



Applied Learning for Undergraduates: Integrating NCHEC Competencies and CEPH Public Health Domains in a Public Health Practice Course

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Abstract

To meet Council on Education for Public Health (CEPH) accreditation standards for a standalone undergraduate public health program, faculty at the University of North Carolina Wilmington conducted a matrix exercise to assess curricular alignment with the CEPH Domains of Public Health (PHDs) and the National Commission for Health Education Credentialing (NCHEC) competencies. Addressing gaps in the undergraduate public health program identified by the matrix exercise drove development of a new course, *Public Health Practice*. The course was designed to use real world experience to provide students with the tools and skills needed for the practice of public health. Written assignments such as a needs assessment and a logic model were used to simultaneously expose and prepare students to address real-life public health challenges and to introduce students to selected CEPH PHDs and NCHEC competencies. This integration of competencies and domains into a course curriculum may be of benefit to undergraduate public health programs seeking to develop courses with applied learning aligned with CEPH and NCHEC requirements.

Keywords Public health · Public health practice · Accreditation · Applied learning · Professional preparation

Introduction

In 2012, the undergraduate Community Health Education Program at the University of North Carolina at Wilmington made a decision to transition to an undergraduate Public Health program with a concentration in Community Health Education. This decision was made to better align with profession-wide recommendations concerning undergraduate education [1, 2]. Transitioning to Public Health aligned the program to better support the strategic plan established by the newly formed College of Health and Human Services. These changes also met the standards for standalone baccalaureate program accreditation established by the Council on Education for Public Health. As part of this transition, the program conducted a matrix exercise to determine the

extent to which the CEPH Public Health Domains (PHDs) and National Commission for Health Education Credentialing (NCHEC) competencies were covered in the curriculum [3]. The PHDs are curricular standards required by CEPH for standalone undergraduate public health programs [4], and NCHEC competencies are standards established for students enrolled in a health education professional preparation program to become Certified Health Education Specialists [5].

The matrix was displayed on an excel spreadsheet that listed required courses across the top and PHDs and NCHEC competencies down the side. Each cell in the matrix was evaluated to determine the extent to which a particular domain was covered in a specific course. Courses were rated as having *primary coverage*, *secondary coverage* or *no coverage*. Instructors who taught courses with primary coverage had to demonstrate in their syllabi an assessment of the domain or competency through testing or the development of an artifact that addressed and applied the concepts relevant to each domain or competency. In courses with secondary coverage, there had to be evidence in the syllabus that a domain or competency was read about, discussed, or reinforced. No assessment of the domain or competency was

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necessary in a secondary coverage course. If a course did not include any coverage of a given domain or competency then a cell was left blank indicating *no coverage*.

From the matrix exercise results, courses in the program found to contribute little or nothing to the domains or competencies were eliminated from the curriculum. These decisions were made by the faculty as all course content was reviewed. It was also found through review of the completed matrix that some domains and competencies were not well covered in the curriculum. As a result, a new course, *Public Health Practice*, was developed to fill the PHD and NCHEC competency gaps and enhance the professional preparation of undergraduate Public Health students. One faculty member took the lead to develop the new course, but all faculty provided input and reviewed the final syllabus to insure domain and competency coverage. The purpose of this manuscript is to describe the development and implementation of this new course. Throughout, reference will be made to how the course assignments align to NCHEC competencies and PHDs.

Purpose

As one of three 200-level courses required of Public Health majors, the new course was designed with the intent to provide students with exposure to PHD 24: Introduction to assessment concepts and features, PHD 23: Introduction to planning concepts and features, and PHD 25: Introduction to evaluation concepts and features. During course development, each PHD was considered when creating its corresponding artifact assignments: a needs assessment, a logic model, and an evaluation assignment. It is important to note all Public Health students are fully introduced to these domains in this new course, but students who complete a concentration in Community Health Education or Global Health Education will take three additional courses to meet NCHEC competencies. Details about the individual artifact assignments are provided below. In addition, the course

covered PHD 14: Introduction to processes and approaches to identify needs and concerns of populations. The PHDs and NCHEC competencies covered by the course are presented in Table 1.

Methods

Needs Assessment

To address PHD 24: Introduction to assessment concepts and features and PHD 14: Introduction to processes and approaches to identify needs and concerns of populations, students worked in assigned groups to interview a staff member or director of a health-related organization. This assignment also addressed NCHEC competency 1.3: Collect primary data to determine needs [5]. Students were required to research the organization by going to its website and/or other online sources to note details including mission, priority populations served, and services provided. Additionally, through semi-structured interview questions, students determined the strengths and needs of an organization, including its assets, barriers faced by an organization to fulfill its mission, and potential causes of problems. Needs assessment questions were developed by multiple faculty members. Examples included What are the main assets of the organization, that is, what does the organization do well?; Is the organization considering offering new services?; and To what extent is the local community aware of this organization and its services? Students worked in groups to produce a 4–5 page written needs assessment summary that reflected their depth of understanding of the health organization and the quality of information collected in the needs assessment interview. To provide students with a holistic understanding of needs assessment strategies, course lectures introduced students to a variety of needs assessment approaches beyond interviews, including surveys, focus groups, nominal group processes, and community capacity assessments. Beyond the instruction given in lecture, students were asked to view

Table 1 Public health domains (PHDs) and NCHEC competencies covered by assignments in the public health practice course

Student learning outcomes	Assignment
PHD 10: Data usage	NC counties assessment
PHD 12: Evidence-based approaches	Annotated bibliography
PHD 14: Introduction to processes and approaches to identify needs and concerns of populations	Group needs assessment
PHD 23: Introduction to planning concepts and features	Logic model, planning quiz
PHD 24: Introduction to assessment concepts and features	Group needs assessment, NC counties assessment, assessment quiz
PHD 25: Introduction to evaluation concepts and features	Evaluation assignment, evaluation quiz
NCHEC 1.3: Collect primary data to determine needs	Group needs assessment
NCHEC 1.6: Examine factors that enhance or impede the process of health education/promotion	Group needs assessment

a video on focus groups and participate in a model nominal group process exercise in class in which they identified top health concerns of college students on campus. These needs assessment approaches were selected because they align with the needs assessment techniques emphasized by NCHEC [6].

Logic Model

To fulfill PHD 23: Introduction to planning concepts and features, students developed a logic model that mapped a proposed program or intervention. A logic model was defined for students as an illustration that captures a program, initiative, or intervention in response to a situation [7]. This assignment focused on the need(s) of an organization and dovetailed nicely with the needs assessment assignment. Students were provided with a basic template in which they used the results of the needs assessment to determine activities a program would undertake to address those needs (Outputs). From those activities, students also identified resources that go into a program (Inputs), and changes or

benefits that result (Outcomes). Each student then submitted an introductory paragraph describing the needs of the organization to provide background and context for a logic model, the actual logic model, and an explanatory paragraph about the logic model and the purpose of its components. The introductory paragraph was based on the needs assessment assignment and five questions: (1) What is the problem/need? (2) Why is this a problem/need? (3) For whom does this problem/need exist? (4) Who has a stake in the problem/need? (5) What do we know about the problem/need to be resolved? Next, students had to identify what type(s) of intervention they would implement to address the need expressed in the introductory paragraph; they chose from a menu of interventions that included health communication, health education, health policy, environmental change, health-related community service, and community mobilization. The logic model consisted of a minimum of four inputs, two activity outputs and one participation output, two short-term outcomes, two medium-term outcomes, and one long-term outcome. Finally, students had to write an 8–10 sentence paragraph explaining their logic model. An example of a logic model assignment is provided in Fig. 1.

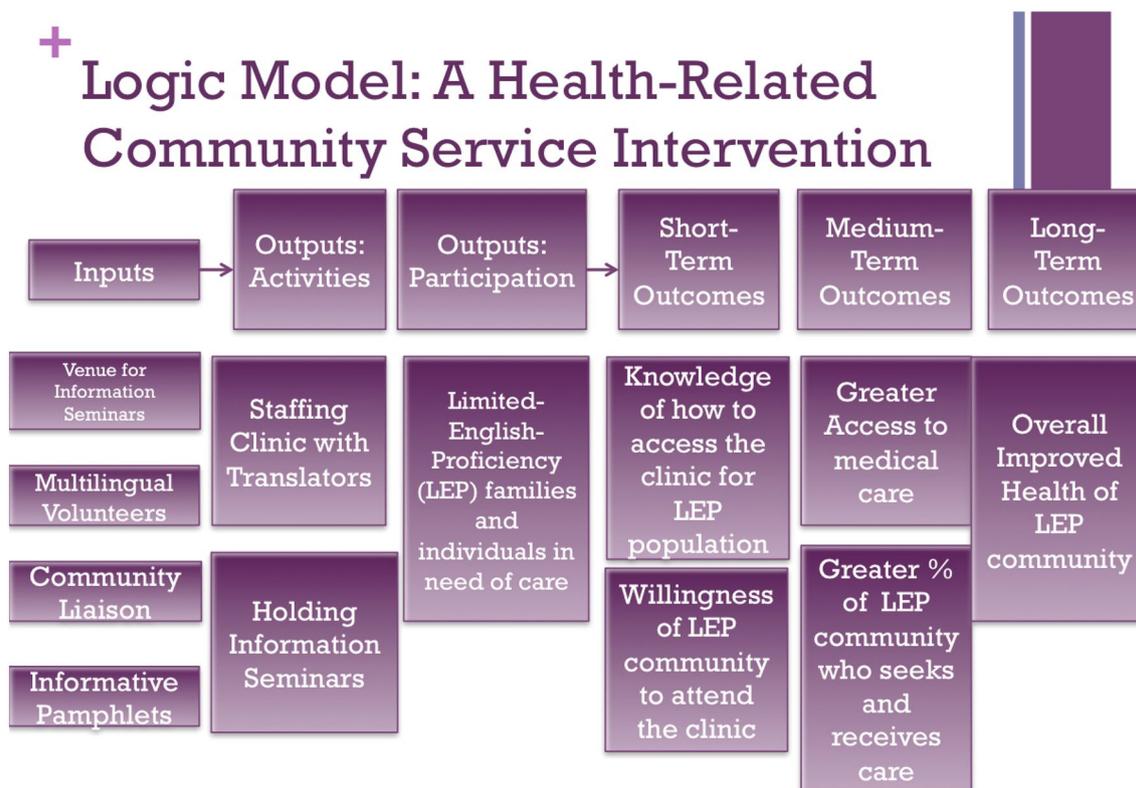


Fig. 1 Student sample logic model

Annotated Bibliography

To fulfill PHD 12: Evidence-based approaches, students read and reviewed peer-reviewed journal articles related to the topic addressed by their logic model. Students developed one paragraph annotated bibliography entries to summarize each article. In a second paragraph, students described how the article related to the inputs, outputs, and/or outcomes of the logic model. Prior to beginning this assignment, students had a session with the College of Health and Human Services librarian to understand how to search for scholarly sources. Students compiled their annotated bibliography entries to produce a list of at least four evidence-based research articles related to their group needs assessment assignment. They were provided with examples of two well written annotated bibliography entries that included proper citations, brief summaries of the two articles corresponding to the citations, and an explanation of how those articles related to a hypothetical component of a logic model. American Psychological Association formatting was required of each entry.

Evaluation Assignment

During course lectures on evaluation, students were introduced to formative versus summative evaluation, a framework for program evaluation from the Centers for Disease Control and Prevention [8], types of objectives [9] (e.g., behavioral objectives, learning objectives, and environmental objectives), and external and internal validity and examples of threats to each. To fulfill PHD 25: Introduction to evaluation concepts and features, students completed an evaluation assignment in which they created a list of objectives for a proposed intervention or program by using their logic models as a starting point. They then specified, for each objective, what needed to be measured and how it was to be measured, or how data were to be collected, to evaluate if the objective had been met.

Multi-county Assessment

In another course assignment, students completed a multi-county assessment to address PHD 10: Data usage. In this assignment, students used data from the North Carolina Justice Center website to identify and compare key statistics relating to economics, health, cost of living, and other indicators for counties in the state. For example, a student might have chosen to compare unemployment rates and life expectancy rates (broken down by race/ethnicity) across

three counties in North Carolina. Students answered questions about how the data of economics and health compared between the county in which the university was located and the State of North Carolina overall, as well as what was surprising about the data collected from each county. This activity was relevant to students because many of them were State residents who chose their home county. Therefore, they saw how public health and other factors compared between counties, applying the data usage aspect of the curriculum to social determinants of health.

Outcomes

Student Evaluations of Course

Students were receptive to the course as determined by positive course evaluations and student comments. Questions in student evaluations included assessments of how well the course met target objectives, such as “learning to *apply* course material” and “developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course” (Table 2). The overall summary course rating obtained through Individual Development & Educational Assessment (IDEA) student evaluations [10] was 3.8 of 5 points for Fall 2015 and 4.4 of 5 points for Spring 2016, the first academic year the course was offered (Table 2). As a result of this course, students were introduced to important public health and health education-related concepts in the context of real-life learning. Further, the course addressed PHD and NCHEC competencies needed in the curriculum.

Lessons Learned

Opportunities for Improvement, Future Directions, and Conclusions

After a two-semester pilot of the course, the following changes/improvements were considered:

1. Key informant interviews conducted by students who assessed the needs of organizations revealed large and complex needs. For example, after interviewing a physician assistant who also acted as a primary care provider at the Veterans Administration, students noted the long wait times of veterans seeking medical care. Solutions to these systemic barriers were multi-faceted, costly, and neither simple nor straightforward. Therefore, students were often challenged when designing programs and interventions because feasibility was an important con-

Table 2 IDEA student evaluation ratings of progress on relevant objectives for the public health practice course in the 2015–2016 academic year

IDEA objectives	Fall 2015 (<i>n</i> = 22/31 students who responded, response rate = 70.97%)	Spring 2016 (<i>n</i> = 24/27 students who responded, response rate = 88.89%)
Gaining factual knowledge (terminology, classifications, methods, trends) (Fall 2015)	3.8	N/A
Learning fundamental principles, generalizations, or theories (Fall 2015)	3.9	4.3
Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories) (Spring 2016)	N/A	4.3
Learning to <i>apply</i> course material (to improve thinking, problem solving, and decisions) (Fall 2015 and Spring 2016)	3.9	4.4
Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course (Fall 2015 and Spring 2016)	3.7	4.5
Acquiring skills in working with others as a member of a team (Fall 2015 and Spring 2016)	3.8	4.5
Learning to apply knowledge and skills to benefit others or serve the public good (Spring 2016 only)		4.3

All scores are out of a maximum of 5 points, with 5 the most positive response

sideration. This provided a future opportunity to teach students about upstream interventions such as political engagement and advocacy to affect policy, rules, regulations and laws. Johnson, Glascoff, Lovelace, Bibeau, and Tyler [11] found these competencies were used least and understood least by students. This topic was one that should be addressed in future iterations of the course, possibly by revising the needs assessment assignment to promote sustainability.

- Originally, the multi-county assessment assignment of North Carolina counties was a standalone assignment for students to address PHD 10: “Data usage.” A change was made to integrate it with other assignments and foster cohesion between class assignments. Now, students choose one county they studied in the multi-county assessment assignment, and then select an organization in that county for their subsequent needs assessment assignment. The organization chosen is typically one of interest to the students because they have worked with an organization or have some familiarity with the organization itself or with someone who works there. In this way, students are introduced to several counties’ health and economic indicators but focus on one county to study a health organization’s needs.

In sum, the Public Health Practice course was designed to address gaps in PHDs and NCHEC competencies in the new Public Health curriculum. Artifact assignments for this course were created to introduce students to applied learning. When the Public Health program went through the CEPH accreditation process for standalone undergraduate programs, this course played an important role in the

curriculum and demonstrated the program’s commitment to academic integrity and rigor. The program was able to clearly demonstrate through the completion of artifact assignments in the course that assigned CEPH domains had been covered. Completion of Public Health Studies curriculum ensured the CEPH domains and NCHEC competencies were addressed and applied.

Going forward, the original matrix exercise used to identify program areas in need of improvement will be updated, refined, and adjusted to ensure curricular alignment with CEPH PHDs and NCHEC competencies as the program grows and expands. Any modifications to any course assignments/artifacts will be submitted to program faculty for approval and noted on the matrix to make certain domain and competency coverage are not negatively affected. In turn, adjustments and adaptations may be made to the *Public Health Practice* course so it continues to reflect public health concepts vital to student learning and real-life practice.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest. Research with human subjects was not conducted; therefore, informed consent was not obtained.

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