

Development and Assessment of Signature Assignments to Increase Student Engagement in Undergraduate Public Health

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Abstract

According to some educationists, engaging disengaged students is one of the biggest challenges facing educators. While many higher education instructors may believe that they promote various areas of learning and engagement, in a recent Faculty Survey of Student Engagement faculty in the health professions reported that 39.5% of their class time is spent lecturing and only 21% is spent on experiential activities. At the same time, fewer than 20% of employers who participated in an Association of American Colleges & Universities–sponsored survey felt that most college students are prepared with the skills and knowledge needed to complete a significant applied learning project before graduation. With this in mind, faculty in an undergraduate public health program integrated engagement-based learning and teaching in the form of signature assignments into core courses throughout the 4-year curriculum to strengthen student engagement, foster deep learning, and address concerns expressed by employers. This article outlines the process used to develop the assignments, describes each of the signature assignments, discusses how assignments were assessed, and shares assessment results.

Keywords

assessment, curriculum design, signature assignments, student engagement

Some educationists consider engaging disengaged students to be one of the biggest challenges facing educators, as between 25% (Willms, 2003, as cited in Harris, 2008) and over 66% (Cothran & Ennis, 2000, as cited in Harris, 2008) of students are considered to be disengaged. While instructors in higher education may believe that they promote critical thinking and active learning, the Faculty Survey of Student Engagement, an instrument designed to measure the importance faculty place on various areas of learning and development, found faculty in the health professions reported spending only 21% on experiential activities (Faculty Survey of Student Engagement, 2014). The companion instrument, the National Survey of Student Engagement (NSSE; 2014), an instrument designed to collect information about first-year and senior students' participation in programs and activities reported that 71% of students spent quite a bit or much of course time memorizing material. According to Fink (2003), "memorizing knowledge" is not the primary goal of higher education. Colleges and universities should focus their efforts on developing people who can engage in complex thinking and reasoning. Using the pedagogy of lecture, which primarily assesses through content-based exams, contributes to the disengagement

of students as it does not foster collaboration, engage students in the material, or easily provide real world, applied opportunities.

The use of engaged pedagogies (generally understood as collaborative work that actively involves students) is certainly not a new concept. In 1991, Pascarella and Terenzini, summarized 20 years of research on the impact college has on student development and the importance of student engagement, finding a correlational relationship between engagement in academic work and intellectual development, specifically "an integrated core curriculum that emphasized making explicit connections across courses and among ideas positively influenced growth in measures of postformal reasoning and critical thinking" (p. 208).

Edgerton (2001) introduced the term *pedagogies of engagement* in his 2001 *Education White Paper*, in which he reflected on projects in higher education funded by

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the Pew Charitable Trusts. He wrote, “We need new pedagogies of engagement that will turn out the kinds of resourceful, engaged workers and citizens that America now requires” (p. 1). This position has been reiterated in multiple publications (Hart Research Associates, 2008, 2013; Keeling & Hersh, 2012), noting that too many college graduates are not prepared to think critically, speak and write cogently, solve problems, comprehend complex issues, or take the perspectives of others. More recently, in a report conducted on behalf of the Association of American Colleges & Universities (AAC&U) by Hart Research Associates (2015), 400 employers were surveyed and reported seeing great value in applied learning, indicating there is room to improve college graduates’ preparedness in this area. Fully 80% of employers said that during the hiring process it is very important to them that recent college graduates demonstrate the ability to apply learning in real-world settings. According to Carol Geary Schneider (2015), addressing this criticism is at the heart of the work being done as part of AAC&U’s ongoing signature initiative, Liberal Education and America’s Promise (LEAP). The LEAP challenge states that all college students need to prepare to contribute in a world marked by open or unsubscribed problems and that the best way to prepare students to create solutions in a complex world is to actively involve students in working on problem-centered inquiry from the time they enter college until they successfully complete their degrees (Schneider, 2015).

Eighty-eight percent of employers think that it is important (47% very important, 41% fairly important) for colleges and universities to ensure that ALL students are prepared with the skills and knowledge required to complete a significant applied learning project. Yet just 14% of employers think that most of today’s college students are prepared with the skills and knowledge needed to complete a significant applied learning project before graduation, while another 53% think about half of them are prepared. Only 23% of employers say that recent college graduates are well prepared when it comes to having the ability to apply knowledge and skills in real-world settings, and 44% rate them as not that prepared or not at all prepared. Employers believe that requiring students to complete a significant applied learning project in college would improve both the quality of learning and the quality of graduates’ preparation for careers (Hart Research Associates, 2015). Since 1990, the notion that students ought to do some kind of culminating work has gained significant ground. NSSE provides a very rough benchmark concerning progress in making culminating work expected at the BA and BS levels. According to NSSE (2014), 47% of graduating seniors report that they have “completed a culminating senior experience,” with the spread extending from 41% at research universities to 75% in baccalaureate colleges.

An applied or engagement-based learning and teaching (EBLT) approach was also highlighted in the 2006 Consensus Conference on Undergraduate Public Health Education and LEAP, which encouraged undergraduate public health programs to develop students’ “civic knowledge and engagement, locally, and globally” (AAC&U, 2007). In Laura Cardon’s (2014) article about millennial disillusionment, she suggests that faculty should encourage students to think about how they will use skills obtained in one class in the rest of their courses and make sure that assignments and exercises in class have value in the professional world.

With this in mind, faculty at Carroll University’s undergraduate public health program decided to purposefully integrate EBLT or “signature assignments” into core courses throughout the 4-year curriculum in order to strengthen student engagement, foster deep learning, and address the concerns today’s employers expressed. Authors believed that intentionally integrating active learning pedagogies and assessments into courses would change the nature of learning, resulting in students finding the work more interesting and thereby putting more effort into it. This use of Signature Work is also a focal point of the LEAP challenge “that each student complete a significant project extending across an entire semester or more—that represents the student’s own best work on a question or problem that matters to the student and to society” (Schneider, 2015, p. 6). Signature Work, according to Schneider (2015),

can take many different forms and directions. . . . But whatever the subject and inquiry strategy, the Signature Work project should require students to integrate and apply their college learning—minimally, across more than one discipline, and frequently, between formal and informal or experiential learning. (p. 6)

Designing active learning engagements means faculty need to be less concerned with content and more concerned with stimulating students through situational experiences that challenge students to grapple with real-world problems. These EBLT approaches can change learning from a passive to an active experience when knowledge is created by the individual’s meaning-making process (Maclehan, 2005).

Since these “signature assignments” are considered milestones or benchmarks in the student’s progress toward fulfilling the program objectives, they can also be used as artifacts for the purpose of reporting assessment results. These signature assignments are an “authentic” or a task-based approach to providing examples of active student learning to both internal and external constituencies. Course-embedded assignments can inform instructional improvement as well as provide evidence for accountability, thus streamlining the assessment process.

According to Ewell (2009), if an institution's goal for student learning is truly dominant, it must permeate the entire curriculum and have explicit assessment at multiple points of a student's career. Core embedded signature assignments create "milestone" assessments of student progress in the program as well as capstone experience, emphasizing the integration of their knowledge in the major. This article describes the process of creating and evaluating EBLT "signature assignments" and the pilot results of their implementation in an undergraduate public health program.

Setting and Participants

In fall 2010, Carroll University offered an undergraduate public health major for the first time. The 129-credit program consists of 9 required core courses, 7 required supporting courses, and 10 general education courses. In addition to the five courses listed in Table 1, required core courses include the following: Public Health Field Experience, Introduction to Environmental and Occupational Health, Public Health Policy and Administration, and Introduction to Epidemiology. Program outcomes align with the Council on Education for Public Health's (2014) curriculum requirements for stand-alone baccalaureate programs in public health. As of Spring 2015, there were 58 declared public health majors and 9 public health minors, making public health one of the fastest growing undergraduate programs at Carroll University, a small, private institution. Majors and minors were predominantly female (87%), White, and between 18 and 22 years old. A community advisory board (CAB), composed of 12 representatives from governmental public health, not-for-profit organizations and regional Master of Public Health programs, meets three times per year and provides practice-based input and guidance to the program.

Signature Assignment Development

The public health faculty identified the broad outcomes expected of all students then matched these program learning outcomes to individual courses through the use of curriculum mapping. Curriculum mapping can be used to demonstrate and explore the lines between student learning outcomes, content, and assessment. This mapping provided the public health program with a visual template of the broad outcomes that are expected of all students where those outcomes are delivered and a coherent set of experiences leading to the development of the desired knowledge and skills expected of all public health graduates (see Table 1 for a depiction of how signature assignments were mapped to program outcomes). The mapping was beneficial in demonstrating increasing levels of sophistication and integration of skills

as students progressed through the program. Following this step, the faculty designed EBLT signature assignments (task, activity, or project) that best displayed the knowledge or skills essential to the learning outcomes for each course. To foster faculty autonomy, general guidelines for the creation of signature assignments were established stating assignments needed to (1) address at least two student learning outcomes, (2) demonstrate a real-world application of disciplinary knowledge, and (3) include a student reflection component. Rubrics for each signature assignment were developed and are used as direct evidence for both course and program level evaluation.

Currently these experiences have been integrated into five core courses and were added to the scaffolded curriculum map used to identify where and how student learning outcomes are assessed. One example of an integrative signature assignment can be found in the 100-level Introduction to Public Health course where students analyze national and local public health data with an emphasis on social determinants of health and assess the efficacy of interventions to address local concerns. Subsequently, students enrolled in the 300-level Program Development and Evaluation course build on the work from the 100-level course signature assignment by completing a four-part semester long signature assignment designed to address an identified public health problem. Specifically the assignment requires students to choose a health burden identified by the Centers for Disease Control and Prevention (Healthy People 2020), conduct a comprehensive needs assessment in order to identify appropriate intervention strategies that address the problem, and then create assessment instruments to measure the effectiveness of the strategies. The assignment includes multiple opportunities for reflection and group work during the semester. This assignment integrates multiple concepts that have been introduced to students in previous classes (e.g., social, epidemiological, behavioral, and environmental diagnosis; barriers to change; social marketing; and policy implications). At the senior-year level, students complete a required capstone where they gain practical experience in a local public health setting, and apply and integrate knowledge and skills acquired in the classroom setting to address a local public health issue. Annually, results of these signature assignments are evaluated by program faculty and recorded in the program assessment report (see Table 2 for a description of each signature assignment).

Evaluation

Effectiveness of the EBLT activities was measured using both indirect evidence from student surveys and CAB feedback and direct evidence from signature assignments. Indirect evidence was gathered from a 14-item Public Health Competencies Self Evaluation

Table 1. Signature Assignments Mapped to Program Outcomes.

Program outcomes	Course ^a	Signature assignment
Describe concepts of population health and the processes, approaches, and interventions that identify and address the major health-related needs and concerns of populations.	PBH 101	Healthy People
	PBH 102	Country Profile
	PBH 324	Design Portfolio
	PBH 480	Capstone Internship
Describe socioeconomic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities.	PBH 101	Healthy People
	PBH 102	Country Profile
	PBH 210	Community Coalitions
	PBH 324	Design Portfolio
	PBH 480	Capstone Internship
Articulate the role culture plays in the health and health behaviors of individuals and communities.	PBH 101	Healthy People
	PBH 102	Country Profile
	PBH 210	Community Coalitions
Use existing sources of health data to track changes in major causes of morbidity and mortality for use in community assessment.	PBH 101	Healthy People
	PBH 102	Country Profile
	PBH 210	Community Coalition
	PBH 324	Design Portfolio
Describe features of health systems that promote the integration and utilization of disease prevention and health promotion services.	PBH 102	Country Profile
Identify the roles various health care providers, interdisciplinary health care teams, consultation/referral sources, and community resources play in promotion and protecting the health of the community.	PBH 210	Community Coalitions
	PBH 324	Design Portfolio
	PBH 480	Capstone Internship
Make ethical decisions related to self and society Advocate for the protection and promotion of the public's health at all levels of society.	PBH 210	Community Coalition
	PBH 324	Design Portfolio
Communicate public health information in oral and written form, using a variety of media to diverse audiences.	PBH 101	Healthy People
	PBH 102	Country Profile
	PBH 210	Community Coalition
	PBH 324	Design Portfolio
	PBH 480	Capstone Internship
Apply fundamental concepts and features of project implementation, including planning, assessment, and evaluation in a practice setting.	PBH 324	Design Portfolio

^aPBH 101 = Introduction to Public Health; PBH 102 = Global Health; PBH 210 = Public Health for Communities; PBH 324 = Program Development, Assessment, and Evaluation for Public Health; PBH 480 = Capstone Internship.

administered to students after they completed their required capstone internship and prior to graduation. As part of the survey, students reflect and comment on how effective the signature assignments are at preparing them to be successful public health practitioners. Since the first cohort graduated in fall 2012, a total of 21 students have submitted self-assessments. Additional indirect evidence was gathered from public health practitioners. At the fall 2013 CAB meeting, members responded to the following questions: (1) How do you think EBLT helps prepare students as public health professionals? (2) What do you see as beneficial aspects of

each assignment? (3) What, if any, skills do you think students need that are not being assessed in these assignments? Direct evidence consisted of scores from the evaluation rubrics for each signature assignment that were tabulated and reported.

Results

Indirect Evidence: Student Self-Evaluations

Comments from student self-evaluations specific to the signature assignments have been overwhelmingly positive. Students attributed the signature assignments with

Table 2. Course and Signature Assignment Description.

Course	Signature assignment
PBH 101: Introduction to Public Health	<i>Healthy People Exercise:</i> This assignment introduces student to the concept of “burden of disease” using the Centers for Disease Control and Prevention (Healthy People 2020) indicators. Principles and tools of population health are applied to select indicators including incidence, prevalence, and relative risk for high- and low-risk groups. Possible interventions to address the problem are evaluated in terms of when (primary, secondary, tertiary), who (individual, at risk population), and how (education, motivation, obligation).
PBH 102: Global Health	<i>Country Profile:</i> This assignment familiarizes students with basic concepts and issues of global health by assigning students a country for which they must develop a detailed profile of social, demographic, health, economic, and political indicators. Profiles are used by faculty, residents, and students in a global studies program at a local medical college.
PBH 210: Public Health for Communities	<i>Community Coalition Assignment:</i> This assignment introduces students to the importance of, and processes involved in the development and maintenance of community coalitions. Students review community-level data, select a local health topic, and “develop” a coalition that includes stakeholder identification and assessment, mission and vision, organizational and decision-making structures, root cause analysis, and evaluation plan.
PBH 324: Public Health Program Development, Assessment, and Evaluation	<i>Design Portfolio:</i> This assignment challenges students to develop an implementation plan to address a health need the student has selected based on a thorough needs assessment. The intervention must include goals, objectives, logic model, specific strategies for how objectives will be met, an evaluation plan, and budget.
PBH 480: Capstone Internship	<i>Placement-Specific Projects:</i> This assignment provide students with the opportunity to gain practical experience in a public health setting and apply and integrate knowledge and skills acquired in the classroom. Project goals and outcomes are site-specific and meet the needs of the student and placement agency.

(1) helping them gain a better understanding of the discipline of public health, (2) increasing their understanding of the role of community coalitions in health education and prevention, (3) challenging them to think creatively to better address community health concerns, (4) exposing them to local public health resources, and (5) developing programs that are responsive to community needs and reflect best practices. However, several students commented that they did not fully appreciate many of the above benefits and the amount of work required, until they had completed the signature assignment and were able to reflect on what they had learned (see Table 3 for comments on signature assignments).

Indirect Evidence: Community Feedback

CAB member feedback was also very positive. Members stated the signature assignments benefit not only communities in which students complete their required coursework and internships but also communities in which students will work after graduation as students will enter practice with more hands-on experience. Fifty percent of CAB members have precepted our public health students. These members specifically reported that Carroll University’s students consistently outperform health professions students from other local colleges and universities, and all CAB preceptors indicated

they look forward to working with our public health students in the future. They also commented that EBLT facilitates knowledge exchange between communities and academia to the benefit of both. Finally, CAB representatives stated students would benefit by compiling their signature assignments into a portfolio as evidence of their skills and experience to show future employers.

Direct Evidence: Scores From Signature Assignment Grading Rubrics

Signature assignment scoring rubrics were reviewed, and student grades were placed into one of three categories (1) exceeds expectations (earned grade of A or A/B), (2) meets expectations (earned grade B, B/C, or C), and (3) falls below expectations (earned grade of D or F). For all five signature assignments, 60% or more of students exceeded expectations and in only one signature assignment did some students fall below expectations (see Table 4 for performance on signature assignments).

Lessons Learned

After incorporating signature assignments into our undergraduate public health program for the past 5 years, we have learned the following:

Table 3. Student Comments on Signature Assignments.

Public health course	Signature assignment	Select student comments
PBH 101: Introduction to Public Health	Role of Public Health	This [assignment] really opened up my eyes to what public health is. I learned a lot about different topics and how important public health is. It set the basis for everything that I was going to learn. It highlighted areas that were to be focused on later in other classes.
PBH 210: Public Health for Communities	Community Coalition Assignment	This is something that in the workforce I am finding is a very common form of working on an issue. . . . This assignment was a realistic requirement that helped me understand the basis of what a coalition is and why they are important to the organizations that use them. This assignment taught me how to look for stakeholders and the importance of having stakeholders. In my future, this assignment will help me in knowing how coalitions work and how to be more involved with a coalition.
PBH 324: Program Development, Assessment, and Evaluation	Four-part Project Development Assignment	This class taught me how to value the entire process rather than assume I know how to fix the problem. To be honest the end product is absolutely nothing like I had pictured. If a student picks a real topic for their project that pertains to an area they would like to work in after graduation, the project is helpful to learn more about the issues/problems facing that population. This assignment helped me gain the internship I received and has helped me in the interview process of potential jobs after graduation
PBH 480: Capstone Internship		This placement gave me lots of opportunity to prove I can do projects on my own. It allowed me to act professionally and overcome any questions I had about public health. I have been able to complete all three of my objectives for my internship. I think by completing all three, I have gained experience, knowledge, and confidence as I take the next step and start to interview for jobs in the public health field. By completing these objectives and various projects throughout my internship, I have gained or developed skill sets that can help me land a job.

- *Start small:* After completing curriculum mapping, identify one or two 100-level courses to develop and pilot signature assignments and integrate additional signature assignments in upper-level courses in subsequent years. Introducing signature assignments at the 100-level familiarizes students with the concept of benchmark assessments requiring them to integrate knowledge from the course and apply it to a real-world problem. As students progress through the curriculum, signature assignments can be developed that build on their experiences from previous courses. Taking a stepwise approach to the integration of such assignments also reduces faculty anxiety related to developing new, milestone assignments that may also be unfamiliar to them.
- *Make assignments “real”:* When students can see a link between an assignment and a real-world public health issue or task, they are more engaged and

motivated. Millennial students are particularly resistant to highly abstract material and therefore these real-world scenarios provide relevance, connecting the classroom experience to the broader professional arena. We have discussed many of our assignments with our CAB, and they have helped provide a context for the assignments that we can share with our students. For instance, we have heard several times from CAB members that public health professionals need to be skilled in the development and implementation of evidence-supported programs on a variety of health topics, for a variety of populations. This information not only helped inform the development of the Design Portfolio for our 300-level Public Health Program Development, Evaluation, and Assessment course but is also shared with students to provide a meaningful context for the assignment. To complete this “loop” with the real world, select students are invited to share their completed design portfolios at a CAB

Table 4. Student Performance on Signature Assignments.

Signature assignment	Student performance		
	Exceeds expectations (%)	Meets expectations (%)	Below expectations (%)
PBH 101: Role of Public Health	69	29	2
PBH 102: Country Profile	100	0	0
PCH 210: Community Coalition Project	60	40	0
PBH 324: Four-part Project Development Assignment	67	33	0
PBH 480: Public Health Internship	100	0	0

meeting where practicing professionals provide valuable feedback to the students.

- *Design rubrics for signature assignments:* Faculty need to carefully craft rubrics for all signature assignments particularly the broad constructs for evaluation so both faculty and students know what is expected for the successful completion of the assignment. This is especially important given the level of uncertainty students experience in a project that requires critical thinking. It is also helpful to scaffold these rubrics for upper-level courses so students can see the constructs applied across courses.
- *Provide opportunities for student reflection:* Since the EBLT assignments are designed so students do more than just process an accumulation of information, assignments must include opportunities for reflection. Reflection thus becomes an important link between processing the new information and integrating it with the existing understanding of a concept. This final step also helps deepen the understanding of the information.
- *Review assignments to track student progress:* Imbedded signature assignments in core courses build on each other and can be used to demonstrate student progress. If possible, develop an electronic portfolio system to store students' signature assignments and have students and faculty purposefully review and compare assignments at specific points throughout the curriculum. This exercise provides faculty with evidence of students' growth and areas for improvement and also allows students to mark their progress, gaining confidence as they move through the curriculum.

Conclusion

Indirect and direct evidence suggests that stand-alone baccalaureate public health programs looking to increase student engagement and deepen student learning could benefit from an EBLT curriculum that is assessed with signature assignments. If well designed, signature assignments

help students connect learning across the curriculum and provide a meaningful example of their learning. When faculty focus on student learning rather than instruction, students report increased engagement and persistence, and employers will find college graduates better prepared when it comes to having the ability to apply knowledge and skills in real-world settings.

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