

Evaluating the Writing-to-Learn Strategy with Undergraduate Nursing Students

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ABSTRACT

The writing-to-learn (WTL) instructional strategy has not received sufficient empirical investigation. Using a pretest-posttest, quasi-experimental, non-equivalent, control group design, the WTL strategy was evaluated with 87 undergraduate basic and RN-to-BSN nursing students enrolled in a Nursing Leadership and Management course. Students participating in the course perceived significant benefits of the WTL approach. A significant decrease in writing apprehension was found in the experimental group on two separate measures of writing apprehension. These findings are congruent with the theoretical WTL literature and anecdotal reports of the benefits of using the WTL strategy.

As students graduate from their basic nursing education programs, nursing faculty hope to have provided each student with the requisite knowledge and skills for safe and effective practice. Yet, faculty also realize that at least some of the knowledge students take into the “real world” of nursing will be obsolete in the future. More than 10 years ago, Allen, Bowers, and Diekelmann (1989) cautioned nurse educators that even knowledge gained through nursing research is insufficient if clinicians cannot use this knowledge appropriate-

ly in patient care situations. Thus, in addition to knowledge, faculty hope to have provided students with the skills to assist them in lifelong learning and the realities of nursing practice in a chaotic health care system, or as Niedringhaus (2001) questioned, “Can students apply critical thinking skills to nursing situations?” (p. 11).

Nursing faculty must structure the educational experience so students can develop and refine these critical thinking skills in preparation for entering the practicing RN role. Indeed, Gere (1985) proposed the idea that the measure of success in any educator is not the quantity of the teacher’s knowledge the students take with them, but rather how well students can think. Similarly, Spiller and Fraser (1999) suggested the critical questions for all educators are, “What do I want these people to learn, and how can I engage their thinking about issues embedded in this area?” (p. 137).

The writing-to-learn (WTL) strategy has been suggested as a method to develop critical thinking skills (Cowles, Strickland, & Rodgers, 2001; Poirrier, 1997). It could conceivably help meet the goals suggested by Spiller and Fraser (1999). Allen et al. (1989) suggested that the WTL strategy represents one method of linking knowledge to writing so students could have and use an important tool for mastering content areas.

Given the proposed benefits of WTL, it is somewhat surprising that more discussion has not appeared in the nursing education literature. Perhaps this is related to the lack of empirical evidence of the anticipated benefits of WTL actually being realized. The study reported in this article, conducted with basic and RN-to-BSN students in a Nursing Management and Leadership course, begins to fill this knowledge gap.

THE WRITING-TO-LEARN STRATEGY

Although not specifically referencing nursing education, Spiller and Fraser (1999) suggested that a separa-

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tion of teaching and learning from the acquisition of disciplinary knowledge is present. Students participate in a teacher-centered environment and assume the role of passive recipients of factual knowledge. The authors concluded that this role does not allow students to “...engage explicitly with and uncover processes that underlie learning within the discipline” (p. 138). The WTL strategy places an emphasis on improving thinking and learning. It is contrasted with the writing-across-the-curriculum strategy, which focuses primarily on improving the quality of writing produced by students (Gere, 1985).

Focus

The very thought of writing can be frightening for students. Evidence of this fear is not only present in students' final written products, but also in students' attitudes, behaviors, and capacity for learning. Pearce (1983) suggested that much of college writing represents the recording of facts, referred to as the prove/approve model (Griffin, 1983), rather than the building of knowledge. Under the prove/approve model, students write to prove what they know and wait for the faculty member's approval of what they know. This waiting and anticipating the judgment of approval or disapproval, along with the actual judgment itself, likely does little to diminish students' fears about writing. Broussard (1997) described this phenomenon in nursing students as an essentially negative response to writing formal papers, since students are caught in a struggle to commit to paper what they believe the faculty member wants. If students are so focused on the approval of faculty and learning the mechanics of writing, again to the approval of faculty, they may never experience true learning. Rather, they will continue to focus on the memorization of facts and fail to fully develop their skills as independent thinkers (Allen et al., 1989).

The WTL strategy has been suggested as one method to shift the emphasis away from the finished written product, which in actuality may be little more than a record of facts, to more active, sophisticated, and meaningful learning (Allen et al., 1989). Cowles et al. (2001) referred to this as students' being able to “see” what they are learning. Allen et al. (1989) outlined the salient principles guiding the WTL paradigm, including that:

- Writing is a process in which content is learned and understood, instead of memorized and reported.
- Writing skills are primarily thinking skills.
- Writing is a process of developing an understanding of or coming to know something.
- Writing is dialectical and recursive, not linear and sequential.
- Higher-order conceptual skills can only evolve when writers engage in ongoing dialogue with the self. Communication, learning, and discovery are all equally important.
- Conceptual processes vary among disciplines, and these processes relate to standards for writing within the specific disciplines.

Benefits

Parker and Goodkin's (1987) discussion of the benefits of writing is particularly appropriate to the WTL paradigm. They asserted that the process of learning is actually the construction of knowledge through transactions with objects, people, symbol systems, ideas, and values. They further claimed that learning is grounded in the social structure and involves a reconstruction of social process to individual processes; learning requires new experiences; and information must be used before knowledge can be constructed.

Gere (1985) suggested that the WTL strategy represents a more student-centered teaching style. The role of the faculty member is shifted to helping students find their own

Some of the more commonly discussed writing-to-learn activities include freewriting, microthemes or mini-essays, dialectics, brainstorming, and focused writing.

knowledge within the content area. According to Tchudi (1986), effective WTL activities are short, impromptu, beneficial to writers as an aid to clarifying experience, and do not require extensive commentary or feedback from the faculty member. He coined the phrase “workaday writing” (Tchudi, 1986, p. 20) to describe effective WTL assignments. Tchudi (1986) also suggested that if content is always at the center of the writing process, many of the skills related to writing will become self-correcting.

Activities

Writing-to-learn activities can take many forms, although the activities must be clearly linked to course objectives and the content being taught. Failure to do so results in fragmented activities that yield little benefit to students (Allen et al., 1989; Poirrier, 1997). Some of the more commonly discussed WTL activities include freewriting (Tchudi, 1986), microthemes or mini-essays (Tchudi, 1986), dialectics (Arkle, 1985), brainstorming (Gere, 1985), and focused writing (Gere, 1985). Journals are also frequently used as an adjunct to in-class writing activities. Rather than focusing directly on content, journals are helpful to students in exploring their reactions to content and situations (Tchudi, 1986). The common characteristic of these activities is the emphasis on content and thinking associated with the content, rather than a finished product (Allen et al., 1989).

Evaluation

Faculty evaluation of WTL activities requires thoughtful consideration. If, as Tchudi (1986) advised, content is

at the center of all WTL activities, then it is the content that is evaluated. It is beneficial for faculty members to introduce expectations of correctness in grammar, syntax, or style at the beginning of a course. Correctness can then be evaluated using a pass/fail system, and more attention can be directed to the specific evaluation of content. When it does become necessary to comment on correctness in grammar, syntax, or style, selective correction and attention to errors that could affect meaning within the context of disciplinary knowledge are more beneficial to students (Tchudi, 1986).

Effectiveness

The empirical evaluation of the effectiveness of the WTL strategy has been sparse. Outside of nursing, Bird, Zelin, and Ruggle (1998) evaluated one specific WTL activity in an experiment with undergraduate accounting students. Using only the freewriting activity, the researchers did not find a statistically significant difference on examination scores, when controlling for grade point average. However, the WTL group did perform better on seven of nine examinations. Consistent with other findings, the researchers found the use of freewriting was more beneficial to students who were likely to have difficulties with content.

Within nursing, Cowles et al. (2001) provided qualitative evidence from end-of-course evaluations that students felt that, although the writing was challenging, the exercises helped them focus on content and make sense of it. Dobie and Poirrier (1996) developed the Writing-to-Learn Attitude Survey and used this measure to evaluate student perceptions of WTL activities incorporated into a beginning nursing course. Scores were significantly different between the beginning and end of the semester, with students responding more positively to statements after experiencing WTL activities.

The WTL strategy, or the use of informal writing assignments, has been associated with benefits other than learning. More than 25 years ago, Daly and Miller (1975) identified the construct of "writing apprehension," a psychological trait of avoiding writing that will be evaluated. Students experiencing writing apprehension view the act of writing and the evaluation of that writing as punitive and, therefore, avoid writing if at all possible (Faris, Golen, & Lynch, 1999). Writing apprehension can affect academic, career, and personal choices, as students will tend to select a major and career based, at least in part, on the perceived writing requirements in that particular discipline. In addition, Onwuegbuzie (1998) identified that writing anxiety detracts from students' ability to think cohesively and write effectively.

Reeves (1997) summarized the extant research findings related to writing apprehension and concluded that students with writing apprehension exhibit several common characteristics along three primary dimensions: behavioral, attitudinal, and output. Behaviorally, apprehensive writers, in addition to selecting careers, college courses, and majors they perceive as requiring little writ-

ing, also write very little outside the classroom, lack role models for writing, and score lower on standardized tests. From an attitudinal perspective, apprehensive writers may lack self-confidence, have a history of poor success with writing, have received negative instructor feedback, and tend to be more comfortable in writing works that do not require the expression of personal feelings, beliefs, or experiences. The output of apprehensive writers tends to be shorter, less well developed, and lower in quality than writers with comparably less apprehension. Apprehensive writers also have more difficulty with the mechanics of writing, as well as with formulating ideas of what to write about. Taken as a whole, these are not characteristics nursing faculty would hope to see in members of the nursing profession.

The dilemma in evaluating the effectiveness of WTL activities may be related to a number of factors. First, isolating the academic effects specific to WTL in a single course may be difficult because the classroom setting does not lend itself to control of extraneous variables. If WTL activities do enhance students' critical thinking abilities, it would be unlikely to discover these benefits during the course of a single semester, especially using the limited sample size available in an intact classroom. Evaluating change during the course of an entire program of study would only compound the extraneous variables present in a single classroom situation. Given the limited empirical evidence related to the effectiveness of WTL activities, alternate dependent variables may be necessary, instead of academic performance or critical thinking abilities, to assess the short-term benefits of WTL activities.

HYPOTHESES

Other benefits associated with WTL may be more amenable to empirical testing, especially during the course of a semester. Given the more informal nature of WTL activities, compared to the more formal, rigid, scholarly paper, it is reasonable to assume students would experience less apprehension or "writer's block." In addition, if the ultimate benefit of WTL activities is improved student learning, it is reasonable to expect that students would perceive this benefit as present, even in the absence of objective measures of student performance. These outcomes formed the basis for this study. Specifically, the following hypotheses were tested:

- Nursing students in a course incorporating WTL activities will perceive significant benefits from these activities.
- Nursing students in a course incorporating WTL activities will have less writing apprehension than students in a course that does not incorporate WTL activities.

METHOD

Setting and Sample

This study was conducted in the School of Nursing of a private university located in the southeastern United

States. The School of Nursing offers a basic, upper division nursing program (4 semesters, 2 years), a RN-to-BSN program (3 semesters, 1.5 years), a master's program, and a doctoral program. Students in four separate undergraduate classes participated in the study during the fall 2002 and spring 2003 semesters. The experimental group consisted of students enrolled in the Nursing Management and Leadership course. One class of fourth-semester basic undergraduate students ($n = 40$, spring 2003) and one class of third-semester RN-to-BSN students ($n = 16$, fall 2002) were included in the experimental group. The Nursing Management and Leadership course is taken in the final semester of the respective programs.

The control group consisted of students enrolled at the beginning of the fall 2002 semester in the Foundations of Multicultural Nursing course in the undergraduate, basic program ($n = 84$) and the Concepts of Professional Nursing course in the RN-to-BSN program ($n = 20$). Both courses are taken in the first semester of the respective programs of study.

After student attrition and unmatched responses between pretest and posttest assessments, the final sample for analysis consisted of students with a complete set of responses for the dependent measures. Forty-two students comprised the experimental group, and 45 students comprised the control group.

Design

A pretest-posttest, quasi-experimental, non-equivalent, control group design was used in this study. Pretest data were collected during the first regularly scheduled class meeting of the semester, and posttest data were collected on the last regularly scheduled class meeting of the semester.

Ethical Considerations

Informed consent was achieved through a cover letter attached to the data collection packet and verbally by the author or an alternate faculty member in courses where the author was the instructor. As an additional human subject protection, collected demographic data were structured to minimize the possibility of identification of individual students. Students were informed through the cover letter and verbally that their decision to provide data would not affect their grades for the course or progression in their program of study.

To match pretest and posttest responses, students were asked to provide their birth month and day on the first page of the survey. Surveys were also coded as to the specific class number. These data elements were used to match student responses on the pretest and posttest assessments. In the rare instances of the identical combination of course number, birth month, and birth date, records were censored from analyses.

Instruments

At each data collection point, students completed the Writing-to-Learn Attitude Survey (WTLAS) (Dobie &

Poirrier, 1996), the Writing Apprehension Survey (WAS) (Daly & Miller, 1975), and demographic information.

The original WTLAS is a 30-item measure, scaled in a Likert-type response format where 1 = strongly agree and 5 = strongly disagree. Statements on the WTLAS consist of items from Daly and Miller's WAS, classroom histories of writing, and similar surveys (Dobie & Poirrier, 1996). Psychometric data for the 30-item version of this measure were not available, although Dobie and Poirrier (1996) did report significant differences in pretest and posttest scores in a beginning nursing course.

Psychometric evaluation of the WTLAS was performed using pretest responses from the students in this study and resulted in a revision of the measure (Schmidt, 2004). The revised WTLAS consists of 21 items, distributed among two subscales. The "Apprehensions about Writing Abilities" subscale consists of 14 positively or negatively worded items that tap students' general dislike of writing and difficulties encountered in formulating and committing ideas and concepts to written form. The Cronbach's alpha for this subscale was .93 in the pretest data set of this study. The second subscale, "Perceived Benefits of Writing-to-Learn Activities," contains 7 positively worded statements referencing specific WTL activities and the perceived benefits associated with those activities. The Cronbach's alpha for this subscale was .77 in the pretest data set of this study.

The format of the response choices in the original WTLAS did not offer the clearest interpretation of scores, since a higher score was associated with more disagreement. Compounding this interpretation was the inclusion of both positive and negative items in the Apprehensions about Writing Abilities subscale, with only positively worded items in the Perceived Benefits of Writing-to-Learn Activities subscale. To increase clarity of interpretation, all items of the WTLAS were reverse scored so that 1 = strongly disagree and 5 = strongly agree. Then, the positively worded items of the Apprehensions about Writing Abilities subscale were returned to the original scoring format so that strongly disagreeing (5) to a positively worded item represented the equivalent of strongly agreeing with the negative form of this item, since apprehension is, by nature, a negative construct.

The WAS (Daly & Miller, 1975) is a 26-item measure designed to capture students' lack of self-confidence in their writing abilities. The scale consists of two subscales, "high apprehensions" and "low apprehensions," with 13 items in each subscale. A writing apprehension score is calculated as $78 + (\text{high apprehension item total} - \text{low apprehension item total})$. The Cronbach's alpha for the scores of the high apprehension subscale was .94 using the pretest data set, while the Cronbach's alpha for the low apprehensions subscale was .93 using this same data set.

Procedure

The experimental group received the usual course content of the Nursing Management and Leadership course,

TABLE 1
Select Writing-to-Learn Activities and Journal Guidelines

Topic	Writing-to-Learn Activity
Leadership and management	<i>Mini-essay.</i> Read "The Fading of Nursing Leadership" (Horton-Deutsch & Mohr, 2001) in which the authors describe student observations to two distinctly different nursing units and characteristics of the nurse manager and staff. In the mini-essay, students discuss which unit they have encountered more frequently, and how nursing leadership affects staff nurse performance and patient care.
Power	<i>Brainstorming.</i> Students react to American Nurses Association standards related to educational qualifications for nursing leadership (e.g., how could requirements outlined in standards affect the power of nursing leadership within an organization?).
Delegation	<i>Dialectic.</i> Students write notes from the lecture on one half of a piece of paper and questions related to content on the other half. Both the notes and questions are submitted to the instructor for further comment and are returned at the next class session.
Employee orientation, recruitment, and retention	<i>Mini-essay.</i> In this mini-essay students explore the questions, "Why do nurses 'eat their young?'" and "What should nursing leadership and staff nurses do to eliminate this negative condition?"
Staffing and scheduling	<i>Letter.</i> After reviewing proposed minimum staffing legislation for California, students compose a letter to the governor addressing their support or nonsupport for the measure. Staff nurse, nursing leadership, and patient perspectives should be included, and the science of nurse staffing, as well as legal and ethical principles of nursing practice, should be addressed.
Unions and collective bargaining	<i>Freewriting and brainstorming.</i> After viewing a union recruitment videotape, students identify how they would respond as a nurse manager if their staff gave them the videotape.
Journal Guidelines	
Students are instructed to record their observations and reactions to a nursing leadership or nursing management situation they witness. They are to identify what happened in the situation, how the situation was handled, and the outcome. They should compare the actions taken and outcome to the theoretical leadership and management literature, and reflect on the similarities and dissimilarities they discover.	

but the evaluative criteria for students in this course were altered to eliminate the scholarly paper requirement. In place of this requirement, students completed one to two WTL activities during each regular class session. Students also submitted a nursing management and leadership journal. The WTL activities and journal were graded as pass/fail. The remaining evaluative criteria for students consisted of a midterm examination, a noncumulative final examination, and one or two group learning exercises assigned during the course of the semester. Selected WTL activities used in this course and the guidelines for the journal requirement are outlined in Table 1.

Students in the control group continued with the usual course requirements as outlined in the course syllabi. Students in the first-semester basic undergraduate course were required to complete a medication calculation examination, three written examinations of course content, and a comprehensive final examination, nursing care plans, and a child health promotion paper. Students in the first-semester RN-to-BSN course were required to complete a personal philosophy of nursing paper, a presentation of their philosophy, a professional assessment, and a minimum of four abstracts of professional nursing journal articles.

Data Analyses

After appropriate data entry error-checking procedures were completed, analyses were performed to test

the study hypotheses. Additional analyses were then performed to further explore the data.

The first hypothesis was tested in the experimental group using a one-sample *t* test, with the difference score (posttest – pretest) from the Perceived Benefits of Writing-to-Learn Activities subscale as the dependent variable. The comparison test value was set to 0.

The second hypothesis was tested using analysis of covariance (ANCOVA), with group assignment (experimental versus control) as the independent variable, the posttest scores for the Apprehensions about Writing Abilities subscale of the WTLAS and the WAS score as dependent variables, and the pretest score for these measures as the covariate. A separate ANCOVA was conducted for each dependent variable since there is considerable overlap in item content between the measures.

RESULTS

The sample consisted of 87 students with a complete set of responses to the pretest and posttest measures. The demographic characteristics of the total sample, as well as the experimental and control groups, are provided in Table 2. Significant differences between groups were not identified for any demographic variables after elimination of nonresponses. Measures of central tendency and dispersion for the dependent variables at the pretest and posttest assessments are shown in Table 3.

TABLE 2
Demographic Characteristics of Participants* (n = 87)

Characteristic	Total	Experimental Group	Control Group	χ^2
Type of student	—	—	—	$p = .663$
Basic	64	30	34	—
RN-to-BSN	23	12	11	—
Gender	—	—	—	$p = .115$
Female	72	36	36	—
Male	9	2	7	—
Age group	—	—	—	$p = .288$
20 to 29	51	21	30	—
30 to 39	22	12	10	—
40 to 49	7	5	2	—
50 to 59	1	0	1	—
Location of college-level writing course	—	—	—	$p = .645$
Community college	32	14	18	—
University or 4-year college	49	24	25	—
Time since college-level writing course	—	—	—	$p = .322$
< 6 months	17	7	10	—
6 months to 1 year	11	3	8	—
1 to 2 years	22	11	11	—
3 to 4 years	11	5	6	—
4 to 5 years	6	2	4	—
> 5 years	14	10	4	—
Grade in college-level writing course	—	—	—	$p = .140$
A	44	22	22	—
B	31	12	19	—
C	6	4	2	—
Have a college degree	—	—	—	$p = .359$
Yes	49	25	24	—
No	32	13	19	—

* Only participants providing data are included.

Regarding the first hypothesis, that nursing students in a course incorporating WTL activities will perceive significant benefits from these activities, a significant difference was identified ($t[41] = 2.127, p = .039, d = .33, \text{power} = .54$). A mean increase of 1.38 ($SD = 4.21$) was noted during the course of the semester. The null hypothesis of no significant perceived benefits from WTL activities was rejected.

Regarding the second hypothesis, that nursing students in a course incorporating WTL activities will have less writing apprehension than students in a course that does not incorporate WTL activities, the results were significant for the Apprehensions about Writing Abilities subscale ($F[1,84] = 5.47, p = .022, \eta^2 = .061, \text{power} = .64$). The mean posttest score was 33.12 ($SD = 11.19$) for the experimental group, compared to 37.82 ($SD = 11.58$) for

the control group. Using the WAS score as the dependent variable, similar results were obtained ($F[1,84] = 4.05, p = .047, \eta^2 = .046, \text{power} = .51$). The mean posttest score for the experimental group was 64.76 ($SD = 22.12$), compared to 71.33 ($SD = 21.18$) for the control group. These results support rejecting the null hypothesis of no difference in posttest writing apprehension scores between the groups when controlling for the pretest score.

Since the experimental and control groups were not composed of students at identical points in their program of study, follow-up analyses were performed to determine whether the findings for the second hypothesis could have been contaminated by the non-equivalent nature of the groups. All analyses were performed using ANCOVA, with the appropriate pretest score used as the covariate in the analyses.

TABLE 3
Descriptive Statistics of Dependent Variables

Variable	Experimental Group (<i>n</i> = 42) Mean (SD)	Control Group (<i>n</i> = 45) Mean (SD)
Pretest		
Apprehensions about writing abilities	36.98 (11.76)	38.89 (11.36)
Perceived benefits of writing-to-learn activities	24.14 (4.68)	24.91 (4.61)
WAS score	70.52 (22.12)	72.49 (19.54)
Posttest		
Apprehensions about writing abilities	33.12 (11.20)	37.82 (11.58)
Perceived benefits of writing-to-learn activities	25.52 (4.97)	25.02 (4.58)
WAS score	64.76 (22.12)	71.33 (21.18)
Difference (posttest – pretest)		
Apprehensions about writing abilities	–3.86 (7.32)	–1.07 (5.52)
Perceived benefits of writing-to-learn activities	1.38 (4.21)	.11 (3.67)
WAS score	–5.76 (13.40)	–1.16 (8.92)

Note: WAS = Writing Apprehension Survey.

Using the type of program as a grouping variable (basic versus RN-to-BSN), significant group differences were not obtained for the Apprehensions about Writing Abilities subscale of the WTLAS ($F[1,84] = .46, p = .50$) or the WAS score ($F[1,84] = .71, p = .401$). When the four specific courses used in this study were used as the grouping variable, significant differences were not obtained for either the Apprehensions About Writing Abilities subscale ($F[1,82] = 1.92, p = .133$) or the WAS score ($F[1,82] = 1.68, p = .177$). These results suggest the findings related to the second hypothesis were not biased toward students' point in the curriculum or their program of study.

DISCUSSION

The results presented generally support WTL as an effective teaching-learning strategy. The finding that students using WTL activities perceived a benefit from the short, impromptu, focused assignments is in itself worthy of giving strong consideration to incorporating WTL strategies into nursing education curricula. The significant difference in writing apprehension scores provides further support for considering the use of the WTL strategy, especially given the potentially negative effects of writing apprehension (Reeves, 1997).

The use of the WTL strategy seemed especially appropriate with the basic nursing students who were enrolled in the Nursing Management and Leadership course. As a final semester course, students are normally focused on the clinical aspect of their nursing education, preparation

for the licensure examination, and obtaining nursing positions after graduation, and may fail to see the relevance of this type of course to their nursing practice. Several of the WTL activities provided a way for students to link classroom facts with clinical situations.

Added benefits of the WTL strategy were seen by the faculty member in this study. The almost-continual evaluation of students' writing assignments provided feedback regarding the progress of the course and the students' understanding of course content. The varying perspectives offered by students in their writings were refreshing and provided many opportunities for focused, in-class discussions. These faculty benefits are consistent with Parker and Goodkin's (1987) description of exciting and vital teaching in which new knowledge is produced for faculty members, instead of the routine application of old knowledge.

IMPLICATIONS FOR NURSING EDUCATION

The WTL strategy represents a more student-centered approach to learning and may be well suited to at least some courses in nursing education curricula. Of course, the blanket substitution of short, impromptu, focused writing assignments for a larger written work, such as a scholarly paper, will have little benefit for students if the WTL activities are not clearly linked to the content being taught and the course objectives. The WTL strategy may be unfamiliar to some (Rowles & Brigham, 1998), but excellent, practical

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resources are readily available to offer guidance and suggestions (Gere, 1985; Poirrer, 1997; Tchudi, 1986).

LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDY

The results of this single study, while encouraging, must be considered in light of several methodological limitations. The sample size was limited through enrollment in the respective programs and the requirement of having matched pretest and posttest responses for analysis, which may have influenced the findings. Since the WTL strategy was new to this program and the specific course, the results may have been influenced by the novelty of the WTL activities, as well as students' favorable responses to not having a major scholarly paper requirement. In addition, it is difficult for researchers to control the many extraneous variables in the classroom setting that could potentially affect results.

The non-equivalent nature of the experimental and control groups is an additional limitation. Ideally, a randomized design with students at the same point in their program of study and the same academic program would have been used. However, enrollment in the School of Nursing prescribed program of study and available faculty resources did not support the use of this approach. The findings from the exploratory analyses using program of study and specific courses as the grouping variables do not suggest these factors biased the results.

CONCLUSION

Despite these limitations, the findings from this study and feedback from the experimental group suggest that the WTL strategy deserves consideration as a nursing education strategy. Further research, using both qualitative and quantitative approaches, should be conducted in an attempt to replicate the findings from this study, examine writing apprehension and benefits of WTL over more than a single course, and isolate the effects WTL activities may have on the promotion of critical thinking abilities.

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