

The Effects of Reflective Journaling on Content Comprehension

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Abstract

Journaling is a pedagogical strategy that continues to gain momentum and research support as a means to increase college students' course engagement, promote application of classroom materials to real life situations, and provide deeper understanding of materials (Chickering & Gamson, 1987; Fritson, K. K., Forrest, K. D. & Bohl, M. L. 2011; Oxendine, 1988). The current project explores the effects of reflective journaling on students' content comprehension. We hypothesized the use of reflective journaling in the classroom would increase student's content comprehension above and beyond another common teaching strategy, online quizzing. Over the course of one semester, participants enrolled in a Lifespan Development course at a Midwestern university completed four reflective journals relating course content to their lives. We scored each reflective journal using Bloom's Taxonomy of Educational Objectives for the Cognitive Domain (Bloom, B.S., Engelhart, M.D., Furst, F.J., Hill, W. H., & Krathwohl, D. R. 1956). Students also completed online quizzes. Using step-wise regression analysis, we compared the reflective journal Bloom scores and the online quiz scores to students' exam performance. Results indicated that compared to online quizzing, completing reflective journals that target course content had greater impact on students' exam grades.

Keywords: Journaling, Online Quizzing, Test Performance

1.0 The Effects of Reflective Journaling on Content Comprehension

From boldface terms in textbooks, flashcard websites, and quizzes, there are many learning aids available that are designed to help students increase their understanding of classroom material (Gurung, 2003). A method that has just recently increased in popularity is online quizzing. Using online quizzing as a learning aid requires a small amount of effort from the professor and has been found to increase students' exam and course performance (Johnson & Kiviniemi, 2009).

Another beneficial learning technique that encourages student thought, while also encouraging active learning, is journaling. Cicero (2006) defines effective journal writing as "meaningful interacting with the reading material by applying information to personal experiences, analyzing and critiquing information, synthesizing information, or creating a product based on information" (p. 231). Thus, reflective journaling allows students to obtain a deeper understanding of the content, while simultaneously linking the reading with their own experiences (Chickering & Gamson 1987; McKeachie, 1963; Oxendine, 1988).

Connor-Greene (2000) found that students who completed journals over the course of the semester performed better on exams as opposed to students enrolled in classes without journal assignments. However, what has not been studied is whether journal writing improves test scores to the extent that online quizzing does. Given that previous research shows exam-performance enhancement through the use of journals, we hypothesized that reflective journaling would improve students' overall content comprehension as well. Additionally, we predicted the improvement in course content comprehension through journaling would exceed the effects of another common pre-testing strategy, online quizzing.

2.0 Method

Participants

A total of 144 participants (44 M; 100 F) completed this study. Enrolled in 3 sections of Lifespan Development courses in a University of about 7,000 students, these traditional aged college students completed the activities described as part of their course requirements. We did not collect data on age. Of the 144 participants, 55 had missing data for at least one reflective journal. All participants were treated in accordance with APA standards.

2.1 Materials

2.1.1 Reflective Journals. Over the course of the semester, participants responded to four discussion questions designed to help them apply classroom material to their own lives. Each reflective journal corresponded to one of the four exams given over the course of the semester. The assignments required students to use developmental perspectives, textbook vocabulary and material, and classroom lectures in order to answer the journal questions. The instructor posted each question on Blackboard and students submitted responses through an online program called SafeAssign, a subscription service plagiarism checker that is integrated into Blackboard. Journal length averaged two pages. The questions follow below.

1. Describe your earliest childhood memory involving an interaction between you and your primary caregiver (e.g., mother, father, grandparent, step-parent). Why was this interaction important to you at the time and how has it influenced who you are today? In discussing this event you **MUST** use the following terms where appropriate (normative development, non-normative development, cognitive, social and personality developments, context, continuous and discontinuous development, nature and nurture, plasticity, critical or sensitive period, or terms related to any of the theories covered).

2. Consider your grade on your first exam in this course. Tell me how you went about studying the material. Based on your grade, will you study this way again? Why or why not? Be sure to include terms related to the cognitive theory most relevant to your study strategies. Use terms related to Piaget, Information Processing, or Vygotsky.

3. Who am I? Some of you have given a lot of thought to who you are as an individual and what career path you have chosen to follow. Others, not so much. You are caught up in trying to decide what career would be the best fit for you. Regardless of where you are concerning your identity development, use Erikson's terms of achieved identity and role confusion as well as Marcia's terms of diffused identity, foreclosed identity, moratorium and achieved identity to describe where you are in the career choice process (and where you aren't!) Also talk about Marcia's processes of crisis and commitment.

OR----

Choose three of the songs from your personal collection that best describe who you are. Why are they descriptive of your identity? Then use the same terminology as the question above to describe who you are.

4. This exercise asks you to think about your future, focusing on each of the domains of development. Your job is to imagine that you are preparing to attend your 25th high school reunion. Prepare two versions of who you are at this reunion. First, create a life story in which you experienced no major setbacks or limitations to your potential and dreams. Then, write a second, more realistic version that reflects the more typical biosocial, cognitive, and psychosocial developmental patterns described in the text.

2.1.2 Blooms Taxonomy. Bloom's Taxonomy divides educational objectives into three domains; cognitive, affective, and psychomotor. Using the Bloom's Taxonomy of Educational Objectives for the Cognitive Domain we assessed each reflective journal as predominately demonstrating one of the six cognitive levels: knowledge, comprehension, application, analysis, synthesis, or evaluation. We then coded those journals from 1 (*knowledge*) to 6 (*evaluation*).

2.1.3 Quizzes. Participants completed several online quizzes throughout the course of the semester. The untimed online quizzes ranged from 5 to 10 multiple choice questions and covered material relevant to assigned readings and classroom lectures for that week. Students had the opportunity to complete approximately three quizzes for each exam with 10 of 12 quizzes counting toward their final grade. Participants took the quizzes multiple times using their textbook and lecture notes. These questions on these quizzes did not originate from computer-generated randomly assigned questions, nor did they change with each attempt. Rather the instructor chose content relevant questions from the publisher's test bank to generate the questions for the quizzes as well as the subsequent tests. Students received information on which questions they answered incorrectly, but answers were not provided. The exams did not include questions from the quizzes.

2.2 Procedure

Throughout the Fall 2010 academic semester students enrolled in the Lifespan Development courses wrote four reflective journals and then submitted those journals electronically through a program called SafeAssign. A teaching assistant, unaware of the journal's grade then coded each reflective journal using Bloom's Taxonomy of Educational Objectives for the Cognitive Domain (Bloom et al., 1956). Blackboard's grading system calculated online quiz grades. Finally, we compared the Bloom's Taxonomy score on the reflective journals to the online quiz scores, to determine the effects of these pre-testing techniques on exam scores.

3.0 Results

We conducted a stepwise regression to predict participants' exam scores on a 100 point scale based on their reflective journal critical thinking scores (1-6) and their online quiz grades (0-10). Due to missing reflective journal assignments for some students, the number of participants varies across analyses.

For Exam One the regression equation was significant, $F(1, 115) = 16.09, p < .001$. The reflective journal critical thinking score significantly predicted the grade on the first exam, $\beta = .35, t(116) = 4.01, p < .001$ and explained a significant proportion of the variance in exam scores, $\text{adj}R^2 = .12$. Participants' exam grade equaled $71.00 + 2.22$ multiplied by their reflective journal critical thinking score. This suggests that participants' exam scores increased two points on the exam for each one-point increase in critical thinking score. Online quizzes did not significantly predict exam performance.

The regression equation was also significant for exam two, $F(1, 110) = 18.63, p < .001$. Again, the reflective critical thinking score significantly predicted Exam Two scores, $\beta = .38, t(111) = 4.31, p < .001$ and explained a significant proportion of variance associated with this grade, $\text{adj}R^2 = .14$. Participants' exam grade equaled $69.93 + 2.75$ multiplied by their reflective journal critical thinking score. This indicates that participants' exam scores increased almost 3 points on the exam for each one-point increase in their critical thinking score. Neither of the two online quizzes significantly predicted exam performance.

For exam three, the regression equation remained significant, $F(1, 123) = 30.62, p < .001$. Critical thinking scores significantly predicted Exam Three scores $\beta = .46, t(127) = 5.87, p < .001$ and accounted for a significant proportion of the variance, $\text{adj}R^2 = .21$. Participants' exam grade equaled $55.00 + 3.82$ multiplied by their reflective journal critical thinking score. This suggests that participant's exam scores increased almost four points on the exam for each one-point increase in critical thinking score. Quizzes failed to remain in the model.

For Exam Four the regression equation was also significant, $F(1, 112) = 53.65, p < .001$. and old the reflective journal critical thinking score predicted of grades on exam four, $\beta = .57, t(113) = 7.32, p < .001$. These critical thinking scores explained a significant amount of variance associated with exam scores, $\text{adj}R^2 = .32$. Predicted exam grades equaled $53.00 + 3.77$ multiplied by their reflective journal critical thinking score. This suggests that participant's exam scores increased almost four points on the exam for each one-point increase in critical thinking score. Once again, quizzes did not predict exam performance.

4.0 Discussion

Our findings suggest that reflective journals, targeting concepts in the course, influence student test scores above and beyond online quizzes. These findings support Daniel's (2004) research, which suggested that web-based quizzes did not positively impact exam performance. However, our findings are inconsistent with the results of Johnson and Kiviniemi's (2009) study, which found that online quizzing did in fact affect exam performance. The numerous significant results of our study suggest that faculty consider the use of student journals as a learning tool, as well as the need for further investigation of the impact of on-line quizzes on exam scores.

Although having students complete reflective journals increases the workload for professors, it also increases their students' content comprehension. There are several ways that a professor can decrease the workload that reflective journaling may add. These ways include: having teaching assistants grade the journals, keeping journal length to one or two pages, assigning only a few journals, and keeping the journals very specific to those terms with which students have difficulty.

In addition to content comprehension, reflective journaling gives faculty the opportunity to really get to know their students, promotes engagement, and students report benefit from journaling (Fritson, K. K., Nelson, D., Vontz, H., & Forrest, K. D., 2013).

The research-supported student benefits of reflective journaling, make the additional effort by instructors worth while, especially in larger classrooms in which students can often easily disengage or feel anonymous or unimportant to instructors.

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