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ABSTRACT

This study investigated 30 preservice teachers' journals for examples of the knowledge base for teaching, expectations for professional collaboration, and depth of reflectivity when discussing these issues. Content analysis was conducted on six journal questions intended to generate thought patterns in relation to professionalism in teaching. Descriptive statistics and multiple regression were used to examine the data. Analysis revealed a dearth of substantive examples of the new knowledge base and collaboration. However, when examples were evident, they consistently predicted depth of reflectivity, suggesting an integrated growth of professionalism in the preservice teachers. (Contains 31 references.) (Author/SM)

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Running Head: THOUGHT PATTERNS CONCERNING PROFESSIONALISM

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The Examination of Preservice Teachers' Journals for Reflective Thought Patterns Concerning Professionalism

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Abstract

The present study investigated preservice teachers' journals (n = 30) for examples of the knowledge base for teaching, expectations for professional collaboration, and depth of reflectivity when discussing these issues. Content analysis was conducted on six journal questions intended to generate thought patterns in relation to professionalism in teaching. Descriptive statistics and multiple regression were used to examine the data. Analysis revealed a dearth of substantive examples of the knowledge base and collaboration. However, when examples were evident, they consistently predicted depth of reflectivity, suggesting an integrated growth of professionalism in the preservice teachers.

The Examination of Preservice Teachers' Journals for Reflective Thought Patterns Concerning Professionalism

The face of teacher education is changing, and has been for some time. Largely motivated by educational reform efforts, institutions that train teachers are increasingly focussing on field-based and other educational experiences that will develop teachers of heightened competence and pedagogical skill. Of course, such efforts are not new and educational reform has become a something of a mantra for many policymakers, politicians, and educators (cf. Cuban, 1990). However, the nature of such reform is a point of debate. What are the critical elements of teacher education? What are the characteristics of the effective teacher in terms of what they know, how they act, and how they perform the translation of knowledge into action? Additionally, how can we make the truly effective teacher a normative phenomenon that can benefit students with diverse backgrounds and experiences?

In a seminal article, Shulman (1987) discussed one of the recurring themes of educational reform, namely, the professionalization of teaching. In reference to teaching

improvement reports from the Carnegie Task Force (1986) and the Holmes Group (1986), he noted:

> One of the recurring themes of these reports has been the professionalization of teaching - the elevation of teaching to a more respected, more responsible, more rewarding and better rewarded occupation. The claim that teaching deserves professional status, however, is based on a more fundamental premise: that the standards by which the education and performance of teachers must be judged can be raised and more clearly articulated. The advocates of professional reform base their arguments on the belief that there exists a "knowledge base for teaching" - a codified or codifiable aggregation of knowledge, skill, understanding, and technology, of ethics and disposition, of collective responsibility - as well as a means for representing and communicating it. (pp. 3-4)

Indeed, the depth and applicability of the "knowledge base for teaching" has been central to calls for an elevated level of professionalism, both in research and in practice. That is, the accumulation of knowledge concerning teaching must be handled is such a way that it ultimately benefits classroom practice.

In his comments, Shulman (1987) captured a second central element of professionalism - collective responsibility. Professions have collective identities, and hold the expectations that persons within the field will abide by certain conduct (typically prescribed by codes of ethics) and interact in a collaborative manner. One important extension of this perspective suggests that teachers must be able collaborate professionally in problem solving. In fact, considerable recent research has focussed on establishing meaningful collaborative relationships among educational partners (e.g., Bickel & Hattrup, 1995; Engestrom, 1994; Jensen & Shepston, 1997; John-Steiner, Weber, & Minnis, 1998; Stevenson & Lee, 1995).

In addition to the establishment of a knowledge base and the facilitation of collaborative relationships, professionalization movements have also called for the development of thoughtful reflectivity in teachers. It is reflective pedagogical thinking, or the ability to critically evaluate the myriad of individual, interpersonal, contextual, and social/philosophical influences on teaching, that enables a teacher to know how to acquire and use the knowledge base as well as how to establish and maintain meaningful collaborative partnerships with colleagues.

Schon (1983) has described the reflective practitioner in some detail and later expounded upon the dynamics of educating persons in such a way that reflection becomes part and parcel with their practice (Schon, 1987).

Central to the professionalization of teaching is the manner in which preservice teachers are educated. Their training and expectations, no doubt, impact their practice and how they perceive the field of teaching. Ultimately, their behavior will play a significant role in defining the professional reputation of teaching.

It was the purpose of the present study to examine how preservice teachers used and perceived these issues related to professionalism (i.e., knowledge base, collaboration, and reflectivity). An understanding of how preservice teachers view teaching as a profession provides valuable information concerning the effectiveness of teacher education programs in establishing these perspectives in their students as well as regarding the prognosis of the continued professionalization of teaching. Three questions guided the present study: (1) What thoughts do preservice teachers have in reference to the establishment and utilization of a knowledge base? (2) What are the perceptions of preservice teachers regarding the collegiality and collaboration of

teachers required in solving professional problems? (3) What depth of reflectivity do preservice teachers discuss these and related educational issues?

The Knowledge Base

Theory and practice are hand-in-glove concepts. Instructional practice without theory amounts to little more than trial and error with no generalization to alternate settings or even to the next student. However, regardless of whether we recognize the dynamic, theory is built by experiences in living. For teachers, this may manifest itself in the manner in which a teacher interacts with his or her students the first few days of the school year. If such an approach has historically been effective in building a cooperative learning environment, the teacher is likely to repeat the effort.

Of course, such a haphazard approach to effective teaching yields little theory building information. As such, considerable educational research has focussed on "teaching effectiveness" in efforts to apply more rigorous scientific principals of inquiry to the complex task of teaching (cf. Brophy & Good, 1986; Gage, 1986). Shulman (1987) argued, though, that such research does not capture the intricate dynamics of teaching in totality. Instead,

Shulman proposed an expansion of the concept of "knowledge base for teaching" to include other forms or categories of knowledge that are critical to teaching (see Table 1). Experienced and effective teachers rely on a wide range of knowledge types in their practice. Shulman also argued that this broadening of perspective was a central element to the ultimate professionalization of teaching and the development of a research validated "knowledge base for teaching."

An interesting practicality of this position is the degree preservice teachers possess these types of knowledge and use them in their practice. Certainly, if the professionalization of teaching is to continue to evolve into existence, a pivotal factor in the process is the extent that teachers are educated concerning these types of knowledge and the extent to which they become a part of the teacher's cognition and behavior. If new teachers do not possess and utilize this knowledge, then the professionalization of teaching may become hampered by a feedback loop where novice educators are socialized into the profession without reliance upon important knowledge and theory.

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INSERT TABLE 1 ABOUT HERE

Teacher Collaboration

Constructivist views of education have propelled efforts to establish collaborative relationships not only between students and teachers, but also between teachers themselves. Collaboration is certainly an important source of professional problem solving of challenges faced in teaching. As previously noted, Shulman (1987, p. 4) alluded to these relationships as "collective responsibility." Other researchers have highlighted the role of collaboration in establishing meaningful relationships between preservice and inservice teachers (Jensen & Shepston, 1997) and in fostering reflective critical thought (Henderson, 1996; Ross, Johnson, & Smith, 1992).

In an attempt to clarify differing forms of collaboration among teachers, Henderson (1996) proposed five levels of collaboration, each of which represent varying points on a continuum of increasing depth and meaningfulness in collaborative experiences. The continuum ranges from simply sharing information between professionals to the

establishment of intimate mentoring relationships. Table 2 lists all of the levels suggested by Henderson (1996).

INSERT TABLE 2 ABOUT HERE

As with the recognition and use of the knowledge base, the anticipation of collaborative relationships with fellow teachers may guide the professional behavior of preservice teachers as they move into practitioner settings. For example, Jensen and Shepston (1997) reported that preservice teachers who were able to engage in meaningful collaborative experiences with other teachers were better able to identify examples of best practice or distinguish between examples and non-examples of best practice in the real world than those preservice teachers that did not meaningfully engage in collaboration.

Reflectivity and Practice

An overarching influence on both the use of the knowledge base and professional collaboration is the level of reflectivity the teachers has concerning his or her practice. One of the given goals of educational research is to evaluate and improve upon the practice of classroom teaching. This worthy goal has been approached in a variety of ways including the encouragement of reflective thought by

the teacher. Although reflective thought is as old as the great Greek philosophers Socrates and Plato, it has resurfaced (Schon, 1983, 1987; Cruickshank, 1985) in this generation with the promise of granting teachers a resource for improving practice. Dewey (1933) defined reflective thinking as "active, persistent, and careful consideration of any belief, or supposed form of knowledge in light of the grounds that support it and the further consideration to which it ends" (p. 9).

Schools and colleges of education are judged on how well they prepare teaching candidates for the classroom. A major thrust of their mission is to give students direction in pedagogical content, learning and development theories, and sound classroom management practices. These components are important in establishing a knowledge base for preservice teachers. Nonetheless, recent graduates who begin practice with a sound theoretical base but no framework for reflective thought may continue to repeat the mistakes encountered in their first year due to a lack of critical self thought (Cruickshank, 1987). Leahy and Corcoran (1996) stressed the importance of integrating the theoretical knowledge base and careful reflection for preservice teachers. Although students at this level may

have little or no field experience, Leahy and Corcoran (1996) reported that preservice teachers in an introductory course ranked the development of a personal philosophy of education that was developed through reflective thought practices above the field components.

Schon (1983, 1987) discussed the action that must follow reflection to complete the equation for improving classroom teaching. His "reflection in action" concept captures the essence of reflecting and adjusting simultaneously. While this is a worthy goal, preservice teachers do not have the theoretical base and experience to execute this higher order skill with the automatization of a master teacher. Preservice teachers can, however, begin working on the beginning stages of the reflective thought framework (Hatton & Smith, 1995).

One group of researchers (Sparks-Langer, Simmons, Pasch, Colton, & Starko, 1992) addressed the issue of reflection in preservice teachers through blocked classes and structured field experiences. In addition, after drawing from the literature on reflective thinking (e.g., Van Manen, 1977), cognitive psychology (e.g., Gagne', 1968; Leinhardt & Greeno, 1986), and experiential learning theory (e.g., Kolb, 1984; Schon, 1983, 1987), they developed a

coding scheme, called the Framework for Reflective Thinking, to measure reflection in preservice teachers. Sparks-Langer et al. (1992) argued that their coding scheme mirrored Van Manen's (1977) critical reflections and Gagne's (1968) hierarchy of thinking. A benefit of this scheme (see Table 3) over Schon's (1983, 1987) broader perspective lies in its utility in distinguishing more subtle forms of reflection at the lower end of the reflection continuum - an attribute important in measuring reflection in preservice teachers given the developmental nature of their professional maturation.

INSERT TABLE 3 ABOUT HERE

Method

Research Design and Questions

As noted, the purpose of this study was to examine the thought patterns of preservice teachers concerning the knowledge base, professional collaboration, and depth of reflectivity in discussing these issues. Cognitive processes, by nature, are difficult to recognize and measure. One means for capturing these elusive but worthwhile phenomena involves the use of journal writing. Researchers (e.g., Farris & Fuhler, 1996; Gipe & Richards,

1992; Roe & Stalman, 1994; Surbeck, 1994) have used journals to assess the thought patterns of preservice teachers with promising results. Following this approach, the journal responses of preservice teachers were used to address the research questions.

Data Sources

During an educational psychology course in a large public university in the southwest, 186 preservice teachers maintained a journal and responded to a series of questions concerning course content and the teaching profession. Two questions specifically assessed their perceptions of the accumulation and utilization of a theoretical knowledge base and expectations of collegiality and working relationships with fellow teachers. The questions asked were (presented in chronological order):

1. How is being a teacher similar to or different from being a practicing physician?
2. What are some advantages and disadvantages of the apprenticeship model? How might this model be used with practicing teachers?
3. Are schools "moral" environments? To what extent, if any, is it the teacher's responsibility to foster moral development in his or her students?

4. Do teachers in the real world use a knowledge base, or theories of teaching and learning, to inform their practice? In not, why? If so, how? Do you plan on doing so? How?
5. To what degree do you expect to work with other teachers in dealing with the problems that you will face teaching? When might this problem-solving take place?
6. From what resources do teachers draw upon to gain information about how to improve their teaching? Explain why these resources are used.

The questions were conceived to prompt the preservice teachers to reflect upon their readings, personal experiences, small discussion groups, and any field experience completed. A small portion of the students' course grade was based on completion of the journal.

Procedures

Near the end of the term, an outside party solicited the students' participation in the study. Of the students present, 140 volunteered participation. Names and other identifying remarks were removed from the journals of consenting students and each one was assigned an identification number. Thirty journals were then randomly selected for analysis from the pool of 140 participants.

The selected preservice teachers reflected the demographics of the class as a whole and were largely female (86.7%), Caucasian (86.7%; African-American, 3.3%; Hispanic, 3.3%; Asian, 3.3%; other, 3.3%), and were in their last year of teacher education (senior, 83.3%; junior, 13.3%; other 3.3%). They had a mean age of 22.03 (SD = 3.69) and most were pursuing secondary education certification (73.3%; elementary, 23.3%; other 3.3%).

The 30 journals were submitted to content analysis (Weber, 1990; Bogdan & Biklen, 1998) to identify themes in the thought patterns of the subjects concerning the knowledge base, professional collaboration, and depth of reflectivity. Three sets of coding criteria were established to measure these constructs. Types of teaching knowledge were categorized using the criteria set forth by Shulman (1987), which included codes for the seven types of knowledge and a code for all data that could not be categorized into one of the seven types (see Table 1). Professional collaboration was measured using Henderson's (1996) continuum of collaborative approaches along with a code for no reference to collaboration (see Table 2). Finally, Sparks-Langer et al.'s (1992) Framework for

Reflective Thinking was used intact as the coding scheme for reflection.

For the knowledge base and collaboration codes, the sentence was used as the unit of analysis. For complex and compound sentences, each independent clause was considered a codeable sentence. Sentences including compound subjects, verbs, and/or objects but without an explicit independent clause were left intact for the analysis. Since reflection by nature necessitates a larger repertoire of ability, knowledge, and communicative skills, each journal entry was used as the unit of analysis for the reflection coding. As such, each of the respondents' six journal entries received one reflection code. Prior to coding, all journal entries were marked for each sentence and independent clause to code.

A sample set of journal entries was used to establish inter-rater reliability for the coding criteria. Researchers utilized a cyclic process of practice coding and comparison among raters. Ambiguities and discrepancies were discussed and resolved. As such, acceptable inter-rater reliability was established for all coding criteria: knowledge base (86.67%), collaboration (86.67%), reflectivity (75%). Since the Framework for Reflective

Thinking represents a hierarchy of reflection and following the method used by Sparks-Langer et al. (1992), inter-rater codes that were within one level of each other were considered acceptable. Even with these criteria, however, 75% of inter-rater codes were exact matches in establishing reliability.

When coding the journal entries, researchers read each entry once. Then, returning to the beginning, each pre-marked sentence or independent clause was assigned a knowledge base and collaboration code. Although, the sentence was the unit of analysis, grammatical context was allowed to inform and clarify the specific content of the sentence. Also, while some sentences contained elements of multiple codes from either or both of the criteria, only the most relevant code from each criteria set was assigned to the sentence. Finally, after assigning knowledge base and collaboration codes, an overall reflectivity coded was given for each journal entry.

For both knowledge types and collaboration level, all positive examples were aggregated to yield one knowledge (KNOW) and collaboration (COLL) score for each subject. This figure does not include the sentences that were non-examples and is representative of the amount of knowledge

and collaboration content that is present in each journal entry, regardless of the type or level of that content.

Descriptive statistics were used to evaluate the types of knowledge and collaboration present and their relationship to each other. Multiple linear regression was utilized to examine the relationships between teaching knowledge and professional collaboration and reflectivity.

Results

Tables 4 and 5 summarize the nature of the knowledge base and collaboration content as well as the mean reflectivity depth for each journal question. Collapsing across subjects, each question generated a similar response length, around 14 sentences per journal entry, with total number of codeable sentences ranging from 347 to 466. Question 3, which concerned moral development, generated the highest level of reflectivity (M = 3.90, SD = 1.84) while Question 1, comparing teachers with physicians, yielded the lowest level (M = 2.07, SD = 1.17).

INSERT TABLES 4 - 5 ABOUT HERE

Looking at Table 5, it is apparent that the majority of sentences coded did not contribute to the knowledge type and collaboration level categories. For example, 84% and 95% of

coded responses from question 1 did not fit into coding schemes for knowledge and collaboration, respectively. For questions that were most successful in generating substantive teaching knowledge responses, around 40% of such entries represented positive examples. Collaboration responses were less frequent with most questions yielding very little categorical information. Overall, questions 2, 3, and 4 were most successful in eliciting examples of knowledge and questions 5 and 6 generated the most instances of collaboration. Given the nature and content of the questions asked, this pattern should be expected.

The predominate type of teaching knowledge was pedagogical methods and theory (question 2, 26%; question 4, 23%). No other category yielded consistently large percentages. One apparent anomaly in this pattern was the 17% of responses dealing with educational ends, purposes, and values from question 3. However, this percentage was no doubt an artifact of the nature of question 3, which asked about the moral environment of schools and the teacher's responsibility of fostering moral development in children.

For collaboration, the first level (collaborative exchanging) was by far the most frequent response.

Collaborative exchanging indicates a simple sharing of knowledge between teachers. Few examples of higher levels of collaboration could be found in the preservice teacher's journals. Question 5, which asked directly about working with other teachers to solve problems, yielded the most collaborative exchanging examples (36%). Even with this direct question, however, the preservice teachers did not indicate the expectation of other forms of professional collaboration, such as modeling, coaching, or mentoring.

It is also apparent from Table 5 that when examples of the knowledge base were present, collaboration was not. The converse was also true. All of the questions illustrate this point with the exception of question 1, which did not generate substantive responses for either knowledge or collaboration.

Multiple linear regression was conducted with knowledge (KNOW) and collaboration (COLL) as predictors of reflectivity. This analysis examined the relationship between these variables between subjects (unlike the results presented above which evaluated knowledge and collaboration between questions and across subjects). If each of these variables is important to teachers that function as professionals, then a positive relationship should exist

between them. The degree that such relationships exist in the present data may be indicative of the integrated professional perspective of preservice teachers. A series of six regressions were conducted for each question in which the KNOW and COLL aggregate scores were regressed onto the reliability scores. Table 6 presents the regression results and effect sizes obtained. Questions 1, 2, 5, and 6 each yielded statistically significant values, respectively as F (2, 27) = 3.955, $p < .05$; F (2, 27) = 5.667, $p < .01$; F (2, 26) = 4.958, $p < .05$; and F (2, 25) = 3.935, $p < .05$. Importantly, each also produced adjusted R^2 effect sizes around 20%, suggesting a moderate relationship between the predictors (KNOW and COLL) and reflectivity. Also of note is the 12.89% effect for question 4 which, despite the absence of statistical significance, is meaningful in the present context. Only question 3, then, does not support a relationship between teaching knowledge, collaboration, and reflectivity.

INSERT TABLE 6 ABOUT HERE

Table 7 provides evidence that this relationship is positive. All beta weights are positive indicating a positive correlation between KNOW and COLL with

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reflectivity. An examination of the weights and structure coefficients indicated that KNOW was primarily responsible for the predictive variance. However, most COLL structure coefficients are of a large enough magnitude to support the importance of collaboration as a predictor as well. After collapsing across journal entries to yield grand total knowledge and collaboration aggregate scores, a high correlation between the variables was obtained ($r = .7141$, $p < .001$). As such, both KNOW and COLL were considered meaningful predictors of reflectivity.

INSERT TABLE 7 ABOUT HERE

Discussion

It is perhaps somewhat concerning that there was a dearth of knowledge base and collaboration examples in the journal entries. Clearly, most of the information presented was unrelated to the two professionalization variables. We believe this occurred largely due to the nature of the preservice teachers' prose, wherein many sentences are used for context building and often are repetitious. An examination of the journals themselves confirmed this expectation. It could also be argued that the questions were not successful in cueing thought patterns that related

to the coding schemes. However, questions 2, 3, and 4 did in fact generate from 38% to 44% of substantive knowledge type responses while questions 5 and 6 yielded 19% to 42% of collaboration responses. While not all questions cued relevant cognition, some were at least moderately able to accomplish this objective.

Finally, it is also possible that the preservice teachers simply do not possess the knowledge types examined or view professional collaboration as occurring beyond the lowest levels. This potentiality has direct bearing on the preservice teachers' professional selves, at least in relation to the degree that the knowledge base and collaboration are central elements of the professionalization of teaching. Given that the majority of the subjects were in their last year of formal teacher education (83.3% seniors), one might expect a more substantive outcome in regards to the knowledge base and collaboration.

However, before it can be deemed appropriate to brand preservice teachers as unprofessional, it is important to highlight the developmental nature of teacher knowledge and cognition. Preservice teachers are novices, to be sure. Few have had extensive real world experience with teaching

and none in the present sample had undergone student teaching. Shulman (1987) noted that "the knowledge, understanding, and skill we see displayed haltingly, and occasionally masterfully, among beginners are often demonstrated with ease by the expert" (p. 5). As such, it should not be too surprising that the preservice teachers in the present sample have yet to develop more complete understandings of the knowledge base for teaching or collaboration that moves beyond the simple exchanging of information.

Unfortunately, herein lies a fundamental dilemma for teacher education and the professionalization of teaching. Largely, preservice teachers make the shift from student to practitioner quite rapidly. While it is appropriate to highlight the lack of professional cognitive development as an explanation for the present results, it must also be noted that very little time passes (perhaps one to two years) between the final year of formal education and actual teaching. Is this sufficient time for teacher education programs to adequately impact preservice teachers' knowledge structures to graduate students with enough automaticity to function professionally in the classroom? Additionally, do first year and new teachers undergo professional

socialization into the teacher role? If not, then the professionalization of teaching may be hampered by a loop of negative feedback that indoctrinates preservice and new teachers to function outside of professional thought patterns (i.e., use of the knowledge base and facilitation of higher level collaborative relationships).

It is encouraging to note, however, that the preservice teachers in the present study showed positive relationships between their knowledge base, expectations for collaboration, and depth of reflectivity. The regression results consistently indicated the positive correlation of these variables. These results are suggestive that preservice teachers do indeed grow in all three elements as they develop professionally. Of course, individuals develop at different rates with some never moving to the point of genuine effectiveness. However, growth does seem to occur for most, if not all. The key, of course, is facilitating such growth in teacher education programs such that inservice teachers have sufficient knowledge and skills to succeed in continued professional development in the early years of teaching and throughout their careers.

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Table 1

Shulman's Knowledge Base and Codes Used for Analysis

Type of Knowledge	Code
Knowledge not exhibited in K1 - K7	K0
Content or subject matter	K1
Pedagogical methods or theory	K2
Curriculum design	K3
Pedgogical content knowledge	K4
Learner characteristics	K5
Teaching contexts or learning environments	K6
Educational ends	K7

Table 2

Henderson's Levels of Collaboration and Codes Used for Analysis

Level of Collaboration	Code
No reference to collaboration	C0
Collaborative exchanging	C1
Collaborative modeling	C2
Collaborative coaching	C3
Collaborative supervision	C4
Collaborative mentoring	C5

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Table 3

Sparks-Langer et al.'s Framework for Reflective Thinking and Codes Used for Analysis

Description	Level
No descriptive language	1
Simple, layperson description	2
Events labeled with appropriate terms	3
Explanation with tradition or personal preference given as the rationale	4
Explanation with principle or theory given as the rationale	5
Explanation with principle/theory and consideration of contextual factors	6
Explanation with consideration of ethical, moral, political issues	7

Table 4

Descriptive Statistics for Six Journal Questions and Reflectivity Scores

Quest. No.	Mean No. of Entries	Total Entries	Mean Reflectivity	N
1.	15.53 (SD = 6.94)	466	2.07 (SD = 1.17)	30
2.	13.53 (SD = 6.38)	406	3.17 (SD = 1.70)	30
3.	13.37 (SD = 6.08)	401	3.90 (SD = 1.84)	30
4.	14.53 (SD = 8.72)	436	3.20 (SD = 1.40)	30
5.	11.97 (SD = 6.48)	347	3.17 (SD = 1.23)	29
6.	13.25 (SD = 7.37)	371	3.00 (SD = 1.61)	28

Note. N is the number of valid journal entries for each question. Questions 5 and 6 had 1 and 2 missing entries, respectively.

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Table 5

Percentages for Knowledge Types and Levels of Collaboration According to Journal Question

	Knowledge Type								Level of Collaboration					
Question	K0	K1	K2	K3	K4	K5	K6	K7	C0	C1	C2	C3	C4	C5
No. 1	84	0	6	2	2	2	1	3	95	5	0	0	0	0
Total Entries:	466													
No. 2	56	2	26	3	6	5	1	0	96	1	1	1	0	0
Total Entries:	406													
No. 3	62	1	9	1	2	3	4	17	100	0	0	0	0	0
Total Entries:	401													
No. 4	60	4	23	5	4	2	1	0	98	1	0	0	0	0
Total Entries:	436													
No. 5	93	0	3	1	2	0	1	1	58	36	2	3	1	0
Total Entries:	347													
No. 6	85	0	6	2	1	2	1	0	81	18	1	2	1	0
Total Entries:	371													

Note. Percentages are rounded to nearest whole number. As such, percentages per question may not sum to exactly 100%.

Table 6

Regression Summary Table of Reflection by Knowledge and Collaboration for Each Journal Question

Source	SOS	df	MS	F	R^2 (Adj. R^2)
			Question 1		
Explained	9.033	2	4.517	3.955*	22.56%
Residual	30.834	27	1.142		(16.93%)
Total	39.867	29			
			Question 2		
Explained	24.884	2	12.442	5.667**	29.57%
Residual	59.283	27	2.196		(24.35%)
Total	84.167	29			
			Question 3		
Explained	6.517	2	3.259	0.954	06.60%
Residual	92.183	27	3.414		(-0.32%)
Total	98.690	29			
			Question 4		
Explained	10.733	2	5.367	3.145	18.90%
Residual	46.067	27	1.706		(12.89%)
Total	56.800	29			
			Question 5		
Explained	11.633	2	5.817	4.958*	27.61%
Residual	30.504	26	1.173		(22.04%)
Total	42.137	28			

Table 6 (Continued)

Source	SOS	df	MS	F	R^2 (Adj. R^2)
			Question 6		
Explained	16.760	2	8.380	3.935*	23.94%
Residual	53.240	25	2.130		(17.86%)
Total	70.000	27			

* $p < .05$ ** $p < .01$

Table 7

Beta Weights and Structure Coefficients for Knowledge (KNOW) and Collaboration (COLL) for Journal Questions

Predictor	beta	r_s	r_s^2
	Question 1		
KNOW	.3552	.8512	72.45%
COLL	.2548	.6817	46.47%
	Question 2		
KNOW	.6317	.8548	73.07%
COLL	.3278	.0115	00.01%
	Question 3		
KNOW	.2319	.9352	87.46%
COLL	.0913	.4383	19.21%
	Question 4		
KNOW	.3965	.9637	92.87%
COLL	.1182	.4448	19.78%
	Question 5		
KNOW	.2235	.6390	40.83%
COLL	.4195	.9122	83.21%
	Question 6		
KNOW	.4167	.8802	77.48%
COLL	.2326	.5269	27.76%

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