A proposal for a graduate curriculum integrating theory and practice in public health

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Prior editions of this journal (McLeroy and Steckler, 1993; Green et al., 1994; Schwartz and Capwell, 1995) and other recent publications (Hochbaum and Lorig, 1992; Buchanan, 1994; Kelleher, 1996; McQueen, 1996; Milburn, 1996) have discussed the value of theory and its relation to practice in health education. This discussion inspired us to think about theory (defined broadly as theories of etiology and theories of change), and the ways in which theory and practice can be better integrated in graduate education programs in public health. Traditional programs, which utilize a ‘Theory of the Week’ or cookbook approach, fail to assist students to make the leap from learning theories out of books to application in the field. Neither do they provide opportunities for students and faculty to partner with and provide technical assistance to communities, and state and local agencies (Sorensen and Bialek, 1993).

This article proposes a problem-based curriculum, integrating theory and practice, for two public health graduate settings: public health education or a generalist masters in public health. Based on our systematic reflection about how students can bridge theory and practice in public health settings, we have begun to consider these proposals for the University of New Mexico Program in Public Health.

The current threats to public health from privatization and the lack of policy-maker understanding make it imperative for public health graduate students to apply their learning to support an improved public health infrastructure in the next years. Continual critiques of public health practice have led to publication of specific public health needs and competencies to ensure that students would become effective practitioners and public health leaders (IOM Report, 1988; Roemer, 1988; Shugars et al., 1991; Lawrence et al., 1992; O’Neill, 1993; Sorensen and Bialek, 1993; Maibach et al., 1994; Ratzan et al., 1994; Pew Health Professions Commission, 1995; Capwell, 1997; SOPHE/AAHE Committee on Graduate Standards, 1997; USDHHS, 1997). Accompanying efforts to enhance the links between the education provided in Schools of Public Health, Health Science Centers and communities have been launched by federal health agencies, health professional associations and foundations since the early 1980s. These have included the Centers for Disease Control and Prevention efforts to link health departments and academia (Gemmell, 1995; IOM Report, 1997); community-oriented problem-based learning in medical schools (Kaufman, 1985; Kantrowitz et al., 1987); partnership initiatives between Schools of Public Health, other health professions schools and their communities (Buchanan, 1996; Healton and Novotny, 1997; Seifer and Connors, 1997); and other similar initiatives (Handler et al., 1994; Novotny and Healton, 1995).

While the Council for Education on Public Health accreditation process requires a set of competencies, such as those from the Faculty/Agency Forum, the focus remains classroom based. Many graduate education programs have increased their institutional partnerships with health departments and communities, developing an advisory
board, creating student learning opportunities in real-world settings, and providing technical assistance to communities (as recommended in the Faculty/Agency Forum) (Sorensen and Bialek, 1993). However, the reality of professional health education programs is largely a traditional academic model separating classroom theory from learning in the field. Practice-based frameworks, such as the IOM core functions, used by most Departments of Health across the country in their planning processes, have been largely ignored by graduate training programs in Schools of Public Health. While health education graduate training has historically incorporated community skills and experiential learning into the curriculum (Steckler et al., 1993; Steuart, 1965), designated ‘practicum’ blocks are often divorced from theory-based learning. Some Masters of Public Health (MPH) graduate programs, such as those at Johns Hopkins School of Public Health, have no required practicum.

Current models still reflect little integration across disciplines (Steuart, 1965); teach theory classes from the literature rather than from needs generated in the field; and fail to take advantage of opportunities to generate new theory and knowledge through self-reflection of practitioners (Strauss and Glazer, 1967; Freire, 1970; Chalmers, 1982; Schoen, 1983; Buchanan, 1994; Labonte, 1995). In addition, the enormous pressure to teach essential competencies in a condensed time frame (i.e. 1 year MPH programs) or in part-time programs such as our own, greatly limits the time required for reflection or for generating theory from practice.

The kind of academic education that either ignores practical experiences or separates theory from practice has produced a cadre of health professionals who often have difficulty working within community contexts or who may be competent at using planning frameworks for program development, yet have a difficult time designing interventions informed by theory. It is clear from the discussions published in this journal that many public health educators are still seeking models which facilitate the integration of theory and practice, and which combine classroom learning and field experiences.

While one end of the continuum of an integrated curriculum is a tacked-on practicum (or none at all), we acknowledge that the proposed curriculum is at the other far end of the continuum. Full implementation of our proposal would require a complete curricular reframing. However ambitious, this program is possible in full-time MPH programs, such as the University of North Carolina Department of Health Education where faculty work together to create an interdisciplinary and community-involved curriculum. In our own MPH program in New Mexico, we are struggling with how to implement these ideas, recognizing that conceptualization is easier than putting into practice. In our own program, we have partial theory and practice integration across the curriculum (as described in the case below), in addition to the use of selected problem-based cases to integrate real-world problem-solving and student-directed learning.

It is our proposal that public health and health education students, in a master’s degree curriculum, need to achieve competencies in, and understanding of, the relationships between the following five areas: theory; research methods; program planning, management and evaluation; policy development; and health and disease content areas (see Table I). Similar lists of competencies have been proposed in other publications (Sorensen and Bialek, 1993; Maibach et al., 1994; Ratzan et al., 1994; Steuart 1965). The IOM framework provides a conceptual base of core functions for these different sets of competencies. Our purpose in this proposal is to integrate the gaining of competencies with mechanisms that highlight the relationships among them, since they all use a different language and emphasize different skills and knowledge. For each of these competencies, we agree with our colleagues that there is a need for ‘both a set of knowledge and skills...to fulfill the competency described’ (Sorensen and Bialek, 1993).

The theory competency would be based on learning relevant social-political, cultural, psychological and behavioral theories; their historical
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Table 1. Curriculum competencies

<table>
<thead>
<tr>
<th>Theories of etiology and intervention</th>
<th>Research methods</th>
<th>Program planning, management, evaluation</th>
<th>Policy development</th>
<th>Health and disease content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social-political, cultural, psychological, behavioral theories and their inter-relationship; ecological models; historical development; theory creation</td>
<td>Qualitative and quantitative research design and analytical skills</td>
<td>Strategic planning; logic model; planning models; community organizing; training; evaluation methods; relationships between theory and program development</td>
<td>Systems analysis; agenda setting; political context of change; relationships between multiple levels of change</td>
<td>Epidemiology of health issue; community context; cultural, gender, ethnicity influences; national and international priorities</td>
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development; their application to both understanding the problem and developing the intervention; their relationship to each other across multiple levels of analysis; and their integration with practice principles and experiences in the field (Freudenberg et al., 1995). In addition, we believe students need encouragement to use their field experiences to generate new assumptions and theories about how problems are defined and how interventions work (Labonte, 1995).

The research methods competency would incorporate research design, quantitative and qualitative research methods (e.g. epidemiology and field research), the IOM report’s assessment function, and accompanying biostatistical and qualitative analytic skills for individual, social network, community, organizational and policy levels of analysis.

The program planning, management and evaluation competency would be similar to the assurance function of the IOM report and also incorporates many assessment skills. It would be based on the acquisition and practice of an intervention framework, including processes such as planning, implementation, community organizing, training, monitoring and evaluation, cost analysis, and health program coordination. Effective program planning would encompass theories of the problem, theories of intervention, theories of evaluation, and the relationship between theory, program development and evaluation.

The policy development competency would include systems analysis, political context of change processes, agenda setting and policy formation. It would also undertake an understanding of the relationships among policy, individual behavior and community change.

The health and disease competency would be attained through the study of public health problems within a community context. Such issues of how culture, language, gender, ethnicity, social status, economics, policy, and national and international priorities affect the epidemiology and interpretation of the public health problem would be addressed.

To facilitate the discussion of an integrated curriculum, we present an example of an amalgamation of public health and medical student community-oriented primary care projects that actually took place at the University of New Mexico. The representative project outlined here (see Boxes 1–5) describes a several-year sequence of student public health projects focused on diabetes in a rural multi-ethnic community served by a health clinic.

Year 1

Within our proposed 2 year full-time curriculum (see Figure 1), incoming students would be divided into working groups of three to five, with a range of disciplinary interests within the working group. Each working group would be asked to choose a health problem that they are interested in or to choose a community accessible to the University. For those who choose a health problem, the
Fig. 1. Years 1 and 2.
expectation would be to focus on a community where this problem is significant. For those who choose a community, the expectation is that a health problem will emerge out of the group’s involvement with the community.

**Box 1: Background**

The community site of the Checkerboard Area Health System (CAHS) is situated 90 min northwest of the University in northern New Mexico. The CAHS has a central clinic in the small town of Cuba (population 760) with four satellites covering a 3600 square mile catchment area. The preceptor is an MPH-trained family practice physician who is the medical director of CAHS. Community representation for student projects is sought through clinic staff, which includes community lay health workers and translators.

Student involvement in communities raises several ethical dilemmas: the short duration of student participation; the fact that they are learners; the community’s resentment of university researchers who take data out of communities; and the difficulty of establishing a genuine participatory relationship. However, it is our experience that communities need and desire technical assistance on an ongoing basis, especially when there are increasing opportunities for communities to raise funds for their own programs. The proposed curriculum faces these dilemmas through creating long-term relationships with several communities where student projects can build on each other at the same time as providing services. In addition, involvement with community members offers students the opportunity to reflect on the role of health professionals in relation to issues of community self-determination, power and the possibilities of true collaborative participation.

Health problems and the community would be the focus of study for the working group and would be the basis for application of content, theory, program planning and evaluation, and research methods over the next 2 years. Each working group, which would include community member participation, would identify a public health preceptor from that community involved with the relevant health problem and population. During the 2 years, working groups would present their work, in its various stages, to the community and the public health program, honing their skills in presentation as well as providing examples for other student working groups.

The first activities of each working group would be assessment: defining the problem and understanding the community context of the problem. This would involve research methods and theory related to the specific health area. Students would apply epidemiologic, community, socio-cultural and behavioral principles to the study of the problem,

**Box 2: Characterization of community and health issues**

The first student projects characterized the demographics, economics and health statistics of the community. Briefly, the CAHS serves the small northern New Mexican town of Cuba, and the surrounding Navajo, Pueblo, private and federal lands. The population of 2500 served by the clinic is 58% Native American, 25% Hispanic, 6% Anglo and 11% other, with per capita incomes that range from $3341 to $4756 per year. Fifty percent of the clinic population are without telephones, 33% lack complete plumbing and the majority lack electricity. Ninety percent of the Navajo population speaks Navajo in the home. Common health problems are: diarrhea, impetigo and bacterial problems from limited sanitation and hygiene, and alcohol abuse, resulting in an excess (twice the state average) of alcohol-related fatalities. New Mexico ranks fourth in the US in overall mortality from non-insulin-dependent diabetes mellitus (NIDDM) among Hispanic and Native American populations and exceeds the national average by as much as 112–500%. As a result, there is significant morbidity and mortality resulting from adult-onset diabetes, including heart disease, cerebral–vascular disease, pneumonia and influenza (Garrity, 1992; Andazola, 1995).
through review of published and unpublished literature and discussion with experts and community members. Epidemiological knowledge would include information about the populations at risk, incidence and prevalence, definitions of transmission and exposure, and health system access and utilization, if appropriate. Community information would include a theoretical framework about contextual issues contributing to the problem (i.e., social–environmental conditions, poverty, racial, ethnic and gender issues, stigma), and an understanding of cultural knowledge and beliefs that influence the health problem and abilities of the community to address the health problem. Behavioral principles would include an understanding of antecedents and consequences of behavior, and the relationships between knowledge and other psychological constructs that lead to behavior change.

The early assessment and characterization of the community should lead to the collection of original data: community diagnosis, cultural and behavioral and the eventual development of a theory of the problem. If conducted as a collaborative process, community members would work with students to decide what kind of information is necessary to determine strategies and interventions. This step would include the teaching of grounded theory methodology, qualitative and quantitative methods for data collection, as well as research-related issues of ethics, confidentiality and informed consent. A community diagnosis with formative data would include the historical framework; the political, social and economic resources; strategic elements such as access to and use of communication channels; role models and spokespersons for the community; decision makers for the potential target audiences; gatekeepers and social networks; and language and visual images used by and with community members. Cultural information would include the emic perspective of the problems, and the existing ethnomedical and explanatory models developed to cope with the problems (Gittelsohn et al., 1996). Behavioral information would include actual behaviors required for the health change, constraints (structural as well as individual), community attitudes and beliefs, interpersonal relationships and social networks which might support or resist behavior change, and motivators for change. During this period of data collection, students would also need to be engaged in learning about group processes, such as group facilitation, team work and coalition building, in order to facilitate a genuine partnering with the community.

At the University of New Mexico, for example, health students identified with community members and clinic staff the problems related to effective diabetes care. They first conducted a literature search on physical and mental health issues related to diabetes, cultural health beliefs and conditions among Native American and Hispanic populations, and examined local census data.

**Box 3: Original data collection and development of theory of the problem**

Because of the prevalence of diabetes in this area and the belief of the clinic staff that they were providing inadequate diabetes care for their patients, the student projects focused on diabetes for the next 2 years. The first project was a chart review of 44 type II diabetic subjects being treated with medication, which found that less than 5% of the patients had adequate glycemic control and were obese. The student’s self-reflection focused on the limitations of pharmacologic treatment in favor of the importance of counseling and other behavioral controls, such as weight loss and exercise (Wensink, 1995). The two following student projects included interviews with community members and clinic staff about cultural beliefs and language barriers among Navajos related to diabetes as well as organizational barriers to effective care (Knupp-Peterson and Thompson, 1995; Shaw, 1995). In combination with the general characterization of the community (with its barriers to health seeking behavior created by large distances and lack of transportation and telephones), the diabetes projects created an ecologic framework of a theory of the problem.
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After the data collection, each working group of students would be required to make two presentations: one to their fellow students and one to the larger group of community members. Their presentation would focus on a conceptual framework of the problem at a macro level and summarize the data for community members in order for the community entity to begin to prioritize what interventions should be targeted. Included in this presentation would be an assessment of the potential levels of intervention: behaviors, knowledge, attitudes, interpersonal social network issues, public policy, community and other structural (organizational) issues, and suggestions for how to work with community members.

In the University of New Mexico public health program, we have created a communications matrix that laces communication skills throughout the curriculum. Students and faculty are provided with training on effective presentation skills, using graphics computer programs and group dynamics. Student presentations are expected at different intervals during their training.

The analysis and interpretation of this information, together with the definition of the problem, would lead to some decisions about interventions and which level to target within an ecological model. On-going instruction in biostatistical methods and computer analysis would be integrated so that students could make sense of the data that had been collected.

The next step would be to examine the theoretical literature to determine what existing theories would explain the community or behavioral determinants, and which theories would suggest strategies for approaching the problem(s). At this point, students would be required to gain in-depth knowledge of the available and applicable theories. Each group would be required to make a comprehensive presentation on several theories with justification for their selection and the criteria used to integrate behavioral and community change theories as well as those which address factors at different ecological levels of analysis in order to address the multiple dimensions of public health problems.

Next would be the step of identifying which program strategies and theoretical bases would successfully or unsuccessfully engage a community in behavior or community changes. Depending on the health problem, little information on prevention strategies may exist in the peer-reviewed literature. This step may also require in-person or telephone interviews with program directors and study designers to learn about their work, as well as review of the unpublished ‘gray’ literature, such as project documents, implementation plans or evaluation reports. Students would be required to present their findings so that intervention models, with their strengths and weaknesses, could be compared.

**Box 4: Planning a health education intervention for diabetes control**

The next student project examined the behavior change literature on weight loss programs in Navajo and Zuni Indians and made recommendations for implementing diabetes patient education in Cuba. The proposal supported the use of Navajo clinic aides as the educational channel and proposed seven different strategies for the intervention (Marder, 1996).

All of the steps above would reasonably be included in the first year of study. The summer would be used for program planning; students would produce a short plan, including a problem rationale, intervention strategies, implementation ideas, monitoring and evaluation plans, and the budget.

**Year 2**

The second year would review program planning, and concentrate on program implementation, evaluation and policy development. The year would begin with the review of the program plans and budgets, and the allocation of funds to support modest proposals. Since the students would be working on actual problems within their communities, it would be ideal to have previously attracted training grants or small grant funding to enable the students to implement and evaluate their strat-
egies in the communities. Students would be asked to identify local resources to build an intervention based on community strengths and potential for sustainability. Financial resources may be available as well from local and state health departments.

Students would, together with community members, undertake an intervention. This might include a wide array of options: the production, pre-testing and dissemination of health education materials; training of health personnel, developing neighborhood organizing strategies, implementation of a theoretically sound behavior change program at the local senior center or working with the school board to create policy changes for new school health centers.

Quasi-experimental evaluation methods and designs would be taught, and students would select and implement an appropriate evaluation strategy, together with community members. Presentations would encourage critical response to these elements, with opportunities to modify and restructure evaluation designs as required. Monitoring of program implementation through process evaluation would encourage recommendations for strengthening or revising the program, should that be necessary (Helitzer et al., 1999).

Box 5: Intervention

One of the student interventions was a curricular strategy for clinic aides that included skills and knowledge related to diabetes care. The training workshop on the curriculum was evaluated for its ability to provide clinic aides with self-confidence to teach their patients about diabetes control. The evaluation showed that the organizational barriers to improving diabetes care included discomfort on the part of clinic aides in providing education because of their concern about their level of knowledge about diabetes (Broxterman and Wagner, 1996). Future student projects will address the lack of comfort and other identified individual and organizational barriers to promoting diabetes prevention and improved disease management.

Collection and analysis of evaluation data would comprise the final stage of the student learning process. During this phase, analysis and interpretation skills would be honed. Students would be encouraged to re-examine epidemiological principles to determine whether changes in health outcomes (intermediate or long term) could be measured. Interpretation of results could lead to recommendations for modifications or additions in theory, or in lessons learned about intervention design. Initial results would also be used as the basis for recommendations about future intervention design and continuity of the program on which the evaluation is based.

The conceptual whole

While this may seem like an ambitious health education or generalist public health masters program, we believe that it makes sense for teachers, students and the community. It is difficult to comprehend principles and methods of biostatistics, epidemiology, anthropology, psychology, and behavioral and social science, community processes, policy analysis, evaluation design and data collection in the abstract; the problem-oriented approach presented here would give students real opportunities to apply the theories and methods as they learn them.

At the far end of the continuum, this curriculum would be best implemented with full-time students over a 2 year period. For each of the five steps each year, they would be enrolled in 2 month modules which would have beginning, intermediate and advanced iterations over the course of the 2 years. In addition, students could take other electives depending on interests or their chosen problem.

In the middle of the continuum, there are potentially many options to better integrate theory and practice along the ideas presented in this paper. In many graduate programs, practicum experiences are often separate activities located between the first and second years. Preceding and later course work, however, could be designed to address the problem(s) the students would focus on during their practicum experience.
Another option is for students to work in their teams for a several half-days a week throughout their 2 years, enabling them to develop the integration of community field experience with their classes. Workshops or seminars interspersed throughout the 2 year experience can provide additional training when needed, such as a conflict management workshop in the first year; further opportunities for integration of theory and practice; and the structured time for student presentations.

Because it is a part-time program, the University of New Mexico Program in Public Health has had to adopt modifications of several integrative ideas. Students attend a year-long ‘theory/practice’ seminar based on the three core functions of public health. Students learn the theories of assessment, while conducting a community diagnosis; they learn about policy, while following policies at the state legislature; and they learn about assurance, through their proposal for their practicum experience. Their practicum must provide in-depth practical experience on one of the core functions.

With any of the curriculum options, each group of students would only focus intensively on one health problem in one community setting. However, over the 2 years of presentations they would be exposed to a range of health problems and populations, and to the relevant theories, methods and intervention designs for those problems. We propose this as a grounded approach, rather than one that expects students to inhale, if you will, a breadth of information on a multitude of apparently unrelated topics and expecting them to sort out the details after they have reached a hyperventilated state of confusion around the time of graduation. Additionally important, but rarely stated as an academic objective, is the opportunity for students in the program to work with communities to solve their own problems, rather than sit in an academically isolated setting, postulating about theoretical situations and solutions to problems and people with whom they have little contact. Not only will students’ educations be enhanced, but the interventions that evolve out of this exercise have the potential of being sustained by and for the community—the most important benefit of learning: actually making a difference.

Note

1. The University of North Carolina Department of Health Education and Health Behavior has adopted this framework in their year-long requirement for small groups of students to conduct a community diagnosis. Individual students are then urged to continue to work with the same community in their subsequent intervention projects.

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