

ORIGINAL RESEARCH

Make writing a daily habit: An evaluation of an educational intervention to improve writing self-efficacy among DNP students

Pearman D. Parker*, Elizabeth Riley, Leonie C. deClerk, Sharon B. Stevenson, Pamela V. deGravelles, Pamela J. LaBorde, Albrey L. Berber, Marilyn F. Hughes, Corey Nagel

College of Nursing, University of Arkansas for Medical Sciences, Little Rock, AR, USA

Received: July 31, 2021

Accepted: September 5, 2021

Online Published: September 12, 2021

DOI: 10.5430/jnep.v12n1p49

URL: <https://doi.org/10.5430/jnep.v12n1p49>

ABSTRACT

Background and objective: Doctorate of Nursing Practice (DNP) students are trained to integrate both clinical care and evidence-based research in order to bring together science with application. However, the educational pathways in DNP programs can be problematic, especially with regards to scholarly writing. While several interventions have been utilized for DNP students, the results show that the intervention(s) used should be tailored to the specific student body being served. However, limited evidence exists regarding the effectiveness of tailored interventions on improving central concepts such as writing self-efficacy. Given these differences in the design and delivery of the DNP curricula, we created a tailored educational-writing curriculum for new DNP students at a medium-sized academic medical center in a Southern state.

Methods: We assessed changes in writing self-efficacy over the three measurement intervals using linear mixed effects modeling to account for within-student clustering of writing self-efficacy scores over time.

Results: Baseline scores of writing self-efficacy improved immediately after the workshop (Timepoint 2 – immediate post-test) and a full semester later (Timepoint 3 – semester post-test). However, we observed no statistically significant difference between Timepoint 2 (immediate post-test) and Timepoint 3 (semester post-test).

Conclusions: We saw a significant benefit in writing self-efficacy among incoming DNP students from baseline scores. The tailored format and integration of real-life anecdotal feedback from faculty may have been fundamental to creating an increase in writing self-efficacy among students—a concept foundational to student, and possibly professional, nursing success.

Key Words: Scholarly writing, DNP curriculum development, Nursing graduate students

1. INTRODUCTION

The educational pathways for entering the nursing profession continue to evolve through various degree programs, ranging from associate degree to doctoral degrees. The most recent shift was in 2004, when the American Association of the Colleges of Nurses (AACN) voted to endorse education for advanced practice nurses from the master's level to the doc-

torate level by the year 2015.^[1] While educational programs in the United States have not yet entirely made the transition to offer only doctorate-level education for advanced practice nursing, Doctor of Nursing Practice (DNP) programs emerged across the country at an unprecedented rate.^[2]

This rapid growth of DNP programs allows nurses more op-

*Correspondence: Pearman D. Parker; Email: pparker@uams.edu; Address: College of Nursing, University of Arkansas for Medical Sciences, Little Rock, AR, USA.

portunities to become advanced practice registered nurses (i.e., nurse practitioners, nurse anesthetists, nursing administrators, etc.) with the capacity to excel in scholarship. Students not only learn the clinical skills required for advanced practice, but also are instructed on searching the literature and applying knowledge to implement and evaluate evidence-based research. The result is a curriculum that can be overwhelming. Ideally, DNP graduates are a cohort of providers with the skills to integrate evidence-based research with excellent advanced practice nursing care. They are equipped to integrate both worlds of clinical care and evidence-based research to bridge together science and application. However, the educational pathway in these programs can be problematic for students.^[3] Many DNP students report barriers to success due to reduced self-efficacy in writing, difficult time and life balance, financial problems, lack of confidence, and the perceived value of the degree.^[4] While some of these issues may be specific to individual students, scholarly writing remains a universal challenge to student success.

Depending upon previous academic preparation and professional backgrounds, DNP students may have limited scholarly writing training and experience.^[5] Furthermore, the emphasis on scholarly writing in research-intensive courses can be overwhelming for students and result in lower quality of life, which can exacerbate depression and anxiety, especially among graduate students.^[6] The students' perceived barriers to academic performance in writing-intensive courses may be due to two overarching categories. First, nursing graduate students may enter the DNP program through various educational routes and may not have received consistent education and emphasis on writing skills throughout their undergraduate curriculum.^[7] This is in direct contrast to other disciplines, such as sociology or psychology, where scholarly writing is foundational to the degree program. Second, undergraduate nursing education is traditionally rooted in the application of clinical skills and critical thinking, with little focus on writing.^[8,9] This is a direct reflection of a curriculum concentrated on providing students with the cognitive knowledge, affective attitudes, and psychomotor skills needed to provide safe, direct patient care, which often offers minimal training or mentoring on effective scholarly writing.^[10,11] As a result of these systematic curriculum issues across the programs of study, some faculty attempt to design and test educational interventions with the goal of improving student writing.

Rohan and Fullerton^[12] used a two-step writing assignment with peer-supported interventions within a workshop to help DNP students with scholarly writing. The results from the Rohan and Fullerton^[12] evaluation showed an increase of 3.9 points (out of a possible 5-point scale) on the writing assign-

ment (pre/post intervention), and students also perceived the intervention as helpful. Additionally, Hirschey et al.^[13] took another approach, focusing on the self-efficacy of writing among students. Schmidt and Alexander^[16] conceptualized writing self-efficacy as the beliefs related to writing, and the concepts central to identifying as a writer (namely the process of communicating, revising, and expressing thoughts clearly). Hirschey et al.^[13] built on this research by focusing on the concept of writing self-efficacy, and saw an improvement in self-efficacy scores after students participated in a writing program consisting of online lessons, a half-day workshop, and a writing checklist.^[13] Krishnamurthy and Wood^[14] discussed the success of implementing a Writing for Publication course in a DNP program to help students maximize the use of library resources to increase the knowledge and skills necessary for favorable writing outcomes. Student feedback consisted of gratitude for meeting both synchronously and virtually, which provided a personal connection with the librarian and faculty to promote writing and literacy skills.

While several interventions have been utilized for DNP students, the results show that the intervention(s) used should be tailored to the specific student body being served, rather than focusing on generalizability due to the highly individualistic nature of scholarly writing. However, limited evidence exists regarding the effectiveness of tailored interventions on improving central concepts such as writing self-efficacy. Given these differences in the design and delivery of the DNP curricula, we created a tailored educational-writing curriculum for new DNP students at a medium-sized academic medical center in a Southern state. The purpose of the small pilot project was to evaluate the effect of a tailored educational intervention on writing self-efficacy in newly-enrolled DNP students.

2. METHODS

2.1 Intervention development

The creators of the educational intervention initiated a select committee charged with the task to improve writing self-efficacy among DNP students. The committee consisted of faculty members teaching first-year DNP courses, those with a vested interest in improving students' writing, the DNP program director, and an assistant director of Student Services. The majority of the committee members had at least five first-author publications and several years of publishing experience. Members of the committee integrated current DNP student informal feedback and course evaluations to identify areas of focus for the educational intervention. Once these areas were identified, committee members met to prioritize topic areas. Informal feedback was solicited from

current and former students of the program to gauge level of receptivity and interest.

2.2 Conceptual framework

Our intervention was based on Knowles' Adult Learning Theory [15], which outlines the four principles to enhance adult learning activities. Knowles' theory assumes: 1) be involved in their instruction, 2) experience activities to provide a basis for learning, 3) be engaged with problem-centered learning, and 4) have relevant learning material to the learners' job or personal life. We met the first two assumptions of Knowles' theory by involving students in writing sessions and small group activities. We then met Knowles' third assumption by asking students to engage in the peer review process, challenging students to give clear and neutral feedback to their peers. Finally, we used personal examples in our publishing experiences (such as coping with article rejection and responding to reviewers) in our teaching material that were relevant to incoming DNP students.

2.3 Intervention components

The Transition to Scholarly Writing Workshop consisted of a series of interactive demonstrations including live skits, written exercises, question-and-answer sessions, voiceover presentations, peer review, and synchronous questions about APA style. The overall goal of the required workshop was to teach students about the importance of scholarly writing and to introduce students to the associated skills needed to develop writing expertise. The instructional methods used for the workshop were designed for a variety of learning modalities in order to assist DNP students with their unique learning needs.^[3]

The components of the curriculum included eight sessions with two group activities: 1) Importance of Scholarly Communication; 2) Importance of Scholarly Writing/Considering the Audience; 3) Writing a Topic Sentence and Paragraph; 4) Organization of a Paper; 5) Creating an Outline; 6) APA Essentials; 7) Writing a Summary of a Research Article; and 8) Constructive Peer Reviewing. The first session was focused on scholarly (and professional) communication surrounding e-mail etiquette, verbal and non-verbal components of students' professional image, and social media. The second session explored how to consider an audience while writing. The third session was dedicated to topic sentences and writing a sound paragraph. The fourth session gave an overview of the essential pieces of papers and how they linked together while focusing on transitions and flow of thought. The fifth session was a small-group activity which consisted of revising a paragraph, written prior to orientation, that described a perfect vacation. The sixth session provided details of APA formatting and style most commonly used by writers, showing complete cross-reference of sourced material and

avoiding plagiarism. The seventh session was pre-planned short skit showing positive examples of ways to meet with a faculty member to discuss ways to improve a written assignment. The eighth and final session summarized how to provide peer critique. See Table 1.

2.4 Intervention delivery

The Transition to Scholarly Writing Workshop was delivered virtually through Blackboard Collaborate on the second day of a two-day orientation, which occurred at the beginning of the semester for the incoming DNP cohort. Faculty signed on as moderators and the students were participants. Faculty presented the special sessions by sharing screens and using live voiceovers for presentations. A faculty member moderated the questions from the students in the chat session and intermittently relayed the questions to the presenting faculty.

2.5 Instruments

We utilized the Post-Secondary Writerly Self-Efficacy Scale (PSWSES), which is designed to measure self-efficacy beliefs of writing and the associated cognitive elements of identifying as a writer, also known as the writerly process.^[16] The 20-item tool consists of "I can" statements, which allow the respondent to evaluate beliefs about future writing abilities rather than current writing skills. Each of the items utilizes a 0–100 response format for each "I can" statement. Item scores are averaged to yield a total score ranging from 0–100, with higher scores representing greater writing self-efficacy. The PSWSES demonstrates high internal consistency and strong reliability, with Cronbach's alpha of 0.931 and split-half reliability of 0.864 [Guttman split-half coefficient=0.927; 16].

2.6 Data collection

We measured writing self-efficacy across three time points for the students using the Post-Secondary Writerly Self-Efficacy Scale.^[16] First, we measured writing self-efficacy at Timepoint 1 as a pre-test about a week before the Transition to Scholarly Writing Workshop. Second, we sent out the instrument as the initial post-test within two days of the Transition to Scholarly Writing Workshop as Timepoint 2 (immediate post-test). Third, we sent out the instrument at the beginning of the students' second semester (approximately 15 weeks after the workshop) at Timepoint 3 (semester post-test). Students were e-mailed a link to a REDCap survey that asked them to respond accordingly. The director of the DNP program (and member of our team) sent one reminder e-mail to the students approximately one week after Timepoint 2 and Timepoint 3. Each of the reminder e-mails were friendly in tone and included a link to the REDCap survey. The data collection time points were captured using REDCap, which was an electronic data capturing tool housed at our institution.^[17]

Table 1. Description of content within each session of the transition to scholarly writing workshop

Topic	Content
Importance of Scholarly Communication	Expected scholarly communication and etiquette surrounding: <ul style="list-style-type: none"> • E-mails • Social media • Professional image • Online courses
Importance of Scholarly Writing/Considering the Audience	Defined the importance of scholarly writing and associated skills: <ul style="list-style-type: none"> • Critical thinking and reasoning • Language and research • Understanding the audience
Writing a Topic Sentence and Paragraph	Focused on the importance of using logic in writing to connect sentences and overall concepts within writing: <ul style="list-style-type: none"> • Topic sentences and relations to paragraphs • What is a paragraph • Examples of not-so-strong paragraphs and strong paragraphs
Organization of a Paper	Discussed purpose and significance of each section of paper: <ul style="list-style-type: none"> • Introduction • Methods • Results • Discussion • Conclusion
Creating an Outline	Emphasized importance of using an outline: <ul style="list-style-type: none"> • Provided details for how to create an outline • Presented template for a final outline
APA* Essentials	Summarized fundamental concepts to APA formatting: <ul style="list-style-type: none"> • Professional versus student papers • Font, spacing, margins, alignments • Headings and level of headings • In-text citations and references
Writing a Summary of Research Article	Demonstrated strategies to summarize a research article: <ul style="list-style-type: none"> • Using rubrics by aligning content based on points available • Avoiding plagiarism and excessive quotations • Discussing assignment feedback with faculty prior to submitting
Constructive Peer Reviewing	Identified key components to provide constructive peer review by focusing on: <ul style="list-style-type: none"> • Overall impression of the work • Civil, kind, and encouraging voice and tone of reviewer • Concrete suggestions for improvement

*American Psychological Association.

The evaluation of this educational activity was determined not to be human subjects research by the university’s Institutional Review Board.

2.7 Analysis

We assessed changes in writing self-efficacy over the three measurement intervals using linear mixed effects modeling to account for within-student clustering of PSWSES scores over time. Specifically, we fit a two-level random intercept model, with time at level-one and students at level-two. Models were estimated using maximum likelihood, which allows

for unbalanced data and utilizes all available observations in the estimation of model parameters.^[18] All analyses were conducted using Stata 16.^[19]

3. RESULTS

A total of 80 students participated in the intervention and completed the pre-intervention writing self-efficacy assessment. Of these, 31 students completed the first follow-up assessment and 27 students completed both follow-up assessments. Mean PSWSES score at Timepoint 1 (baseline;

pre-intervention) was 79.94 (SD = 11.61), increasing to 83.41 (SD = 9.519079) at Timepoint 2 (immediate post-test) assessment and 87.55 (SD = 8.15) at Timepoint 3 (semester post-test). The results of linear mixed-effects models, adjusting for within-student correlation in PSWES scores, showed statistically significant increases in PSWES score from Timepoint 1 to Timepoint 2 ($B = 3.56$; 95% CI: 1.09, 6.02; $p = .005$) and from Time 1 to Time 3 ($B = 6.23$; 95% CI: 3.38, 9.09; $p < .001$). From Timepoint 2 to Timepoint 3, there was an observed increase in PSWES score, although that increase did not meet the threshold for statistical significance ($B = 2.68$; 95% CI: -0.36, 5.73; $p = .085$). Lastly, we conducted a sensitivity analysis to assess the impact of excluding students who were lost to follow-up after the baseline of Timepoint 1. After dropping those students from the models, we observed no substantive difference in results from Timepoint 1 to Timepoint 2 ($B = 3.18$; $p = .013$), Timepoint 1 to Timepoint 3 ($B = 5.95$; $p < .001$), or Timepoint 2 to Timepoint 3 ($B = 2.77$; $p = .071$).

4. DISCUSSION

Our results demonstrate overall improvement in writing self-efficacy of students after the Transition to Scholarly Writing Workshop. The statistical significance between baseline scores and Timepoint 2 (immediate post-test; $p = .005$) and baseline scores with Timepoint 3 (semester post-test; $p < .001$) show that the students' writing self-efficacy scores not only improved after the workshop, but that the scores also reflected maintenance of writing self-efficacy. In other words, students' writing self-efficacy improved from baseline to immediately after the workshop, and then remained higher than baseline scores approximately a full semester after the workshop. However, their scores did not significantly improve from the end of the workshop (Timepoint 2; immediate post-test) to the next semester (Timepoint 3; semester post-test). We suspect this could be the result of several factors.

First, all of the students took at least one writing-intensive course in which students received feedback on a weekly basis about their discussion posts, papers, and other assignments. Though the intensity and level of feedback varied among instructors, all students were faced with a constant stream of writing activities. This almost-daily repeated practice of writing can help create effective writing habits and decrease the fear associated with initiating assignments, and may increase writing confidence, especially from baseline. These activities could be a direct reflection on the writing self-efficacy score increase between the baseline and other timepoint scores. However, we saw no significant change from Timepoint 2 (immediate post-test) to Timepoint 3 (semester post-test). We suspect this may be the result from faculty feedback

and grading. Students may have experienced an increase in writing self-efficacy from baseline, but their beliefs in their writing ability may have remained stagnant due to the nature of graduate-school feedback. For example, a graduate student may have initially benefited from the Transition to Scholarly Writing Workshop by learning about APA style and the importance of transitions between paragraphs. However, after a full semester of feedback, revisions, and grading, the same student may not have had a statistically significant increase in writing self-efficacy scores between Timepoint 2 (immediately post-test) and Timepoint 3 (semester post-test).

Second, the very nature of improving writing self-efficacy (skills and beliefs) can be time-consuming and laborious. As with any skill, the time required to become proficient and demonstrate mastery varies per student. Some students may need detailed instruction, frequent feedback, and continuing review, whereas other students may need minimal instruction. Thus, this range of student needs can be challenging to measure the effect of a writing workshop on writing self-efficacy.

Third, we speculate that the online delivery format of the workshop may have partially contributed to the lack of significant change in writing self-efficacy between Timepoint 2 (immediate post-test) and Timepoint 3 (semester post-test). Even though our workshop was delivered in a live, synchronous format, the online platform may have been problematic for student learning. For example, students were required to attend the workshop, but they may not have been as fully engaged as if the workshop had been held in person. Although faculty were experienced at teaching online, most students were not accustomed to an online educational environment. Faculty implemented strategies such as small group activities, discussion, verbal question and answer, and polling to promote student interaction, but faculty faced difficulty in evaluating student engagement. Furthermore, this workshop was held during the first six months of COVID-19, and students may have been experiencing significant stress associated with the pandemic, thus affecting their assessment of their own writing self-efficacy. Finally, the differences in the significance of scores may simply have been the result of a decrease in sample size. We were not able to ensure that students completed the follow-up assessments at Timepoint 2 (immediate post-test) and Timepoint 3 (semester post-test). Thus, this smaller sample size may have led to insufficient statistical power due to the loss to follow-up.

Despite these potential discrepancies, our workshop had several strengths. First, we incorporated anecdotal advice from faculty. Faculty members discussed their wide range of experiences with publishing and writing, which seemed to capture many of the students' attention. One student commented in

the chat box, “Hearing about [faculty] mistakes and not so positive experiences does lessen the anxiety and makes me feel not so criticized so thank you for that!” The openness among faculty to share their success and losses therefore resonated with the students. Second, we introduced students to their future first-year faculty and possible resources and encouraged dialogue among the students during the two breakout sessions and live chat function. One post-master’s student remarked, “I love that you are doing this refresher. It has been very helpful. I am feeling overwhelmed and think that it will take me some time to get back in the swing of writing. I am a bit rusty.” This introduction helped to foster a welcoming environment for the incoming DNP students. A post-BSN student, new to graduate-level study, wrote, “The overview is great. Very helpful information about rubric and expectations. Great to hear you are all encouraging us to continually improve!” Third, our workshop was designed to gently introduce incoming students to a higher level of expectation as a new DNP student. We discussed the rising expectations for transitioning into a new role of provider, nurse scholar, and graduate student.

Limitations

This workshop and the subsequent evaluation had some limitations. We created this workshop to introduce our incoming students to scholarly writing, focusing on broad concepts identified as challenges by current and former students and faculty. We did not tailor the intervention to address the potential needs of subsets of our student population, such as those who spoke and wrote American English as a second language, those with low emphasis on writing skills in their undergraduate programs, those who already had a graduate degree, and those returning to school after several years in the clinical environment. In addition, we incorporated a large amount of content in this workshop, and students seemed less engaged toward the end of the day.

Additionally, we chose a validated measure of writing self-

efficacy, but we did not evaluate the actual writing ability of these students. In addition, the number of students responding to the survey decreased at each timepoint. The scores at Timepoint 2 (immediate post-test) and Timepoint 3 (semester post-test) may not accurately reflect changes in self-efficacy for the entire group. Finally, students completed coursework over the first semester and received a large amount of feedback on their work; therefore, we cannot assume that the sustained writing self-efficacy scores at the end of the first semester were solely due to the workshop.

5. CONCLUSION

Overall, we saw a significant benefit in writing self-efficacy among incoming DNP students. The tailored format and integration of real-life anecdotal feedback from faculty may have been fundamental to creating an increase in writing self-efficacy among students—a concept foundational to student, and possibly professional, nursing success.

FUNDING

Dr. Parker is currently supported by the University of Arkansas for Medical Sciences Translational Research Institute (TRI) grants KL2TR003108 and UL1TR003107 through the National Center for Advancing Translational Sciences of the National Institutes of Health (NIH) and Arkansas Breast Cancer Research Program.

Dr. Riley is currently supported by the University of Arkansas for Medical Sciences Translational Research Institute (TRI) grant UL1TR003107 through the National Center for Advancing Translational Sciences of the National Institutes of Health (NIH). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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