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Learning Public Health Through Civic Issues

Kathleen FitzPatrick

Merrimack College

Abstract

This course is organized around current challenging health issues, such as mandatory immunization, childhood obesity, health insurance, tobacco control, etc. Activities included issues-focused debates, lecture and video presentations, case study discussions, and guest speakers. Students completed fifteen hours of community-based service learning, many in the Lawrence Math-Science Partnership, an outreach program in which undergraduates work on after-school STEM enrichment activities with middle-school students. Several activities complemented the course issues, allowing college students to make connections between course theory and community needs, while engaging middle-school students in important public health concepts. The SENCER-SALG assessment (N=189/192 (98%) of enrolled students) indicated that the course was of much/great help for learning in addressing real world issues (80%), looking at the interplay of science and civic issues (71%) and in the service learning activities (53%). 58% of students indicated good/great gains in their interest in volunteering for science-related community service.

Introduction

In 2008, Merrimack College adopted a four credit per course curricular model. At this time, major curricula were completely redesigned. Our Department recognized that since many of our students intend to pursue careers in health care, knowledge of population medicine and health care system organization and function was critical. This content was not included in the major program previously. The Association of American Colleges and Universities (AACU, 2007) recommends that education in public health is essential for all undergraduates, in preparing an engaged citizenry for civic responsibility. Public health, a highly interdisciplinary and applied field, offered an opportunity to design an entirely new course using the NSF Science Education for New Civic Engagements and Responsibilities (SENCER) principles of science education through engagement with complex, unresolved civic issues. One of the goals of SENCER is to “strengthen students’ understanding of science and their capacity for responsible work and citizenship.” (SENCER, 2011). A faculty team attended the SENCER Summer Institute in 2009; this experience provided guidelines for designing this new course. (Tewksbury and MacDonald, 2005). Additional guidance in specific content came from AACU public health curriculum recommendations (Riegelman and Albertine, 2008).

The goals of this course were 1) to teach the basic principles of public health by focusing on several current, complex and challenging public health issues, and 2) to include a required service learning experience, as the added value fourth credit, that would place students in health-related field sites where they could connect classroom content to actual experience, and 3) to employ a variety of active learning techniques to cultivate student engagement. The hypothesis was that this approach would generate positive attitudes toward and engagement with civic issues, while achieving the learning goals. A three year assessment of the course, using the SENCER version of the Student Assessment of Learning Gains (SALG; <http://www.salgsite.net>; Seymour et al., 2000) is presented below. Student reaction to the issues focus and engagement components was quite positive. Preliminary findings from the first year have been presented (FitzPatrick, 2009).

Methods

Context of the Study

Our institution is a small (2000 student), private, comprehensive college. Data are reported here for 192 students (29% male, 71% female) enrolled in Community Public Health in

2008 (sixty-six total, two sections), 2009 (sixty-six total, two sections), 2010 (sixty total, two sections), all taught by the author. The course is required for all majors in Health Science, Sports Medicine and Athletic Training. These students were almost all traditional college age students and predominantly in their sophomore year. The Merrimack College Institutional Review Board approved this study.

Course Description

HSC3302 Community Public Health Four credits This course will aim to understand the distribution and determinants of health and disease, injury, disability and mortality within populations, with the goal of prevention and health promotion, through changes in individual behavior, control of infectious disease and environmental health factors, and social and political organization for health improvement.

Learning Objectives

The course content, activities and assessments were designed to help students achieve three advanced learning objectives (Table 1). These are higher order skills at the analysis/synthesis levels of learning, but they require mastery of basic objectives to complete. In addition, there were thirteen basic content learning objectives, appropriate for a

TABLE 1. Community Public Health Learning Goals Performance and Perceptual Assessment 2008-2010 N = 192

		Performance Assessment Mean(sd)	SALG Perceptual Assessment Mean(sd) 5 = High
ADVANCED LEARNING OUTCOMES			
Analyze a new public health problem by applying the public health approach of problem, cause, intervention and implementation/assessment.	Service Learning Reflective Journals	92.1 (6.5)	4.2 (0.9)
Evaluate the quality of public health information on the Internet or in mass media.	Homework Papers	94.6 (8.1)	4.1 (0.9)
Analyze the advantages and disadvantages of a potential intervention	Debate Papers	86.3 (5.7)	4.1 (0.9)
SELECTED BASIC LEARNING OUTCOMES			
Explain the basic principles of epidemiology, including rates, risk factors, disease determinants, causation and public health surveillance.	Quiz	80.8(12.2)	4.1 (0.9)
Explain the impact of communicable and chronic diseases on the health of a population and approaches to prevention and early detection.	Quiz	80.2 (11.8)	4.3 (0.8)
Describe the basic organization of health care and public health systems	Quiz	81.6 (10.8)	4.2 (0.8)
All 13 Basic Learning Goals	All Quizzes	79.7 (7.4)	

first undergraduate survey course, adopted from Riegelman and Albertine (2008), directed toward the knowledge level of Bloom's taxonomy. See Table 1 for examples. For instance, to research and evaluate literature supporting or opposing mandatory HPV vaccination for debates, students must understand basic principles of epidemiology and impact of communicable disease.

Course Activities

During the term, six debates were held with students offering positions on different sides of important timely public health issues (Table 2). For each topic, all students were required to compose a position paper, taking a side on the proposition and researching and supporting their position with acceptable scientific references. Four students, in teams of two, presented their arguments for and against the proposition, and were scored by the class. These debates thus required students to take responsibility for their own learning, mastering basic public health concepts through text reading and their own research, in order to address the issue effectively. Debate papers were assessed by the instructor using a scoring rubric provided to students. (Appendix 1).

TABLE 2. Issues Debate Topics

Issues Debate Topics
Communicable Disease: Should HPV Vaccination be Required?
Communicable Disease: Should H1N1 Vaccination be Required?
MDR Tuberculosis Control Through Mandatory Treatment
Obesity and Soda Tax
Obesity and Restaurant Calorie Count Posting
Obesity: Lifestyle Modification vs Drug Treatment
Access to Health Care: Should Minute Clinics be Licensed in Drug Stores?
Approaches for Reducing Emergency Department Overuse
Approaches for Reducing Infant Mortality
Health Care Politics and Finance: Massachusetts Health Insurance Reform Law Pro and Con
National Health Care Reform: PPACA Pro and Con
Mental Health: What to Do with Returning Iraq Veterans with PTSD?
Health Related Behavior, Prevention: Tobacco Sales Restrictions
Tobacco Use Reduction on College Campuses
Racial and Economic Disparities in Health and Health Care

Several videos highlighting public health topics were shown and used as the basis for reflection papers and class discussion. These included *Unnatural Causes: How Inequality is Making Us Sick* (California Newsreel, 2008), *Typhoid Mary*

(PBS: Nova, 2004), *Influenza 1918* (PBS: American Experience, 1998).

The text (McKenzie, Pinger and Kotecki, 2008) was used to provide case studies for frequent classroom and small group work and discussion, in about one third of classes. A small portion of the course, approximately one fifth of class meetings, included instructor lectures, briefly reviewing major concepts. There were some short homework assignments; for example, students were required to analyze, compare and contrast short internet commercial videos on the HPV Gardasil vaccine or on internet media commentary on H1N1 influenza. Guest lectures invited speakers on the politics of Massachusetts and national health care reform, influenza preparedness procedures for the H1N1 epidemic at a large group medical practice and public health issues in Haiti, as seen in a rural health organization.

Two-three single class discovery activities using technology/internet were conducted, with students working in teams. A personal health insurance research activity used the Massachusetts Commonwealth Health Insurance Connector to attempt to find a plan affordable for a college graduate without employer coverage; an analysis of health outcome disparities compared surrounding communities with different socioeconomic profiles; a chain of infection profile was constructed for currently active threats such as West Nile virus.

The class met for three fifty-minute periods per week and additionally required twelve to fifteen hours of direct involvement in health-related service in the community. Students were required to maintain a reflective Service Learning Folio, guided by a formal scoring rubric provided in the syllabus (Appendix 2). These were collected at mid-term and the end of the course and graded using the rubric provided.

Students had several options for connecting with a service activity, facilitated by the Merrimack College Stevens Service Learning Center. Their major program is the Lawrence Math-Science Partnership (LMSP), in which college mentors conduct weekly health-focused after school constructivist discovery STEM learning activities (Table 3) with middle school students in community after-school programs in Lawrence, MA. Lawrence is an economically disadvantaged community, near the bottom of state rankings for mean family income, with a majority Latino population (90% in the public schools), high rates of poverty (85% of students qualify for school meal assistance) and 20% of public school students with English as their second language. (Foote and DeFillipo, 2009).

TABLE 3. Sample Lawrence Math-Science Partnership Learning Activity Topics

Sample Lawrence Math-Science Partnership Learning Activity Topics
Diet and Wellness: Vitamin C Indicator Test
Food Safety: Cooking Right to Eat Right (hand washing demo)
Nutrition: Understanding Nutritional Information
Oral Health: Healthy Habits
Infectious Disease: Saving the World from Illness
Lung Capacity, Exercise and Smoking
Cells and Body Chemistry: The Brain
Exercise Physiology: Heart Rate and Fitness
Microbes and Immunity
The Power of Food
Nutrition: That's What I've Been Eating!
Heart Disease (Atherosclerosis)
Melanoma

The Stevens Center also provides health-focused placements in other community agencies, such as Marland Place Senior Living, American Red Cross, etc. Students may find service learning placements individually, volunteering for example, in an Alzheimer unit in a local nursing home or participating in events such as organizing a blood drive. Overall seventy of 192 students (36%) participated in the Math-Science Partnership; thirty-six of 192 (19%) in other placements arranged by the Stevens Center and eighty-six of 192 (45%) in sites and activities selected and arranged by students on their own initiative.

Assessment

Performance Assessment

The course grade was based on six quizzes on chapter readings and lectures (30%), debate performance and papers (20%-Appendix 1), service learning folio (20%-Appendix 2), homework writing assignments (15%), class discussion (10%-2010 only), SALG survey (5%).

Perceptual Assessment

For 5% of their grade, students were given instructions and due dates, during the week prior to the final exam, to complete the Student Assessment of Learning Gains (SALG; <http://www.salgsite.net>; Seymour et al., 2000), a web-based instrument developed for assessing the effectiveness of college level science courses. This instrument has been adopted by

SENCER and includes many items relating to civic engagement. It assesses student perceptions of the degree to which various course aspects improved their learning. The instructor modified the standard SALG template to add additional numerical questions pertaining to the specific learning goals and activities of this course, and text box questions for narrative responses. After submission of final course grades, the survey data were downloaded for analysis. The SALG site allows the instructor to pool results from different years for analysis, of both numerical response items and narratives, which can be coded for content analysis. The instructor can track which students responded, but cannot link that information with the specific responses.

Results

Performance Assessment

The performance assessments are mapped to the three advanced goals and to quiz results for selected basic learning goals in Table 1. These basic goals were represented as examples since they mapped directly to single quizzes. Grades from all three years of the course for 192 students were pooled. On the three most highly weighted assessments, students averaged 86.3 mean (5.7 standard deviation) on debates, 79.7(7.4) on all six quizzes and 92.1(6.5) on the service learning folios. Quiz results were slightly lower and more variable across the population than the other assignments.

Perceptual Assessment

Table 4 summarizes the numerical results for SALG items most closely related to civic engagement. Table 5 summarizes a content analysis of the themes appearing in narrative text box responses. Table 6 shows sample quotes from the SALG narratives.

Real World Issues

More than 70% of students reported that the focus on real world issues and science-civic issue interplay were of much to great help in their learning. In narratives on civic and political integration, greater attention to politics, involvement in service learning and single event participation were most often mentioned. In the class activities section, the items most directly related to civic issues (debates, videos and case study class discussions) were most highly rated; 75% of students

TABLE 4. SALG Results

5=great help/gain: 4=much help/good gain; 3=moderate help/gain			
The Class Overall			
HOW MUCH did the following aspects of the class help your learning?	Mean(sd)	Mode	%4,5
Addressing real-world issues	4.3(0.89)	5	80
Interplay between science and civic issues	4.0(0.86)	4	71
Class Activities			
HOW MUCH did each of the following aspects of the class HELP YOUR LEARNING?	Mean(sd)	Mode	%4,5
Presentations/lectures from course instructor	4.0(0.99)	5	68
Discussions in class	4.1(0.91)	5	77
Group work in class	3.8(1.07)	4	63
Computer-based work	3.3(1.11)	4	46
Media such as videos, film or slides	4.3(0.85)	5	80
Debates in Class	4.1(1.08)	5	75
Presentations by guests	3.7(1.07)	4	60
Required service learning activities	3.5(1.19)	4	53
Increases in your skills			
As a result of your work in this class, what gains did you make in the following skills?	Mean(sd)	Mode	%4,5
Apply scientific information to social concerns	3.9(0.99)	4	70
* Analyze public health problem, cause, intervention, implementation	4.2(0.90)	5	78
* Evaluate public health information in media, Internet	4.1(0.91)	5	75
* Analyze advantages and disadvantages of public health intervention	4.1(0.89)	4	78
Class impact on your attitudes			
As a result of your work in this class, what gains did you make in the following?	Mean(sd)	Mode	%4,5
Interest in reading about science and its relation to civic issues	3.7(1.03)	4	59
Interest in exploring career opportunities in science	4.1(1.06)	5	72
Interest in attending graduate school in a science-related field	4.0(1.15)	5	69
Interest in teaching science	2.8(1.36)	4	35
Interest in volunteering for science-related community service	3.6(1.23)	4	58
Interest in participating in non-formal science education at a museum or a school	3.1(1.26)	3,4	42
Integration of your learning			
As a result of your work in this class, what gains did you make in integrating the following?	Mean(sd)	Mode	%4,5
Writing a letter or email a public official about a civic or political issue	3.1(1.25)	4	39
Debating or offering public comment on a scientific issue	3.5(1.12)	4	55
Debating or offering public comment on a civic or political issue	3.4(1.17)	4	50
Attending a meeting, rally, or protest about a civic or political issue	3.1(1.20)	4	38
Writing a letter to the editor about a civic or political issue	3.0(1.31)	4	35
Participating in science-related civic education	3.2(1.23)	3	42
Doing an internship at a civic organization	3.2(1.23)	3,4	42
Participating in one-time civic events such as walk-a-thons	3.6(1.18)	4	53
Voting in elections	3.9(1.19)	5	64

TABLE 5. Narrative Content Analysis

Civic, Political Integration of Learning?	
N=104	%
Attention to Politics	15
Service Learning	12
Single Event Participation	4
What course activity helped you learn the most?	
N=161	%
Debates	46
Videos	27
Group Work	9
Service Learning	8
Class Discussion	6
Changes in Understanding?	
N=152	%
Awareness of PH Issues	29
Scope of PH	18
Socioeconomic Status	12
Finance of PH	7
Epidemiology	5
Increased Interest?	
N=120	%
Further Study in PH	16
Clinical Practice	6
Teaching	5
Skills Gained?	
N=120	%
Presentation	15
Information Gathering	7
Issue Analysis	6
Suggested Changes?	
N=153	%
Grading Scheme	12
No Change	11
More Videos	7

reported that these were of much to great help. When asked what class activity helped them learn the most, students identified issue debates, videos, group work, service learning and class discussion most frequently. In narrative responses on assessing changes in their understanding, increased awareness of important current public health issues, of the scope of public health, of socioeconomic status effects on public health, of finance and funding and of principles of epidemiology were most commonly mentioned. Respondents indicated increased

interest in further study in public health, clinical practice and teaching science.

Skills Gains

In skills gains, the three starred items in Table 4 are the advanced course learning goals. Over 75% reported good to great gains in these skills, with 70% reporting good to great gain in applying scientific information to social concerns. When asked which skills they had gained, most frequently mentioned were oral presentations (debates), research information gathering and evaluation and ability to analyze issues using the public health framework (Table 5).

Basic Knowledge Gains

There were thirteen basic learning objectives focused on content knowledge as presented in the text and assessed by quizzes. On all these items, students indicated that they felt that they had made good to great gains in their understanding (means 4.0 to 4.3, all modes of 4 and 5). These perceptions compare with an overall quiz average of 79.7(7.4). Selected specific basic learning goals are reported in Table 1.

Impact on Attitudes and Integration of Learning

The six attitude impact items related to future interests were somewhat lower rated, with means in the moderate to good range (means of 2.8-4.1) and 35-72% reporting good or great gains (4 and 5). Interest in volunteering for science related community service (3.6, 58% good to great gains) was most relevant to the course goals. As expected in a majors class, career opportunities in science (72%) and intention to attend graduate school (69%) were the most highly rated; interest in teaching science was the lowest rated (35%), but in the narrative responses, several comments indicated enthusiasm about teaching science. The responses to this category of attitudes showed greater variability than previous categories, as seen in response distribution. Items relating to activities of civic participation also fell in the moderate to good range, with voting in elections the most highly rated in this category, 3.9 mean and 64% indicating good to great gains.

TABLE 6. SALG Sample Student Comments

What course activity helped you learn the most? Describe why it helped you learn.

"The debates were probably most helpful to my learning because the debates focused on real life issues that were happening today.

"I believe the Debate activities was a place where I learned the most due to having to research information of both positives and negatives and support arguments with evidence. This helped us think critically as well as covered presentation skills.

"I think watching the videos helped the most because you can read about each problem in many ways but once a face is attached to the problem it seems more real"

"The videos were a great help and eye openers. They showed real stories and actually let me see just how people are affected by many different aspects of their lives. Applying the course material to the real-life scenarios in the film was helpful and interesting."

"The service learning helped me the most because it helped me relate in class discussions to real world topics.

"I thought the service learning was a crucial part of the course. I was able to apply the skills we learned about in class and make a difference!"

"the required service learning activity then writing about it our folios because the material from the text and in class we applied to our own experiences/interests."

Please comment on how your understanding of the subject has changed as a result of this class.

"I learned a lot in this class, especially about the various health issues that are largely prevalent in societies today. The number of efforts that are being placed to resolve health issues has encouraged me to get more involved in prevention and health promotion activities."

"I now realize that fixing health problems in a community are not as easy as I once thought. There are several factors, such as cost, feasibility, and the population that need to be taken into account. I now better understand the process of intervention and implementation. "

"I did not have any idea about so many current events that were occurring in our country today. I loved being able to relate current events to my field of study. "

As a result of this course, has your interest grown in any other activities related to science?

"I have always loved science but public health has helped to put all the pieces of science together."

"I have become more interested in the community aspect of health as opposed to the individual aspect. "

"My interest in wanting to work with children or teaching science in the future has increased after being a member of the Lawrence math and science partnership for the civic engagement for this course. "

"I am excited to work towards becoming a Health Teacher"

"I have become more interested in volunteering from this course"

"community service with public health issues"

Are there other ways you have integrated your learning in this class to a civic or political area?

"Yes...I submitted a response in a scientific medical journal that asked about ways to solve the current crisis in primary care...I used the research done in this class to writet a response to the forum..."

"Writing the letter about banning selling cigarettes integrated the subject of civic and political issues into class."

"Discussing the problems w/ fam. and grandparents and getting real life application. "

"It has made more attentive to what our officials are doing in Washington, therefore has increased my interest in local and state politics, and not just the federal level. "

"The main way that I integrated my learning is by gaining interest in participating in a one time civic event."

"Going into the city of Lawrence each week for the Math and Science Partnership was a great way to integrate things that I was learning about. "

"When volunteering at Bellesini Academy I used most of the information obtained in class and taught them a little useful information."

"This class has allowed me to better my conversation skills pertaining to political conversations. "

"Taking part in the health field promoting fitness and nutrition."

"The class, with the help of the debates, allowed me to focus more on the issues that surround us as a community."

"become more involved in community activities"

"During this election, I took note of the candidate's take on health insurance and care"

Service Learning Impact

The service learning activities were rated of moderate to much help in learning by 53% (mean 3.5). The service learning folios completed by students also offer comments on the value of this aspect of the course. These folio entries are often surprising in the depth of the reflection and the awareness of the value of this kind of civic engagement both for themselves as learners and for the populations with whom they are working. Uniformly, the reflections describe an increase in awareness of, for example, the striking differences between the city of Lawrence and the upper middle class communities of Andover and North Andover where the college is located, or the real challenges faced by elders dealing with failing physical health and dementia. The theme of making a difference appears frequently.

“Overall, I think it was an awesome way to end my LMSP because I left there feeling that I really showed the girls how they personally could make a difference in a world that seems so big and scary. It only takes one person’s help and one person’s support to start the ball rolling and these girls were able to realize that...”

“I learned a lot from these kids every day, as well as them learning from us, and I believe that they were able to benefit a lot from our presence. Overall, I believe that this program is very important to public health because it promotes the idea of education and college to these young, inner city kids who are anxious to learn, and are looking for people to teach them.”

“This week’s class topic on alcohol, tobacco and other drugs relates to my experience at Adelante The kids that I work alongside every week face many, if not all, of the risk factors that contribute to the probability of substance and drug abuse. ...My experience ... helps to promote educational awareness about many health problems, in order to protect from bad choices due to lack of understanding and giving in to pressures.”

Course Changes

In terms of one possible course improvement (Table 5), changes in the grading scheme, particularly quizzes (12%), no suggested changes (11%), and more videos (7%) were the most prevalent comments. The quizzes were designed to insure that

students were reading and mastering the basic content learning objectives. Responses cited a wish for fewer quizzes, easier quizzes, including debate subjects in the quizzes, help in quiz preparation, etc.

Discussion

The hypothesis of this study was that an emphasis on current challenging public health issues and a service learning experience would generate positive attitudes toward and engagement with civic issues, while achieving the course learning goals using active learning techniques. The results of the perceptual SALG survey and student performance on assessments support the hypothesis.

Impact of Real World Civic Issues Focus

Several national science organizations, in setting goals for the pedagogy of the future, have emphasized experiential learning and direct engagement with the scientific issues facing society. Project Kaleidoscope, for example, foresees “an environment in which learning is active, investigative and experiential, where the curriculum connects to the world beyond the campus...” (PKAL, 2002, p. 5). The National Research Council (Bransford, et al., 1999) also suggests that real world problems can be of great value for learning in the science classroom. The NSF SENCER initiative expressly aims to teach to science through complex unresolved civic issues (SENCER, 2011).

Public health affords an excellent opportunity to incorporate these aims; it is highly interdisciplinary and has the explicit applied goal of health promotion and disease prevention. We are faced with many difficult issues, such as emerging and reemerging infectious diseases and threats to health from the chronic lifestyle-related obesity and diabetes epidemics. Sadly, on several accepted measures of population health, such as infant and maternal mortality and life expectancy, the United States ranks quite poorly in comparison with other industrialized countries. The goal of undergraduate public health education is 1) “to produce an educated citizenry who can be expected to examine the evidence and to evaluate critically public health goals and methods. An educated citizenry can also be expected to make political and financial commitments to support successful public health interventions.” (Riegelman et al., 2007, p. 4). Even students who do not pursue public health as a career will vote on issues affecting public health

in elections. Many citizens may become involved in health related community and school based-programs.

To introduce a focus on complex unresolved civic issues, it is only necessary to read the news regularly. This course focused first on a specific issue and used that issue as a lens for students to examine and learn the public health principles. The SALG data showed that students strongly supported the issue-focused debates as an effective learning tool. The topics were drawn from the latest headlines and were often chosen to be of direct relevance to the college population. For example, to evaluate the question of cervical cancer vaccination, students had to grapple with basic principles of communicable disease transmission, vaccine development and implementation, descriptive statistics on disease frequency, questions of effectiveness, risk, cost and access, etc. Each of the debate issues in turn required students to research and master various aspects of public health.

The information derived from the SALG survey of this course can be compared to data from an evaluation of SENCER courses based on over 10,000 student SALG evaluations (Weston et al., 2006). SALG scores in this course exceeded levels reported in the overall evaluation. For example, students rated focus on real world issues as 4.3 here vs 3.61 and interplay between science and civic issues 4.0 vs 3.45. This trend is also evident on civic engagement items, with scores for this course higher, means of 3 and above, than the overall evaluation, with means of 2 and above.

Students also responded very positively to the issues focused videos. The Unnatural Causes series particularly resonated strongly with students in its depiction of real people facing real problems. As class debates focused on state and national health care reform and the Affordable Care Act was working through Congress, students were able to see, in a video segment, the effect that moving a manufacturing plant from Michigan to Mexico had on the health of the community resulting from job and health insurance loss, as well as a comparison to the effect of and different response to a similar plant relocation from Sweden to eastern Europe. This gave a face to the topics of health care finance and policy.

Impact of Service Learning

The experiential component of the class was the required service learning experience, designed to get students out in the community to directly experience the challenges to population health around them. Available literature, as summarized

by Eyer et al., (2001), in an extensive review of hundreds of studies, indicate that service learning has a positive effect on citizenship skills and social responsibility (twenty-three papers) and on commitment to service (twenty-six papers). Astin and Sax (1998) studied 3450 students at forty-two institutions and report that involvement in service learning at the undergraduate level enhances sense of civic responsibility. Astin, Sax and Avalos (1999) surveyed 12,376 undergraduate and high school service-learning participants nine years after college entry and found enhanced likelihood of engagement in volunteer community service work after college. Foote and DiFilippo (2009) also indicate that service learning participation enhances engagement with the outside community, increases student awareness of community issues and enhances exposure to diversity of race and culture, with service learning participants displaying a greater commitment to community service later in life. The overall SENCER SALG evaluation also indicated that courses with service learning may facilitate future involvement in service (Weston et al., 2006).

Our campus has a very active service learning center, supported by the College mission of valuing community service and engagement. The LMSP, in which more than a third of these students participated, has been evaluated in detail (Foote and DiFilippo, 2009). Over a three-year period, 97% of 207 survey respondents (of 434 participants in the program) noted that this program had contributed a lot to their development in the area of contribution to society. Many of the narrative comments in the SALG survey here support this finding. In the fall, the LMSP activities conducted with the middle school youth almost all relate to health topics. Thus, while debating programs to curb the obesity epidemic in class, the college mentors were working on nutrition and movement related activities with the youth. At the same time, their journals often noted student behavior and casual conversation around food issues that illuminated the multidimensional nature of the problem. For example, young students remarked that they ate at fast food restaurants many times per week, because parents held multiple jobs, had no time to cook and limited access to fresh foods at reasonable prices, a situation they had also seen in a video segment. Students working in settings other than LMSP were able to make similar connections between their work and class issues. A majority of the students considered the service-learning component to be of good to great value to their learning, though it was not as highly rated as the debates and videos. It should be noted

that the service learning did require that time be scheduled outside class, both at the site, to travel to it (transportation to LMSP sites is provided) and to write the reflective journal. As students get busier as the term progresses, this may become more difficult. A small number of complaints about these issues did appear.

The question remains as to whether this course will affect future civic engagement by these students, a finding described by Sax et al. (1999). An examination of the SALG items relating to attitude impact and integration of learning showed moderate gains from the course in areas such as attending a meeting regarding a civic issue, participating in civic education, etc. Interestingly, the highest rated items in this area were participation in one-time events, such as fundraisers, and voting in elections. The ratings for these items exceeded those for the global SENCER SALG assessment. (Weston et al., 2006). It may be that as first term sophomores, these students remain focused on college concerns and events they can do easily that do not require sustained commitment or off campus involvement.

Impact of Active Learning Pedagogy

This course used primarily active learning methods and students responded quite positively to activities such as debates and class discussions, which placed responsibility for learning on their engagement with the material. Combining these methods with an issues focus, rather than simply lecturing on the issues, enhanced student learning.

Challenges and Limitations

It was interesting that although quizzes made up only 30% of their course grade, compared with 100% in many courses, students tended to focus a great deal on their quiz grades. Since assessment in science courses is often highly focused in high stakes tests, this is not unexpected. The remaining 70% of the course grade was based on writing assignments, yet students needed to be encouraged to invest as much effort on those as on test preparation. Given the large number of writing assignments, this model of the course is a challenge to instructors. Since sections were large, with the instructor handling two each term, commenting at length on student writing and returning papers quickly for feedback is often difficult. The biggest issue encountered in these papers was difficulty with identifying and using reputable scientific sources and citing them appropriately, rather than using the first five hits off a

Google search. Despite materials provided on information literacy, this remains a problem and more specific guidelines for sources and a class with a reference librarian would be helpful. Large class sizes can also inhibit discussion. Recently a grade for participation was added, with mechanisms for tracking contributors. The idea of having every student prepare a position paper on every debate issue attempts to insure that everyone has background information to add to the class; inducing students to speak up is still a challenge. There was much positive response to small group discussions, where comfort level with three or four peers is greater. Another challenge is that of bringing the service learning experience into the classroom, so students can share experiences and connections to the issues. While the instructor has the privilege of reading the reflective journals, others are not benefitting and some classes devoted to journal-based discussion should be helpful.

In summary, students responded very positively to an undergraduate course in public health designed to teach basic principles through complex challenging civic issues, while connecting to those issues directly through service in communities.

About the Author



Kathleen A. FitzPatrick, Ph.D. is Associate Professor of Health Sciences and has taught a variety of courses in health related areas for many years at Merrimack College. She received her bachelor's degree in biology-chemistry from Lawrence University in Appleton, WI and the Ph.D. in physiology from the University of Wisconsin at Madison. She has attended two SENCER Summer Institutes as well as local SENCER events and attempts to incorporate these principles in her courses and she has a strong interest in implementing various methods of active and engaged learning in her classes.

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APPENDIX I Issue Debate Paper Evaluation and Grading Criteria

Entries must be word-processed. Each debate position paper is worth 10 points.

1. Paper has a specific title and position on issue is clearly stated in first sentence.	
2. Organization and Clarity	
HIGH A	<ul style="list-style-type: none"> a. Position on issue is stated in an organized and clear manner b. Position on issue is supported by legitimate evidence c. Position is presented in objective terms, without editorializing d. Structure of argument and evidence effectively persuade reader of validity of your position
B	<ul style="list-style-type: none"> a. Position is unclear or muddled and not persuasive due to lack of good evidence b. Unsupported points and /or personal opinion are used to argue position
Low C	<ul style="list-style-type: none"> a. Assignment appears to be treated casually, with little care given to constructing a cogent argument b. Argument includes inappropriate prejudices, bias
3. Evidence	
HIGH A	<ul style="list-style-type: none"> a. 3-5 annotated references used to support argument, not to include starter references provided in assignment b. All References are legitimate scientific sources and directly relevant to position c. At least 1-2 references are primary research article sources d. References are cited in the text body (Smith, 2009) at points where ideas derived from them are presented e. References are listed in alpha order by author at end of text, using CSE format f. Website references from .gov such as the CDC, .edu such as a university, only g. Direct quotes are indicated as such " " and source clearly identified.
B	<ul style="list-style-type: none"> a. References provided but derived from inappropriate sources (commercial websites, commercial news outlets, popular media, personal websites and blogs) b. References cited section provided, but in text references not provided c. References cited section in incorrect format or not annotated d. Words of others not set off in quotes and referenced
Low C	<ul style="list-style-type: none"> a. Provides no references
4. Writing Quality	
HIGH A	<ul style="list-style-type: none"> a. Work is completely free of grammar, spelling, punctuation, or readability problems
B	<ul style="list-style-type: none"> a. Work contains errors (incomplete sentences, words missed by spell-checkers, etc.) that should have been caught by proofreading b. Writing is too casual and distracts from the content.
LOW C	<ul style="list-style-type: none"> a. Work is replete with careless errors and/or serious English writing problems in grammar, spelling, punctuation, and readability b. Lacks coherence

The **Experiential Learning Folio** is a tool for guiding reflection, for developing skills and understanding and for fostering self-knowledge. This journal has a special format designed to assist you in your reflections on the readings, our classes, and your experiences in order to clarify the connections between the three. I expect you to make an entry for each service visit (you will have between 5 and 10 entries, depending on the number and length of your service visits). (*Adapted from Dr. Gina Vega, Dept. of Management*).

Format

- Set up your Learning Folio in three sections (Reading, Experience, and Reflection) and date each new entry that you make.
- **Reading** is where you will write about something that held your attention in one of the class readings. Maybe it made you angry, maybe it made you sad, or it made you think, or you connected to it in some other way. Maybe it just confused you. Or maybe it related to a question posed that week in class. Whatever your strongest response was, that is the one to write about.
- **Experience** is where you will write about something that happened to you in the course of your learning activity. Maybe it was a conversation with someone at your site, maybe it was something you overheard or saw, maybe it had to do with the service itself. Or maybe it related to assigned reflection questions to look for in the service process. Whatever incident made an impact on you, that is what you will write about.
- **Reflection** is where you will connect the reading and your experience. Sometimes this will be difficult. Nonetheless, I urge you to try diligently to make the connection with your experience. The end goal of this section is to make you think about what you have been doing, ask yourself why your experiential work is needed, and what you should do about it now and in the future. In this section, you should explicitly identify how the experience relates to the three 3 Ps of public health (Promote, Protect, Prevent) and to the 4 step approach to population health (Problem, Cause, Intervention, Implementation). The entry for each date should be one or two pages. Save the entry on a disk and back it up somewhere. The folio for the first half of the semester is due at midterm on October 21 and the second half is due on December 2.

APPENDIX III Experiential Learning Folio Evaluation and Grading Criteria

Entries must be word-processed. Each entry is worth 10 points.

1-Entry identifies the service site or agency, date of activity and total time spent.	
2. Selection of Experience	
HIGH 3	<ul style="list-style-type: none"> • Description of event is clear and comprehensive; • Description indicates care in the selection of the event • Description presents the event in objective terms, without editorializing
2	<ul style="list-style-type: none"> • Description of the event is unclear or muddled • Reflection or opinion is included in this section
Low 1	<ul style="list-style-type: none"> • Assignment appears to be treated casually, with little care given to selecting a meaningful experience • Choice of event is insignificant
3. Quality of Reflection	
HIGH 3	<ul style="list-style-type: none"> • Indicates careful and thoughtful consideration of the purpose of the service • Identifies the specific learning that results from the service • Shares the personal impact of the service with the reader • Suggests actions that can be taken to assist the people being served • Makes the thought process transparent (i.e., obvious to the reader) • Makes a clear connection between readings and experience
2	<ul style="list-style-type: none"> • Lacks an action plan or recommendations • Makes multiple mutually inconsistent or contradictory statements • Does not make the link between service and learning
Low 1	<ul style="list-style-type: none"> • Provides little to no analysis of the mutual impact of service • Provides little or no evaluation of the service learning • Provides little or no evidence of critical thinking based on the service
4. Writing Quality	
HIGH 3	<ul style="list-style-type: none"> • Work is completely free of grammar, spelling, punctuation, or readability problems
2	<ul style="list-style-type: none"> • Work contains errors (incomplete sentences, words missed by spell-checkers, etc.) that should have been caught by proofreading • Writing is too casual and distracts from the content.
LOW 1	<ul style="list-style-type: none"> • Work is replete with careless errors and/or serious English writing problems in grammar, spelling, punctuation, and readability • Lacks coherence