Do Authentic Writing Environments in Nursing (AWE in Nursing) Improve Nursing Student Learning Outcomes?

The AWE in Nursing research project evaluates whether the implementation of an authentic written capstone project – one that mirrors future career responsibilities – enhances student learning outcomes and engagement of senior Bachelor of Science in Nursing (BSN) students.

Background and Research Questions

The nursing course containing the innovative, authentic capstone project stems from the Writing Enriched Curriculum (WEC) program. The WEC program began at the University of Minnesota in 2007 with the goal of meaningfully engaging students in writing and writing instruction across the curriculum. In 2009, as an early adopter of WEC program goals, School of Nursing faculty developed and implemented a WEC for BSN students to support the development of scholarly writing and communication skills essential to the profession. In the nursing capstone course, students identify and address a clinical problem over the course of the semester. The capstone project involves a thorough review and synthesis of the research literature and discussion of findings in relation to the clinical question being studied. Students receive regular peer and faculty feedback at each phase of the step-by-step, scaffolded process to develop their course papers. More recently, in 2013, the capstone project was refined to create an innovative and ‘authentic writing environment’ for students. The authentic writing environment was designed to facilitate students’ ability to make the connection between their capstone writing project and the evidence base of nursing practice, an essential component of baccalaureate nursing education.

The authentic writing environment created for the nursing capstone writing course (NURS 4777w) was grounded in research. Studies have found innovative teaching strategies that engage nursing students in their learning improve student learning outcomes (e.g., increased confidence in one’s ability to search research literature, increased appreciation of the research-practice link, and improved attitudes towards research). Moreover, authentic learning environments with authentic assignments, which match future career responsibilities and audiences, are powerful motivators for improving student learning and writing, as students can see real world applicability. For example, student participation in simulated clinical experiences has been found to increase student confidence and competence in providing clinical care. Therefore, within nursing writing courses, an authentic environment for students would include a written project similar to what they may be tasked to do as a practicing nurse, with dissemination of findings to a collegial audience.

In the authentic environment of this course, developed and piloted in one section of the capstone course in 2013, and further expanded to two sections of the capstone course in 2014, students selected a peer-reviewed journal that they judged would be a good target audience for the findings of their evidence based review paper. Students then wrote their capstone papers following the target journal’s submission guidelines and stylistic formats, using the scaffolded writing process from previous semesters with frequent peer and faculty review. Although students were not required to submit for formal publication, students submitted their manuscripts to an online, classroom journal that simulated manuscript submission to a professional journal. In a small post-course survey in Fall 2014, students reported their learning outcomes were expanded by targeting an audience beyond the faculty and through the practical application of the publication process and writing of a manuscript. Given the positive student feedback in Fall 2014, it was decided to implement the authentic writing environment across all five sections of the capstone writing-intensive course for Fall 2015. It remains unclear, however, whether this ‘authentic’ method of teaching the written capstone enhances student learning
outcomes and engagement. Specifically, this project will allow us to answer the following research questions:

1. Does the 'authentic environment' improve student technical accuracy?
2. Does the 'authentic environment' improve student clinical judgement?
3. Does the 'authentic environment' improve student writing confidence?
4. Does the 'authentic environment' assist students in building connections between the research evidence used to inform practice and their future nursing roles?

Project Description and Goals

Understanding how the authentic writing environment contributes to student learning, writing development and future professional capacity is critical to help inform and refine best practices for teaching writing within practice-based, scientific disciplines and professions, like nursing. To answer research questions 1 and 2, we propose to create a tool to measure technical accuracy and clinical judgement of writing samples. The tool will be grounded within both the Outcome Present-State Test (OPT) theoretical framework\(^9\)-\(^11\) and related scholarship,\(^12\) which guide student development of clinical reasoning in clinical care/case settings. The newly developed tool will be used to evaluate and compare the technical accuracy of a random sample of nursing WEC writing samples from 2012 and 2015. To answer Question 3 and Question 4, we propose to assess pre- and post-course surveys administered in Fall 2015 to evaluate a variety of student outcomes (e.g., student confidence in discipline-specific writing, perceived value of the authentic writing environment). The surveys were vetted by the five faculty members teaching the course; both quantitative and qualitative data were collected.

**Methods.** The tool to measure technical accuracy and clinical judgement will be developed by the investigators and consultant, Daniel Emory, Assistant Director of the Writing Across the Curriculum program (see letter of support) in conjunction with the undergraduate research assistant (RA) to ensure we elicit and include the student perspective in the evaluation tool. The OPT model of clinical reasoning is introduced to nursing students during their initial coursework and is used throughout their clinical rotations to assist them in logically identifying, prioritizing and addressing clinical problems. As such, the OPT model provides a structure and visual representation of the sophisticated, systems-based thinking involved in clinical reasoning for students\(^9\) and is a framework for faculty to provide student's feedback on clinical judgement and technical accuracy. Additionally, the model can provide scaffolding to support such thinking beyond the clinical realm and will be utilized to guide the development of the tool to evaluate technical accuracy and clinical judgement in writing. Though adaptation of the OPT model\(^9\) and related scholarship,\(^12\) the newly developed tool will retain a focus on the flow of logic and evidence of sound clinical judgement coupled with technical accuracy. The newly developed tool will be designed to be transferable across disciplines that also seek to foster student clinical judgement and technical accuracy.

The student RA and Principal Investigator (Horning) will use the tool to evaluate five WEC writing samples to test for usability (reported ease of use) and inter-rater reliability (calculated using Kappa's and two-way mixed intraclass correlations\(^13\),\(^14\)). If the tool is not user-friendly or inter-rater reliability is low (i.e., <0.40\(^14\)), further tool revisions will be conducted and reliability rechecked. Once finalized, the tool will be used by the student RA to evaluate writing samples from both 2012 and 2015, and the RA will be blinded to the year of the sample. Additionally, a random subset of writing samples will also be separately rated by two investigators to cross-check quality and inter-rater reliability. Descriptive (means, standard deviations, ranges) and bivariate (independent t-tests) statistics will be used to describe and evaluate the mean difference in scores between 2012 and 2015.
Quantitative surveys gathered information from students on a variety of topics, including the student's rating of the importance of writing within the profession (example survey questions: Please rate how much you agree/disagree with these statements: I believe excellence in writing is important to the nursing profession); their confidence in their own abilities to complete discipline specific writing (example survey questions: Please rate how confident you are: ... to find research to review the literature needed to answer a clinical problem; in your ability to write a review of the literature to answer a clinical problem); and their belief in using research to inform practice (example survey questions: Please rate how much you agree/disagree with the following statements: I believe I have a role in bringing research into practice (e.g., through conducting research literature reviews) to answer clinical problems; I will work to utilize research in practice by conducting and writing literature reviews on research to answer a clinical problem). Internal consistency of survey items that are believed to be measuring similar constructs (e.g., confidence in discipline specific writing) will be tested using Cronbach’s alpha; if the Cronbach’s alpha score is at or above 0.70, then the items will be summed to form a scale and analyzed as such. If the Cronbach alpha score is low, then items will be analyzed individually.

The newly developed scales and/or individual items will be analyzed using both bivariate and multivariate statistical analyses. Bivariate analyses will include Chi square tests (i.e., to assess differences in categorical variables), independent t-tests (i.e., to assess for group differences in continuous outcomes like confidence), and Pearson or Spearman correlations (i.e., to assess relationships between ordered categorical and/or continuous outcomes). Additionally, general linear multivariate analyses will also be conducted and analyses will include potentially confounding covariates (e.g., course section number, student rating on the importance of writing in nursing). However, it should be noted that a limitation to our study is that the multivariate analyses will not be able to include two time points, as data are not linked by student from pre-course to post-course given the IRB approval. Even without linked student data, quantitative data analysis will provide valuable information about overall mean group differences in scores from pre-course to post-course and will be able to identify if associations exist between potentially confounding variables and pre-course survey scores and post-course survey scores.

In addition, to the quantitative survey data, four open-ended short-answer items were included in the survey to strengthen the robustness of findings. One item, “Please describe your hopes, worries, and thoughts about this course” was included at pre-test. Three short-answer items asking about the experience of: 1) seeing the classroom journal, 2) connecting the work to their future career, and 3) creating a manuscript and classroom journal, were included in the post-test. A conventional content analysis will be conducted by the student RA and two co-investigators experienced in qualitative analysis. Responses will be read and grouped into categories for each statement. The groupings developed will be compared and decisions made when discrepancies occur. These groupings will be presented to the entire workgroup and themes identified/confirmed. This data will reflect the attitudes and opinions the students have about the experience of creating an authentic manuscript and will provide an important opportunity to facilitate interpretation of quantitative study findings.

Research Assistant Role. In order to conduct and complete the proposed research, we will be hiring and training an undergraduate RA to work on this project with us. In doing so, we are committed to support the educational and professional development of the undergraduate student hired. This student, selected from a pool of current students entering into NURS4777w in Fall 2016, will be afforded four main benefits through the experience. First, the student will draw from an insider’s experience to contribute to the development of the tool for assessing technical accuracy and clinical judgement through authentic writing. Working closely and
collaboratively with faculty on tool development will extend the student’s knowledge and skills regarding measurement and team science. Second, the student will learn how to conduct appropriate statistical and qualitative analyses as well as how to synthesize the qualitative and quantitative findings. Analyzing both numeric and textual data will provide the student a higher level of understanding about how research is conducted and can be interpreted. Third, we can offer the student multiple opportunities to contribute to dissemination of our findings through presentations and peer-reviewed publication. These activities will enhance the student’s writing and presentation skills. Lastly, the experience will benefit this student by providing a prolonged engagement with a research project focused on teaching mechanisms to enhance nursing practice, transferable skills necessary for leadership in the professional practice setting, and a foundation to encourage post-graduate education.

**Limitations.** The proposed AWE in Nursing study seeks to inform best practices for writing assignments within nursing and across other disciplines. However, we acknowledge that this study has several limitations. The inability to randomize students to the authentic learning environment or a traditional learning environment means that we will be unable to definitively reach a conclusion as to whether the authentic writing environment led to better student learning outcomes or if other aspects (e.g., natural development and progression in the program, different instructors, programmatic changes to the entire BSN curriculum occurring between 2012 and 2015) are contributing to changes in student outcomes. While this is a major limitation, we purposefully are utilizing multiple data sources (e.g., qualitative and quantitative data from pre- and post-course surveys and WEC writing samples) and analyses to help us interpret the findings from different perspectives to be able to better assess the impact of the authentic writing environment on learning outcomes.

It should also be noted that students who chose to respond to the pre- and post-course surveys may be different from students who did not, creating a biased response sample; however, overall response rates for the pre- and post-course surveys, respectively, were 67.6% (90/133) and 56.4% (75/133), which are on par with national survey response rates. In spite of the limitations, the proposed project will develop a new tool to measure technical accuracy and clinical judgement that will be designed for multidisciplinary use. In addition, the proposed study will provide valuable information to support the evidence base and continued use of the authentic writing environment or suggest need for further adaptation of the authentic writing environment to facilitate student learning, a valuable contribution to the field.

**Significance, Relevance and Plans for Dissemination**

The evaluation of the authentic student writing environment in the N4777w capstone course is critical to informing best practices for writing education within nursing and has high potential for use across other practice-based disciplines both within and outside of the University of Minnesota. Additionally, the tool developed to measure clinical judgement and technical accuracy in writing will be purposefully created with the intention of being transferable across other practice based disciplines that foster student development of clinical judgement and technical accuracy. We will write and submit at least one manuscript and one conference abstract detailing our newly developed tool and findings in 2016-2017. Also, if findings are supportive of the authentic writing environment, we will also develop a model for translation of this teaching strategy across disciplines within the University of Minnesota (e.g., pharmacy) and to other universities.
Budget
In order to conduct the proposed research, we are seeking $3813 to support an hourly-paid undergraduate research assistant from June 2016 - January 2017. The student RA will:

- contribute to the development of the tool to measure technical accuracy and clinical judgement within student writing samples
- use the newly developed tool to rate student writing samples
- assist with quantitative and qualitative analyses, the writing and dissemination of findings, and development of the model for translation of this teaching strategy across disciplines

It is estimated that the student will have ten hours of work per week for the 34 week proposed grant timeframe.

Timeline

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<td>Hiring of student (Principal Investigator Horning &amp; Co-Investigators: McKechnie, Beacham, Kirk, Dean)</td>
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<td>Create the tool grounded within the OPT framework to assess writing for technical accuracy and clinical judgement (ALL &amp; Daniel Emory [see letter of support]) - Pilot/feasibility (RA, Horning)</td>
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<td>- Rating of student writing samples using the OPT model (RA with validity checks by Horning, Beacham)</td>
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<td>Qualitative short answer data analysis (RA with guidance of McKechnie, Kirk)</td>
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<td>Quantitative data analysis (RA with guidance of Horning, Dean)</td>
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<td>Interpretation of quantitative/qualitative findings as a whole (ALL) and write-up of findings (Student lead with guidance from research team)</td>
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<td>Poster/presentation (Student lead with guidance from Horning, Dean)</td>
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<td>Manuscript: draft background, methods, results, discussion. (Student with assistance from Horning and research team)</td>
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Study Team

This study team is highly qualified to conduct the proposed research with the undergraduate research assistant and provide optimal mentorship for the research assistant.

Principal Investigator. Melissa Horning, PhD, RN, PHN taught in the N4777w course that implemented the AWE in Nursing study. She is an Assistant Professor in the School of Nursing and brings expertise in quantitative methods and instrument development.

Co-Investigator. Anne Chevalier McKechnie, PhD, RN taught the N4777w course that implemented the AWE in Nursing study. She is an Assistant Professor in the School of Nursing, and brings expertise in qualitative/mixed methods as well as instrument development to this study.

Co-Investigator. Barbara Beacham, PhD, RN taught in the N4777w course that implemented the AWE in Nursing study. She is an Assistant Professor in the School of Nursing and brings expertise in qualitative methods.

Co-Investigator. Laura Kirk, PhD, RN taught in the N4777w course that implemented the AWE in Nursing study. She is an Assistant Professor in the School of Nursing and brings expertise in mixed methods.

Co-Investigator. Patrick Dean, EDD, RN, OST taught in the N4777w course that implemented the AWE in Nursing study.

Institutional Review Board Approval

The data and evaluation from the pre- and post-course surveys of the N4777w course were approved as exempt by the IRB prior to data collection and launching the authentic writing environment across the five sections of the N4777w senior capstone course (Approval documentation is attached; note that the title of this IRB application is slightly different from this grant; a title change has been requested from the IRB and is pending). Additionally, the request to the IRB to use WEC data for this study is currently being prepared for submission.
References


3. McCulley C, Jones M. Fostering RN-to-BSN students' confidence in searching online for scholarly information on evidence-based practice. DigitalCommons@Linfield. 2014.


