conceptual Framework for Analyzing Practical Reasoning" was used to analyze the discourse employed by the students. For class discussions, Shulman's (1987) "Model of Pedagogical Reasoning and Action," was used to identify student's reasoning because it encompasses the whole process of teaching from preparation to reflection, along with Zeichner & Liston's (1985) framework. For the field experiences and student teaching, three instruments used were: Galvez (1995) "Assessment for Levels of Reflection" and VanManen (1991) "Levels of Reflectivity of Deliberative Rationality", to determine levels of reflection; and Zeichner and Liston's (1985) framework.

Orientation for Subjects

The orientation session for the control group lasted 30 minutes. Students were instructed on the guidelines for the class journals: (a) reflections on the readings, focusing on what they learned and how it can be implemented for future teaching; and (b) reflections on what they

learned from the class and how it can be implented in future teaching (referring to social studies). The class journals and reading journals were handed in weekly for five weeks. For the field journals, students were told that they could reflect on any event that caught their attention. They were to tell what had happened, how it was handled, and how it could have been improved (Cruickshank 1981,1985,1987). They were to hand in three journals for autumn and winter quarters after the field experience was completed. For spring quarter, the student teachers prepared one journal entry per week for eight weeks. These journal entries were handed in weekly following the same format as autumn and winter quarter field experiences.

The orientation for the experimental group took place during of summer quarter of 1996. It was a 3-hour session that consisted of: (a) a discussion on a handout prepared by the principal investigator which was a literature review on reflection, reflective thinking and reflective practitioner, (b) the role of reflection in the learning process which included Kolb and Fry's (1975) model (Troyer, 1988), (c) cognitive processes involved in reflection (Troyer, 1988), (d) the importance of reflecting on classroom situations following Cruickshank's (1985) model of Reflective Teaching (Troyer, 1988), and (e) Reflective Teaching was developed, theoretically (its foundations and practice were explained) and practically.The students were also involved in four Reflective Teaching Lessons. Students were given guided questions for their reflection in class journals: (a) reflections on the readings, focusing on what they learned, how it can be implemented for future teaching from the teachers' and students' perspective, how did the readings related to instruction and learning objectives, and the limitations the content of the readings would have for implementation in the classroom; (b) reflections on what they learned from the class and how it can be implemented in future teaching (referring to social studies)

taking into account the teacher's and the students' perspective. The class journals and reading journals were handed in weekly for five weeks. For the field journals, students were given guidelines for reflection: instructional and non-instructional events observed in the classroom setting. They were to tell what had happened; analyze the teacher behavior/performance from the teacher's perspective and the effect it had on the students; what did they learn from observing that particular situation; highlight effective versus non-effective instruction and how the instructional event is related to objectives, students characteristics, teaching strategies and how they met the students' learning styles; evaluate the instructional event from multiple perspectives (teacher's, students' administrators' and parents'); and the ways in which the non-instructional event could have been handled differently. They were to hand in three journals for autumn and winter quarters after the field experience was completed. For spring quarter, the student teachers prepared one journal entry per week for eight weeks. These journal entries were handed in weekly following the same format as autumn and winter quarter field experiences.

Data Collection and Analysis

The subjects were in direct contact with the principal investigator weekly during the six quarters the study lasted (autumn 1995, winter 1996, spring 1996, autumn 1996, winter 1997, and spring 1997). Journal entries were collected weekly for all three focus areas . All journals were scored by two raters who were trained in the use of the five instruments, and all documents per student, per quarter, were also read by all raters in order to determine levels of reflection. The inter-rater reliability was determined by using Cronbach's alpha=0.95; yielding a high inter-rater reliability..

A repeated measure of one factor between - two within subjects design was used to analyze the data sets that corresponded to class readings, discussions, and field experiences. Content analysis was performed on the class discussions using the categories that came from Shulman's framework. Percentages and frequencies were calculated per category. Triangulation was performed among the instruments used for the readings and field experiences.

Validity

A representative sample from the control and experimental groups examined the five instrument and agreed that the instruments measured what they intended to measure: reflective thinking. After ratings of the data were completed, a member check was performed by a second representative sample from each group with a 98% agreement on the ratings. Triangulation was carried out through the use of multiple instruments, methods, and investigators to increase confidence in the results of the study.

Results

Table 1 summarizes a repeated measures one between two within factor analysis conducted to test for between and within subjects effects on Ross' (1989) levels of reflection on selected readings.

Insert Table 1 about here

An examination of Table 1 revealed that the between effect (treatment variable) was statistically significant, $F(1,40) = 73.07$, $p < .05$. This effect is attributed to the training

given to the experimental group. The within effects indicated that the interaction between time (autumn and winter quarter reflections) and raters (1 and 2), was statistically significant, $F(1,40) = 8.47$, $p < .05$. This suggested that the students in both groups (control and experimental) tended to reflect more as they moved from autumn to winter quarter.

Table 2 summarizes a repeated measures one between two within factor analysis conducted to test for between and within subjects effects on Zeichner & Liston's (1985) Discourse Analysis on selected readings.

Insert Table 2 about here

An examination of Table 2 revealed that the between effect (treatment variable) was statistically significant, $F(1,40) = 104.10$, $p < .05$. No statistical significance was found for the within effect. The lack of significance was attributed to the fact that both groups remained within the same level of discourse through autumn and winter quarters (Control: Autumn Mean=1.33, Winter mean=1.39; Experimental Mean: Autumn Mean=2.68; Winter Mean=2.70). The control group remained within the first discourse level which is the factual at the sublevel hermeneutic. The interpretation of the means of the reflections achieved by the experimental group was that the students were in the transition from the second to the third level of discourse, that is from prudential to justificatory. The justification for this statement is that within the four sublevels of the prudential discourse the rating of M=2.68 and M=2.70 is above the fourth level.

In comparing the means of the readings analyzed using Ross' (1989) instrument to

Zeichner & Liston's (1985) discourse analysisl, the control group (Autumn Mean=1.35, Winter Mean=1.43) and the experimental group (Autumn Mean=2.39, Winter Mean=2.63) exhibited the same pattern as found in the discourse analysis. The control group remained in level one and the experimental group transitioned from level 2 to level 3.

Table 3 summarizes a repeated measures one between two within factor analysis was conducted to determine between and within subjects effects. It was performed on Zeichner and Liston's (1985) Discourse Analysis concerning class discussions by treatment, quarter, and raters.

Insert Table 3 about here

An examination of Table 3 revealed that the between effect (treatment variable) was statistically significant, $F(1,40) = 4.51$, $p < .05$. No statistical significance was found for the within interaction effect. Only the time variable (quarter) had a significant $F(1,40) = 23.39$, $p < .05$, but it is considered a marginal effect.

A content analysis was performed by two raters on the class discussion journals using Shulman's six categories (comprehension, transformation, instruction, evaluation, reflection, and new comprehension) as shown in Table 4.

Insert Table 4 about here

An examination of Table 4 revealed that overall most of the journal entries were

represented by the reflection category (control=57%; experimental=37%), followed by the transformation category (control:34%; experimental=51%). The other strong category was new comprehension (control=32%; experimental=51%). Notably, most of the students' reflections during autumn quarter, were rated (control=81%; experimental=65%) under the reflection and new comprehension categories (control=9%; experimental=21%). During winter quarter, (average between raters: control=35%; experimental=10%) of the students' reflections were rated on the reflection category, (control=27%; experimental=44%) of the students' reflections were rated in the transformation category. This indicated that during autumn quarter both groups' (control and experimental) reflections focused on reviewing and recreating classroom settings; in contrast winter quarter revealed that the control group moved from reviewing and recreating to reflecting on instructional strategies and consolidating new understandings. The experimental group focused on teaching strategies, analysis of class preparation and meeting the students' needs. They also looked at the implications of what was taught upon future planning and teaching.

Table 5 summarizes a repeated measures one between two within factor analysis to determine between and within subjects effects. It was performed on Galvez's (1995) framework on levels of reflection concerning field experiences by treatment, quarter, and raters.

Insert Table 5 about here

An examination of Table 5 revealed that the between effect (treatment variable) was statistically significant, $F(1,40) = 164.01$, $p < .05$. Statistical significance was found for the

within interaction effect between time and rater, F (2,80) = 17.10, $p < .05$. This suggested that differences were found in the ratings within each quarter. Statistical significance was also found between treatment and rater in the within effects, F (1,40) = 18.23, $p < .05$. The means (control group: Autumn Mean=1.67; Winter Mean=2.31; Spring Mean=2.86; experimental group: Autumn Mean=5.05; Winter Mean=5.26; Spring Mean=5.33) reveal that the control group moved from level 1 to level 2, whereas the experimental group remained at level 5 all three quarters.

Table 6 summarizes a repeated measures one between two within factor analysis to determine between and within subjects effects. It was performed on VanManen's (1991) framework on levels of reflectivity concerning field experiences by treatment, quarter, and raters.

Insert Table 6 about here

An examination of Table 6 revealed that the between effect (treatment variable) was statistically significant, F (1,40) = 124.27, $p < .05$. Statistical significance was found for the within interaction effect between (a). treatment, time and rater, F (2,80) = 5.16, $p < .05$; (b). time and rater, F (2,80) = 9.03, $p < .05$; and (c). treatment and rater, F (1,40) =10.49, $p < .05$. These results are reflected in the means of both groups (control: Autumn Mean=1.10; Winter Mean=1.31; and Spring Mean=1.33; experimental: Autumn Mean 2.14; Winter Mean=2.07; Spring Mean=2.43). This suggested that that the control group remained at level 1 (technical rationality), meanwhile the experimental group remained at level 2 (practical action).

Table 7 summarizes a repeated measures one between two within factor analysis to determine between and within subjects effects. It was performed on Zeichner and Liston's (1985) discours analysis concerning field experiences by treatment, quarter, and raters.

Insert Table 7 about here

An examination of Table 7 revealed that the between effect (treatment variable) was statistically significant, $F(1,40) = 140.9$, $p < .05$. Statistical significance was found for the within interaction effect between treatment and rater, $F(1,40) = 4.39$, $p < .05$. An analysis of the means indicated a difference between the control group and the experimental group in progression from one level to another. Even though the control group's mean (Autumn=1.26; Winter=1.49;Spring=1.51) was higher from autumn to spring they still remained at level 1 (factual discourse), whereas, the experimental group's mean (Autumn=2.62; Winter=2.77; Spring=3.10) moved from level 2 (practical discourse) to level 3 (justificatory discourse).

Conclusions and Implications

When preservice teachers engage in reflective activities they improve considerably on their level of reflection. This study is an extension on Troyer's (1988) investigation and corroborates her findings that preservice teachers tendto be more reflective when they receive specific training on reflective thinking. This study also shows that even though, preservice teachers can achieve the higher levels of reflection through training and guidance they still do not reach the highest level (i.e., analyzing teaching situations from multiple perspectives; and evaluating and adjusting

one's own teaching performance in response to children's individual differences) regardless of the frameworks utilised as demonstrated by this study which triangulated several instruments..

This study has shown when preservice teachers do not receive training in reflection and are required to reflect there is some improvement in reflection within time, but if they are trained on reflective thinking and receive structured guidance they improve considerably in their own reflectivity. Kuhn (1986) states that preservice teachers will tend to be more reflective if they are asked to reflect, the researchers found this to be true from the results of the study where the control group from quarter to quarter did improve slightly, whereas, the experimental group made leaps to different levels.

It thus seems clear that when preservice teachers are simply asked to reflect, they typically retell the events of the day without interpreting them or analyzing what the events mean.
As the researchers found with the shulman framework, the control group remained in the retelling of events and the experimental group moved from retellings to analyzing the "why" and "how" of.

.Implications for future research include:

1. Future research should include a comparison between preservice teachers at the undergraduate level and the graduate level.
2. What hinders preservice teachers from advancing to the highest levels of reflection?
3. Preservice teacher reflection needs to be studied more systematically (cognitive domains, and affective domains).
4. Future studies should offer strategies and specific exercisesto promote reflectivity. based

What we have seen suggests that the theme of teacher as reflective professional, as Wildeman & Niles (1987) and Pultorak (1993) suggest should be pursued vigorously in preservice teacher education programs and specific training should be extended throughout these programs.

Table 1

One between-two within subjects design on Ross' levels of reflection on selected readings per treatment, time and rater

Source	df	SS	MS	F	P
Between SS					
A (CvsE)	1	52.26	52.26	73.07	0.0001
S(A) Error	40	28.61	0.72		
Within SS					
Time	1	1.05	1.05	2.75	0.1048
ATime	1	0.27	0.27	0.70	0.4080
STime(A) Error	40	15.29	0.38		
Rater	1	0.01	0.01	0.90	0.3482
ARater	1	0.00	0.00	0.07	0.7971
SRater(A) Error	40	0.32	0.01		
TimeRater	1	0.06	0.06	8.47	0.0059
ATimeRater	1	0.01	0.01	1.49	0.2295
STimeRater(A) Error	40	0.27	0.01		
Total	167	98.15			

Table 2

One between-two within subjects design on Zeichner and Liston's discourse analysis on selected readings per treatment, time and rater

Source	df	SS	MS	F	P
Between SS					
A (CvsE)	1	74.00	74.00	104.10	0.0001
S(A)Error	40	28.44	0.71		
Within SS					
Time	1	0.06	0.06	0.10	0.7579
ATime	1	0.02	0.02	0.03	0.8738
STime(A) Error	40	26.92	0.67		
Rater	1	0.01	0.01	0.08	0.7739
ARater	1	0.02	0.02	0.20	0.6573
SRater(A) Error	40	3.44	0.09		
TimeRater	1	0.06	0.06	0.80	0.3765
ATimeRater	1	0.06	0.06	0.70	0.4077
STimeRater(A) Error	40	2.86	0.07		
Total	167	135.89			

Table 3

One between-two within subjects design on Zeichner and Liston's discourse analysis on class discussions per treatment, time and rater

Source	df	SS	MS	F	P
Between SS					
A (CvsE)	1	2.68	2.68	4.51	0.0399
S(A) Error	40	23.73	23.73		
Within SS					
Time	1	9.91	9.91	23.39	0.0001
ATime	1	0.17	0.17	0.41	0.5258
STime(A) Error	40	16.95	0.42		
Rater	1	0.01	0.01	0.61	0.4377
ARater	1	0.05	0.05	3.84	0.0570
SRater(A) Error	40	0.56	0.01		
TimeRater	1	0.01	0.01	0.96	0.3323
ATimeRater	1	0.02	0.02	1.97	0.1686
STimeRater(A) Error	40	6.48	0.01		
Total	167	54.57			

Table 4

Shulman's categories with percentages per quarter, and group, by rater

Categories	AU QTR				WI QTR			
	C		E		C		E	
	R1	R2	R1	R2	R1	R2	R1	R2
Comprehension	3	0	1	2	4	2	4	1
Transformation	6	7	8	6	25	30	44	44
Instruction	1	1	4	4	4	7	10	14
Evaluation	2	1	1	1	4	7	1	2
Reflection	80	81	69	62	38	32	13	6
New Comprehension	8	10	17	25	25	22	28	33
Total	100	100	100	100	100	100	100	100

AU QTR=Autumn Quarter
WI QTR=Winter Quarter
C=Control Group
E=Experimental Group
R1=Rater 1
R2=Rater 2

Table 5

One between-two within subjects design on Galvez's levels of reflection on the field experiences per treatment, time and rater

Source	df	SS	MS	F	P
Between SS					
A (CvsE)	1	543.25	543.25	164.01	0.0001
S(A) Error	40	132.49	3.31		
Within SS					
Time	2	23.08	11.54	4.78	0.0110
ATime	2	8.60	4.30	1.78	0.1752
STime(A) Error	80	193.32	2.42		
Rater	1	11.57	11.57	41.01	0.0001
ARater	1	5.14	5.14	18.23	0.0001
SRater(A) Error	40	11.29	0.28		
TimeRater	2	7.71	3.86	17.10	0.0001
ATimeRater	2	1.24	0.62	2.74	0.0704
STimeRater(A) Error	80	18.05	0.23		
Total	251	955.74			

Table 6

One between-two within subjects design on Van Manen's levels of reflectivity on the field experiences per treatment, time and rater

Source	df	SS	MS	F	P
Between SS					
A (CvsE)	1	59.06	59.06	124.87	0.0001
S(A)Error	40	18.92	0.47		
Within SS					
Time	2	3.08	1.54	3.82	0.0260
ATime	2	1.37	1.68	1.69	0.1902
STime(A) Error	80	32.22	0.40		
Rater	1	0.78	0.78	8.03	0.0072
ARater	1	1.02	1.02	10.49	0.0024
SRater(A) Error	40	3.87	0.10		
TimeRater	2	1.56	0.78	9.03	0.0003
ATimeRater	2	0.89	0.44	5.16	0.0078
STimeRater(A) Error	80	6.89	0.09		
Total	251	129.66			

Table 7

One between-two within subjects design on Zeichner and Liston's discourse analysis on the field experiences per treatment, time and rater

Source	df	SS	MS	F	P
Between SS					
A (CvsE)	1	124.88	124.88	140.9	0.0001
S(A) Error	40	35.44	0.89		
Within SS					
Time	2	5.51	2.75	3.33	0.0409
ATime	2	1.08	0.54	0.65	0.5235
STime(A) Error	80	66.18	0.83		
Rater	1	0.06	0.06	4.39	0.0425
ARater	1	0.06	0.06	4.39	0.0425
SRater(A) Error	40	0.52	0.01		
TimeRater	2	0.01	0.01	0.52	0.5961
ATimeRater	2	0.00	0.00	0.23	0.7962
STimeRater(A) Error	80	0.85	0.01		
Total	251	234.59			

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