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Measuring Health Promoter Core Competencies Among Graduate Students Enrolled in a Health Promotion Course

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Measuring Health Promoter Core Competencies Among Graduate Students Enrolled in a Health Promotion Course

Abstract

Global public health events such as the COVID-19 pandemic create public awareness of the need for skilled public health graduates and public health graduate programs. Core Competencies for Public Health are tools that can guide graduate-level public health programs to ensure students are receiving the appropriate knowledge, tools and skills required to become effective public health practitioners that comprise a strong public health workforce. Case-based learning is a learner centered approach that allows students to apply their knowledge to real-world scenarios, promoting higher-order thinking. The University of Guelph Master of Public Health graduate program incorporates both the Core Competencies for Public Health in Canada as created by the Public Health Agency of Canada and the Pan-Canadian Health Promoter Competencies developed by Health Promotion Canada (HPC), as well as experiential learning to ensure students are receiving a high-quality learning experience throughout the course of their studies. Assessments of the program, individual courses within the program, and assignments within the courses are beneficial to ensure alignment with the Public Health Core Competencies—including Health Promotion Core Competencies. In the present study, surveys were administered to students enrolled in the University of Guelph Winter 2021 semester Health Promotion class before and after completion of an experiential group health promotion assignment worth 50% of their grade. The assignment used case-based learning within a group setting, allowing students to engage and apply knowledge gained through the semester to solve a real-world public health issue. Students reported increased self-perceived proficiency in all Core Competencies after completion of the practice-based group health promotion program assessment.

Des événements mondiaux de santé publique tels que la pandémie de la COVID-19 sensibilisent le public à la nécessité de disposer de diplômés et de diplômées qualifiés en santé publique et de programmes d'études supérieures en santé publique. Les compétences de base en santé publique sont des outils qui peuvent guider les programmes d'études supérieures en santé publique afin de garantir que les étudiants et les étudiantes reçoivent les connaissances, les outils et les compétences nécessaires pour devenir des praticiens de santé publique efficaces qui constituent une main-d'œuvre solide dans le domaine de la santé publique. L'apprentissage par cas est une approche centrée sur l'apprenant qui permet aux étudiants et aux étudiantes d'appliquer leurs connaissances à des scénarios du monde réel, favorisant ainsi une réflexion de haut niveau. Le programme de maîtrise en santé publique de l'Université de Guelph intègre à la fois les compétences de base en santé publique au Canada créées par l'Agence de la santé publique du Canada et les compétences pancanadiennes des promoteurs de la santé élaborées par Promotion de la santé Canada, ainsi que l'apprentissage par l'expérience afin de garantir aux étudiants et aux étudiantes une expérience d'apprentissage de grande qualité tout au long de leurs études. Les évaluations du programme, des cours individuels au sein du programme et des travaux à effectuer dans le cadre des cours sont utiles pour garantir l'alignement sur les compétences essentielles en santé publique, y compris les compétences essentielles en promotion de la santé. Dans la présente étude, des enquêtes ont été menées auprès d'étudiants et d'étudiantes inscrits au cours de promotion de la santé du semestre d'hiver 2021 de l'Université de Guelph, avant et après la réalisation d'un travail de promotion de la santé expérimental en groupe, qui représentait 50 % de leur note. Le travail a utilisé l'apprentissage par cas dans un contexte de groupe, permettant aux étudiants et aux étudiantes de s'engager et d'appliquer les connaissances acquises au cours du semestre pour résoudre un problème de santé publique dans le monde réel. Les étudiants et les étudiantes ont indiqué qu'ils se percevaient mieux dans toutes les compétences de base après avoir effectué l'évaluation du programme de promotion de la santé en groupe basé sur la pratique.

Keywords
Master of Public Health, public health education, graduate students, program evaluation, core competencies, survey, assessment; maîtrise en santé publique, éducation à la santé publique, étudiants et étudiantes diplômés, évaluation de programme, compétences de base, enquête, évaluation

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The COVID-19 pandemic has emphasized the importance of a collaborative and robust public health system. The management of the pandemic continues to require strong public health leadership and cooperation across communities, countries, and globally. Following a less recent public health threat—the SARS outbreak in 2003—recommendations were made to increase the capacity of the public health system to effectively deal with emergencies. Among the recommendations, the expressed need for training of graduate-level public health professionals resulted in a dramatic increase (five to fifteen programs in Canada between the late 1990s and September 2011, with three others in development) in the number of Master of Public Health (MPH) programs across Canada (Massé & Moloughney, 2011). Guidelines were developed by the Public Health Agency of Canada to inform the planning and implementation of graduate-level competency-based public health education in Canada (Public Health Agency of Canada, 2014). The guidelines ensure the consistency and quality of education, with the goal of strengthening of the public health system in Canada and accelerating the job readiness of graduates (Public Health Agency of Canada, 2014).

The *Core Competencies for Public Health in Canada* were created by the Public Health Agency of Canada (PHAC) (2007) to guide the range of skills, knowledge, and abilities required of public health professionals to promote and protect the health of Canadians. Further, the PHAC Core Competencies serve to guide post-secondary public health educational programs in Canada. In 2015, an additional set of competencies were released by Health Promotion Canada (HPC) that expand upon the PHAC Core Competencies and focus specifically on the knowledge, skills, and abilities required for health promoters within public health. Health promoters are defined as "those who enable the population to take control of and improve their own health" (Health Promotion Canada, 2018). The HPC Pan-Canadian Heath Promoter Competencies inform the health promotion aspects of public health training across Canada (Health Promotion Canada, 2015). The 35 HPC Health Promoter Competencies (or "Health Promotion Core Competencies") are divided into nine categories, as seen in Appendix A.

Experiential learning empowers students to apply their knowledge gained through MPH curricula to practical public health issues (Bates, 2022). Guidelines for MPH Programs in Canada inform the planning and development of MPH programs and include experiential learning through assignments, practicums, and other forms (Public Health Agency of Canada, 2014). There are a wide range of ways to embed knowledge within a practical context, including case-based learning (Bates, 2022). Case-based learning has been used across health professional education programs including medicine, dentistry, veterinary medicine, and more (Thistlethwaite et al., 2012). A review aiming to evaluate the effectiveness of case-based learning in these programs found that it seems most effective when used in small groups and students rate it highly and perceive it enhances their learning (Thistlethwaite et al., 2012). A systematic review of medicine, dentistry, and speech and hearing science programs found that case-based learning led to positive student learning outcomes (Bridges & Jin, 2014). No similar review or literature were found that focused on case-based learning in public health. A recent study evaluating the effectiveness of problem-based learning assignment to develop a health promotion program based on a real-world issue in a health promotion course (Crawford et al., 2024). The study aimed to assess whether the project impacted actual and self-reported learning resulting from the group project. Results showed increased in actual and self-reported learning, showing students had fairly accurate perceptions of their own learning throughout the assignment (Crawford et al., 2024).

The University of Guelph is one of the Canadian post-secondary institutions that is home to a professional, graduate MPH program. This MPH program was developed in 2008 to prepare

students and professionals for a career in local, national, or international public health. This program typically educates 25 students per year, is two-years in length, and includes at least one practicum placement. The University of Guelph MPH program incorporates both the PHAC Core Competencies for Public Health in Canada and the HPC Health Promoter Competencies in the content of its courses and practicum experiences. In February 2013, Britten et al. (2014) conducted a five-year outcome assessment and evaluation of the University of Guelph MPH program using the PHAC Core Competencies as an evaluative framework for the program as a whole. The study found graduates had a positive learning experience which resulted in proficiency in these Core Competencies (Britten et al., 2014). Factors contributing to the improvement in competence between the pre- and post-program evaluation included a "comprehensive core curriculum, diverse electives, meaningful practicums, and interactive, knowledgeable faculty" (Britten et al., 2014). Practice-based learning is a key aspect of many MPH programs, which allows students to apply the knowledge gained within the classroom to real-world public health problems. Practice-based learning is achieved within the University of Guelph MPH program through the practicum opportunities, as well as case studies and projects within required and elective courses.

Typically, in the second semester, full-time students in the University of Guelph MPH program are enrolled in the degree requirement course "Health Promotion" (course code POPM*6510) which is mandatory as part of the MPH program. This graduate course introduces students to health promotion, and health behaviour theory and practice. Example topics include social determinants of health, health promotion theories, health behaviour change, campaign planning, and social marketing. Within the course, students apply their knowledge by creating a public health promotion program. During the Winter 2021 semester, the course partnered with the University's Education and Promotion Working Group to develop health promotion programs that the working group could use in their COVID-19 return to campus plans. The practice-based experiential learning project incorporates skill-building opportunities within each of the categories of the Health Promotion Core Competencies.

The current study expands upon the prior research using the PHAC Core Competencies to assess the learning outcomes of the MPH program (Britten et al., 2014; Wallar & Papadopoulos, 2015), and focuses on the Health Promotion Core Competencies to more specifically assess the knowledge, skills, and abilities developed as a result of a health promotion assessment. The aim of the present study was to determine if the completion of a comprehensive health promotion program assignment increased students' self-reported proficiency in the thirty-five Health Promotion Core Competencies, thereby improving their job readiness into the public health system. The objective of our study was to determine if completion of the assignment significantly increased students' mean self-perceived proficiency in these Core Competencies.

Method

Participants

Graduate students (n=35) who were enrolled in the Health Promotion (University of Guelph POPM*6510) course during the Winter 2021 semester were invited via e-mail to participate in the study. Eligibility to participate in the study required enrollment in the Health Promotion course. The Health Promotion course is normally delivered in-person; however, due to the COVID-19 pandemic the Winter 2021 offering of the course was delivered virtually

(synchronous), as were all other MPH courses at the University of Guelph. This study was approved by the University of Guelph Research Ethics Board REB#20-03-010.

Health Promotion Program Assignment

The health promotion program assignment (Appendix B) was the second of three assignments in the Health Promotion (University of Guelph POPM*6510) course and was worth 50% of students' final course grade. The assignment was completed in assigned groups of 4-6 students. Students were tasked with developing a comprehensive health promotion program proposal for a return-to-campus strategy in the context of the COVID-19 pandemic. Groups were given a choice of two practice-based questions to address through their health promotion programs: 1) How to enhance COVID-19 vaccination uptake across campus, or 2) How to enhance COVID-19 health protective measures across campus (i.e., masking wearing, physical distancing, hand washing). The University of Guelph Education and Promotion Working Group planned to use aspects of each group's program in their return to campus strategy. Health promotion program proposals were to be tailored to a specific target audience chosen by the group (e.g., students, faculty, general public, etc.). Groups were required to submit a written report and present a 25-minute summary presentation of their program. Key elements of the report included:

- 1-page visual summary of the program
- 3-page executive summary of the program
- Full report including a needs assessment, intervention strategy, theoretical framework, marketing mix, SWOT analysis, program evaluation plan and budget

This assignment was designed to use case-based learning in a relevant public health situation to increase students' problem-solving skills and critical thinking in an experiential education setting. Guiding principles for practice-based education were reflected in the assignment to increase the effectiveness of learning (ASPH Council of Public Health Practice Coordinators, 2004). This was designed to enhance the students' self-reported proficiency in the Core Competencies such as health promotion knowledge and skills, situational assessments, plan and evaluate health promotion action, communication, and leadership and building organizational capacity. A representative from the working group attended two classes to introduce the health promotion problem and questions to be addressed through the proposals and answer questions students had initially and then later in the semester when the work on the proposals had commenced. The connection to the working group and the experiential aspect of the assignment provided students with the opportunity to develop competencies in a real-world situation.

Survey and Data Collection

Students were asked to complete pre- and post-assignment surveys in Qualtrics, each consisting of 35 questions assessing the student's self-perceived ability as a health promoter to achieve the 35 Health Promotion Core Competencies. The surveys were both designed to take approximately 10-15 minutes to complete. All participants provided informed consent for each survey.

In February 2021, students enrolled in the course were emailed a description of the survey with a link to the Qualtrics survey and informed consent form. The first survey invitation was

emailed to students prior to beginning the health promotion program assignment. The second survey was emailed eight weeks later, after completion of the assignment. The email invitations indicated that participation in the survey would in no way impact their grade in the class or their standing in the MPH program. Participants were given 14 days to complete the survey from the date of the email invitation. A reminder email was sent halfway through the survey period. All results from the survey were anonymous and the course instructor, the teaching assistant, and the program coordinator did not have any involvement with the distribution or collection of the survey data and did not see the results until after final grades were submitted. Incomplete surveys were not included in the analysis.

Each question for the competencies was asked in a Likert scale format. Within the question, students were asked to rank their proficiency as a health promoter in a given competency as: *Not Competent* (1), *Somewhat Competent* (2), *Moderately Competent* (3), *Competent* (4) and *Very Competent* (5).

Data Analysis

Analysis of the pre- and post-assignment surveys was completed by comparing the difference between the responses from both surveys. For each question, the mean response value, standard deviation, and count value were analyzed by using an unpaired student's t-test in Stata version 16.1 to determine if there was a significance change in the mean student response of perceived competency level pre-completion of the health promotion program assignment compared to post-completion of the assignment.

Results

Students worked in small groups (4-6) to develop a health promotion plan to address mental health and wellness, prenatal/postnatal infant/maternal health, immunization, sexual health, healthy diet/nutrition, physical activity, climate change and health, or substance use/abuse. The program plan includes all the necessary information about each groups program, including mock-ups of campaign materials. In the 2023 winter semester, student projects focused on safe sex and STI testing among men who have sex with men, increasing HPV vaccination among university students, maternal health among South Asian immigrant women, eating disorders among university athletes, condom use among youth adults, and safe alcohol consumption among young adults. Often groups included a social media campaign, web-based information, and in-person activities. The program plans included assessing the needs of the selected community, setting goals and objectives, developing plans for their inventions, as well as an implementation and evaluation plan. Students were also required to include program mock-ups, which ranged from example social media posts, promotional materials for in-person elements, and website mock-ups.

Response Rates

The results of the pre- vs. post-assignment health promotion Core Competencies perceived proficiency surveys can be found in Appendix C. 22 (62.9%) of the 35 invited students participated in the pre-assignment survey prior to beginning the health promotion program assignment. 16 (45.7%) of the invited students participated in the post-assignment survey after completion of the

health promotion program assignment. The pre- and post-assignment student data was not paired due to privacy and anonymity concerns.

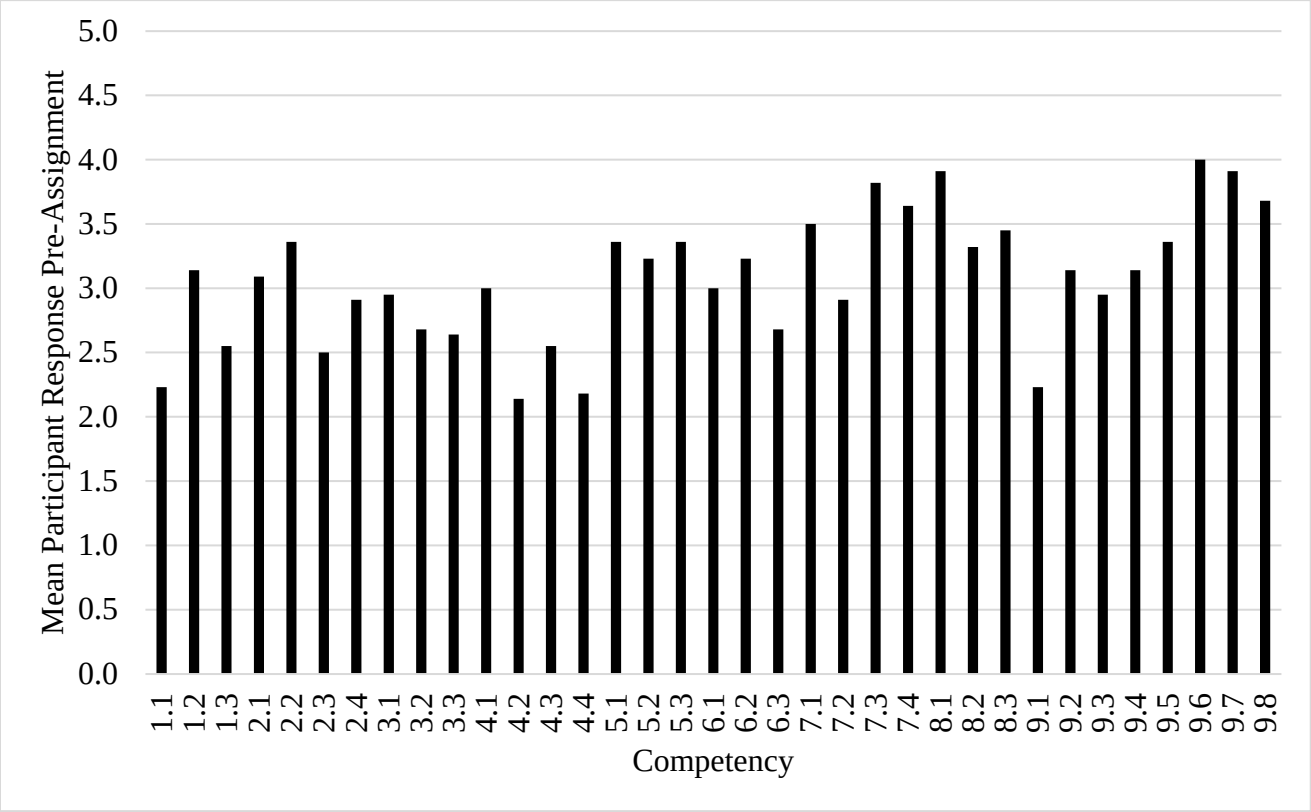
Pre-Assignment Health Promotion Core Competencies Proficiency

Before starting the assignment, 4/35 (11.4%) of the Core Competencies had a mean response value less than 2.50 (between 0–.49) on the 5-point scale, as follows: *4.2 – I am able to provide strategic policy advice on health promotion related issues*; *4.4 – I am able to understand the policy making process to assist, enable, and facilitated the community to contribute to policy development*; *9.1 – I am able to describe the context of health promotion structures and roles at different jurisdictional levels*; and *1.1 – I am able to apply a population health approach to the analysis of health issues (including determinants of health, health equity).* These were the lowest mean response values pre-completion of the assignment, with values of 2.14, 2.18, 2.23 and 2.23 respectively.

25/35 (71.4%) of the Core Competencies had a mean response value between 2.50–3.49. 5/35 (14.3%) of the competencies had a mean response value of 3.50–3.99. One perceived competency (2.9%) *9.6 – I am able to manage self, others, information and resources in an ethical manner* had a mean response value of 4.00.

Figure 1

Mean Participant Response Before Creating a Health Promotion Program When Self-Identifying Competency Level for the Core Competencies on a Likert Scale.



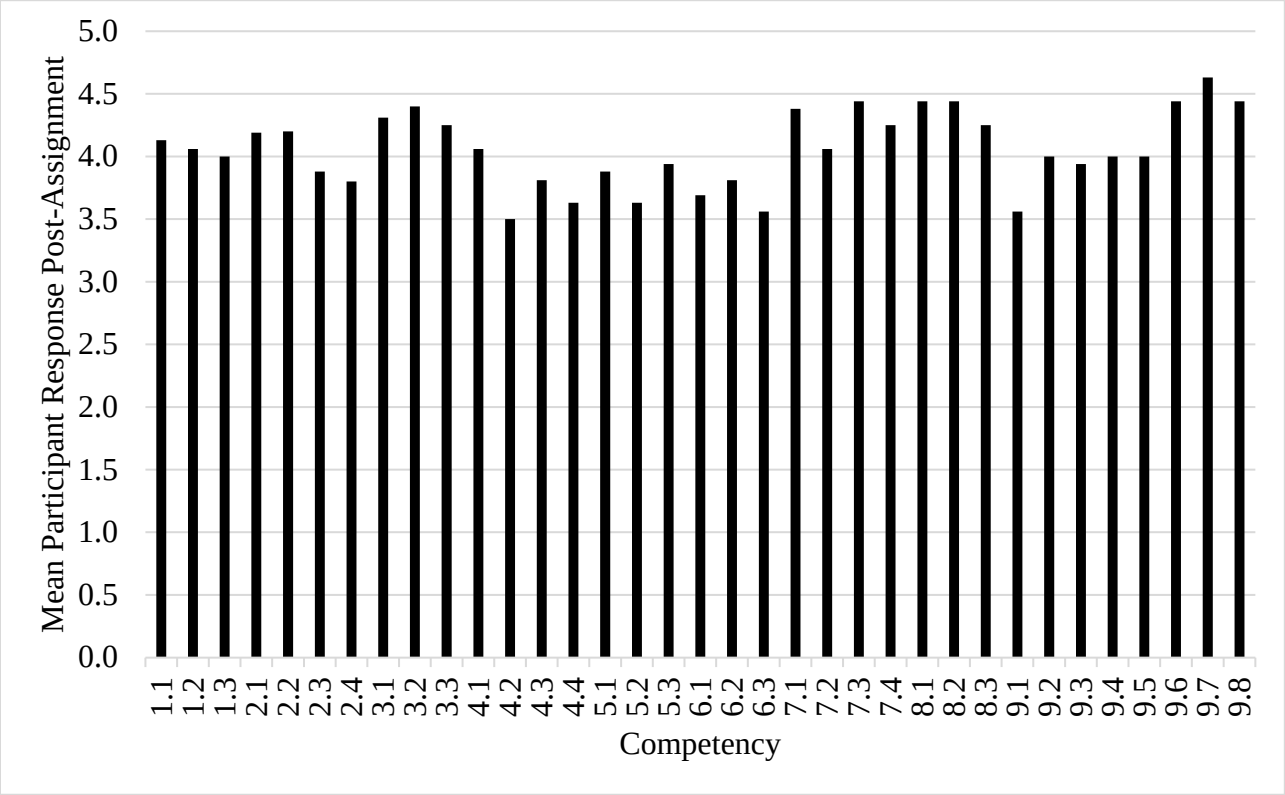
Note. 1=*Not Competent*, 2=*Somewhat Competent*, 3=*Moderately Competent*, 4=*Competent* and 5=*Very Competent.*

Post-Assignment Health Promotion Core Competencies Proficiency

After completing the assignment, 0/35 (0%) of the Core Competencies had a mean response value between 0.00 – 3.49 on the 5-point scale. The lowest mean response value was 3.50 for perceived competency *4.2 – I am able to provide strategic policy advice on health promotion related issues.* 13/35 (37.1%) of the self-reported competencies had a mean response value between 3.50 – 3.99. 21/35 (60%) of the self-reported competencies had a mean response value between 4.00 – 4.49. Perceived competency *9.7 – I am able to contribute to team and organizational learning in order to advance health promotion goals* had a mean response value of 4.63 and was the only self-reported competency with a mean response value above 4.50.

Figure 2

Mean Participant Response After Creating a Health Promotion Program when Self-Identifying Competency Level for the Core Competencies on a Likert Scale



Note. 1=*Not Competent*, 2=*Somewhat Competent*, 3=*Moderately Competent*, 4=*Competent* and 5=*Very Competent.*

Proficiency Differences in Core Competencies Pre- vs. Post-Assignment

When comparing the difference in the mean response value of participants' Core Competencies pre-completion of the assignment compared to post-completion of the assignment, all of the Core Competencies showed statistically significant differences ($p < 0.05$), except for Competency *5.1 – I am able to develop relationships and engage in a dialogue with communities based on trust and mutual respect; 5.2 – I am able to identify and strengthen local community capacities to take action on health issues,* and *9.6 – I am able to manage self, others, information*

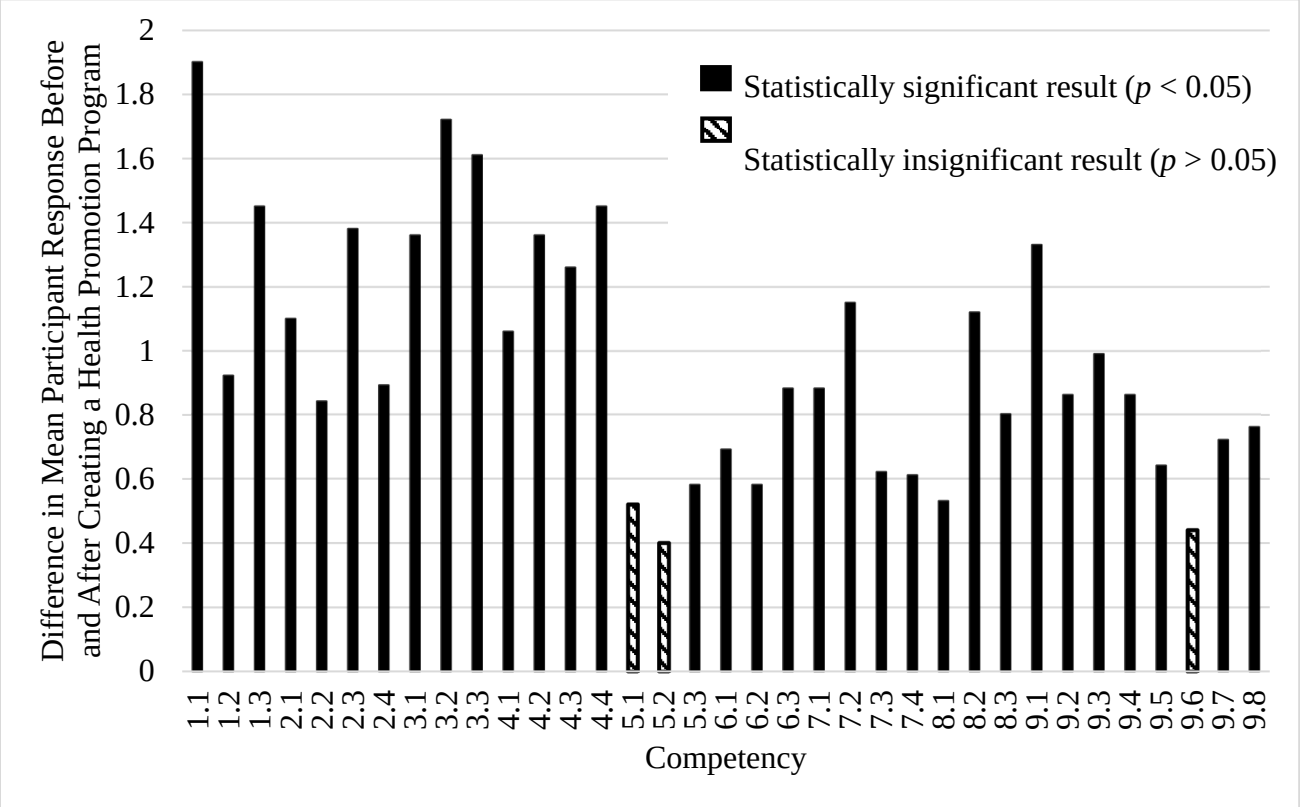
and resources in an ethical manner. These three competencies showed incremental changes, but the results were not statistically significant ($p > 0.05$). The differences in the mean response value of all the Core Competencies and their statistical significance can be seen in Appendix C.

The largest difference was in self-reported competency *1.1 – I am able to apply a population health approach to the analysis of health issues (including determinants of health, health equity)*. This self-reported competency had an average mean increase of 1.90 (46% increase, $p < 0.0001$, 95%CI [1.28, 2.52]). Two additional self-reported competencies had an average mean response increase over 1.50. Competency *3.2 – I am able to identify and oversee resources to develop, implement, and evaluate sustainable health promotion* and *3.3 – I am able to monitor and evaluate the implementation of health promotion action* had average mean response increases of 1.72 (39% increase, $p < 0.0001$, 95%CI [0.99, 2.45]) and 1.61 (38% increase, $p < 0.0001$, 95%CI [0.89, 2.33]), respectively.

11/35 (31.4%) of the Core Competencies had an average mean increase between 1.00 – 1.49. 19/35 (54.3%) of the Core Competencies had an average mean increase between 0.50 – 0.99. Only 2/35 (5.7%) of the Core Competencies (*5.2 – I am able to identify and strengthen local community capacities to take action on health issues* and *9.6 – I am able to manage self, others, information and resources in an ethical manner*) had an average mean increase between 0.00-0.49, and neither were significant ($p = 0.15$ and 0.06, respectively). None of the Core Competencies showed an average mean reduced response.

Figure 3

Difference in Mean Participant Response Before and After Creating a Health Promotion Program when Self-Identifying Competency Level for the Core Competencies on a Likert Scale



Note. 1=*Not Competent*, 2=*Somewhat Competent*, 3=*Moderately Competent*, 4=*Competent* and 5=*Very Competent*.

Discussion

The results of this study address whether completion of a comprehensive health promotion program assignment increases students self-perceived proficiency in the 35 Health Promotion Core Competencies. This data provides insight into the value of the health promotion assignment, student learning experience, and self-reported competency development while participating in the course.

Comprehensive Health Promotion Assignment Builds Proficiency Across Core Competencies

Prior to completion of the health promotion assignment, the majority of participants rated themselves as between *Somewhat Competent* to *Moderately Competent* within most of the Health Promotion Core Competencies. The Health Promotion course within the MPH program provides the most focused content related to developing these competencies, with other courses furthering the skills and abilities. The assessment is introduced mid-way through the semester, which may account for elevated perceived competencies previously covered in class or an assignment. The course focuses on developing the competencies through the semester within the lectures and assessments.

As the course progressed and the students completed the assessment, students rated themselves as *Competent* or *Very Competent* for the majority of Core Competencies. Notable significant increases were identified in self-reported competency categories: *1 – Health Promotion Knowledge and Skills; 2 – Situational Assessments; 3 – Plan and Evaluate Health Promotion Action;* and *4 – Policy Development and Advocacy*. Modest increases were also identified in the self-reported competency categories: *5 – Community mobilization and building community capacity; 6 – Partnership and collaboration; 7 – Communication; 8 – Diversity and inclusiveness;* and *9 – Leadership and building organizational capacity*. All nine self-reported Core Competency categories saw some increase in the mean average response regarding proficiency. There was increased proficiency in all 35 of the competencies post-assignment completion.

The statements that did not have a significant increase were: *5.1 – I am able to develop relationships and engage in a dialogue with communities based on trust and mutual respect; 5.2 – I am able to identify and strengthen local community capacities to take action on health issues;* and *9.6 – I am able to manage self, others, information and resources in an ethical manner*. Within the context of this assignment, the lower self-perceived increases make sense as students develop a health promotion program plan and do not directly engage with communities, partners, and do not manage any budgets. Students often select cases that are relevant to their life stages and current interests, which often include young adults.

Additionally, *4.2 – I am able to provide strategic policy advice on health promotion related issues* had the lowest mean value in the post-assignment survey. By and large, students to do tend to focus on advocacy, creating or influencing policy, or understanding other jurisdictions and levels as part of their health promotion program, which may account for the lower rating of this competency Students in the MPH program are required to take Public Health Policy and Systems and complete a case-based group assignment, which we would expect higher ratings within these competencies.

Practice-Based, Experiential Learning Further Enhances Proficiency in Health Promotion Core Competencies

Public health is an interdisciplinary field that requires practitioners to be proficient in a range of competencies in order to be effective. Practice-based teaching and learning provides meaningful, interdisciplinary, and applied opportunities for building knowledge, skill, and ability (ASPH Council of Public Health Practice Coordinators, 2004; Wrenn & Wrenn, 2009). The integration of community knowledge into practice-based opportunities enhances learning and application of course content into real-world problem solving (ASPH Council of Public Health Practice Coordinators, 2004; Wrenn & Wrenn, 2009). Collaborative practice across professions and among students through case-based learning and problem-based case studies have also shown increased levels of engagement (Sibbald et al., 2016).

The collaboration between the Education and Promotion Working Group and the Health Promotion course provided students with a meaningful, community- and problem-based project. A representative met with the students throughout the semester to provide information based on the return-to-campus initiative and to answer questions the students had regarding the development of their programs. This experiential aspect provided students with real-world relevance and prepared them for working in a multidisciplinary team within public health. While the study did not measure the impact of the practice-based assignment directly, the significant increases in self-perceived proficiency found in the areas of health promotion knowledge and skills, situational assessment, and planning and evaluating programs were likely as a result of working on a real-world problem that students knew could be implemented. Problem-based learning integrates knowledge across fields integral to public health through active learning, collaboration, and critical thinking, which builds competencies in students (Leon et al., 2015).

As previously mentioned, Britten et al. (2014) conducted a five-year outcome assessment of MPH graduates while using the PHAC Core Competencies as an evaluative framework. It was found that practice-based learning experiences were beneficial to students' learning experience and proficiency in the PHAC Core Competencies (Britten et al., 2014). This aligns with our current findings, as creating a health promotion program is a practice-based learning experience in which students developed a relevant health promotion program for a safe return to campus in the context of COVID-19. Completing a learning assignment which was problem-based may have also contributed to students' significant improvement in self-perceived proficiency in health promotion knowledge and skills, situational assessment and planning and evaluation of health promotion action. Problem-based learning has been found to be effective at developing skills and abilities, which are essential aspects of competencies. Flexible thinking, problem solving, and lifelong learning have been found to be positive outcomes of problem-based learning (Hmelo-Silver, 2004; Sibbald et al., 2016).

Our results are also congruent with a previous study by Wallar & Papadopoulos (2015) where the authors assessed students' PHAC Core Competency proficiency using mixed-methods before and after completing a collaborative capstone business plan for another required course in the MPH program, "Public Health Administration". The experiential nature of the project was also found to provide important skill and ability development in relation to the PHAC Core Competencies (Wallar & Papadopoulos, 2015). Similarly, we found an improvement in students' self-perceived proficiency of the Health Promotion Core Competencies which we suspect results from completing a health promotion practice-based assignment.

Professional MPH Programs Should Focus on Building Health Promotion Core Competencies to Ensure a Skilled and Prepared Public Health Workforce

Defining and applying core competencies within public health is critical to ensure a shared understanding and development of the knowledge, skills, and attitudes needed for professional practice. Core competency for public health education and training is essential to developing a skilled workforce that can improve population health (Barry et al., 2012). Our findings may indicate that improvement in students' perceived proficiency in the Core Competencies can be supported by completing a practice-based, experiential learning assignment with real-world applications.

Overall, we found an increase across all of the Health Promotion Core Competencies, which we suspect was the result of the completion of the practice-based assignment and perhaps the course itself. Bonesso et al. (2015) found that a combination of traditional and experiential learning opportunities can enhance technical knowledge and skills that increase the proficiency in social, emotional, and behavioural competencies. In this University of Guelph course, the experiential learning assignment was completed in parallel with traditional classroom learning, small group discussions, and other course learning opportunities. Pedagogical approaches that increase engagement and promote interdisciplinary learning include case-based learning, small group collaboration, and competency-focused curriculum (Sibbald et al., 2016). This combination of pedagogical approaches likely contributed to the increase in self-reported proficiencies in the Core Competencies.

As indicated by Ozdemir & Duffy (2017), there is a lack of detailed explanation of how core competencies are incorporated into public health degree programs. Not only do learning outcomes related to core competencies need to be analyzed, they need to be applied and shared (Ozdemir & Duffy, 2017). Appendix B is the detailed assignment instructions and requirements that students used to develop their reports and presentations. This assignment or similar assignments with other real-life public health situations can be applied in other public health contexts to help build the core competencies required for health promotion.

To further improve the experiential and case-based learning aspect of the project, this assignment could be done in collaboration with public health organizations to develop real program plans related to public health issues they are facing. This would further enhance the competencies related to collaboration, facilitation, and partnerships and possibly policy. It would also provide students with the opportunity to create a plan that may be implemented in practice, which has shown improved overall knowledge and skills related to health promotion (Anderson et al., 2022).

Limitations

Small sample size limits the generalizability of our findings. In addition, we were not able to match or pair the pre- and post-assignment student data due to privacy and anonymity concerns. Because of this, the mean response values were used in place of matched individual data. As students were most likely enrolled in other courses during the completion of this assignment, it is possible that the improvement in students' Core Competencies was in part due to other projects, assignments, and learning opportunities in other courses. Students are required to take 13 courses including public health policy, health communication, environmental public health, epidemiology, and others. Experiential and competency-based education is built into all courses, allowing for

increased critical thinking and problem-solving skills and a deeper understanding of the subject matter (Kong, 2021). The program requirements as a whole build the competencies over time and the experiential learning opportunities further solidify them and allow for some mastery. Therefore, it cannot be assumed that the perceived improvement in the Core Competencies was solely due to the completion of this assignment.

For the present study, we did not have the capacity to gain qualitative assessments from students (e.g., focus groups). Therefore, our data indicated a quantitative perceived increase in the Core Competencies but could benefit from future qualitative research to gain the perspectives of students with regards to the development of Health Promotion Core Competencies as a result of the assignment.

In contrast to the in-person learning context of previous studies assessing the public health-related competencies in MPH students at the University of Guelph, the Winter 2021 semester was completed entirely online due to the COVID-19 pandemic. Students' ability to communicate with their group members was limited to virtual contact only–such as e-mail, video calls, and Microsoft Teams chats. This lack of in-person learning and in-person team collaboration may have influenced students' experience in the course, its learnings, and their self-perceived proficiency in the Core Competencies.

Conclusion

Evaluation of the University of Guelph required courses in the Master of Public Health Program is beneficial to ensure the courses and assessments are encouraging students to develop confidence and proficiency in the Health Promotion Core Competencies. Students reported an increased proficiency these Core Competencies after completion of a practice-based health promotion program assessment. Development of the competencies prepare students for employment within the complex public health system in Canada, specifically within health promotion practice. Now, more than ever, strong public health practitioners are needed to positively impact the complex public health system in Canada and in turn, improve public health. Practice-based teaching and learning that integrates the Health Promoter Competencies can help develop proficiency across the competencies and increase the skill and ability of public health practitioners.

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Appendix A

Thirty-five Health Promoter Core Competencies (Health Promotion Canada, 2015) Embedded in the University of Guelph Master of Public Health (MPH) Program

1 - Health promotion knowledge and skills	
1.1	I am able to apply a population health approach to the analysis of health issues (including determinants of health, health equity).
1.2	I am able to identify options of health promotion action.
1.3	I am able to plan, implement, and evaluate health promotion action based on health promotion principles, theory, and research.
2 - Situational Assessments	
2.1	I am able to retrieve and synthesize population health status information to describe the importance and underlying causes of a health issue.
2.2	I am able to access and critically appraise evidence for potential health promotion action.
2.3	I am able to conduct an environmental scan to identify community perspectives, assets, resources, challenges, and gaps.
2.4	I am able to interpret population health status information, evidence, and environmental scan findings to identify options for health promotion action.
3 - Plan and evaluate health promotion action	
3.1	I am able to develop a plan to implement health promotion action including goals, objectives and implementation and evaluation steps.
3.2	I am able to identify and oversee resources to develop, implement, and evaluate sustainable health promotion.
3.3	I am able to monitor and evaluate the implementation of health promotion action.
4 - Policy development and advocacy	
4.1	I can describe the potential implications of policy options (e.g. health, economic, legal, social, etc.).
4.2	I am able to provide strategic policy advice on health promotion related issues.
4.3	I am able to write clear and concise briefs for health promotion issues.
4.4	I am able to understand the policy making process to assist, enable, and facilitated the community to contribute to policy development.
5 - Community mobilization and building community capacity	
5.1	I am able to develop relationships and engage in a dialogue with communities based on trust and mutual respect.
5.2	I am able to identify and strengthen local community capacities to take action on health issues.
5.3	I am able to advocate for and with communities to improve their health and well-being.
6 - Partnership and collaboration	
6.1	I am able to establish and maintain linkages with community leaders and other key health promotion stakeholders.
6.2	I am able to utilize leadership, team building, negotiation, and conflict resolution skills to build community partnerships.
6.3	I am able to build and support coalitions to stimulate intersectional collaboration on health issues.

7 - Communication	
7.1	I am able to provide information tailored to specific audiences on population health status and health promotion action.
7.2	I am able to apply community methods and techniques to the development, implementation and evaluation of health promotion action.
7.3	I am able to use the media, technologies, and community networks to receive and communicate information.
7.4	I am able to communicate with diverse populations in a culturally appropriate manner.
8 - Diversity and inclusiveness	
8.1	I am able to recognize how the determinants of health influence and well-being of specific population groups.
8.2	I am able to address population diversity when planning, implementing, adapting and evaluating health promotion action.
8.3	I am able to apply culturally-relevant and appropriate approach with people from diverse cultural, socioeconomic, and educational backgrounds, and persons of all ages, genders, health status, sexual orientations and abilities.
9 - Leadership and building organizational capacity	
9.1	I am able to describe the context of health promotion structures and roles at different jurisdictional levels.
9.2	I am able to describe how the work of health promotion supports an organization's vision, mission, and priorities.
9.3	I am able to contribute to developing key values and a shared vision in planning and implementing health promotion action in the community.
9.4	I am able to demonstrate an ability to set and follow priorities, and to maximize outcomes based on available resources.
9.5	I am able to contribute to maintaining organizational performance standards.
9.6	I am able to manage self, others, information and resources in an ethical manner.
9.7	I am able to contribute to team and organizational learning in order to advance health promotion goals.
9.8	I am able to pursue lifeline learning in the field of health promotion.

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Appendix B

Assignment 2 (Group Assignment) – Health Promotion (University of Guelph) Winter 2021
Health Promotion Program (50%)

Overview

For this group assignment, students will work in small teams to create a proposal for an original and innovative health promotion program to address a timely real-world public health issue. The program will be described and justified in the form of a paper and then shared with the class during a presentation. This year, we have a community engaged learning opportunity in that the content of the programs you create may be utilized in practice.

Health promotion professionals recognize that effective health promotion programs are highly important for controlling disease, including in the context of global pandemics. The University of Guelph Return-to-Campus Steering Committee has issued a request for our help, asking you to put together a comprehensive program to address one of two important components of campus health and safety in the context of the ongoing COVID-19 pandemic: vaccination; and continued use of health protective measures (i.e., hand washing, mask wearing, physical distancing). The program or some of its components you create for this community-engaged learning opportunity may be used by the Committee to support a healthy and safe return to campus in the 2021/2022 academic year.

Your Task

In response to the request, each group (assigned) will develop a health promotion program that addresses one of the two components (vaccination or health protective measures) for a specific target audience. Using evidence, theory, and best practices will demonstrate how your group's approach effectiveness and appropriateness in preventing COVID-19 infections and promoting health on our campus. The program should demonstrate, and be informed by, what has been learned throughout the course and be supported with evidence from peer-reviewed and grey literature on health promotion, as well as COVID- 19/emerging infectious diseases.

Research Questions & Target Audiences

1. *How can we enhance COVID-19 vaccination uptake across campus?*
2. *How can we enhance COVID-19 health protective measures (i.e., mask wearing, handwashing, physical distancing, testing) across campus?*

Target audiences of focus may include students, faculty, staff, and/or the broader community. Keep in mind the diversity of students, staff, faculty, and community when developing your plan and use audience segmentation to target and tailor plans (e.g., students include undergraduates, graduate students, clinical students, students living in residence vs. off-campus, etc.).

Assignment Requirements

The ***written paper (60%)*** should include: title page, table of contents, 1-page visual summary (e.g., infographic or poster), 3-page executive summary, full report (up to 25 double-spaced pages), references, and appendices (including mock-ups of your program's communication materials or initiatives). The body of the paper should include all of the necessary information about your program, including the basics, such as who you're targeting, why, how, with what, and when. To this end, a report about a health promotion program will typically include: needs assessment; goals and objectives (SMART); target audience(s)/priority population(s); intervention strategy/methods; theoretical framework; marketing mix; SWOT analysis; implementation plan; program evaluation plan; budget; and mock-up of program materials.

The ***presentation (30%)*** will be a summary of your program allowing you to pitch your ideas to the class. The presentation can be conducted using various formats; however, a PowerPoint presentation is typical. Each group will have approximately 25 minutes to present, which will be followed by a brief Q&A session. All members of the group will participate.

Peer group feedback (10%) is also part of this assignment. The class will ask questions of the group after each presentation. Your group will be required to submit three strengths and three areas for improvement for each group's campaign proposal.

Appendix C

Results of Pre- vs Post-Assignment Self-Identified Competency Levels for Each of the Competencies

Competency	**Pre-assignment**				**Post-assignment**				**Results from T-Test**					
	Count	Mean	Standard Deviation	Variance	Count	Mean	Standard Deviation	Variance	Mean Difference	Standard Error	Lower 95% CI	Upper 95% CI	*p*-value	Percent Change
1.1	22	2.23	1.11	1.23	16	4.13	0.60	0.36	1.90	0.306	1.279	2.521	<0.0001*	46%
1.2	22	3.14	1.14	1.30	16	4.06	0.66	0.43	0.92	0.318	0.274	1.566	0.0033*	23%
1.3	22	2.55	1.03	1.07	15	4.00	0.89	0.80	1.45	0.327	0.786	2.114	<0.0001*	36%
2.1	22	3.09	1.12	1.26	16	4.19	0.95	0.90	1.10	0.346	0.399	1.801	0.0015*	26%
2.2	22	3.36	1.07	1.14	15	4.20	0.75	0.56	0.84	0.320	0.191	1.489	0.0063*	20%
2.3	22	2.50	1.20	1.43	16	3.88	0.93	0.86	1.38	0.360	0.650	2.110	0.0002*	36%
2.4	22	2.91	1.16	1.36	15	3.80	0.91	0.83	0.89	0.357	0.165	1.615	0.0088*	23%
3.1	22	2.95	1.19	1.41	16	4.31	0.85	0.71	1.36	0.349	0.653	2.067	0.0002*	32%
3.2	22	2.68	1.26	1.58	15	4.40	0.71	0.51	1.72	0.360	0.990	2.450	<0.0001*	39%
3.3	22	2.64	1.23	1.50	16	4.25	0.83	0.69	1.61	0.355	0.889	2.331	<0.0001*	38%
4.1	22	3.00	1.28	1.64	16	4.06	1.14	1.31	1.06	0.402	0.245	1.875	0.0061*	26%
4.2	22	2.14	1.14	1.30	16	3.50	1.00	1.00	1.36	0.356	0.638	2.082	0.0003*	39%
4.3	22	2.55	0.94	0.88	16	3.81	1.18	1.40	1.26	0.344	0.563	1.958	0.0004*	33%
4.4	22	2.18	1.11	1.24	16	3.63	1.17	1.36	1.45	0.373	0.693	2.207	0.0002*	40%
5.1	22	3.36	1.11	1.23	16	3.88	0.86	0.73	0.52	0.333	-0.155	1.195	0.0635	13%
5.2	22	3.23	1.24	1.54	16	3.63	1.05	1.11	0.40	0.383	-0.376	1.176	0.1514	11%
5.3	22	3.36	1.23	1.50	16	3.94	0.66	0.43	0.58	0.339	-0.107	1.267	0.0478*	15%
6.1	22	3.00	1.00	1.00	16	3.69	1.10	1.21	0.69	0.343	-0.005	1.375	0.0258*	19%
6.2	22	3.23	1.08	1.18	16	3.81	0.95	0.90	0.58	0.338	-0.105	1.265	0.0472*	15%
6.3	22	2.68	1.18	1.40	16	3.56	1.00	1.00	0.88	0.364	0.141	1.619	0.0104*	25%
7.1	22	3.50	1.03	1.07	16	4.38	0.60	0.36	0.88	0.288	0.296	1.464	0.0021*	20%
7.2	22	2.91	1.12	1.26	16	4.06	0.90	0.81	1.15	0.340	0.461	1.839	0.0009*	28%
7.3	22	3.82	0.83	0.69	16	4.44	0.70	0.50	0.62	0.256	0.101	1.139	0.0103*	14%
7.4	22	3.64	0.93	0.87	16	4.25	0.66	0.44	0.61	0.272	0.058	1.162	0.0156*	14%
8.1	22	3.91	0.79	0.63	16	4.44	0.79	0.62	0.53	0.260	0.004	1.056	0.0243*	12%
8.2	22	3.32	0.92	0.85	16	4.44	0.86	0.75	1.12	0.294	0.523	1.717	0.0003*	25%
8.3	22	3.45	1.03	1.07	16	4.25	0.83	0.69	0.80	0.313	1.658	1.434	0.0074*	19%
9.1	22	2.23	1.04	1.08	16	3.56	1.17	1.37	1.33	0.360	0.600	2.060	0.0004*	37%
9.2	22	3.14	1.14	1.30	16	4.00	0.94	0.88	0.86	0.349	0.153	1.567	0.0093*	22%
9.3	22	2.95	0.93	0.86	16	3.94	0.66	0.43	0.99	0.272	0.438	1.542	0.0004*	25%
9.4	22	3.14	1.18	1.39	16	4.00	0.87	0.75	0.86	0.349	0.152	1.568	0.0093*	22%
9.5	22	3.36	1.07	1.14	16	4.00	0.87	0.75	0.64	0.326	-0.021	1.301	0.0286*	16%
9.6	22	4.00	1.00	1.00	16	4.44	0.61	0.37	0.44	0.282	-0.133	1.013	0.0639	10%
9.7	22	3.91	0.90	0.81	16	4.63	0.60	0.36	0.72	0.259	0.194	1.246	0.0043*	16%
9.8	22	3.68	0.97	0.94	16	4.44	0.79	0.62	0.76	0.296	0.161	1.359	0.0072*	17%

*Indicates a significant *p*-value of < 0.05