On Academics

INCORPORATING GLOBAL HEALTH COMPETENCIES INTO THE PUBLIC HEALTH CURRICULUM

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The pace of globalization and the resultant profound impacts on population health in all parts of the world demand that greater attention be paid to global perspectives in the training of public health professionals.[1] In efforts to expose master's of public health (MPH) students to global health perspectives, schools of public health have offered elective overview courses in global health and/or sought to infuse global content across the public health curriculum by globalizing the curriculum.[2] While overview courses may be criticized for lacking cohesion and failing to provide opportunities for the development of higher-level competencies, globalizing the curriculum is, we believe, almost always an incremental process, as faculty trained in traditional public health disciplines currently often lack global perspective, expertise, and experience.

To overcome these challenges, Emory University's Rollins School of Public Health (RSPH) added a required core course in global health (called "Critical Issues in Global Health" or GH500) to the traditional requirements of training for an MPH starting in the 2011–2012 academic year. Taught by faculty in the Global Health department, the course is required for all students who are not in the Global Health department. The course is competency-driven, interdisciplinary, and case-based, and it incorporates new interactive technologies. Its primary objective is to enable students enrolled in the MPH program in the departments of Behavioral Science and Health Education, Biostatistics, Environmental Health, Epidemiology, and Health Policy and Management to apply principles from these core public health disciplines to authentic global health challenges using a team-based, problem-solving approach.

GLOBAL HEALTH PEDAGOGY

Global health presents specific challenges for curricular development. It is a dynamic and emerging field characterized by interdisciplinarity that is better conceptualized as an approach than as a discipline. Recently, there have been valuable, though not uncontentious, efforts to develop a commonly accepted definition of global health.[3–5] Global health's transnational, interdisciplinary, and collaborative dimensions, and its integration of population-level prevention with clinical care, are largely uncontroversial. There is, however, disagreement about the extent to which these characteristics distinguish it from public health, or from the modern public health that we aspire to see. Global health competencies have recently been proposed to guide instruction.[6] Less attention, however, has been paid to the pedagogical approaches best suited to helping students develop these competencies.

The effects of rapid globalization combined with unprecedented investment in research and programmatic practice during the past decade have made for a highly dynamic global health environment. Content delivered via traditional didactic modes of instruction risks being quickly outdated, and future professionals are likely to be in a position to swiftly access the up-to-date data they require online. A case-based approach has the advantage of allowing students to grasp both the systems-level thinking that is central to understanding complex global health challenges and the respect for contextual specificity that is essential for effective and sustainable solutions. Problem-based learning approaches are particularly well suited to developing a workforce with adaptable critical-thinking and collaborative problem-solving skills[7,8] that will allow them to think on their feet and out of the box in pursuit of

innovations to overcome key obstacles to global health challenges in a complex and rapidly changing world.

The new course drew inspiration from Emory's successful interdisciplinary Global Health Case Competition, which has been held annually since 2009.[9,10] The use of case competitions addressing challenges from the corporate world has been common in business schools, while problem-based learning is a mainstay of clinical education. However, the approach has been much less used in public health instruction. The Emory case competition invites teams comprising students from university-wide disciplines—since 2012, students have come from universities around the world—to competitively seek feasible and sustainable solutions to real-life global health challenges.

"Critical Issues in Global Health" combines interactive lectures, incorporating audience response systems (or "clickers") and multimedia resources with small-group problem-based learning. The lecture component introduces key concepts and scaffolds problem-based learning. Many students are in joint degree programs and may bring clinical, nursing, or other expertise to the classroom. A wide range of nationalities is represented among the student body.

METHODS

Course development

We used a multidisciplinary, dialogue-based approach to develop the new course. An overriding goal was to equip students with critical perspectives and competencies that they would need as public health professionals and global citizens in our increasingly small, interdependent world. We drew course readings from a range of disciplinary perspectives, including history, political science, economics, sociology, and anthropology, in addition to public health and medicine. The course was first developed and pilot-tested in a largely online format, as part of the Rollins distance-learning Career MPH program. Course development grew from dialogue with colleagues working in the Global Health department at Emory and Atlanta-based institutions working in global health.

Competencies

During the past decade, the Association of Schools and Programs of Public Health (ASPPH) has been developing core competency models for a range of public health programs.[11] The MPH competency model, which was finalized in 2006, is organized around the five core disciplines of public health (Biostatistics, Environmental Health Science, Epidemiology, Health Policy and Management, and Social and Behavioral Sciences) and

considers Global Health a specialty track.[12] Starting in 2009, ASPPH collaboratively developed a Global Health Competency Model, designed for master's-level students in Global Health programs, but with relevance to "globalized graduate public health curricula."[6] We drew inspiration from the candidate competencies for the second Delphi round of the ASPPH Global Health Competency Model as we developed the course competencies for GH500 (Figure 1) in spring 2011.

Thematic areas

We identified key themes for the weekly sessions (Figure 2), along with a relevant core competency and learning objectives for each session. Although we wanted the course to be structured around cases, we recognized that prior to engaging with the cases, the students would need grounding in definitions of global health, in a historical contextualization of global health and its missions and motivations, and in the global distribution of morbidity and mortality.

Logistics

This two-credit course meets for two hours a week during a 14-week semester. It is offered several times per year in sections of no more than 72 students who are divided into 12 small groups of six students each. Groups are composed with a view to ensuring that as many RSPH departments as possible are represented in each group. The students are asked to sit throughout the course with their small group so that they can easily engage in both plenary and small-group discussions without loss of class time or momentum. Small-group discussions and exercises are facilitated by teaching assistants, who also take responsibility for certain administrative tasks, such as managing the course's online site.

Figure 1. Core competencies for the Emory University Rollins School of Public Health "Critical Issues in Global Health" course, 2011–2012

Core competencies

- Advocate for the importance of global health.
- Describe historical, economic, political, social, and cultural factors that shape global health challenges.
- Illustrate current and emerging public health priorities for specific regions or nations based on available evidence.
- Compare the strategic role, agendas, and historical contributions of major global health organizations.
- Compare approaches used to address global health issues at global, national, and community levels.
- Integrate the core public health disciplines into team-based problem identification and solution-finding.

Figure 2. Weekly sessions for the Emory University Rollins School of Public Health "Critical Issues in Global Health" course, 2011–2012

Weekly sessions

- What Is Global Health?
- The Past, Present, and Future of Global Health
- The Global Burden of Disease
- Global Health Actors
- Coordination in Global Health
- Global Health and Development
- Intervention Options in Maternal and Child Health
- Priorities, Communities, and Values in Global Health
- Effects of Globalization: Introduction to NCDs
- Tobacco and Other NCD Risk Factors
- Nutrition-Related NCDs: Obesity in Mexico
- Pandemics and Surveillance
- Pandemic Influenza

NCD = non-communicable disease

The cases

The cases, which are detailed in Figure 3, address four key thematic areas in global health: complex humanitarian emergencies, maternal and child health in the context of extreme poverty, non-communicable diseases (NCDs), and pandemics. These thematic areas are not exhaustive and capitalize on the strengths of the faculty and the school.

The individual cases are used to leverage debate on broad, cross-cutting issues. Although the cases are instructive in their own right, they are strategically positioned within the arc of the course structure to advance competencies and scaffold learning: with each successive case, student understanding of cross-cutting issues and potential responses is deepened. For example, among the issues to which students are introduced in the opening sessions are health system challenges in resource-constrained settings. Students apply and deepen their insights on this subject as they tackle the first case that deals with the response to the earthquake in Haiti amid the decimation of an already weak health system, and they consider the roles played by various global health actors and the challenges of coordination among them. In Case 2, students grapple with the challenges of promoting maternal and child health in Malawi, the country with the lowest number of physicians per capita in the world, and address issues concerning task-shifting, community health worker capacity, and community health systems. In Case 3, which addresses NCDs, they consider health system challenges associated with the management of chronic illness, including recordkeeping and access

Figure 3. Global health cases for the Emory University Rollins School of Public Health "Critical Issues in Global Health" course, 2011–2012

Global health cases	Description
Humanitarian emergency: Haiti 2010	This case calls upon students to identify intervention priorities two weeks after the earthquake in Haiti and coordinate among global health actors. Haiti, also known as the "Republic of NGOs," presents opportunities to address questions concerning national sovereignty, weak states, and the impact of geopolitical power dynamics on global health. Students identify fundamental health needs, the roles and responsibilities of different global health actors, and the challenges of coordination and their implications for global health architecture.
Maternal and child health in the context of extreme poverty: Eva	In this case, students rewrite the narrative of a mother living in extreme poverty in rural Malawi. They consider the relationship between macro-level determinants of global health and intervention options, address implementation in the context of weak health systems, consider the value basis of rationales for priority setting, and address practical and ethical issues concerning community capacity, participation, and sustainability.
NCD and the effects of globalization: obesity in Mexico	Students are called upon to consider the communicability of NCDs and their implications for health systems. A case on obesity in Mexico is leveraged to address similarities and differences between tobacco and other modifiable NCD risk factors and efforts to control them (e.g., the relevance of taxation; and the intersections among international frameworks, corporate responsibility, government policy, social norms, and individual behaviors).
Pandemic: a hypothetical global H5N1 outbreak	This case draws inspiration from a tabletop exercise developed by the Centers for Disease Control and Prevention as part of pandemic influenza preparedness efforts. Students are called upon to consider the design of a culturally and contextually appropriate influenza surveillance system in a low-income country, and also to contemplate the U.S. domestic response to a pandemic as it reaches its shores. The case addresses international regulations, coordination and aid, crisis communication, and time-based priority setting in a complex and evolving global pandemic.

NGO = nongovernmental organization

NCD = non-communicable disease

to medication, as well as the potential for multilateral learning around optimal health system design and functioning. They consider interventions that seek to decrease food consumption and relieve the burden of NCDs on the health system, such as taxation and limiting serving sizes. Finally, in Case 4, they consider the role of health systems in surveillance and response as they confront a hypothetical emerging influenza pandemic.

The use of clickers, in-class and online asynchronous discussion forums, and small-group exercises ensures that the course is highly interactive. Clickers are used anonymously to monitor comprehension, poll the students, and promote interactivity and critical thinking. Interviews with global health leaders in Atlanta were videotaped and edited into short video resources for use in the class alongside an evolving set of videos available online through YouTube and other websites.

Student assignments
Student assessment is divided equally between individual and team-based components. Individual assessment is based on a weekly online quiz or posting to the online discussion board in response to required readings for that week. The weekly individual assignment is designed both to ensure that students are completing reading assignments and to anchor learning in preparation for the case-based exercises, thereby allowing for more in-depth conversations in class. Group assignments have evolved during the three semesters the course has been offered in response to student feedback, and currently consist of a midterm deliverable based on Case 2 and a final presentation and paper. Groups answer the following question in the final presentation:

> If you were a team of advisors to a billionaire philanthropist eager to invest a substantial sum ($25 million in the first instance) in efforts to improve global health, for which organization would you advocate and why? Specify, as appropriate, your programmatic priority areas, geographic region, and/or operational approach, providing your rationale for these choices.

The final assignment motivates students to learn skills related to priority setting and investing financial resources during the semester. It draws on historical precedents, including Bill and Melinda Gates, Warren Buffet, Ted Turner, and Oprah Winfrey. It also capitalizes on the fact that students may themselves be regularly solicited to donate to global health organizations. In the final course session, student teams present their proposals to the class, while those in the audience take on the role of billionaire philanthropist and vote with clickers on the proposal they choose to support.

The final assignment is designed to give students an opportunity to showcase their achievement of course competencies, and the students are informed that it will be graded accordingly. Although we do not have a formal baseline for the purposes of comparison, the final assignment does allow us to document achievement of course competencies at the end of the course. In addition, groups are instructed to write one paragraph reflecting on how the issues covered in the readings and discussions during the course of the semester influenced the decision they made. This requirement is in keeping with the problem-based learning strategy of encouraging a self-reflective stance on the part of learners.

Student feedback
From fall 2011 to fall 2012, the course was offered to 261 master's-level students in its face-to-face format by two different instructors. Toward the end of each of the five course offerings, students were asked to provide confidential online evaluations. The average response rate across the five sections was 84%. Quantitative components used Likert scales to assess students' perception of amount learned, intellectual stimulation, course organization, and fairness and value of assignments. We calculated descriptive statistics for these categories across the three semesters in which the course was offered. The qualitative component included questions on which aspects of the course were most valuable and what specific suggestions students had for improving the course. The qualitative data had limitations in that not all students responded to all questions, there was often repetition across the questions, and it was not possible to identify comments made by the same student, leading to potential over-representation of some perspectives; in addition, the questions tended to encourage polarized responses. Mindful of the characteristics and limitations of the data, we identified recurrent themes that were critical or affirming of the course and analyzed these themes using MAXQDA software.[13]

RESULTS

Quantitative feedback
During the three-semester period, the majority of students (73%) agreed or strongly agreed with the statements "I learned a great deal in this course" and "The course challenged and stimulated my thinking." Similar proportions approved of the assignments. Almost 90% of students agreed or strongly agreed that the course was well organized. In its most recent iteration (fall 2012), the pace of the course was judged to be ideal by 80% of students (similar to previous semesters), while

67% indicated that the amount of work was about right relative to the credit earned (up from 40% the previous semester and based on revisions made to the course as discussed hereafter) (data not shown).

Qualitative feedback

Critical comments. The course evolved during the three semesters from fall 2011 to fall 2012 in response to student feedback, and this evolution is reflected in successive qualitative evaluations. During the first two semesters, students felt that the workload was excessive. They also chafed at the weekly quiz, which was deemed to focus on isolated details instead of reinforcing key messages from the readings. The readings, while appreciated, were considered by several students to be too long and numerous.

These issues were successfully addressed in successive iterations of the course. The number of graded group assignments was reduced from four to two, and the cases themselves were made more concrete. While we retained the concept of a weekly individual assignment, we reduced the number of quizzes and increased the number of required postings to the discussion board to allow for more critical reflection on the readings. We reduced the number of readings and made several readings optional.

Following these changes, criticisms of the course focused above all on the prominence of group work, with students advocating for more individual assessment. Isolated comments recommended a more didactic approach, less breadth and greater depth, and more content and skills-building exercises. A few students recommended that the course should not be required for all MPH students.

Positive comments. Positive feedback focused on the class format, variety in teaching methods, interactivity, and experiential learning. Multiple students commented on the thoughtful organization of the course and of each individual session as well as the instructors' commitment to engaged teaching. The varied and multidisciplinary readings were appreciated, while the clickers elicited widespread enthusiastic feedback. Many comments conveyed an appreciation of multidisciplinary group-based discussion concerning the cases. Some students commented that the case-based approach made it possible for the course to avoid a superficial introduction to global health and delve deeply into some key global health concepts, while also promoting critical thinking. In some cases, skeptics admitted being won over. One student in the fall 2011 course said, "While I am not personally a fan of the case study method, it very effectively made me conversant in some

of the central problems and positions that [Global Health] is currently trying to address." Students commented positively on the creativity and problem solving the cases elicited, seeing them as a way of synthesizing and applying what they had learned to date. Of the billionaire philanthropist exercise, one student in the spring 2012 course commented, "It was an excellent way to learn the decision-making process of people who fund specific organizations. It was nice to take everything we had learned at that point and give a deliverable justifying our choice."

DISCUSSION

A problem-based approach has the advantage of engaging students collaboratively as active learners and allowing them to build on their prior training and experiences and their existing competencies.[14,15] Based on educational principles of constructivism, this experiential approach integrates knowledge across multiple domains and fosters flexible thinking and lifelong learning skills.[16–18] It also allows students to learn from one another in an engaging, motivating, hands-on way. As such, a case-based approach addressing real-world global health challenges is particularly appropriate for self-directed and self-motivated graduate learners.

Balancing individual and group assignments is an ongoing challenge. If students find themselves in a dysfunctional group, they resent having to complete group assignments. However, graded individual assignments are not realistic for a course of this size. Additionally, some students do not enjoy problem-based learning. For those with little interest in global health, this lack of affinity for the pedagogical approach exacerbates their resentment toward the fact that the course is required and adds to an already busy MPH curriculum.

The course evaluation data are not a measure of the achievement of course competencies. Nonetheless, the final assignment is directed at the culmination of competencies. In addition, efforts have been made to support the achievement of competencies through session-based learning objectives, scaffolded learning, and tiered assignments of increasing complexity. Innovative solutions are needed to address the ongoing challenge of measuring competencies at baseline and course conclusion in feasible and meaningful ways to evaluate course impact.

Instituting a required course on this scale is not without its challenges. Teaching the course necessitates a team of instructors; as such, consistency is an issue. We sought to optimize consistency across instructors by clearly defining competencies and learning objectives for each individual session. Because the course

covers a broad range of subject areas beyond an individual instructor's professional expertise, it demands intensive preparation. Regular updates to the course are essential to keep up with the dynamic field of global health. Institutional commitment—in support of teaching time and effort for course instructors and teaching assistants, information technology resources, and infrastructure—is required to ensure the course's sustained success.

CONCLUSION

Problem-based learning is a mode of instruction that is particularly well suited to introducing the dynamic complexity of global health challenges to learners. It also has relevance for other ASPPH competency areas. Data from the evaluative feedback provided by the first cohorts of students to take "Critical Issues in Global Health" at the RSPH attest to the fact that a problem-based approach—through its focus on synthesis of content, collaborative cross-disciplinary dialogue, and creative problem-solving—is engaging, motivating, and enjoyable.

It is increasingly necessary to incorporate global health competencies into the required curriculum of MPH programs. We propose doing so through problem-based learning using case discussions as the core around which lectures, readings, and other teaching tools are presented to learners.

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