

## Health Promotion Research Methods: Preparing Students to Publish

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### Abstract

Since few Master's level students publish papers, we specifically designed our course in Health Promotion Research to facilitate the process. Students learned about research design and theory in the first half of the course and prepared a paper on archival data for journal submission in the second half. The content and approach for the 16 class sessions varied in approach and included lectures, discussion and homework assignments. Students worked on papers in 2 groups of three and had a chance to meet with a journal editor to discuss the publishing process along the way. Students gave a power point presentation of their findings at the end of the semester along with submitting their finished paper. Overall, students reported learning a lot in the class and they appreciated the chance to publish a paper. Suggestions for improvements included incorporating the paper topics more into the first half of the course.

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### Background

While most graduate programs require a course on research methods, not all offer students the chance to publish in peer-reviewed journals, especially at the Master's level. For example, a survey at the University of Colorado at Boulder found that only 20% of Master's level students had the opportunity to publish as a co-author in refereed journals as compared to 44% of Doctoral level students (2007). Additionally, 15% of Master's students reported publishing as a sole or first author in refereed journals as compared to 37% of Doctoral students. Demographic comparisons at the Doctoral level indicated that international students, males, and non-minority students published more frequently than their counterparts (Price & Price, 2006).

Beginning with the spring 2007 semester, University of Hawaii at Manoa MPH students specializing in Social and Behavioral Health Sciences were required to take PH 702 – Health Promotion Research. We decided to take a novel approach with the course and not only teach students how to do research, but give them a chance to develop a peer-reviewed publication from archival data. As listed in the official course catalog the focus of the course is, "...on

research methods commonly used in health promotion. Topics will include randomized trials, quasi-experimental design, sampling, measurement, and correlational studies. Lab work will focus on the use of SPSS to analyze data for applied research problems."

Using this as the basis for the course design, we adapted the 3-credit course to our specifications by dividing the course into two parts. For Part 1, we covered research design and theory in the behavioral health sciences and for Part 2, we had the students directly apply their research knowledge by preparing a paper to submit to a peer-reviewed journal.

The class was formatted to address specific objectives and develop competencies specific to the MPH program, and the course was designed to slightly overlap topics of other courses in the program with the purpose of augmenting the information previously learned. For Part 1, objectives included learning the key terms and concepts of health promotion research design and methodology and the application of those concepts to the construction and criticism of research designs through critiques of peer-reviewed scientific journal articles. After this

section of the class, students were expected to be able to read, understand, and summarize health research publications and identify each study's purpose, design, methods or procedure, results, and major strengths and weaknesses. Students were also required complete the computer-based 'Protecting Human Subjects' training offered through the National Institutes of Health (National Institutes of Health, 2007). For Part 2, focus was on direct application of knowledge gained in Part 1 through preparation of a paper following these steps: (1) selecting a health-related topic and generating research questions and hypotheses from an archival dataset; (2) obtaining IRB approval for the study; (3) using SPSS to analyze the results; (4) writing a research report in the format of a publishable journal article; and (5) presenting the results. The course syllabus can be found [online](#).

### **Class Structure and Content**

At the initial class meeting, students were given an introduction to the course and syllabus and they were asked to fill out a questionnaire to assess their knowledge of the topics to be covered in the course (e.g., major pros and cons of qualitative research; threats to internal validity; differences between pre-experimental, experimental, and quasi-experimental studies; study consent form content). While many students had heard of the topic areas to be covered, most did not have the necessary level of understanding that would be provided by the course. Students appeared to be interested in the opportunity to publish as well as learn.

Class 2: Students received an introduction to research, experimental design and theory as well as a brief review of program evaluation (another course required by the program). Students learned how health promotion must be grounded in research and the difference between correlation and causation. We also reviewed the scientific method, logic reasoning, experimental vocabulary, and the basis of scientific theory. The main goals of this session were to provide an overview of the logic and reasoning that lead to research studies and for students to be able to clearly distinguish between correlation and causation.

In class 3, the differences and similarities between quantitative and qualitative research were addressed. Qualitative research was then covered in more detail, and students were assigned two qualitative articles to review for the next class. Homework questions included, "What was the rationale for (or importance of) the study? How were the data analyzed?". Some time was available at the end for students to work on their homework assignment together, although each student was required to type and hand in their own assignment. Students were also given a brief overview of narrative review and meta-analysis studies during this class. The goals for this lecture were to give students a more in-depth look at qualitative studies so that they could analyze the work done by others and appropriately decide to use qualitative or quantitative methods.

During class 4, validity issues were covered. This included in-depth examinations of internal validity, construct validity, statistical conclusion validity, and external validity. This lecture was designed so that students could conduct critical analysis of research papers to identify appropriate threats to validity. Students were assigned two research studies and had to address validity threats for each.

Class 5 covered experimental designs, addressing the strengths and weaknesses of each. Students learned how to visually draw designs using design elements. Randomization to conditions was covered in detail. Students were assigned homework 3, which included an analysis of two research studies where they had to answer questions such as "If the design is one described in class, tell which design it is, or which design it is closest to" or "What were some of the reasons for attrition in each group?"

The following week, during class 6, quasi-experimental and pre-experimental designs were covered. Students learned how to draw out each design and discussed ways to strengthen each one. Case-control studies and causal inference were also addressed. At the end of this class, students chose one of four research studies to review for next class and had to answer questions such as, "What was the dependent

variable? Describe an example of how history could be a possible threat to internal validity in this design.”

Class 7 was the beginning of the writing part of the course, and students were introduced to the archival database that they would use to write their papers. After a short review of the methodology used to collect the cross-sectional survey data, students were able to peruse the code book to familiarize themselves with the available variables. A review lecture was given covering research questions, variables, hypotheses, and sampling strategies. By the end of class, students were asked to identify variables of interest to them and groups were formed based on shared interests. The available data set included a large number of health behavior variables as well as socio-demographic data. The students decided they wanted to focus on the topics ‘stress’ and ‘food consumed outside of the home’. Student groups developed basic research questions which were e-mailed to the guest lecture for the next class.

A research librarian was the guest lecturer for class 8, covering literature research and management. This class was held in the department’s computer lab and it was open to any interested students, faculty or staff. Topics covered included conducting literature searches and managing references with Endnote® ([online](#)). During the class, students had a chance to practice search strategies using the keywords they identified for their respective research questions. After this class, student groups were expected to conduct a literature review for the introduction section of their papers. A draft of the literature review was due five weeks later.

The compliance officer of the University of Hawaii Committee on Human Studies was the guest lecturer for class 9. At that time, all students had already completed the on-line National Institutes of Health human subjects training (National Institutes of Health, 2007). The content of class 9 addressed general aspects of human research subject protection as well as general and local procedures for IRB review. At the completion of the workshop, students were awarded a certificate confirming their

participation in the University of Hawaii’s workshop “The protection of human research subjects for research investigators”.

To ensure that students were on the right track for their papers, during class 10 we reviewed rough drafts of literature reviews and spent time refining research questions and hypotheses while looking at the database. When the syllabus was initially developed, we considered having students develop a questionnaire and collect their own data. That idea was dropped, because of concern about the publishable quality of the data collected with minimal funding in a single semester. Thus, we decided to work specifically on the group papers during this session instead of focusing on measurement development and selection.

During class 11, a writing workshop was facilitated by the Editor of the *Californian Journal of Health Promotion*. The lecture covered basic strategies of writing a scientific paper as well as practical exercises regarding the sections of a data-based publication. Additionally, students were introduced to the details of the manuscript submission and review process. Students were given a practical examination at the end of class for completion within three weeks. The exam was designed to test the students’ grasp of both quantitative and qualitative research designs. In the first part of the exam, students were asked to design a quantitative study on a health problem of interest to them. Students had to develop a rationale for their study using at least three peer-reviewed references and then address areas discussed in the first part of class (e.g., hypothesis, population and sample selection, design, ethnics, validity threats). For the second part of the exam, students were asked to use the same research question to develop a quantitative study.

During class 12, a review of the American Psychological Association’s publication guidelines was given along with a lecture on the process of statistical method selection. A review of students’ papers was conducted in groups ensuring that students were covering all relevant topics in their introduction sections and that they

had the necessary information to start writing their method sections.

Using SPSS was the topic for classes 13 and 14. Students received a review of the basic functions of SPSS including analyses that were planned to use for their papers. Students continued to write the sections of the paper during these class sessions as well as outside of class. By class session 15, students had the chance to peer review the other group's paper based on standard peer review guidelines. Class 15 was spent finalizing the papers and reviewing the MPH competencies as listed on the syllabus. Students were also given guidelines for the oral presentations of the papers for the next class session.

For the last class (16), students gave 15 minute power point presentations as a group following standardized guidelines. Students were encouraged to present as if speaking at a conference, including choosing an appropriate outfit and following conference standards. After the presentation, students were evaluated by both instructors as well as the three students in the other group and received specific feedback on presentation contents and style. After discussing final questions and editing the manuscripts, both papers were submitted to CJHP. Finally, the students gave feedback on strengths and weaknesses of the course and concluded the course with a standardized evaluation.

### **Overall Experience, Strengths and Limitations**

For a first attempt, this class can be considered very successful. Almost all the planned competencies were addressed during the course. Students were very active and invested a lot of time outside of the class into the final publication project because they perceived it as a meaningful and challenging project. We felt that teaching the class was rewarding because students were very engaged and also challenged us to become involved in the process.

Overall, the students' comments very well matched our perceptions. The course required commitment not only from the students but also

from us as instructors, especially during the writing process where short-term feedback and comments were essential to support students in their learning process. One challenge was guiding the students through the writing process and improve their skills, and at the same time letting the students write "their" paper without interfering too much or imposing too many of our own ideas and experiences.

### **Strengths**

At the end of the course, students pointed out a number of strengths and positive aspects of this class, including:

- "... I was excited that we were able to publish an article (hopefully)"
- "The class is more applied than the other classes."
- "From this class and Needs Assessment and Program Evaluation I think I will retain the most because they were really applied."
- "I think it was surprising that we all took statistics but when it was time to apply it we had no idea.... I think we learned a lot from actually applying it."
- "...liked the high expectations, this class definitely had higher standards than other classes had, I enjoyed that."
- "It prepared us for professional roles, professional life after graduate school in that we were able to write a publishable paper and make a formal presentation."
- "It feels like a nice wrap up and integrates things we did before." (from a second year student)
- "Enjoyed having it earlier because now I have the ability to write other papers." (from a first year student)
- "...Letting us choose our own topic was good because we were really interested in what we were doing and put more effort into it."
- "...liked the commitment of the professors, we got a lot of feedback..."
- "I like that it was a small class."
- "This is a class you definitely need to have for all students."
- "It was very useful and meaningful."

## **Weaknesses**

Weaknesses or negative aspects from the students' perspective included:

- "... we should have gotten to work with the data earlier."
- "...in the end we were less likely to put all our effort into in because there was so much else going on."
- "I think the group work experience was good but it also added pressure because you had to keep deadlines all the time."
- "I learned a lot from all the activities we did but if they had been tied more into the paper I think it wouldn't have been as overwhelming"
- "Picking a topic at the very beginning would have been better."
- "...it was just a lot of extra time and a lot of extra work."
- "It wouldn't feel like so much work if it were more spread out."
- "...appreciated all the theory but if the lessons would have been better integrated into the writing process it would have been better."
- "...the SPSS session should be earlier in the course..."
- "... the time crunch toward the end of the course was not so good."

## **Lessons Learned and Future Changes**

Overall, the course was a very promising beginning and we plan to offer this course regularly in a modified version. The following points address some of the modifications we would like to incorporate into the course:

1. The course should integrate theoretical aspects and practical aspects better. Therefore, we plan to let students choose a topic of interest early in the course. As a first step, students will do literature searches and collect relevant publications for the introduction sections of their papers. These publications will also serve as examples to introduce the students to the theoretical background of research methods and design. While this is very likely to increase the relevance for the

students and they will work with publications that are of interest to them, this will also require an increased commitment from us as we will also have to work with the publications the students compile rather than with pre-selected material in order to teach the basic concepts.

2. The sequence of the classes will have to be slightly modified, e.g. literature search and statistical analysis (and practical SPSS training) should be addressed earlier in the course. We currently also consider offering an additional 1 credit SPSS course that is coordinated with this class in order to improve the students' practical skills in data analysis. In our experience, these skills need to be addressed. While other courses (e.g., Biostatistics I) have provided a solid foundation for the understanding of statistical procedures, the practical application skills were underdeveloped in many of our students.
3. We will make an effort to connect to community organizations and the Department of Health and offer them to use their existing data sets for secondary data analyses in the context of this class. This could result in a win-win-situation: Community organizations get support in summarizing and potentially publishing their results, and students will run meaningful analyses based on real data and at the same time build relationships within the local Public Health community. The final presentations could then be given in a small symposium to faculty and community members. This would further increase the relevance of the students' work, strengthen community-student-department relationships and provide the students with valuable feedback about their work.
4. The writing process required a lot of time. Our experience shows that it is worth using some of the course time for writing because questions can be addressed immediately and instant feedback

encourages and motivates the students. As a result of the higher than expected time dedicated to writing, we had to drop a lecture on measurement development and selection even though we consider this to be an essential part of a research methods course. A modified course should definitely cover this topic.

5. In the original planning, we had considered conducting a complete study in the course, including creating research questions and hypotheses, selecting and creating assessment instruments, data management & analysis, and writing up the results in the form of a publishable paper. While we piloted this on a very small scale in another course, we decided it would be too much to incorporate all this into this course without compromising the necessary level of detail we were aiming for. The only realistic way to do this in our opinion would be to stretch out this course over two semesters. While we have no short-term plans to put this into practice, we will keep that option open and re-evaluate after we will have offered this course more often.
6. One of the big challenges we see is the time that the instructors are required to dedicate to the course. In this class, two of

us taught a class of six students, and in the majority of all sessions we were both present. Additionally, we both met repeatedly with students outside of class time during the writing process. Our experience with teaching as a team was overall very positive. However, if the class becomes larger in future years, the burden on the instructors will become very high and the course may require additional support through teaching assistants.

### Summary

Overall, we think this course is a valuable experience for faculty as well as for students. We are hopeful that with future modifications it will even more become a course that bridges the sometimes lamented gap between theory and practical application. That way the contents of the course can help prepare students for their future professional roles and not "...go in one ear and out the other." The course format encourages students to create a product (i.e. publishable manuscript) that is perceived as highly relevant, satisfying and "...not just another course paper..." And finally, both faculty and students are grateful that the Californian Journal of Health Promotion specifically encourages student papers and provides potential outlet for the manuscripts of this course as well as a valuable experience for our future colleagues in Public Health.

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