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Interdisciplinary Team Teaching

A Collaborative Study of High-Impact Practices

Edited by

Reneta D. Lansiquot

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ISBN 978-3-030-56301-1 ISBN 978-3-030-56302-8 (eBook)
https://doi.org/10.1007/978-3-030-56302-8

This Palgrave Macmillan imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

To my colleague and friend, Jean Hillstrom, whom we lost too soon. Her contribution of a chapter to this book would have added a highly valuable perspective.

Foreword

Welcome to an institutional-level case study where professors at New York City College of Technology (City Tech) for over a decade have been operationalizing the complex work and best practices of interdisciplinary team-teaching. At City Tech it is a structural need to team-teach, as all baccalaureate students are required to complete at least one interdisciplinary team-taught course. Yet as anyone who has team-taught knows, there is often a profound correlation between the care one puts into the collaboration, and its positive outcomes. In this collection, critical teachers candidly reflect on the challenges and affordances to interdisciplinary teaching, so that you, dear reader, can stand on their stable shoulders.

We often profess to our students that the real world is not made of the "cells and bells" of traditional schooling[1] and that interdisciplinarity and diverse collaboration are the norm. Yet our course design and action may, in fact, show a different reality. For instance, while collaboration is important in real workplaces, some studies cite that less than 3% of teachers in the United States team-teach.[2] By contrast, instructors in this book demonstrate what Ken Robinson has called "creative revolution," working "from the ground-up"[3] using the assets of their different disciplinary lens to be relevant and to be innovative beyond common walls. Co-teachers, as in Honigseld and Dove's collaborative instructional cycle,[4] spark positive outcomes in curriculum planning, instructional delivery, assessment, and reflection. Their collaborations are prodigious communities of practice.[5]

If the idea of interdisciplinary team-teaching seems overwhelming or difficult in your teaching context, you will be encouraged by Matthews and Doubleday who focus in this volume's first chapter on developing interdisciplinary course content together. Professor Matthews at City Tech and Doubleday, a professor at the University of Illinois at Chicago, share content planning across universities. While team-teaching for them means collaborating on course content without physically being together in class, they attest to how such collaboration can still bring real joy to the instructors and students, and this is in an associate program charged with achieving discipline-specific proficiency and technical professional skills: City Tech's Dental Hygiene program. As a reader you are taken through example assignments where clinical students investigate multiple disciplinary points of view that include forensics, pharmacology, oral anatomy, and ethics, and in modes and mediums outside the dental lab, such as through art shows, popular newspaper articles and videos, summer book reading, letter writing to lawmakers, and creating public service announcements.

In Chapter 2 Chef Walljasper, grounded in his discipline of culinary arts, shares insights from his experience across time and collaborations with colleagues in the disciplines of physics and biology to produce the special topics course, Science in the Kitchen. His candid descriptions of course iterations over three years and different teaching arrangements from a model where co-teachers alternated the classes they each taught with him, to achieving full simultaneous co-teaching with others from curriculum co-planning to delivery, to assessment, and finally, to co-reflection, are helpful to readers imagining possible investments they might give in time and resources. He also articulates how students have benefited not only from an amelioration of content, but also in their physical meeting space actively being moved from the lecture hall to the lab. That is, students across majors delight in the relevant hands-on complementary tension of learning, as Walljasper calls it, in both the "sterile" and the "edible" lab (in both the science lab and culinary kitchen).

The impact on co-teaching on the physical place students are invited to engage with is also a theme in MacDonald's Chapter 3 on Place-Based Learning as a high-impact educational practice. She argues using an Environmental Economics course example that place-based learning ought to be added to Kuh and O'Donnell's high-impact practices.[6] This argument is elaborated on in Montgomery's description of a special topics course, *Learning Places: Understanding the City*. At the time of this

writing, the course has been team-taught over five years with faculty from the library and architectural technology program, plus a third instructor from programs in hospitality management, tourism, history or a social science, like psychology. Co-instructors facilitate students' selection of a local site (e.g., Grand Central Terminal, the Gowanus Canal) to research in terms of design and construction, but also from myriad human factors including cultural, social, and economic processes. Instructors alternate to lead classes and walking tours. Multiple perspectives help students to see, or re-imagine their own neighborhoods.

Phillip's Chapter 5 shares a parallel teaching experience to Montgomery's teaching of *Learning Places: Understanding the City*, but in her course section she narrows down the concept of place to focus students' research attention on the unexamined monuments they have walked past multiple times to enter their campus, and in their neighborhoods. The course, inspired by current events such as the 2017 violent tragedy in Charlottesville, VA, between white nationalists protesting the removal of a Confederate statue, and anti-fascist protesters, asks students to investigate what the use of selected monuments in New York City can reveal about the intersections of race, colonialism and sexism, and their own civic engagement. Readers will see the immediate teaching ideas for our current world. Phillip combines her expertise in tourism and museum education, with her co-instructor, and the final author of this collection, psychology professor Almond. Details of how they alternate and complement each other's teaching (and assessment) will make any reader want to be in their class—as an active student or co-teacher. Student voices cited by Phillip testify to students' appreciation of the relevancy of multiple perspectives on normalized objects literally in one's life path, but also metaphorically to a new openness to opportunities for learning.

Evangelista also sees a transformation of students' appreciation of multiple perspectives through her interdisciplinary course, The Heritage of Imperialism, described in the penultimate chapter. More than in any of the courses described in this collection, this course makes use of a multiple-guest lecturer format. This format functions as a powerful catalyst to center perspectives that have historically not been prioritized, and to help students more easily unearth imperialism as a local system which continues to impact their lives today. Re-conceptualizations of time, geography, spaces, and the meaning of self-actualization are explored. A public anthropologist, Evangelista, fosters students' direct civic engagement through a visit to the independent media studio of *Democracy Now!*

in addition to guest lecturers from journalists and columnists from venues, such as the Huffington Post.

As a reader you might wonder how you can have a similar community of practice where you and your colleagues are collaborating using impactful practices to better serve your diverse students. Almond prepares you for what might be ahead when a community wants to institutionalize, and ultimately evaluate, their interdisciplinary courses. Questions of validity are at the forefront of this final chapter. Almond shares her experience asking difficult questions regarding the operationalization of team-teaching in interdisciplinary courses and how the organization of interdisciplinarity is made obvious to students. She asks, "how can faculty be assessed, fairly, for maintaining the interdisciplinary nature of a course, over time?"

Almond's question is extremely relevant. As of this writing, the Coronavirus Disease 2019 (COVID-19) pandemic and protests over the murder of George Floyd are changing society and education, profoundly. We know a better world is one that honors multiple points of view and uses them to solve global problems. The validity and impact of our co-teaching, for our students, and co-teachers, could not be more important. Now, more than ever, we must work together for each other.

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Notes

1. Prakash Nair and Randall Fielding, *The Language of School Design: Design Patterns for the 21st Century Schools* (Minneapolis, MN: Designshare, 2009), 25.
2. Bill & Melinda Gates Foundation, *Primary Sources 2012: America's Teachers on the Teaching Profession* (Seattle, WA: Scholastic Inc. 2012), 14.
3. Ken Robinson, *Creative Schools: The Grassroots Revolution That's Transforming Education* (New York: Penguin Books, 2016), xxii.
4. This instructional model gives insight into co-teaching in linguistically diverse classrooms as well. See Andrea Honigseld and Maria Dove, "Preparing Teachers for Co-Teaching and Collaboration," in *The Handbook of TESOL in K-12*, ed. Luciana C. de Olivera (Chichester, UK: John Wiley & Sons, 2019), 405–421.

5. Jean Lave and Etienne Wenger, *Situated Learning: Legitimate Peripheral Participation* (Cambridge: Cambridge University Press, 1991), 138.
6. George Kuh and Ken O'Donnell, *Ensuring Quality and Taking High-Impact Practices to Scale* (Washington, DC: Association of American Colleges & Universities, 2013).

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Robinson, Ken, and Lou Aronica. *Creative Schools: The Grassroots Revolution That's Transforming Education*. New York: Penguin Books, 2016.

Christine Rosalia earned her Ph.D. from New York University in educational communication and technology. Her research interests have focused on teacher education, computer-assisted language learning, extended reality, written feedback, and online peer assessment. At Hunter College, City University of New York, she is an Associate Professor of Teaching English to Speakers of Other Languages (TESOL). She enjoys preparing public school teachers and teachers of adults to incorporate technology into their everyday language and literacy teaching. She is fortunate to supervise language teachers in PreK-12th grade classrooms across New York City. As a high school literacy coach at International Community High School, she works alongside teachers team-teaching, and developing interdisciplinary curriculum that meets the needs of recent immigrants and students with interrupted formal education. In remote learning her research interests include the impact of reflective dialogue in one-on-one language learner advising in the tradition of writing centers and self-access learning centers.

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CHAPTER 1

The Art and Science of Interdisciplinary Connections: A Look at Dental and Dental Hygiene Education

Anna Matthews and Alison F. Doubleday

Abstract This chapter offers a voice to innovative educators in the often tightly controlled environments of clinical dentistry and dental hygiene. Despite limitations due to requirements of dental and dental hygiene education, it is possible to include informative, historical, and current interdisciplinary content to enhance student learning. There are many ways to integrate interdisciplinary content into discipline-specific courses to enhance and enrich the student experience. We examine the parallels and benefits of an interdisciplinary approach to teaching and learning in dental and dental hygiene curricula, discuss how the use of interdisciplinary content aligns with institutional and program goals, and provide some examples of the successful incorporation of interdisciplinary content in dental and dental hygiene courses.

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R. D. Lansiquot (ed.), *Interdisciplinary Team Teaching*,
https://doi.org/10.1007/978-3-030-56302-8_1

Keywords Assessment · Dental education · Dental hygiene education · Interdisciplinary · Pedagogy

Building information literacy, critical thinking, and analytical skills assists future dental health care professionals in evaluating the quality and evidence for the vast amounts of information they encounter. How often as educators do we hear from our students that our course was difficult and challenging? Probably all the time! But how often do these same students say that the course was interesting, informative, interactive, and fun, meaning our students felt motivated and inspired by what and how we teach? Students may share with us that they thought homework readings were "very helpful" and that assignments were not a burden but instead "great" and "a nice getaway from the work done in class."[1] To hear such responses from students is rewarding and encourages educators to continue enriching course curricula with new, innovative pedagogies. Ranging from a reading assignment from a popular newspaper or magazine on a current topic or adding an interactive online discussion, to re-envisioning and redesigning entire courses and bridging content from two or more disciplines, interdisciplinary (ID) educational innovations are meaningful and enriching for our students as they broaden the horizons of their discipline-specific knowledge. Among the long-term goals of most educators is the desire to promote lifelong learning. Arguably, nowhere is it more important to do this than in the health care professions. Indeed, ongoing learning is not only encouraged but also required and necessary for maintaining a license to practice medicine, nursing, dentistry, and dental hygiene, among other professions. The seeds for lifelong learning must be planted early in the student's educational journey to introduce the wide variety of sources that are available, both within and outside professional resources. Specifically, for future dental professionals, establishing ID connections is significant as they become lifelong learners.[2] Once graduated from a specific professional program with a relatively narrow sphere of subjects, professionals will experience inter- and multidisciplinary learning. In professional practice, learning is obtained from textbooks, professional and lay publications, social media, internet resources, and everyday interactions, conversations, and experiences.

The Function of ID Content in Health Professions Education

Research supports the importance of integrating ID content in the health care professions and the value of connecting discipline-specific knowledge and experiences to the world beyond the boundaries of professional education, including arts, physical sciences, history, anthropology, and contemporary issues.[3] Besides promoting the development of critical thinking skills, studies credit integration of humanities into health sciences education with fostering empathy and cultural competence.[4] While most evidence comes from medical programs where humanities, arts, and research have been successfully incorporated into students' experiences, there are notable examples from social work and dental programs.[5] Opportunities to enrich students' educational experiences are abundant and ID content can be incorporated into didactic and clinical courses through lectures, laboratory sessions, and student assignments using sources such as popular media (TV, newspapers), literature, theater, and art exhibitions. The benefits of such an approach can be examined and confirmed by evaluating student feedback in formal research surveys, students' evaluations of teaching, and informal students' comments and reflections.

What better reward as educators can we receive than comments from students: "*Thankful for all that I'm taking with me into the real world*" and *"I was inspired and my eyes opened widely into the field of dental hygiene thanks to this course."*? This student feedback, noted here, is especially appreciated because it was offered as optional comments in a survey focused primarily on assessment in dental hygiene courses (oral anatomy), and not specifically targeting the evaluation of ID content. These comments, therefore, may be illustrative of the students' understanding and appreciation of the subject of oral anatomy and its breadth. Not limited to the subject of the anatomy of the head and neck and the oral cavity, virtually every course in the dental hygiene curriculum can be enriched by various-scale ID content in homework assignments, class activities, and online discussions. Further in this chapter, examples from pharmacology and principles of dental hygiene courses, oral anatomy projects, as well as examples from integrated biomedical sciences courses are provided and discussed.

Aligning Discipline-Specific, General Education, and ID Education Goals

Dental and allied dental education programs (including dental hygiene programs) are monitored and accredited by the American Dental Association's Commission of Dental Accreditation (CODA). Accreditation ensures that programs maintain standards for preparing graduates for entry into professional practice.

CODA Standards and Requirements for Dental Education Programs

CODA sets out the minimum standards that are expected of an accredited dental education program. According to the CODA Accreditation Standards for Dental Education Programs, the learning experiences of the students provide a pathway to professional competence and "blend the various dimensions of competency into an integrated performance for the benefit of the patient."[6] Critical thinking is viewed as a fundamental component of the learning environment. In addition, scientific discovery and integration of knowledge are considered core principles of the educational environment and it is noted that "learning objectives that cut across traditional disciplines and correlate with the expected competencies of graduates enhance curriculum design. Beyond the acquisition of scientific knowledge at a particular point in time, the capacity to think scientifically and to apply the scientific method is critical if students are to analyze and solve oral health problems, understand research, and practice evidence-based dentistry."[7] Collaboration with professionals across fields is also stressed; health care professionals should be "educated to deliver patient-centered care as members of an ID team,"[8] which can present a challenge for educational programs. Emphasis on the importance of ID activities is supported by the following CODA standards: Standard 1.9, "The dental school must show evidence of interaction with other components of the higher education, health care education and/or health care delivery systems"; Standard 2.7, "Biomedical, behavioral and clinical science instruction must be integrated and of sufficient depth, scope, timeliness, quality, and emphasis to ensure achievement of the curriculum's defined competencies"; Standard 2.11, "Biomedical science instruction in dental education must ensure an in-depth understanding of basic biological principles, consisting of a core of information

on the fundamental structures, functions, and interrelationships of the body systems."[9]

Integrated National Board Examination (INBDE)

In addition to evolving CODA requirements, in 2020 all dental students wishing to practice dentistry in the United States must participate in one Integrated National Board Dental Examination instead of the traditional two-part National Board Examination (NBDE) challenged by dental practitioners up until this point. Whereas the traditional NBDE split the biomedical and clinical sciences into Parts 1 and 2, the integrated exam is ID in nature and combines biomedical, clinical, and behavior sciences. Duong et al. found that many dental schools have undergone extensive curricular changes in anticipation of the new examination to ensure that students are prepared. Strategies include ID cases and case-based learning within current courses, online modules bridging content from multiple disciplines, revision of institutional competency statements, and, in some cases, the complete restructuring of courses to be more ID in nature.[10]

Evolving Dental Curricula and the Case for ID Education

With the current emphasis on the integration of clinical and biomedical sciences within dental education, many institutions have undergone extensive curricular reform to remove siloed, discipline-based courses and replace them with ID curricula that organize around organ systems or other unified themes.[11] There are several areas of focus in dental education that are driving this push for ID approaches: caring for specific populations of patients such as geriatric patients or other patients with special needs, diagnosis and treatment of patients with multifactorial, complex diseases (for example, diabetes or hypertension), managing acute and chronic pain, and working as part of an ID health care team. The changing role of the dentist inpatient care, the dentist's participation as part of an interprofessional team, and the increasing recognition of the importance of oral health for overall systemic health necessitate a broader base of knowledge for trainees that includes perspectives beyond the traditional scope of dentistry. ID education that brings together content from various dental specialties, a common practice in postgraduate dental education, is essential, but dental educators must also ensure that students

understand how they will coordinate with other health professionals to ensure continuous and reliable health care for patients, increase the quality and safety of patient care, and develop novel approaches to prevention, treatment, and management of complex diseases.

CODA Standards and Requirements for Dental Hygiene Programs

In dental hygiene, CODA describes the standards for pre-clinical and clinical curricula, including general, biomedical, dental sciences, and dental hygiene science.[12] Additionally, more detailed guidance to programs is provided by the American Dental Education Association.[13] In general education, effective oral and written communication, sociology, and psychology are emphasized,[14] and biomedical studies instruction (e.g., anatomy, physiology, immunology, pharmacology) provides students with the foundational knowledge of body systems and their interrelationships.[15] Communication and collaboration with other health care providers and understanding cultural influences in a diverse society are underscored by "patient care competence,"[16] whereas ethical decision making, professionalism, and responsibility are emphasized as necessary abilities of the graduates as members of the dental hygiene profession.[17] Preparing graduates for lifelong learning by ensuring competence in evaluating scientific literature aids their ability to continue their professional advancement post-graduation and stay abreast of developments in science, technology, and health care.[18]

These professional educational standards are closely aligned with general education learning goals at the New York City College of Technology (City Tech).[19] A set of knowledge, skills, and values is found in courses across all majors, which includes effective communication in diverse settings and the ability to work in diverse teams, information literacies to help the ability to gather and analyze information from various sources, and other competencies required for lifelong learning and personal/professional development. Also emphasized is the importance of the arts, sciences, and humanities in promoting the breadth of knowledge and the graduates' ability to integrate knowledge by making meaningful connections between the liberal arts and professional studies. There is a notable correlation of these student goals in particular with the ID student learning outcomes at City Tech, which underscore connection and integration of interdisciplinary knowledge and synthesis/transfer of

knowledge across disciplinary boundaries, as well as integrative thinking in ethical ways.

The parallels among these professional, general education, and ID competencies are not surprising; this correspondence helps ensure a graduate's ability to enter the professional world and assume their responsibilities in providing dental health care, maintaining the highest professional standards. All these dimensions of graduates' readiness, including their intellectual curiosity and willingness to continually learn, being flexible thinkers who can recognize and appreciate varied perspectives and be comfortable with complexities and uncertainties of the "real world,"[20] are necessary for their success. There is no single course in dental hygiene that can teach our graduates all these skills; they are acquired through intensive, comprehensive curricula that include student activities and experiences to promote their attainment of these essential qualities.

High-Impact Practices and Interdisciplinarity in Dental Hygiene and Dental Education Courses

So, how can we prepare our students for this ID lifelong education and professional growth and advancement? Moreover, how can we help them get ready for practice within the constraints and requirements of today's intense, competency-based dental and dental hygiene programs where the main focus is on achieving discipline-specific proficiency and excellence in technical professional skills? The addition of an ID course to every student's educational journey can be ideal, and, in fact, some colleges have made this a requirement for baccalaureate education. For example, the ID course requirement underscores the importance of ID education and its role as high-impact pedagogy preparing graduates for the lifelong learning necessary for their professional growth. One such ID course, Healing the Body: The Visual Culture of Medicine, created by an art historian, a registered nurse, and a dentist with a specialty in oral pathology, bridges the gaps among art history, nursing, and dental hygiene. The course examines the visual culture of medicine and artistic representations of the healthy and ailing body; it presents the socio-historical context of medicine in relation to the body, disease and illness, and treatment and healing. Learning from educators in all three fields, students acquire various general education skills, helping them use art as a way to examine cultural values that underlie medical practice across

historical eras.[21] Ever since its launch, the course sections are consistently filled, and it is popular among students from health care studies and the humanities. However, because the City Tech's dental hygiene program is an associate-level degree that does not require an ID course, dental hygiene students typically do not take advantage of them. They may participate in this course if they continue their education at City Tech toward the baccalaureate degree. In the dental hygiene program, the rigidity of curriculum, tight credit limit, and close alignment of educational content with CODA requirements necessitate the inclusion of other opportunities for ID content within the regular discipline-specific dental hygiene courses. While creating or modifying the existing dental and dental hygiene courses as ID is not always possible, it is also not necessary. Rather, it may be preferable to develop ID activities for use within existing courses to promote ID thinking within the parameters of a traditional curriculum.

Examples of ID Activities in Dental Hygiene Education

Among the many effective teaching methodologies that promote student learning, the Association of American Colleges and Universities identifies a set of high-impact practices that have been widely tested and shown effective and beneficial in undergraduate education to increase student engagement and retention.[22] These eleven research-supported practices include collaborative assignments/projects, writing-intensive courses, undergraduate research, service-learning/community-based learning, and other educational approaches facilitating active learning. Spanning student learning experiences across the curriculum (writing-intensive courses, learning communities, e-portfolios) or used in a single course (undergraduate research, capstone projects) or assignment (collaborative assignment/project), these offer opportunities for active, collaborative, experiential learning. These impactful approaches can be used together in various course activities, as we will demonstrate below.

Student assignments and activities described here offer examples of how the high-impact practices can be used in several dental hygiene courses and coupled with place-based learning as an alternative to service-/community-based learning. These examples incorporate multidisciplinary stories and sources to encourage further reading and learning and help students appreciate the connection of dental sciences to the

other disciplines, including biomedical sciences, history, humanities, and ethics.

Richard III: Oral Anatomy

The inspiration for this assignment is a *New York Times* article "Richard III's Rich Diet of Fish and Exotic Birds," published in August 2014 following the discovery and analysis of the king's remains.[23] Connections of the analysis of Richard's dentition to the Oral Anatomy course (which includes anatomy of the oral cavity, teeth, supporting structures, and the anatomy of head and neck, including the skull) were obvious and multidimensional. Together with the videos by the research team at the University of Leicester,[24] this article presented an exciting opportunity for students to explore the condition of Richard's battlefield wounds and how the presence and locations of his skull fractures informed archeologists and historians of the circumstances of his death in the Battle of Bosworth Field at age 32 in 1485. Meanwhile, learning the locations of Richard III's wounds can make the tedious task of memorizing names and locations of cranial and facial bones more relatable and memorable for students of skull anatomy. Reading about a chemical analysis of his bones and teeth offers a lesson regarding both their development and the importance of the calcified structures in preserving and recording our life story, including the foods we eat (or don't) and evidence of social stratification. Evaluating the presence of the calcified plaque around King Richard's teeth opens up discussions about self-care and the availability of various resources, as well as about teeth's general appearance and condition. These discussions can inform us about the availability and methods of dental care in an historical context. Students often make connections of the condition of his dentition with the copious amounts of wine supposedly consumed by the late king as a contributing factor to cavity development due to the high acidity and sugar content of the wine.

From the article and the related videos, the students also learn about the genetic analysis of the DNA in the dental pulp that led to the confirmation of the king's identity, connecting dental science to forensics. In fact, according to the many student responses on this assignment, they are most impressed by the superior preservation of the DNA in the dental pulp, protected by the hard tooth tissues and preserving the secrets of their owners for centuries.

This writing-intensive assignment supports building students' information literacy and written communication, as well as the integration of knowledge from multiple disciplines. It hopefully also promotes their curiosity and desire to learn, which are key to lifelong learning!

"Boy in the Bubble": Oral Anatomy

While also offering a lesson on history, the assignment "Boy in the Bubble" explores the ethical issues of keeping a young boy, David Vetter, born with the severe immunodeficiency syndrome in the 1970s and living his whole short life in the protective bubble. Unable to escape it to experience a human touch, David's story is as controversial today as it was when he was alive. Dental hygiene students in the Oral Anatomy course read the article about David in the *New York Times*[25] and watch the accompanying video. This assignment is timed to coincide with the study of human lymphatic and immune systems. The many connections to the fields of immunology, microbiology, as well as psychology and medical ethics, are abundant and promote thoughtful and compassionate student responses.

In addition to promoting students' information literacy, written communication, and integration of knowledge from multiple disciplines, this assignment facilitates the growth of their ethics and professional/personal development by discerning multiple perspectives and considering the consequences of decisions and actions.

Making Your Voice Heard: Pharmacology

There is another assignment that explores ethical issues in health care concerning drug development, drug pricing and availability, drug misuse, and abuse and asks the students to propose how they can make a change and have their voices heard. Their careful consideration of the issue in a recent article leads them to a possible solution to the problem presented and to develop a call for action. Too often, as both providers and consumers of health care, we remain silent when our voices should be heard. This assignment offers students the opportunity to practice taking action by addressing the various stakeholders in the industry, legislature, and community.

Students certainly take this opportunity and think broadly and creatively: from developing a public service announcement of the dangers

of prescription stimulants for young children overdiagnosed with attention deficit hyperactivity disorder (ADHD) to writing letters to lawmakers about the overpricing of life-saving medications such as epinephrine (Epipen®) and insulin, leading to their unaffordability and potential increase in morbidity and mortality associated with no treatment for a life-threatening food allergy or diabetes. Several students' letters to the Food and Drug Administration, the Surgeon General, and various state and local lawmakers in 2018 were so well-researched, personal, and passionate that we selected and signed them as a class and mailed them to their respective recipients. In fact, we received several responses, and it provided a lasting important example of our power to make a change where it is needed by literally making our voices heard.

This assignment also supports students' collaborative work using open digital pedagogy as they shared, read, and commented on each other's calls for action and together selected and signed the few letters mailed.

"Epidemic—Are You Paying Attention?": Principles of Dental Hygiene II

As dental hygiene students transition to patient treatment, they learn the process of dental hygiene care with emphasis on patient assessment and care planning. Patient education is a vital part of disease prevention. Dental health professionals can help prevent and lessen the impacts of opioid abuse, from selecting appropriate effective pain management methods to counseling patients about the many implications of opioids use. In this planned assignment, students will learn about the various impacts of the opioid epidemic on individuals and society as they will be presented in the art show *Epidemic*.[26] This out-of-class, place-based activity will allow students to explore the show, focus on a particular artwork exhibit, and draw connections between the field of dental hygiene and their roles as dental health care providers. Careful observation and detailed description of artworks in galleries enhance clinical observation skills honed in medical education and promote empathy, communication, and attention.[27] And while it's not always possible to include a museum visit into structured classroom activities, visiting a nearby gallery, in this case, an art exhibit at City Tech, provides students the opportunity to engage with the arts on their campus. Following their visit to the *Epidemic* exhibition, students could share their reflections online. By paying attention to this ongoing problem and offering their impressions,

participating students can engage with all students in the class and foster a broader and deeper conversation. In addition to incorporating art and art observation, this activity allows students an out-of-class place-based experience and promotes their written communication and integration of knowledge by making meaningful connections between the arts and their professional field of study of dental hygiene.

Summer Book Assignment: Incoming First-Year Dental Students

Being able to think critically, synthesize multiple related concepts, craft a thoughtful and effective argument, and clearly explain one's reasoning are all important skills for a health care professional. As part of their training, upper-level dental students must conduct critical analyses and present their rationale for diagnoses and treatment plans to peers and faculty. To assist students in building a solid foundation in these skills, incoming first-year students are asked to complete a critical analysis of an ID book. For the assignment, students choose from a selection of books, critically read their selection, and answer questions about their book. Books included each year are selected by a diverse group of first-year dental curriculum faculty members to present an ID perspective on health care. Books included are intentionally ID and demonstrate the type of integrated thinking that is expected of students throughout the curriculum. Topics so far addressed as part of this assignment include the microbiome, social determinants of health, ethical dilemmas in science and research, antibiotic use, addiction, and historical perspectives on the biomedical sciences. The assignment serves the dual purpose of preparing students for a writing-intensive first year that includes essay exams and personal reflections and shows students that critical analysis, scientific reasoning, and the ability to pull together content from multiple perspectives are skills valued at our institution. Providing a choice of books and allowing students to select from a series of questions to answer provides students with agency and lets them identify topics that are most relevant for them, given each student's background and personal interests. Faculty graders have a rubric that is also provided to students in advance. The rubric guides students' reading and reinforces the valued skills assessed throughout their dental curriculum. An added benefit of this assignment is that students and faculty who have read the same book have a common topic for informal discussion. Faculty members often find that

students will bring up relevant points from their reading assignment at various times throughout first-year courses, suggesting that there is some retention of content beyond the duration of the assignment.

ID Cases are Guiding Pedagogical Tools for Dental Education

Case-based learning has emerged as an important pedagogical method for pulling together relevant or thematically related content across multiple disciplines. ID cases can be a central component of a curriculum or can be used within a single class session. This flexibility is a great strength because, once cases are developed, they can be implemented in a number of different ways and can be adapted, over time, to evolving curricular models.

At the University of Illinois at Chicago (UIC), College of Dentistry, ID courses facilitate exploration of organ systems and related clinical problems from a holistic perspective. Cases guide student inquiry and prompt students to explore multiple disciplines while synthesizing information into a coherent picture. Cases also have the goal of situating learning in the authentic work of dentistry. For example, a case may introduce a patient with high blood pressure who also has dental inflammation or a dental abscess. The relevant biochemistry, anatomy, histology, embryology, physiology, microbiology and immunology topics for organ systems are addressed together with clinical sciences topics. Students are also asked to consider behavioral and socioeconomic factors that may impact patient care, treatment, or access to care. In this way, students who are just learning foundational content in their first or second year of the dental curriculum can immediately grasp the relevance of their educational activities for professional practice.

Considerations for Successful Implementation of ID Activities in a Dental Hygiene or Dental Education Course

As with any educational activity, consideration and development of learning objectives are important first steps. Rather than being a way to satisfy curiosity or sensationalize a topic, weaving ID content and activities into a course or curriculum should allow students to develop specific

skills or meet professionally relevant competencies. Creating ID learning objectives may be challenging, but alignment with CODA standards is a good way to begin as many of these standards are themselves ID in nature. Crucial to the success of ID activities is the recruitment of faculty members with diverse backgrounds and expertise to contribute varied perspectives and ensure that student interpretations of content accurately reflect the evidence from a given discipline. For example, development of a case that addresses specific epidemiological concepts should involve contributions from an individual with expertise in epidemiology. Likewise, an activity that has students explore the biochemistry of opioids while investigating social factors related to opioid use and clinical considerations for prescribing various pain medications should include faculty members with expertise in each of these areas at all stages of activity development. Doubleday et al. describe the process of ID case-writing at their institution and identify the inclusion of diverse case writers as a crucial contributor to the success and effectiveness of the cases.[28] The authors highlight the social cohesion and sense of shared responsibility and buy-in among faculty that results when an ID team is involved in crafting curricular activities. Bringing together faculty members from multiple disciplines also highlights ID work as a valued commodity within an institution and models ID collaboration for our students.

Another important consideration is the appropriate assessment of ID content. ID courses necessitate ID assessments if students are to be truly encouraged to think about topics in broader ways. Even in classes where shorter, targeted ID assignments are included within a larger discipline-specific framework, assessments should allow students to apply the concepts and content discovered as part of their exploration of different fields and perspectives. The thoughtful inclusion of ID assessments precludes the relegation of ID stories, articles, and perspectives to the role of "filler" or interesting, but irrelevant, factoids. If a goal of bringing in approaches and content from other fields is to expand the way health care students think about their chosen clinical profession, educators need to provide motivation for this and must reinforce the value of this perspective by assessing students on their ability to pull together concepts from multiple fields into a coherent picture. One approach to

developing ID assessments is to involve multiple faculty members in the question-writing process. Key to this endeavor is the identification of specific topics or contexts in which a student might need to call upon information across a variety of fields to arrive at an effective solution to a problem. For example, an exam question may present a case in which a student must apply knowledge of pharmacology, anatomy and physiology, and biochemistry to answer a question about the mechanism of action of a particular drug and its anticipated side effects.

Conclusion

The inclusion of ID content in dental and dental hygiene curricula provides opportunities for students to develop important critical thinking and analytical skills, to enhance their understanding of various disciplines, and to foster a sense of responsibility and value for their place within an ID health care team. As we have demonstrated throughout this chapter, dental and dental hygiene educators can use an ID framework for structuring an entire course, as we've seen at institutions employing a systems-based course model or extensive use of case-based learning. Educators can also opt for implementing targeted ID activities and content within any discipline-based course, rather than engage in complete curricular revision. This flexibility makes the use of ID content in health professions courses relevant and applicable for many institutions, courses, instructors, and cohorts of students. While there is no dearth of resources available from which educators can cull interesting cases and narratives, Duong et al. point out that faculty development may be necessary to help faculty members learn how to teach in an integrated and collaborative fashion.[29] Institutions may need to provide assistance and support for faculty members who wish to develop ID activities, and institutional administrators may need to develop ways to foster collaboration across departments and colleges, as well as cross-institutional interaction. Sharing challenges and successes, as well as resources, with each other presents a model for ID work and furthers the educational effectiveness of all health professions programs.

Notes

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CHAPTER 2

Demystifying the Kitchen: A Collaborative Interdisciplinary Study of Science in the Kitchen

Robert Walljasper

Abstract Science in the Kitchen engages students in course work through the merger, implementation, and practical application of two distinct subjects from diverse disciplines into a single course. The course offers an independent approach to a cooperative effort with strong team-teaching influences in the building of content, course management, pedagogy, and professional development. The collaboration and student learning outcomes are further enhanced with the addition of two high-impact practices: collaborative assignments and undergraduate research. An interdisciplinary course often requires sustained efforts from faculty to address the unique nature of the course. This chapter highlights the advantages and recognizes disadvantages from this rich interdisciplinary combination of student learning, pedagogy, and faculty professional growth.

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R. D. Lansiquot (ed.), *Interdisciplinary Team Teaching*,
https://doi.org/10.1007/978-3-030-56302-8_2

Keywords Collaborative assignments · Culinary arts · Interdisciplinary · Team teaching · Teamwork · Undergraduate research

Science courses are often avoided by students in non-STEM majors, yet these classes are often a core requirement in general education. This chapter describes Science in the Kitchen, a co-taught interdisciplinary course at the New York City College of Technology (City Tech) in which the culinary arts connect with science, particularly biology or physics. The focus of the course is scientific concepts behind food-cooking processes. Laboratory experiments use the scientific method to show the effects of cooking on foods.

City Tech students can take Science in the Kitchen as a general education requirement because it is an interdisciplinary course. Students, usually 24 per section, are enrolled in a myriad of majors and are therefore able to connect with diverse perspectives. At the center of this special topic course are two high-impact practices: (1) collaboration assignments and projects and (2) undergraduate research.[1] Connections are encouraged with labs, which divide students into groups of three to work together to co-write lab reports, summaries, and complete worksheets.

Science in the Kitchen Evolution and Content

Science in the Kitchen was originally proposed as Physics in the Kitchen. During the review process to become an interdisciplinary course, the name was broadened to Science in the Kitchen creating opportunity for distinct special topics, beyond physics. These topics later included biology, while still complementing the original emphasis on physical concepts and the theory behind daily cooking. In all versions of the course, students practice scientific observation through laboratory experiments. The class was taught by two professors, one from physics or biology, and the other from hospitality management (i.e., a chef).

During the first, physics iteration of the course, students shifted class locations between three classrooms during the semester, from the lecture hall, physics lab, and hospitality kitchen lab. Students learned two sets of laboratory procedures. The only prerequisite was a general education mathematics course, Quantitative Reasoning. No prior physics or culinary arts course was needed.

Course materials included Harold McGee's seminal *On Food and Cooking*,[2] plus lab manuals from the physics and hospitality programs. Weekly readings and preparations came from *On Food and Cooking* plus instructor-created handouts and online resources. Sample topics included solutions, suspensions, gels, water hardness, the Maillard reaction, and protein coagulation. Lectures were given by professors, and students moved between both laboratories to apply experiments.

I worked with a colleague in the Biology Department to create a new special topic course with an emphasis shift from physics to biology. We labored to identify themes and theories that associate culinary arts with biology[3] and used the same prerequisite and textbook. Additional resources came from open educational resources (OERs) and instructor handouts. Topics included microorganism, microscopy, fungi cultivation, structure and function of muscles, fermentation, dairy cultures, and growing plants. Throughout the semester, weekly classes met for lecture and presentation in the laboratory classroom with biweekly labs that alternated between the culinary arts and biology concentrations. In this version of the course, the lecture hall was removed, and students met in either the Biology Lab or Hospitality Kitchen Lab.

Student learning outcomes (SLOs) for interdisciplinary courses at City Tech are standardized. While all are applicable for this course, the focus is on the first four SLOs.

1. Purposefully connect and integrate across-discipline knowledge and skills to solve problems. Throughout the semester, students learn using different perspectives on the cooking process from representatives of the Biology or Physics, and Hospitality Management Departments. Students advance their interdisciplinary view on the cooking processes in the laboratory experiments and present reports and exam work in their labs. They link this knowledge and their own experience during the laboratory experiments.
2. Synthesize and transfer knowledge across disciplinary boundaries. Students are given an opportunity to make presentations to describe scientific processes behind a biology/cooking procedure of their choice. They learn how to apply the knowledge gained during the course. They exhibit their skills and active usage of various biological processes beyond the course material and examples.

3. Apply integrative thinking to problem-solving in ethically and socially responsible ways. Students learn that the knowledge of scientific methods in kitchen applications, may ensure the safety of the personnel in the kitchen. By performing science experiments and analyzing the data, students learn to become critical thinkers.
4. Think critically, communicate effectively, and work collaboratively. Students perform laboratory experiments in groups and learn how to write laboratory reports. Students analyze their results, explain which biological concepts were taken into account, and learn how to explain and analyze the measurement errors associated with their experiments. They see that any physical experiment (even in the kitchen) unavoidably contains errors, which should be estimated and described, and are a significant part of scientific thinking. They learn to define a problem for the written assignment, identify potential causes and possible solutions, make thoughtful recommendations, and apply critical thinking skills to new situations.
5. Become flexible thinkers. Students learn how to correct cooking errors based on rational decisions derived from the biological knowledge acquired throughout the semester. Professors will demonstrate unintentional changes of the conditions, which can lead to innovation, both in the laboratory as well as in the kitchen. This encourages creative thinking about diverse approaches to problems.
6. Recognize varied perspectives. Students learn how people acquire systematic knowledge in the kitchen. Kitchens can be considered historically as scientific labs first and cooking as an experiment in a controlled environment.
7. Gain comfort with complexity and uncertainty. Students learn that complex processes can be analyzed and understood using the scientific approach. Students use interdisciplinary cooking literature for their needs.

Special Topics Interdisciplinary Course Development

In the physics section, the physics professor had been developing the course, and at the last minute I was brought into co-teach. The end of the semester and the winter break both affected the opportunity to work together. The weekly sections were divided, assigned, and developed

independently. Essentially this course was two classes combined and listed as one course as a "self-contained classroom."[4] The minimal discussion between professors about classroom procedures, materials, and responsibilities appeared to disorient students a little. Students' responses during class, on assignments, and in discussions showed a disconnect between the two disciplines.

In the biology section, there were significant changes both to the content and development approach. The process was started about one year ahead to allow the professors to develop and refine course content for more interconnectedness. To build weekly lessons and overall themes, I searched for core themes where subjects crossed into the kitchen yet were still holding onto biology.[5] This was a contrast to the first iteration with physics; the development period was very short and completed during the winter break. In the second round, both professors collaborated and discussed potential topics multiple times over a six-month period. After these sessions, I did further research to locate additional material and build up lab experiments or lectures for the identified segment.

Each course offering was a remarkably different co-teaching experience beyond the two disciplines and two professors. Factors that contributed and should be considered prior to co-teaching a course are to give ample time for content development, start preparations and planning 6–12 months ahead, have sustained commitment, and seek collaboration. The two iterations were notably different in classroom logistics and planning. The initial course aligned with physics had weekly classes divided. Each professor was responsible and taught the weekly classes separately. In the two instances where the lab overlapped, physics topic saw no collaboration or co-teaching. After that initial experience, I believed a more collaborative and team teaching approach would benefit the students and increase engagement. For the second and third iteration with Biology, this approach was implemented, and the sections were reviewed as part of the planning process. I and my co-instructor identified five instances as co-instruction days: the orientation or initial day, midterm, field trip, group presentation, and final exam with both professors attending. The other sections were taught by one professor, and in several instances the other professor stopped in. The learning management system[6] was a joint platform with shared access and deployment. Emails to and from students and research groups included both professors. This planned instruction, communication, and learning management system created a more cohesive class and uniform message from both instructors.

Assessment and Projects

In the first iteration of the course, student assessment focused on three areas: the lab report, midterm, and final exam (see Table 2.1). Students completed the lab reports using the handouts based on lab experiments. The exams were cumulative tests of memorized facts, theories, and applications. All grading was done by one professor with limited input from the other co-teacher. Essentially, the majority of assessment was based on the physics section's removing much of the interdisciplinary component. During this semester, the limited assessment was rigorous, focused on physics, and did not consider the learning happening in groups during the processes.

In the second version of the course, the two professors collaborated in the development of student learning outcomes and assessment tools. Course material and assignments evolved to include one research project, with a group presentation, class participation, and removal of one exam (see Table 2.1, Second Iteration). Lab reports were updated to "Lab Assignments & Reports." Now, this section included one lab report from culinary arts and biology and lab worksheets. During the labs, students filled out the worksheets and used data from these to complete the lab report. A research project was created and added for assessment. The team project was divided into three components: an annotated bibliography building the foundation, outline draft paper, and final project. Both drafts enabled the faculty members to provide feedback during the process. Group presentation was a summary of the research project and

Table 2.1 Iterations of the Interdisciplinary Science in the Kitchen course Grading System

First iteration	*Second iteration*	*Third iteration*
25% Lab Reports 25% Midterm Exam 1 25% Midterm Exam 2 25% Final Exam	25% Lab Assignments & reports 20% Research Project 15% Midterm Exam 15% Final Exam 15% Group Presentations 10% Class Participation	25% Lab Assignments & Reports 20% Research Project 15% Midterm Exam 15% Final Exam 15% Group Presentations 10% Class Participation

was comprised of visual aid and peer and professor evaluations. With each of these assignments the weight was substantial decreased and dispersed among the components and scaffolded.

The research group project is an opportunity for students to develop their own research question while enriching collaboration opportunities. The student teams were established with three participants with different majors per team, all with equal representation from the three schools within City Tech—School of Arts and Sciences, School of Technology and Design, School of Professional Studies. An initial faculty-led presentation outlined research and various components and built footings for preparing a scholarly poster. Sections of the class were set aside for students to work on their research question. The poster was broken down into small sections such as an abstract and an annotated bibliography submitted early. This allowed faculty members to review a student team's current draft, hold conferences with the students, discuss questions regarding progress, and make suggestions for moving forward.

Science in the Kitchen Today and Moving Forward

After the second iteration of the course, where we made big changes to the number of assignments and the emphasis of our feedback, from summative assessment to a more formative approach focusing on students' development, we recognized the course could be improved. The student work and response to the previous semester were positive and insightful. Both faculty members discussed the student work and resulting assignments. There was realization regarding the wide scope of work, some that clearly met standards established and some that could be enhanced. We recognized that all the assignments could be enhanced to increase clarity and provide additional details. The next step is continued refinement of assignments and processes to increase student learning. Faculty members will continue to collaborate further, developing richer ideal results of student work and assessment tools for grading, as needed.

There continues to be room for improvement in this course as it enters the third version. Past teaching experience has demonstrated that teaching a course several times allows the teachers to refine and enhance it. Based on the past two offerings, there are several observations about potential improvements to this course or considerations for new interdisciplinary courses. Students enrolled in the course enter from a variety of different degrees and schools. Course materials should continue to be refined based

on this observation. With no prerequisite in physics, biology, culinary arts, or hospitality course content must ensure all significant information is available for students. Further enhancement of OER materials and development of online links and information can enrich the course material.

While there are numerous benefits to creating and offering courses spanning multiple departments and including more than one faculty member; interested faculty should be ready to work through challenges. This might include the department, school, college, course evaluation, or students' issues that come from an atypical class offering. The School of Arts and Sciences, which houses the Physics and Biological Sciences Departments, and the School of Professional Studies, which houses the Hospitality Management Department, offer this section. One department schedules the course, and faculty from the two other departments teach the class.

It is a great experiencing working with three departments, three department chairs, three department administrative assistants, two deans, two dean administrative assistants, two sets of clinical lab technicians (CLTs), and at least one other faculty were involved. In my experience, more people were involved than in typical hospitality courses with the involvement of three people (course leader, CLT, and department chair). Communication and open channels have been especially important throughout this process. The college's documents and online information are often automatically populated from the master course file. With the course listed for one department, the other two departments may not always be aware of the schedule or workload. In addition, with this being a specialty course running irregularly, faculty and staff can be mistakenly left out of the loop on important course information such as class location, use, budget needs, ordering, lab staffing, and more. Depending on the school, organization budgeting can require extra attention to ensure affected departments have funding available for required lab materials.

Traditional evaluations by peers and students may be worth revisiting if the assessment tools evaluate the course.[7] Having a peer coming to observe and evaluate classes every semester is a common practice for colleges. Note that peer observations are for individual professors, as scheduled by the evaluator, and there is potential for evaluation during co-teaching. In application, this could mean a biology/hospitality faculty member would be observing a biology/hospitality faculty member teaching a physics class (general education). It is important for the faculty

peer evaluator to incorporate a general education lens and see the class with a broader perspective. Previous student evaluation forms might be revisited with the consideration of a co-taught class and the nature of the course.

Interdisciplinary courses enrich students' education and have become central to our general education requirement. The past two Science in the Kitchen classes were full, with additional students seeking to get a spot or for us to overtally. At City Tech, this course was full on the first day of registration. During the registration period, there were enough students to fill another section if there had been another section. Offering additional sections or a developing similar course would be easily filled. Overall student evaluations were higher than department averages. Comments by students through emails, conversations, and discussions clearly indicate their enjoyment of the class from the many "thank you," "great class", and "I really enjoyed the class".

Team Teaching Approach

Two professors can use a common topic and perspectives from both disciplines to connect the big picture. For example, fermentation is essential for several culinary delights. The lecture identifies the scientific process and its impacting factors, while the lab brings a gastronomic perspective. During the semester, students can explore biological topics from dual perspectives. The culinary arts professor can highlight applications in more common settings, while the biology professor can bring scientific concepts to the forefront. As part of the course, students can work on a collaborative, in-depth research project underscoring the many connections between biology and the culinary arts.

Team teaching with two or more instructors alters a course in many ways and can vary depending on a class or students and discipline. This class is co-taught by two professors each responsible for 50% of the course work. Over the course of fifteen weekly classes, each professor teaches five classes individually, and five additional classes are team-taught. For this course, generally one professor leads each class alternating back and forth weekly. There are exceptions such as during the initial class orientation, days when student presentations are given, and the final class. When time permits, having both professors there further enhances the class and strengthens collaboration. Each lab is markedly differently: one sterile while the other is edible. This class structure is organized through

advance planning, and discussion is revisited throughout the semester in case of adjustments.

Teacher collaboration is a significant element in the success of Science in the Kitchen. Creating an open dialogue between faculty and meeting regularly assist in forming a more cohesive pedagogy for students. There are many teaching topics to discuss and identify and procedures to establish. Teachers should think about every class they have taught and then consider if every instructor teaches the same way. If the answer is no, how do both professors come to agreement about process? Areas for team teachers to negotiation include online platforms such as Blackboard, communication, grading, course material, and responsibilities. Consistency in these areas can enhance the class, prevent many student issues, and increase uniformity in content delivery. This will eliminate inconsistencies in responses to student questions. Determining early who is responsible will decrease chances of problems later about who needs to update grades or post files.

Co-taught classes offer many advantages to enrolled students. The faculty members are typically knowledgeable experts with extensive experience in their disciplines. In our case, both professors have over twenty years of industry experience. Each instructor brings their persona and expertise into the class to enhance student engagement through increased communication and interactions between faculty and students in and out of the classroom.

Team teaching can give faculty members many benefits and be a form of professional growth. Collaboration with colleagues has been a vital part of numerous teaching careers. Team teaching creates and integrates opportunities to work closely with peers that foster the sharing of ideas and processes.[8] In addition, this atmosphere can provide support and fresh perspective on course topics, pedagogy, and more. This could be the use of turmeric in culinary or biology applications, lab report structure and multiple drafts, and different versions of assessment rubrics. Each department and discipline has distinctive perspectives regarding written assignments, lab reports, and classroom set-up. Faculty's awareness may be due to participation in college committees or other schoolwork. The difference in team teaching is that both participants see the application of each other's personal and discipline perspective connected to a shared space. Together, collaboration, discussion, and co-teaching practices can aid newer faculty in professional development, connect mid-career, and renew seasoned faculty.

It is clear from the previous iterations and current course that teamwork and collaboration are essential to success. Both faculty members should invest enough time to merge their two disciplines. Like students who arrive from different disciplinary backgrounds, faculty members' working and learning together opens all those involved to a broader perspective. The essence of an interdisciplinary course is investigating scientific topics with practical applications in mind. Our joint perspectives enabled students to connect topics such as microorganisms, food safety, milk biology, ice cream, muscle composition, cooking proteins, dairy cultures, and growing bacteria.

Exploration of High-Impact Practice Interaction

Collaborative assignments and projects combine groups of students to produce a final assignment that requires communication, teamwork, and discussion. Having collaborative assignments and projects is essential for developing teamwork and broader understanding. A combination of in- and out-of-class written assignments is given to student teams. Working in collaboration with fellow students engages each student with the topic while bringing multiple perspectives to the final product.

This interdisciplinary course with students from three separate schools and eight to twelve different majors fosters multiple perspectives and a diverse learning environment. In preparation of student teams, faculty should devise a method to create a cross-section from the school. Ideally, each group has one student from each school and different majors. Using a lottery process, with each school drawing had numbers for their research group or a similar method can create unique teams with a representative from each school. Applying this randomized method ensured that research groups for second and third iteration courses had team composition that include students from each school. Declared majors were used as a second level of differentiation with a goal of three different majors in each group. This was a substantial change from the first iteration that had no group work and over 58% hospitality students in professional studies. During the second and third iteration, students were divided evenly, encouraging lively interaction within groups during labs, team collaboration, and class discussion (see Table 2.2).

Class assignments are done as group exercises during labs and outside of class time. Each student becomes a knowledge expert in their group by

Table 2.2 Student majors, school, and course enrollment

Major	*School*	*Enrollment*
First iteration		
Biomedical Informatics BS	Arts & Sciences	1
Hospitality Management AAS	Professional Studies	14
Nursing BS	Professional Studies	2
Legal Assistant Studies BS	Professional Studies	1
Computer Systems BTECH	Technology & Design	2
Construction Engineering Technology BTECH	Technology & Design	1
Mechanical Engineering Technology BTECH	Technology & Design	2
Facilities Management BTECH	Technology & Design	1
Second iteration		
Health Services Administration BS	Professional Studies	1
Hospitality Management BTECH	Professional Studies	10
Human Services BS	Professional Studies	1
Nursing BS	Professional Studies	1
Architectural Technology BTECH	Technology & Design	3
Computer Engineering Technology BTECH	Technology & Design	1
Computer Systems BTECH	Technology & Design	3
Construction Engineering Technology BTECH	Technology & Design	1
Entertainment Technology BTECH	Technology & Design	1
Mechanical Engineering Technology BTECH	Technology & Design	1
Telecomm Engineering Technology BTECH	Technology & Design	1
Third iteration		
Liberal Arts and Sciences AS	Arts & Sciences	1
Biomedical Informatics BS	Arts & Sciences	1
Hospitality Management BTECH	Professional Studies	10
Human Services BS	Professional Studies	1
Architectural Technology BTECH	Technology & Design	4
Communication Design BFA	Technology & Design	2
Computer Systems BTECH	Technology & Design	2
Electrical Engineering Technology BTECH	Technology & Design	1
Facilities Management BTECH	Technology & Design	1
Mechanical Engineering Technology BTECH	Technology & Design	1

bringing something from their major, previous course work, and personal experience. Hospitality students navigate the culinary labs more efficiently and are knowledgeable for many of the processes such as use of lab equipment, location of tools, and food handling and safety practices. The School of Technology & Design and School of Arts & Sciences students apply the scientific methods more readily and confidently to us explaining previous usage. Together, they work on solving in-class lab

experiments jointly preparing answers to lab report or worksheets. Part of the process includes group discussion, with input from team members used for written exercises. There are to two key goals for collaborative assignments: working and solving problems with others, and increasing understanding by listening to others, as identified by researchers.[9]

In our course, we define "undergraduate research" as student exploration of approved topics through a structured process, developing abstracts and annotated bibliographies, and cumulating in a research poster and an oral presentation. In small groups, students research independently to prepare academic posters. Creating the opportunity for students to further explore and direct their learning enriches and engages students. The research project started in the second iteration of Science in the Kitchen is that type of opportunity. With students coming from a variety of backgrounds, there is a strong chance they may not have experienced doing research as part of their course work. Through an initial introduction, the faculty builds a foundation for students to seek new knowledge through research and through testing theories in lab experiments. Students then produce research posters and present findings in a class presentation.

Teamwork can create many rich learning experiences for students and is a significant part of this project. Students enrolled in Science in the Kitchen and working in teams develop and propose their research topic that connects biology and culinary arts. One of the early class sections contains a segment reserved for establishing teams and advancing best practices. It is important to recognize that teamwork and collaboration best practices are not always defined or outlined for students. Through group exercise and discussion, class standards for collaboration are established and elaborated upon. Students work in their small groups (eight groups of three students each) and share their findings with the class. This is an opportunity for students to determine and clarify what it means to be a member of the team, their responsibility, and more. Student group teamwork standards include:

- Communication: within 24–48 hours
- Teamwork: share perspective; make decisions together
- Mutual responsibility and respect: show diverse viewpoints and creativity
- Appreciate and encourage
- Complete Individual Tasks: take ownership and responsibility

- Awareness: recognize peer obligations and workload
- Compromise: value each other's ideas.

The core part of this research assignment or project is connecting students in their topic, getting them wondering, and asking questions. To encourage group work, time is set aside during classes for brainstorming, team discussions, and preparing their abstract proposals. Students' growth in research is supported by a faculty review of draft components such as abstracts, annotated bibliographies, and introductions with additional critical feedback. Throughout the semester, student teams continue to identify, develop, and propose a lab experiment to be part of their academic poster. A lab session is set aside for student-centered experiments to further the research projects. After gathering all the information, results, and supporting evidence, the groups synthesize this into academic posters featuring an abstract, introduction, method, results, literature review, conclusion/discussion, and references.

Plans to Sustain Course

Maintaining and growing an interdisciplinary course requires interest from the faculty, department, school, and college. Team teaching often requires sustained commitment, atypical communication, and the ability to work through nuances. Effectiveness and sustainability of the Science in the Kitchen course typically require the involvement of many people, departments, and schools. To sustain this effort, City Tech has worked to create opportunities for faculty to participate, teach, and develop interdisciplinary courses. Overall awareness continues to be increased through the work of a college-wide Interdisciplinary Committee and General Education Committee about this general education requirement.

The creation of interest, development of an instructor pool, recognition of the distinct value of interdisciplinary course, and team teaching are all important to the implementation of Science in the Kitchen. Currently, this course is taught by one faculty member from Hospitality Management and Biological Sciences Department. Typically, the faculty's department workload leaves space for teaching only one section. Any additional sections would require other faculty members' participation. Faculty interest and the desire to actively participate could be enhanced through endeavors by their colleges and peers to recognize this course work as valuable and significant. There are many unique facets

in team teaching and interdisciplinary courses that enhance professional growth.[10] Faculty members can gain a valuable college-wide perspective. The Comprehensive Teacher Education Institute found this style of teaching encouraged exploration of strategies, enhanced collegiality, and furthered teamwork.[11]

It is important to note that team teaching and interdisciplinary courses can have numerous challenges, with some that are foreseeable and others that are unknown. As a sole instructor, faculty know when classes are, can readily decide the pedagogical approach, modify written assignments, develop assessment tools, and more. All student communications come from the one leader of the class. If circumstances warrant, the instructor can easily modify these various points on short notice. Team teaching changes these basic processes for each course and may often require or feel like more work than a regular course. Sustained communication about the course before, during, and after between professors is required for the course to be successful. This is different from a course with one instructor where that faculty member makes all decisions. The course structure for Science in the Kitchen may have the same core syllabus, but the transition from physics to biology is remarkably close to creating a new course. Having two instructors increases the amount of communication, changes the decision process, and may necessitate an additional time commitment. Course material is developed, shared, discussed, revised, and then incorporated into the class. This requires additional time to complete effectively.

The aspect of two departments' co-teaching a class while another department administers and schedules can inject distinct logistics. Having three departments involved requires sustained follow-up throughout the process to ensure a smooth semester. Each college has its own process for organization of instruction and providing classroom supplies. We have come across challenges in budgeting for a class not within the department or taught by another school within the college. A few extra steps have been required in securing funding for laboratory classes. Ensuring that the appropriate learning space is available can be tedious when a course uses multiple labs (biology lab, culinary lab, and lecture room). While staff and faculty are commonly assigned to one department, team teaching can mean teaching a class for the Physics Department instead of the faculty's regular department. This can create administrative challenges in maintaining records and ensuring proper staffing by CLTs. To

maintain and grow teach-teaching and interdisciplinary courses, institutions will need to plan and provide adequate resources in lab materials, laboratory space, and support staff.

Although there may be challenges in this area of teaching, there are many positive reasons to pursue team teaching and interdisciplinary courses. Students enrolled in Science in the Kitchen include a wide section of City Tech students from different majors, departments, and schools. The combination of culinary arts and biology has been very popular among students. The past two classes and current class have filled up early in the registration period. The students gain from having classes, receiving feedback, and working with two different faculty members. By adopting this type of class and pedagogy, instructors are likely to grow professionally. There is exposure to second perspective, additional teaching styles, other instruction practices, different approaches to assignments, and alternative methods for assessment.[12]

Science in the Kitchen is at an intersection between theory and practical application that generates student interest while bolstering faculty commitment. Collaborating with faculty in the Biological Sciences and Physics Departments, I have noted in our discussions the increased connectedness in co-teaching this course. One of the core principles of this class is linking theories from science classes (biology or physics) to everyday activity of cooking and eating. There are countless applications of what students have learned in biology, physics, chemistry, and other general educations classes in their daily lives. Finding, identifying, and elaborating on these intersections could lead to numerous opportunities in interdisciplinary courses. The connection and interest in culinary arts appear to strengthen student engagement through attendance, participation, and coursework. Over a five-year period, Science in the Kitchen saw the first-, third-, and fourth-highest attendance out of thirteen classes.[13] Faculty teaching this course gain valuable experience, increase awareness of interconnectedness of theories, broaden their pedagogy through collaboration, and enhance relationships with colleagues through team teaching.

This course introduces scientific concepts in daily routines in the kitchen, helping students to connect theory and application. The labs use the scientific method and mathematics in experiments to expand inquiries. Students use lab results to develop formal reports and thoughtful conclusions. The classes enable students to identify relevant scientific principles, integrate cross-disciplinary knowledge, apply the scientific method,

develop hypotheses, analyze data, work in teams, and communicate effectively.

Conclusion

As an interdisciplinary course, Science in the Kitchen connects biology and culinary arts for students in general education. It is continuing to evolve from faculty, student, and college input. This course has been taught with physics and biology disciplines with space to explore chemistry or other sciences. Both current iterations are distinctive in content yet carry common applications. The use of lab reports, academic posters, and presentations for assessment provides the means for measuring student learning outcomes. Engaging students through high-impact practices of collaboration assignments and projects and undergraduate research enriches student learning.

Team teaching is different from having a sole instructor in many ways. Faculty may need to put in additional time, communicate more, plan further out, follow-up on logistical details, and so on. The rewards from team teaching may include having strong connections to colleagues, broader perspective, more engaged students, and a deeper understanding of your institution. The future directions for this course could include exploring further theories and subjects in biology, physics, or other sciences to connect students to everyday science in their lives. The addition of other faculty members and their perspective could expand class content, interdisciplinary connections, pedagogical approaches, and course delivery. Interdisciplinary team teaching courses and the use of high-impact practices offer many unique characteristics in content, pedagogy, and processes that have deeply enriched my teaching, perspective, and relationship with colleagues.

Notes

1. These high-impact practice s are identified with additional information in George D. Kuh, *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter* (Washington, DC: Association of American Colleges & Universities, 2008); George D. Kuh and Ken O'Donnell, *Ensuring Quality and Taking High-Impact Practices to Scale* (Washington, DC: Association of American Colleges & Universities, 2013).

2. See Harold McGee, *On Food and Cooking: The Science and Lore of the Kitchen* (New York: Scribner, 2004). This is the textbook for the course; it offers starting point for many topics. Also see François Chartier, *Taste Buds and Molecules: The Art and Science of Food, Wine, and Flavor* (Somerset, NJ: John Wiley & Sons, 2012); Sandor Ellix Katz, *The Art of Fermentation* (New York: Chelsea Green Publishing, 2012); Ole Mouritsen and Klavs Styrbaek, *Mouthfeel: How Texture Makes Taste* (New York: Columbia University Press, 2017); Bronwen Pervival and Francis Percival, *Reinventing the Wheel: Milk, Microbes, and the Fight for Real Cheese* (Oakland: University of California Press, 2017); Jeffery P. Roberts, *Salted & Cured: Savoring the Culture, Heritage, and Flavor of America's Preserved Meats* (New York: Chelsea Green Publishing, 2017).
3. See J. Kenji López-Alt, *The Food Lab: Better Home Cooking Through Science* (New York: W. W. Norton & Company, 2015). Lopez-Alt explores a variety of fundamental techniques and seeks to illuminate the science behind them.
4. This method is explored in Theresa Wadkins, William Wozniak, and Richard L. Miller, "Team Teaching Models," In *UNK/CTE Compendium of Teaching Resources and Ideas*, ed. Elizabeth G. Peck (Lincoln, NE: University of Nebraska, 2004): 77–96.
5. Cf. Hervé This and Malcolm DeBevoise, *Molecular Gastronomy: Exploring the Science of Flavor* (New York: Columbia University Press, 2008); Nathan Myhrvold and Francisco Migoya, *Modernist Bread* (Port Washington, NY: The Cooking Lab, 2017); Nathan Myhrvold, Chris Young, and Maxime Bilet, *Modernist Cuisine: The Art and Science of Cooking* (Port Washington, NY: The Cooking Lab, 2011). These books offer insightful perspective beyond the basic process, looking at the whys behind the technique.
6. Both professors created and accessed content making a more seamless online presence, for example via Blackboard.
7. See Chapter 7.
8. Initial discussions between professors on team-teaching approaches such as tag team, collaborative sessions, planned improvisation can be a starting point for developing distinctive approach. See Kevin Laughlin, Peggy Nelson, and Susan Donaldson, "Successfully Applying Team Teaching with Adult Learners," *Journal of Adult Education* 40, no. 1 (2011): 11–18.
9. See Kuh, *High-Impact Educational Practices*; Susan A. Ambrose, et al., *How Learning Works: 7 Research-Based Principles for Smart Teaching* (San Francisco, CA: Jossey-Bass, 2010); Jillian Kinzie, et al., *Student Success in College: Creating Conditions That Matter* (San Francisco, CA: Jossey-Bass,

2011); David A. Kolb, *Experiential Learning: Experiences as the Source of Learning and Development* (Upper Saddle River, NJ: Pearson Educations, 2015); Marcia C. Linn, et al. "Undergraduate Research Experiences: Impacts and Opportunities," *Science* 347, no. 6222 (2015).

10. In comparison to single teacher course both students and faculty gain from multiple perspectives, increased dialogue/participation, and enhanced feedback/evaluation. See Rebecca S. Anderson and Bruce W. Speck, "Oh What a Difference a Team Makes: Why Team Teaching Makes a Difference," *Teaching and Teacher Education* 14, no. 7 (1998): 671–686.
11. My experience began with exploring team-teaching to discover interdisciplinary component as an essential element of more successful outcomes. See Judith Haymore Sanholtz, "Interdisciplinary Team Teaching as a Form of Professional Development," *Teacher Education Quarterly* 27, no. 3 (2000): 39–54; Sylvia M. Roberts and Eunice Z. Pruitt, *Schools as Professional Learning Communities* (Thousand Oaks, CA: Corwin Press, 2009). Cf. Richard Mitchell and Adrian Woodhouse, "Fostering Culinary Identities Through Education—Abandoning the Vacherin and Embracing Phyllis' Pavlova," *Scope: Learning & Teaching* 7 (2019): 22–29.
12. See Maxine Alterio and Adrian Woodhouse, "Using Mobile Learning Technologies to Support Assessment Practices," *Scope Learning & Teaching* (2009): 60–69.
13. Other courses include Culinary Arts I and II, Food Sanitation and Safety Principles, Garde Manger.

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CHAPTER 3

Place-Based Learning as a High Impact Educational Practice

Sean P. MacDonald

Abstract This chapter presents a case for the inclusion of place-based learning as a high-impact educational practice and highlights the design and application of place-based learning and research in an interdisciplinary course. The chapter also underscores how place-based learning facilitates deep learning and achieves many of the widely accepted requirements of high-impact educational practices. The chapter explores the connection of place-based learning to each of the currently recognized high-impact practices and how interdisciplinary teaching and learning reinforces and strengthens those connections through its focus on the key educational goals of developing knowledge from a range of disciplinary perspectives and cultivating the understanding and application of diverse disciplinary perspectives.

Keywords Environmental · Interdisciplinary · High-impact practice · Place-based learning

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R. D. Lansiquot (ed.), *Interdisciplinary Team Teaching*,
https://doi.org/10.1007/978-3-030-56302-8_3

Lansiquot and MacDonald sought to situate interdisciplinary place-based learning as a high-impact practice with chapter contributions that explored the variety of contexts for its design and application within an urban learning environment.[1] High-impact educational practices are identified as learning opportunities that require a commitment of significant time and effort, incorporate learning outside of the classroom, include extensive feedback and interaction between faculty and students, and involve engagement with diverse perspectives.[2] These chapters highlighted the value of both the interdisciplinary framework and place-based learning in urban higher educational settings, as well as the evolution and development of place-based learning as a high-impact educational practice. An important focus of the book was the perspective that place-based learning can be situated within virtual as well as physical environments, and that important student learning outcomes can be realized effectively in both types of settings.

This chapter will further the case for the inclusion of interdisciplinary place-based learning as a high-impact educational practice, highlighting its design and application in an environmental economics course. Kuh and O'Donnell have identified 11 high-impact practices. These include first-year seminars and experiences, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity/global learning, service learning/community-based learning, internships, capstone courses/projects, and the most recently added eportfolios.

The discussion that follows explores how place-based learning embodies the characteristics of high-impact practices as they have been detailed by Kuh and O'Donnell,[3] and at the same time, highlighting its connections with many of these high-impact educational practices.[4]

An extensive literature speaks to the interdisciplinary appeal and effectiveness of PBL in connecting students to the real world,[5] and lends support to the idea that it can stand alone as a high-impact practice. This assessment bolsters the notion that the recognized "High-Impact Educational Practices" should be conceived as a living document rather than a list that is set in stone, a feature that Kuh has recently emphasized.[6] As such, it is maintained that learning practices/methodologies can organically emerge and evolve, and assume a fundamental role within a high-impact learning environment, eventually standing on their own.

Kuh has identified several characteristics of high-impact practices that appear to lend support to the inclusion of place-based learning activities as a high-impact practice. He points to the importance of features such as the expectation of a high level of student performance, a "significant investment of time and effort by students," promoting students' experiences with diversity of ideas and perspectives, and the opportunity to see the importance of learning through real-world applications.[7] Indeed, place-based learning and research projects achieve this standard, providing an important hands-on context within which students engage in the thoughtful process of making meaningful connections between theoretical study and peer-reviewed secondary research and the experience, observation and investigation of places, issues and topics in a real-world setting.

As such, place-based learning is viewed in this discussion as a practice that both complements and moves beyond service learning and community-based learning, encompassing virtual place-based experience, formal research projects, and interdisciplinary inquiry. In addition to providing the opportunity for students to "apply what they are learning in real-world settings,"[8] students are at the same time learning from these places and from the research and focused projects that employ them as a learning laboratory.

Through this process, students become active participants in the research process, ideally collaborating in small groups of two or three on a project. They are then required to interact with individuals and organizations outside the classroom, and through that interaction, to gather information through either formal or informal interviews. Further, students engage with the place-based research process through interactive forms of documentation, including the recording of observations, taking detailed notes on impressions during the field visit, or taking photographs and/or short videos.

Another feature that appears to be broadly shared across each of the currently recognized high-impact educational practices, including the most recently added ePortfolios, is that there are significant connections and overlap among them. Service learning/Community-based learning, for instance can readily be encompassed in a Learning Community or a First-Year Experience. Diversity/Global Learning can clearly be located within a Capstone project or Undergraduate Research project. Thus, a case for the addition of place-based learning—or any other high-impact

practice—should consider its connections and shared characteristics with other high-impact practices.

The discussion in this chapter takes a closer look at how place-based learning connects to each of the currently recognized high-impact practices, while at the same time examining how it encompasses the documented characteristics of high-impact practices. It further explores these characteristics within the context of an environmental economics course that is taught as an interdisciplinary course and from the perspective that interdisciplinary teaching and learning goals can further enhance the practice of place-based learning. The chapter concludes with the proposition that place-based learning can stand alone as a high-impact practice.

Place-based learning is recognized as constituting an important part of the mission of the New York City College of Technology (City Tech), where it is central to the vision of employing the city as a living laboratory. The institutional commitment to and recognition of the value of this high-impact practice is evident in its wide-ranging adoption and application by faculty across the disciplinary spectrum. Place-based learning is an important feature of course offerings across the humanities, sciences, social sciences, and professional studies. At the same time, the interdisciplinary perspective is viewed as critical to student learning and as an approach to teaching that enhances place-based learning in many ways. Key educational goals include the importance of developing knowledge "from a range of disciplinary perspectives" and the ability to "understand and apply values, ethics, and diverse perspectives." Within this context, place-based learning is viewed as a valuable tool that encourages students to engage with the complexity of questions and issues that the place-based experience presents.

Development of Interdisciplinary Team-Teaching in Environmental Economics

As an interdisciplinary course, environmental economics examines how sustainable economic policy, planning, and growth can be guided by innovative technology, design, and public policy, while at the same time prioritizing the goals of social, health, economic, and environmental justice. The course further explores how economic and environmental policy can be effectively applied to slow global climate change and how working toward that goal also strengthens and advances sustainable economic development.

Because of the complexity and diversity of topics addressed in the course, instruction is drawn from and informed by several other disciplinary specialties. Thus, the team-teaching model is structured such that several invited guest lecturers deliver content over the course of the semester. Typically, these will include a sociologist, a psychologist, a behavioral economist and a hospitality management professor. This course design encompasses the valuable contributions and insights offered by disciplines other than economics, and is accompanied by assigned readings, questions and class discussion, and activities that complement and inform the lecture, as well as the theme of the course. As students are exposed to the perspectives, knowledge, and methods of inquiry of other disciplines, they are provided the context for being able to make important connections across disciplines and understand their connections to the study of environmental economics. The guest lecturer content serves the added benefit of helping to guide students in recognizing how they might incorporate the perspectives of other disciplines into own class research projects.

Topics presented by guest lecturers have included the global economic impact of emerging market economies and rapid industrialization (sociology); sustainable land use and agricultural practices (geosciences); a behavioral economist's perspective on climate change; how contextual, emotional, and cultural influences shape consumer decision-making (psychology); sustainable building and design practices (architecture and engineering); promoting sustainable tourism (hospitality management); and psychology and the natural world (psychology).[9]

At the same time, students in the course come from a broad range of disciplines, including computer science, nursing, mechanical engineering, hospitality management, and mathematics. This diverse set of disciplinary perspectives forms an integral component in students' understanding of the concepts and methodologies of other disciplines and offers an additional dimension to interdisciplinary complexity and its relationship to the overall scope of environmental economics. This interdisciplinary approach is designed to help to cultivate a comprehensive understanding of the issues central to environmental economics. The place-based learning component has further enhanced the ability of students to connect with readings, media, and guest lecture content, while fostering critical thinking and the development of an interdisciplinary perspective.

How Interdisciplinary Perspectives Enhance Place-Based Learning

Place-based learning and research projects have been a central feature in Environmental Economics, where the emphasis has been on drawing upon the urban setting of New York to study local environments and their economic and social dimensions. As a high-impact practice, place-based learning is employed to connect the study of topics such as sustainable economic growth, environmental policy, and issues of social, economic, and environmental justice. These points of focus are also examined from the perspective of other disciplines through invited guest lecturers. Throughout the course, examples of government and industry policies place emphasis on questions of resource renewal, how to measure the value of natural resources, and the importance of including a measure of natural capital in estimates of economic growth. Environmental practices—both local and beyond—are highlighted as examples that reflect the central importance of sustainable economic goals with respect to people, planet, and profit.

A recurring theme in the course is the transformation and renewal of urban space over time. Explored in the context of the transformations taking shape within our physical environment is the question of how these changes reflect the evolution of environmental awareness and of our notions of what defines urban life. Where can we observe a reimagining of the economic, social, and cultural life of the city in pursuit of practices that sustain and engage communities and re-shape urban economies? What spaces have these projects physically changed and how have they defined their purpose within the context of that changed environment?

Place-based study and an interdisciplinary perspective are viewed as pivotal to the process of exploring these and other questions and it constitutes an important component of the course. The subject of food systems and industrial agriculture, for instance, is studied from the perspective of its environmental impacts, as well as its economic, health, and social costs. As students consider readings and media that examine these impacts, they are provided with a grounding in the interdisciplinary perspective and a framework for critical inquiry, interdisciplinary complexity, and deeper learning. The place-based component introduces students to a local business that offers an alternative model of food cultivation and distribution and that affords a starting point for discussion and debate.

Students begin with readings and viewing of the film *Food, Inc.*[10] that address the characteristics of the dominant system of agricultural output and its wide-ranging environmental impacts, as well as its broader economic, social, and health costs. This is then followed by discussion of the literature exploring many of the locally centered alternative initiatives, including small-scale urban and rooftop farming, CSA's, and farm-to-table eateries that partner with and support small-scale local farming, with a focus on the environmental and economic contrasts and benefits.

Students then take part in a tour of the *Brooklyn Grange* rooftop farm, located in the Brooklyn Navy Yard. In the process, students are able to make connections between their observations in a real-world setting and the ideas and details discussed in the readings and film. The interdisciplinary place-based research experience also presents the opportunity to develop a multidimensional perspective that readily integrates the views of other disciplines into the understanding of environmental issues. Through this exploration of a unique geographic area within the urban setting, students are afforded an opportunity to develop a greater familiarity with the relationship of current environmental issues to life in their own surroundings.

In addition to serving as an example of sustainable agriculture, students also learn that the Brooklyn Grange is a thriving business, and has established an important connection to the surrounding community. It occupies 65,000 square feet on the roof of one of the complex's largest buildings. The volunteers who cultivate, maintain, and manage the site produce over 50,000 pounds of organic produce a year, which is sold to local grocers and restaurants. The *Grange* has also connected with the local and global community and has "partners with numerous non-profit organizations throughout New York to promote healthy and strong local communities."[11]

Ahead of the tour, students are asked to be prepared to make note of any connections between what they observe and experience and concepts and ideas discussed in our previous readings and to note any connections they made to issues presented by any of the invited guest lecturers. For example, how has the disconnectedness of people from the land in the urban environment contributed to social and economic alienation? What are some of environmental, health, and economic benefits of a green roof? What is the potential for urban agriculture to become a firmly established alternative to the factory farming model of producing? How can urban farms benefit the city and its residents? By thinking about these and

similar questions, students begin to make connections across disciplinary boundaries.

As students are likely to have already heard from at least one guest lecturer prior to the visit, they begin to develop an awareness of the knowledge and methods of inquiry of other disciplines. For instance, an Environmental Sociologist asks students to think about how Sociologists view social outcomes such as income, life expectancy and health status, and how such outcomes are often connected to unequal access to healthy food options, or to one's proximity to waste disposal sites and other urban environmental hazards.[12] Students are further encouraged to think about how this perspective can inform the ways in which they view the broader social and economic benefits of urban farming, and to consider how the sociological perspective overall, and the environmental justice lens, in particular, may have contributed to the ways in which they think about the questions the experience raised for them.

Following the tour, students are assigned a two-page essay in which they reflect on their impressions of the visit and the observations and questions the experience elicited for them. At the same time, they are asked to discuss what they see as the differences between a first-hand *visit* to a roof top urban farm and a reading that discusses them, with a focus on specifically what they learned from the tour that they did not get from the assigned reading. Students frequently cite a sense of amazement at the sight of a working rooftop farm located in the city. At the same time, they often readily make connections to the idea of economic empowerment and to the sense that this and similar projects can contribute meaningful social, economic, and environmental change. This assignment serves as an inspiration for students' research paper projects, and to that end, it is considered an important step in that process.

For many students, the tour offers a first of its kind experience that can be a significant first step in helping them make valuable connections between experience and theoretical study. The research paper project is focused on investigation and research on a central question or argument around a specific environmental issue or problem, supported by a thorough review of the literature and making connections with the place-based research component. The guiding question or argument must highlight the topic in the context of both the economic perspective and the viewpoint of at least one other discipline that might be inspired by a topic presented by one of the invited guest lecturers or by the students'

own areas of study. As students are exposed to the perspectives, knowledge, and methods of inquiry of other disciplines throughout the course, they are provided the tools enabling them to visualize the connections across disciplines with the study of environmental economics. In the process, students can more readily envision how they might incorporate the interdisciplinary perspective into their own research.

Support for a High-Impact Practice

Much of the reasoning that has been cited in support of the recent addition of ePortfolios as a high-impact practice can be applied to the case for place-based learning. In their editorial discussion of ePortfolios, Watson, et al. identify and discuss the characteristics of ePortfolios that shape their use as a high-impact practice.[13] They note that high-impact practices contribute to heightened student learning and success "by bringing to the teaching and learning process the intentional and integrative characteristics associated with how humans learn."[14] What is emphasized is the idea that the practice facilitates the transfer of skills learned in one instance to other examples of practice and application.[15]

Place-based learning and research, based upon this feature of high-impact practices, clearly incorporates this benefit of critical thinking and analytical skills transference from one learning context to others. The observations made, the questions posed, and the conclusions drawn in one case of place-based study more readily emerge in the study of related topics. Place-based learning especially lends itself to such transference of thinking and learning in the context of an interdisciplinary course where other disciplinary perspectives—such as those highlighted in the discussion of the environmental economics course discussed in this chapter—engage students in thinking about the meaning of their observations from a variety of perspectives. This process facilitates critical thinking and deeper learning.

In addition, Watson, et al. emphasize the notion that "Signature Work" incorporates characteristics that define all of the recognized high-impact practices, including proficiency, integrative learning, problem-based inquiry, and equity.[16] Place-based learning and inquiry similarly encompasses these characteristics, as students are encouraged to make connections between research on a particular theme and first-hand observation and experience in a real-world setting. This process encourages integrative learning and problem-based inquiry by challenging students

to think about what disciplines or areas of study the experience helps them connect with.[17] By thinking about the connections to what they are observing and experiencing across disciplinary boundaries, students are able to begin building greater proficiency as they are more able to draw upon and make connections to prior experience and study and to engage in self-directed study.

Watson, et al. further emphasizes the importance of institutional support to the success of ePortfolio implementation and the commitment of resources to its success as a high-impact practice and to the expansion of other high-impact practices.[18] Through City Tech's recent U.S. Department of Education grant-funded project, *A Living Laboratory: Revitalizing General Education for a 21st-Century College of Technology*, participating fellows were engaged in the college's mission to re-envision general education as a living laboratory, drawing upon our strengths, hands-on experiential models of learning and our vibrant location.[19] The theme of place-based learning was central to the seminar, which has continued as a semester-long associate fellows project. Among other activities, fellows took part in tours of waterfront sites that reflect the borough's social, cultural, and economic evolution, including the Brooklyn Navy Yard, the Gowanus Canal site, and the SIMS Municipal Recycling Center.

The insights and impressions gained from the tours became a valuable foundation supporting the re-design and re-envisioning of course syllabi to incorporate and emphasize place-based learning and research experiences. Courses across the curriculum have highlighted place-based learning and research projects, where students explore the local economy, history, architecture, and culture. Studies and tours of locales including the Brooklyn Historical Society, historical monuments, theaters, urban roof top farms, brownfields, and neighborhoods undergoing transformation and gentrification have become an essential feature of interdisciplinary courses such as Black New York, Learning Places: Understanding the City, Environmental Economics and History of Theatre Technology and Stages. At the same time, adoption of several other high-impact practices, including service learning, learning communities, collaborative assignments, and undergraduate research projects has expanded broadly across City Tech's schools of technology, arts and sciences, and professional studies.

Place-Based Learning and Interdisciplinarity

A growing body of literature addresses both the strengths of place-based learning and its practice as a means of facilitating important curricular objectives. They also address its inherently interdisciplinary character. Meagher discusses the use of walking tours of the city of Scranton, Pennsylvania in her undergraduate course, *Philosophy and the City* where one of the key learning objectives identified to enhance civic engagement is to "teach students to become lifelong learners who understand the places and communities where they live."[20] Meagher distinguishes this activity from *service learning* which might typically involve direct interaction with others outside of the classroom, emphasizing that students are engaged principally in observation and reflection that encourages them to "examine their ethical views about urban places" and challenges them to think about how they might engage in making positive changes.[21]

Angstmann, et al. describe the development of a place-based learning curriculum in which faculty teaching biology, ecology, environmental studies and chemistry piloted place-based learning modules for their students. Each module was designed around the interdisciplinary theme of sustainable agriculture that connected students to projects involving the campus farm. The shared student learning outcomes from the project included the ability to relate environmental science concepts to their social and environmental impacts, to critically reflect on the broad impacts of food production on the environment, society and health, and to communicate the "broader impacts of inquiry-based research to a cross-disciplinary audience."[22]

These learning outcomes clearly stress the central role of the place-based experience in supporting students' ability to make connections between their own fields of study and the concept of sustainable food production across disciplinary perspectives, critically examining the social, health, and environmental implications. At the same time, in the context of the experience, student collaboration, effective communication, and increased civic engagement are stressed as important overall outcomes.

Gruenewald similarly views place-based learning as a practice that effectively connects to experiential learning, problem-based learning, multicultural education, and other areas of focus, which supports its interdisciplinary appeal.[23] Woodhouse and Knapp identify the characteristics of place-based education as encompassing a practice that "emerges

from the particular attributes of a place . . . is inherently multidisciplinary . . . inherently experiential [and] . . . connects place with self and community."[24]

Luddick's "The Pedagogy of Place" highlights the inherently interdisciplinary approaches of place-based study, identifying a range of potentially cultivated and strengthened skills, including the skills of observation, decision-making, writing, research, problem-solving, critical thinking, and participation.[25]

Some of the more recent literature specifically differentiates place-based learning from experiential learning. Noting that both share many of the same characteristics, Knapp emphasizes that place-based education "provides more specificity and guidance" for students.[26] Added to this distinction is the importance of the notion that in a place-based assignment, students are trained to become active participants in the research process, and to employ a range of tools for documenting information and for noting their observations and impressions, such as recording questions and thoughts, taking photographs, or recording short videos. The experience serves to further encourage interaction and exchange among students in the classroom as students engage in related readings and in-class collaborative assignments.

A number of recent studies highlighting the features, learning goals and outcomes of place-based learning projects in various courses have documented many of the characteristics identified by Kuh and O'Donnell that high-impact practices share, including the expectation of high levels of student performance; the significant investment of time and effort by students over a period of time; interactions with faculty and peers; and experiences with diversity.[27] Powers discusses the findings of evaluations that were conducted of four place-based learning projects that were part of the Place-Based Education Evaluation Collaborative. The programs were all found to have promoted increased civic engagement, greater opportunity for analysis and reflection on the experience, increased dialog between educators and students, and a heightened awareness of the connectedness between academic and real-world study. Another key finding was an increase in the increased application of interdisciplinary teaching and use of techniques that strive for deeper learning and understanding.[28] Although the concept of interdisciplinarity is not defined by the author in any detail, it should be noted that this study suggests there is a natural connection between the incorporation of diverse perspectives and place-based study.

Brownell and Swaner evaluate several outcomes of high-impact practices, focusing on first-year experiences, learning communities, undergraduate research and service learning. They conclude from the research that their inclusion within curricula increases outcomes such as critical and integrative thinking, openness to new ideas, an increased sense of civic engagement, and engagement with diversity and that these outcomes were often higher for students involved in these practices relative to their peers who were not.[29]

Conclusion

A growing body of literature has attested to the benefits of place-based learning, while an emerging literature has addressed its value within the context of an interdisciplinary perspective.[30] The discussion in this chapter has sought to advance that literature, while at the same time offering an approach to modeling a place-based experience while drawing upon students' experience with multiple perspectives. The view as advanced here envisions place-based learning as a high-impact practice that promotes analytical skills, critical thinking, and the transfer of knowledge from one learning context to others. The value of observation and the conclusions that emerge in a particular place-based assignment setting can clearly facilitate the process of making connections in the study of related topics and issues. It is also believed that this value is enhanced within the interdisciplinary setting that works synergistically with place-based assignments to create a foundation for deeper learning.

Notes

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5. See Jayne E. Brownell and Lynn E. Swaner, "Outcomes of High-Impact Educational Practices: A Literature Review," *Diversity & Democracy* 12,

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CHAPTER 4

Learning Places: Place-Based Learning in an Interdisciplinary Approach to Undergraduate Research

Jason Montgomery

Abstract This chapter discusses the faculty toolkit of specific practices with particular effectiveness in student engagement and learning in the twenty-first century, including undergraduate research. While this high-impact practice is most often associated with the sciences, it has wider applicability to undergraduate learning where the methods of research can integrate synergistic strategies that further enhance student engagement and learning: place-based learning and interdisciplinary teaching. In this chapter, these two compelling approaches to higher education are presented as a powerful, interwoven, and integrated approach to undergraduate research. The interdisciplinary general education course Learning Places: Understanding the City provides a case study illustrating undergraduate research using the city as an engaging interdisciplinary laboratory.

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R. D. Lansiquot (ed.), *Interdisciplinary Team Teaching*,
https://doi.org/10.1007/978-3-030-56302-8_4

Keywords Careful observation · Inquiry · Place-based learning · Primary source research · Undergraduate research

Higher education teaching is an ever-evolving practice that responds to changing student preparation and learning needs, the contemporary needs of business, industry, and the professions, research on teaching and practice, and the professional development of faculty. High-impact educational practices outlined by the Association of American Colleges and Universities (AAC&U)[1] give faculty a toolkit of specific practices that current research identifies as having particular effectiveness in student engagement and learning in the twenty-first century. Included in this list of effective practices is undergraduate research, defined by the AAC&U as having the goal "to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions."[2] While this high-impact educational practice is most often associated with the sciences, it has wider applicability to undergraduate learning where the methods of research can integrate synergistic strategies that further enhance student engagement and learning: place-based learning and interdisciplinary teaching. In this chapter, these two compelling approaches to higher education are presented as a powerful, interwoven, and integrated approach to undergraduate research.

Place-based learning is an increasingly applied strategy in higher education to increase student engagement and put the students in the role of generator of knowledge rather than passive recipient.[3] Interdisciplinary teaching is supported by scholarship that identifies specific benefits to the students,[4] including gaining insights from multiple perspectives and increasing ability to integrate diverse concepts into a contextualized approach to analysis. The combination of these approaches to education requires more exploration of applications and techniques. Faculty need more guidance on how to teach effectively in an interdisciplinary format as well as outside the classroom using place as the context and content for learning. Here a specific course that does both is presented as a case study of successful practices and pedagogical approaches that will help the reader develop a similar course on their campus.

Learning Places: Understanding the City, is best described as a natural fit in an urban studies curriculum, where primary source empirical

research methods are explored using the city as the laboratory. In the general education and liberal-arts context, urban studies courses make the city, or more broadly human settlements, the starting point for a broad range of investigations utilizing both interdisciplinary teaching and place-based learning. But in the case of this course, it is not within an urban studies program, but instead serving as enrichment for undergraduate students across disciplines as one of a number of interdisciplinary courses offered as a general education core requirement. Undergraduate students have much to gain from place-based learning focused on the built environment. Many disciplinary fields ranging from architecture and engineering to health, earth, and social sciences to name a few have a direct or indirect link to the built environment, making this pedagogical approach an important addition to the study of these fields.

Urban environments in particular are growing more important to humanity due to a rapid urbanization of populations around the world. Population studies by the United Nations Department of Economic and Social Affairs indicate we are in the midst of a remarkable transition from rural to urban habitation,[5] with the unprecedented scale and speed of this transition increasing pressure to research the impacts of this transformation of societies and guide this development with greater foresight. The current tension between the economic, social, and sustainable advantages of urbanization and the spread of diseases like the novel coronavirus in urban populations only increases the importance of the critical study of the potential of cities as the primary human habitat of the future, necessitating the inclusion of the urban habitat as a component of education and research across many disciplines.

While the course discussed in this chapter is focused on the city as the learning laboratory, the techniques outlined are applicable to other scales of human settlement that equally provide a rich and important laboratory for learning, including towns and villages in rural settings. While the world is rapidly urbanizing, the rural landscape is also going through significant change and the future of these places is unclear. Ecological sustainability, economic development, and social concerns pertaining to the future of smaller scale towns and villages are equally potent topics for undergraduate research and are actively contested questions in the twenty-first century. In these places, the use of place-based learning strategies combined with interdisciplinary teaching are no less useful than the city.[6] Overall, the pedagogical strategies and teaching techniques presented here offer a broad range of applicability that can be of service to faculty in a

range of contexts seeking to apply the high-impact educational practice of undergraduate research.

Overview

Challenges for Undergraduate Research

Undergraduate research presents faculty with a number of challenges depending on the study skills, previous knowledge and experience the students bring with them into the classroom. Likely, students' past research experiences have centered on review of secondary sources where they are learning about and compiling others' research on a topic. These experiences often lead to a rote, performance goal approach to writing research papers, where students seek to meet the word count and provide the minimal number of citations required. Parallel to the rote process, students' selection of sources is often poor, especially in the age of easy access to information. If the students have not developed information literacy skills, they tend to follow the easiest path toward meeting the requirements of the paper. Both of these tendencies result in writing where the student's voice, their observations and insights, their critical statement, research question or thesis on the topic, and/or any significant conclusion or findings are often missing or superficial.

Seeking an approach that would facilitate meaningful research but also maximize accessibility to a diverse range of students, experiential learning and empirical observation[7] were selected as key features of the research in the course presented here. While students in a science lab are asked to use observation skills, most students are not practiced at applying empirical observation to the physical and natural world they see and experience every day. Therefore, a central goal of this course is to change the way they see, to leverage all the power of thinking and learning that comes through their experience as well as purposeful and careful observations. This approach taps into the students' often overlooked skills of visual thinking and learning. Visual thinking and learning stand apart from the usual text-based focus of research and present students with a valuable alternative.[8] Together, these strategies offer great potential to help students overcome the impact of intimidating research experiences of the past and present them with an accessible access point for a different approach to research.

Benefits of an Interdisciplinary Approach to Teaching Undergraduate Research

Interdisciplinary teaching provides specific benefits to courses focused on undergraduate research. First, it brings multiple perspectives to the research topic. Second, it presents students with a broader range of expertise and guidance as they develop their research. Interdisciplinary teaching manifests and reflects the complexity of research topics, helping students move beyond a narrow understanding of the problem they are considering and place the problem in a context that helps them deepen their view of it. Francis, et al. discuss the specific benefits of interdisciplinary learning where the students experience real-world complexity of problems and the need to explore them both broadly and deeply.[9] They point to collaborative teaching where faculty are working together across disciplines to solve problems as modeling the desired behavior and process for the students. Interdisciplinary teaching can also bring specific disciplinary knowledge combinations to bear on the problem at hand and support the student research process.[10]

Place-Based Learning's Critical Reframing of Undergraduate Research

In addition to bringing interdisciplinary examination to the research, the application of place-based research offers students an alternative experience of research that can have significant benefits. Healy and Jenkins argue that undergraduate student participation in research and inquiry is any opportunity to transform students from consumers to producers of knowledge.[11] Their argument dovetails with Gregory Smith's view of the central benefit of place-based learning.[12] Place establishes for students both a real-world context as well as an experiential component for their research. Topics for research, rather than being ethereal and distant, can be selected for their relationship to a specific place or places and vice versa. Francis, et al. note that using place allows the definition of a study area that helps students limit and focus their research efforts.[13] Visits to the selected place(s) facilitate a firsthand relationship to the topic that differs from classroom research experiences that might quickly move into internet searches.

Going further, firsthand experience of place as the critical context *and* content of the research brings the students into a direct relationship

with the research topic. This establishes the potential for empirical observations as the foundation for the research process rather than reliance on secondary source information. In this way, place can serve as the central, primary source for the research. Here place serves the same role as the specimens in a biology lab, or the studied behavior of animals in the wild, or the shifts of light in distant objects in space. All of these research objects require careful observations and documentation as a critical activity.

Making place itself the focus of research is supported by a number of scholars examining both place itself and approaches to inquiry of the natural and built environment. Thoeun discusses how education at its fullest potential is linked to our sense of place and our place in the world, our link to the larger system and organism of a city or town or countryside.[14] In an information world where virtual is competing with real, placelessness is a growing concern, with young people in particular growing disconnected from place. This disconnect has multiple impacts on their lives and their relationships to both the human and natural world around them.[15] Smith and Sobel share this concern, where the digital age tends to cut off the relationship to the world around us, to the natural and built environments that impact our lives at a fundamental level, and degrades a sense of community and human relations.

Critical to Thoeun's discussion of place-based research is the emphasis on a systems thinking approach to undercover multifaceted aspects inherent to a specific environment, a common aspect of many scholars application of inquiry to place.[16] Anderson and Johnson's outline of the principles of systems thinking includes looking at the whole, recognizing complexity and the interconnectedness within systems, and seeing ourselves as part of a system.[17] These principles both raise the challenge of place-based learning, making sense of dynamic and complex problems, but also its benefit: making explicit the students' inclusion and position in the system they are investigating is a potent strategy for engagement.

Starks focuses on the multicultural viewpoints tied to place, where place-based learning assignments that examine students' neighborhoods allow the students to bring their own perspectives and social contexts into the research, at the same time building levels of engagement but also reflective learning[18] based on the opening up of new knowledge connected to a familiar environment not previously examined or taken for granted. Study of place offers students a path for understanding social structures and how they connect to civic and built environment

structures, including housing, transportation, public space, civic, and commercial centers. All of these then open the door to issues to racial and demographic integration or isolation, inequality and social justice, environment and health. David Gruenewald sees this as a natural effect of place-based learning: that as it focuses attention on political and economic impacts on local communities and their environment it encourages a critical pedagogical approach that challenges cultural and education assumptions.[19] This critical pedagogy component of place-based research is proving especially engaging to students from disadvantaged and underserved populations. In this way, this approach is showing success in helping achieve the AAC&U Liberal Education and America's Promise initiative of "making excellence inclusive."[20]

Requirements for Undergraduate Research to Be Considered a High-Impact Practice

The AAC&U research on undergraduate research finds that for it to have the impact on students the research must be relevant and bring the students in contact with significant real-world problems, such that it generates an excitement and engagement in the students, thereby having a higher impact on them than a research experience that does not do these things. The specific piece of the AAC&U's definition that is applied in this approach is the goal "to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions."[21] Smith and Sobel see place-based learning specifically supporting the high impact aspect of undergraduate research as it is demonstrated to improve student engagement in the same way undergraduate research does by helping students derive meaning through their efforts to help address real-world problems.

The empirical observation required in the research of place is one way place-based research specifically meets the requirements of high-impact education practice of undergraduate research. Another way place-based research meets the requirements is that it involves the myriad social, economic, scientific, and political issues connected to the built and natural environments. Many current critical issues in society are tied to place: social and environmental justice, sustainability, urbanization and environmental degradation, bio-diversity and human health, urban density and disease, carbon-footprint and climate change, historical reassessment,

and gentrification and displacement. Research of place that explores these issues meets the high-impact educational practice requirement of addressing "active contested questions" in undergraduate research. The type of problem solving and flexible, creative thinking that will be required of future generations as they face social, economic, and cultural upheaval is facilitated by the study of place and environment. The 2020 pandemic is a case in point, with extreme disruption of place and daily lived experience. This disruption raises fundamental questions of how we live and the importance of social interaction in daily life. It also raises increased understanding of "home" as the foundational place in people's lives, a foundation many in our society have a tenuous hold on or are lacking altogether.

Higher levels of student engagement are the core goal of the AAC&U initiative. When places are selected for research adjacent or near the community where students study, work, and/or live, they are already engaged in the place even if only at a basic level. If the place is well selected, it can begin the process of engaging the students at a higher level as they discover or come to understand the critical issues tied to the place, especially when the issues relate to their life experience. For example, minority students may engage at a higher level when issues of racial displacement due to gentrification are raised through the study of a particular neighborhood.[22] Students studying environmental sustainability will likely engage at higher levels when they examine the multiple impacts of human development on a place and how it functions through an environmental lens.

In addition to the level of engagement, undergraduate research through place-based learning has strong potential to address two of the Essential Learning Outcomes identified by the AAC&U: "knowledge of human cultures and the physical and natural world," and "intellectual and practical skills including inquiry and analysis, critical thinking, oral communication, information literacy, and teamwork." When students study places infused with the imprint of multiple generations and cultures and the way communities interact and are impacted by changing conditions, their research builds their intercultural knowledge. Inquiry and analysis along with critical thinking are all active and central strategies in place-based learning. As presented here, the research approach also requires specific attention to the development of information literacy,

while the mode of presentation is purposely oral and team-based rather than individual written papers. This combination of strategies aligns this approach to undergraduate research closely to the AAC&U Essential Learning Outcomes.[23]

Types of Place That Are Particularly Useful for Research to a Broad Range of Students

The course offered as a model here uses New York City as its laboratory. While this is not a limiting factor for the broader application of this approach to undergraduate research, the built environment is the common denominator of the type of place that works well with this approach due to its high potential for student engagement based on lived experience. The built environment includes the students themselves in the context, where a natural site alone may or may not speak to their lived experience. Place of course means different things depending on geographic location. Encouragingly, Smith and Sobel reinforce the potential of place-based learning in any context, rural or urban, with strong applicability to both more natural settings and the heavily built environments of urban places.[24] Understanding the potential of a place to be a rich laboratory for learning is the key to the selection. The richness then offers a range of topics that students can consider for their research, where each student (or team of students) can select, with careful guidance, a topic that speaks to their interests. It is typical for the early days of the semester to be filled with doubt when the students from majors like law or nursing or hospitality learn that they will be studying the built environment, but student reflections at the end of the semester reveal that they finish the semester not only engaged at a high level, but also that they particularly appreciate the course on multiple levels and came to see how the research was relevant to their own discipline and general education.

Learning Places is designed to bring undergraduate research as a high impact educational practice to students from all disciplines, integrating compelling research supported strategies. It is discussed in greater detail below in the hope that it provides faculty at any institution an inspiration and guide to adopting a similar approach in and out of their classrooms.

Learning Places as a Model Approach

Faculty Teams and Site Selection

Each semester the faculty team for the course forms, usually consisting of two to three faculty members from different departments. The core faculty teams teaching this course come from the Library and Architecture faculty, but faculty from a broader range of disciplines join up to teach the course, including faculty from Hospitality, History and Psychology. The team selects the site for the course based on the potential research avenues, availability of key primary sources, and major and minor topics associated with the site. Access to the site itself is also central in the selection process. As this course was developed for students studying in Brooklyn, New York, the sites utilized for the course have ranged from nearby public housing estates, industrial waterfronts, historic neighborhoods, contemporary development projects, as well as business and civic centers. Important historic structures like Grand Central Terminal have served as places for investigation, as have historic industrial sites like the Gowanus Canal, a superfund site with a legacy of environmental degradation. Contemporary development sites like Atlantic Yards and Metro-Tech in Brooklyn that have had an impact on historic fabric and existing communities are also common subjects for investigation as they evoke questions of how and why places change.

Student Learning Objectives

The faculty consider each site for its potential to facilitate the course's identified student learning goals that integrate general education skills with cross-disciplinary research skills. The central learning objectives for this course are:

- Utilize skills in inquiry/analysis to derive meaning from experience as well as gather information from observation
- Comprehend factors inherent in complex problems
- Understand the cultural, social and economic processes that guide the physical development of the built environment
- Develop, purposefully connect, and integrate/synthesize knowledge across discipline knowledge and skills to solve problems

- Demonstrate and apply information literacy aptitude by gathering, interpreting, evaluating and applying information discerningly from a variety of sources
- Think critically, communicate effectively, and work collaboratively
- Become flexible thinkers
- Develop a methodological approach to research.

This course's strategy for enhancing undergraduate education starts by helping students develop their ability to utilize inquiry and analysis to derive meaning from experience as well as gather information from observation. Analytical investigation propelled by careful observation lies at the core of the learning objectives. Faculty bring students into intimate relationship with the place itself as well as the key primary materials that shed light on the nature of the place and reveal rich topics for further investigation. Careful observation is a widely accessible skill, offering undergraduate students from broad backgrounds an underappreciated foundational research tool. With guidance by the faculty, observations serve as the first level research material driving an analytical process that sets up an engagingly direct and unfiltered[25] research experience.

Analysis of observations of the built environment facilitates recognition of its complexity. This complexity is rooted not just in design and construction but in myriad human factors including cultural, social, and economic processes. While the complexity may seem overwhelming for undergraduate students, the grounding of the research in their lived experience and their perceptive observations paves a path toward confidently managing the complexity and selecting the key issues to research in greater detail.[26]

The foundation of analysis of the direct observations facilitates the development of knowledge that can be purposely connected and integrated across a range of disciplinary perspectives shared and nurtured by the faculty, where each discipline links to specific types of sources of information (buildings, streets, neighborhoods, public space, maps, design drawings, photographs, reports, demographic and real estate data, newspaper articles, and contemporary accounts) as well as methods of interpretation. The potential range of disciplinary perspectives brought into this course is broad (architecture, urban design, library and information science, historical analysis, social science, economics, psychology, art history and aesthetics, law, human services, urban tourism, and more) allowing a variety of combinations of interdisciplinary teams. When the

faculty team consists of an architect and a librarian, observations of the architecture and urban design bring significant qualities, characteristics, and nuances of the built environment to light while primary source materials linked to the architecture and urban design are investigated through an information science perspective, starting with the evaluation of the sources and their purpose, authorship, and value to the emerging research topics. This guidance in the initial stages of investigation helps students to develop and apply information literacy aptitude by gathering, interpreting, and evaluating information discerningly from a variety of sources. This objective is especially important in an age of information overload where the skill of evaluating sources of information is critical.

Place-Based Learning Strategies

The structure and assignments of the course have varied over the three years this course has been offered, with experimental strategies tested for their effectiveness in supporting the students' research. The strategies presented here reflect the insight gained from a number of approaches to the assignments and course structure.

Neighborhood Analysis

At the start of the semester, a short individual assignment provides a scaffold for the research methods to be developed throughout the course, with a focus on mapping, observing, and searching for primary source materials. Students are asked to investigate their neighborhood through the following methods:

- Map the boundaries and important social or spatial center(s) within the neighborhood based on the student's perceptions of the neighborhood
- Use available GIS databases to generate some basic graphic analysis of the neighborhood, such as the differentiation of uses of the buildings or demographic makeup of the population
- Search for at least one historic artifact or document that gives a deeper understanding of the neighborhood (map, photograph, monument, work of art, contemporary account…) and document the source in a formal citation
- While on site, use a voice recorder or video to document observations of a key location in the neighborhood.

Fig. 4.1 Example of a neighborhood analysis

This low-stakes research assignment is then compiled and presented in a five-minute audio/visual format. This assignment allows the students to practice their use of the tools critical for research the rest of the semester. Using their neighborhood for this first step is purposeful, as it has meaning to each student, helping them engage with the methods and tools (Fig. 4.1). It also helps them take the first step of seeing a familiar environment in a new way, likely with greater depth and understanding. The students regularly reflect on this point, as they did not give much thought before to the nature of the built environment they move through every day. The experience of discovery and the awareness of its personal relevance to the students start a process of engagement that student reflections confirm grows throughout the semester and has a discernible impact on them.

Film Series

As a transition between this initial exercise and the primary research project, three documentary/case study films are used to provide deeper and broader perspectives of the importance of the built environment to a range of social, economic, and cultural issues. The first film focuses on the forces of development and their impact on existing communities. This film, *My Brooklyn*, documents a vibrant commercial center in Brooklyn and the imposition of change by heads of business and government that see a development and profit opportunity. This film vividly captures divergent views of place that are grounded in racial perspectives. It also captures the social insensitivity and injustice that is a common by-product of "top down" development. The second film continues this theme in the context of urban planning theory and history. *Citizen Jane* not only chronicles the ideological battle between Jane Jacobs and Robert Moses

for the future of New York City, but also provides in Jacobs a model for our students: a journalist who without training or formal education in architecture or urban planning, emerges as an exemplar for gaining deep understanding of the complexity of the built environment through careful observation. The final film, *The Human Scale*, provides a series of international case studies of the design and development of the built environment and its human impact. This film, centered on the work of the Danish architectural practice led by Jan Gehl, examines how the built environment can either support social interaction or lead to social isolation, both through the design of the public realm but also through the nature of housing development and urban structures. Together, these films help students from diverse backgrounds and a wide range of disciplines further appreciate what they began to understand through the first assignment but also build the theoretical foundation and historical perspective that supports a critical examination of the site selected for the research project.

Initial Site Investigation

With the skills acquired and practiced in the first assignment, students form into teams of two to begin their investigation of the place selected for the semester's research. This investigation begins with a geographic analysis of the site using online sources including Google Earth and Google Maps and historic maps available through local libraries, map collections, and the Library of Congress. Using these tools, the site area is clarified and its primary geographic characteristics defined. Combining contemporary and historic maps in this analysis allows students to visualize and document change in the study area through close observation. This change is often the touchstone for further investigation and research (Fig. 4.2).[27]

The geographic analysis is followed by a series of walking seminars, with the faculty team guiding the students to and through the site with frequent close examinations of particular conditions along the way. These examinations utilize a Socratic method with probing questions guiding deeper levels of observation that help students engage with the discussion and the nuances of the place. The starting point is a general question of "what do we see here?" The subjects of observation include all facets of the place, from the natural flora/fauna to the nature of the human presence to the quality of the physical spatial setting to the architectural characteristics including materials, details, and proportions. The

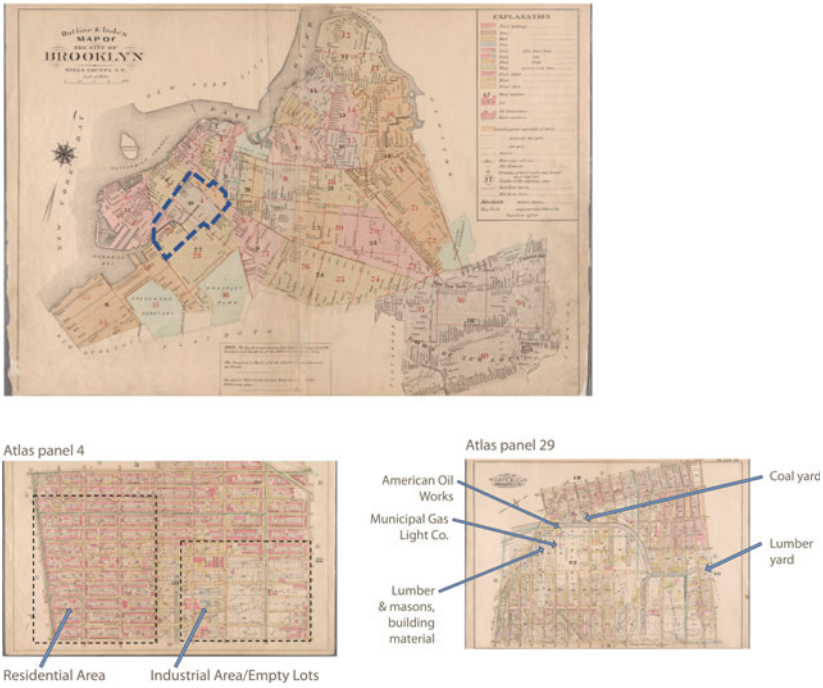

Fig. 4.2 Student analysis of a study area using historic fire atlas (*Source* Robinson's Atlas of the City of Brooklyn, New York 1886)

students document their observations using photographs, videos, and voice memos.

The voice memo, in particular, is a highly effective tool for documenting observations as it allows students to look without hinderance while they record their observations in real time. This process also fosters a critical examination, moving past the superficial characteristics of a place. For example, student observations of a closed off street that is part of a late twentieth-century urban re-development project include the overt and subtle cues that it is not a friendly or welcoming place despite being next to a high school and a university campus, with "back of house" functions serving the institutional buildings, a high security presence for government buildings, and a lack of pedestrian friendly pathways and

poorly maintained grounds. Students demonstrate their levels of engagement and inquiry/analysis by noting comprehensively what they see but also what they don't see, and then asking questions to probe further.

To further enhance student observations in the field, students are given a short workshop on sketching and visual note-taking and encouraged to use these skills as another method of site investigation. The workshop uses a didactic method, where students first draw a place without input, then re-draw the same space after a discussion of careful observation and techniques for drawing in perspective. With this minimal training, students are able to apply visual note-taking in the field (Fig. 4.3).

In addition to observing the site carefully, conversations with local residents, business owners, community representatives, or historians are coordinated to let students hear the voice of stakeholders and to provide the opportunity for the students to build on their documentation and research through direct interaction and conversation. A recent walking seminar to the Gowanus Canal included a visit to a wood shop where the students could discuss with the owner the challenges of maintaining a business in a neighborhood transitioning from industrial to residential mixed use. Another walking seminar included a member of the local conservancy that guided the students through environmental design features being implemented in the neighborhood (Fig. 4.4).

Through these modes of observation, discovery, and initial research the students develop the basis to form research questions and hypotheses

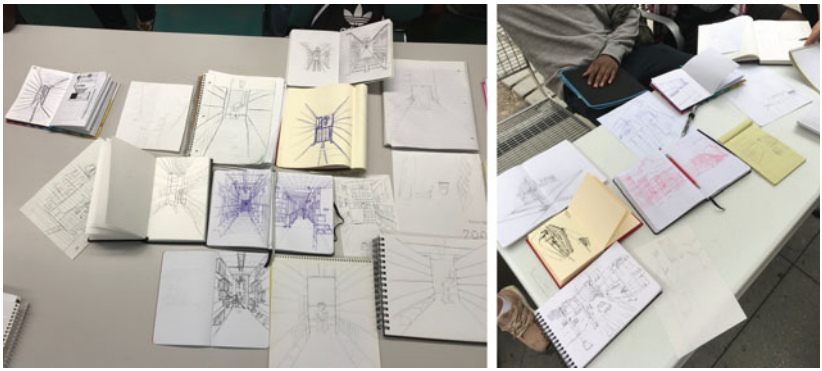

Fig. 4.3 Tutorial on observational sketching (left) and application in field (right)

Fig. 4.4 Walking seminar examining bio-swale near Gowanus Canal

about the place, including its chronological development, the how and why it is used in a particular way, the nature of the access to the place, the makeup of the local population, its environmental challenges, the political, economic and social forces that formed the place, the way the place fosters or hinders social vitality and diversity, how the contemporary place relates to other comparable places or the historic condition within the study area.

Primary Source Research That Compliments and Deepens On-Site Investigation

This first phase of research on site provides direction for the next stage of research, which focuses on primary source materials that shed light on the initial research question and hypothesis. This research makes use of online sources along with guided visits to local libraries, archives, and historic societies (Fig. 4.5). Particularly useful materials include historic

Fig. 4.5 Students huddle around historic map at the Brooklyn Library Brooklyn Collection

maps and photographs, demographic data, government reports, environmental impact reviews, GIS data including data on health, use, traffic, property lines, building footprints, and materials now commonly found both in hard copy form but also digitized and available online. With these materials in hand, the students expand their analysis and revise their research question and hypothesis.

Interestingly, the local research institutions become additional places of experience for the students where these guided primary source research experiences are clearly having a profound impact on the students in a number of ways. First, the experience helps them appreciate the power and accessibility of primary sources for research. Second, the sense of scholarly activity that these experiences facilitate helps students focus and reflect on their own scholarly development and growth. Third, many students may not feel naturally welcome or comfortable in these institutions, believing they are for other people. Helping them gain comfort

and come to understand their right to be in these places is not to be underestimated as a powerful part of the undergraduate research experience.

The observations, documentation, primary sources, and revised question/hypothesis for each team are consolidated at the mid-term into an audio/visual presentation. For the study of Metro-Tech in Brooklyn, research questions focused on a range of issues including examining the economic outcomes against the projections made prior to construction, exploring if the developer balanced social justice concerns in the development project, looking at the impact of transportation infrastructure changes on social and economic vitality of the neighborhood to be redeveloped. Feedback is an important component of HIEPs, and Learning Places is designed to encourage presentations where immediate feedback and group discussion can help focus and deepen the research work. This approach to the first two phases of investigation builds the depth of the research through a clear series of guided steps and prepares the students for the final project development.

Final Project Development

At this point each team of two is joined with another team based on the potential of combining the various research threads and hypotheses, resulting in teams of four that will stay together through the remainder of the semester. At this stage, the most formal components of the research process come into focus, with the final development of a clear research question and consolidated hypothesis, a research outline, and an annotated bibliography. Each of these components is critical to the success of the research, so significant time is allocated for faculty interaction with each team to monitor the progress and give intensive feedback.

The experience gained from the three-year history of this course reveals the central importance of the annotated bibliography to the students' learning and to the success of the research project.[28] The compilation of the list of sources is reviewed to ensure its relevance to the team's research question and hypothesis, as well as the quality of the sources. Here faculty work closely with the students to emphasize that much of the body of the final research presentation comes directly from the annotations. As part of the feedback other sources or research avenues are recommended for potential inclusion. Student teams are then encouraged to operate more independently as they pursue additional sources, visiting libraries and archives on their own to focus in on particular research materials they

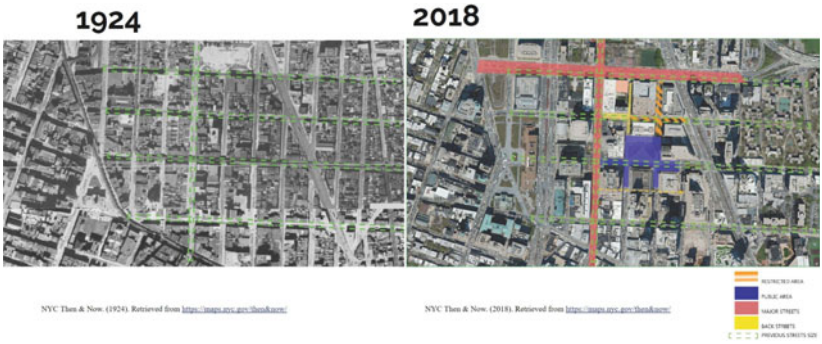

Fig. 4.6 Sample of an annotation in the team annotated bibliography

need to add to the bibliography to round out an argument or provide additional clarity and evidence. This is an important moment, where the students take ownership of their team's research and have genuine independent research experiences, with the confidence, skills, as well as clarity of procedure built through the preceding scaffolded exercises (Fig. 4.6).

Final Presentation of Research

The final presentation of the research takes the form of either a podcast or a multi-media presentation. This strategy aims to accomplish important goals at this stage of the research experience: to keep the voices of the students in the foreground, to avoid plagiarism and pro-forma rote regurgitation of other's research, and to free the students from the "straightjacket" of the student research paper. At the same time students are cautioned against a common outcome in the early iterations of the course, where the podcast dialogue fails to live up to the rigors of the research, and becomes more an expression of student opinion rather than a scholarly assessment. Nonetheless, this change of form and medium has a critical impact on the resolution of the research experience. Student teams are encouraged to creatively conceive of the genre or approach to their presentations, a process that helps them formulate how they can best present their research and conclusions while staying within a comfort level where they can speak confidently and their voice and knowledge is documented and shared. For example, a highly successful team used the popular Jeopardy format, making use of an available online tool to follow the game's format and use the answers and questions to present their

research findings. The team used the typical banter after each question to allow them to debate the finer points of each sub-topic raised in that question.

Once each team decides upon a genre and organization of the presentation, they develop a script where each team member plays a voice or role. For the students, the script writing differs substantially from a formal research paper, freeing them from any hang-ups or hesitations centered on form, content, or style. They then begin a recording process where the tracks are edited and complied by the team using audio editing software such as Audacity.[29] If desired, movie editing software adds the visual and additional audio components, including video from the site, still photos from the site or from their research, maps and diagrams, and voice memos of their on-site observations.

Listing to the podcasts and seeing the audio/visual presentations produced by the students is a revelation. First and foremost, you hear the students' collective voices, not other authors, navigating their own curation of the sources. Second, the analysis and conclusions are the product of this process, not taken from other scholars' views and findings. Third, you hear and see the impact of place-based investigation, where students synthesize the complexity through systems thinking. Finally, you hear the relationship the students have with the place, through their application of a basis of their lived experience combined with their experiential learning in this place. You hear engaged critical thinking presenting original research that concludes an authentic and meaningful research experience. Even where the analysis and findings are less complete or impressive, the product still exceeds typical student research papers in its directness and genuine reflection of original student research.

> This slide was made to help me show the street and block changes by using diagrams that illustrate clearly the negative impacts street changes had. The 1924 map that was taken from the maps.nyc.gov "then and now" maps. This map helped me see the changes of the blocks and street widths as well as streets that were removed. In the 1924 map I have highlighted the pre-existing streets that were dramatically changed with a dashed green border. Then I took those green highlights into the 2018 map to over lay it on top. That way I could compare the changes and see the amount of street that were removed or added from the pre-existing street to the existing condition streets. The 2018 map was used to create a diagram that showed the communal area, restricted area, backstreets and major streets.

NYC DoITT. "NYC Then & Now." Accessed October 15, 2019. https://maps.nyc.gov/then&now/.

Assessing Student Achievement Through Student Feedback and Reflections

Student reflection offers a powerful assessment of the efficacy of this approach to undergraduate research. One important reflection is based on the students' experience of the collaborative teaching in the course. The students state that successful collaborative teaching requires faculty teams to manage the process such that students are receiving direction and feedback that is clear and not contradictory. While the students recognize the different perspectives faculty bring to the course, they do not want to be steered in divergent directions that will frustrate their progress. This is consistent with Francis', et al. stress on faculty working together closely with the students to model interdisciplinary collaboration.[30]

The other important reflection is on the general impact of this course on the students. Here it is not uncommon for students to express their hesitancy to engage with the course at the beginning of the semester and reflect on how that changed as the semester progressed. Students often register for a common core course based on criteria that is not centered on the course description. Therefore, the first day of class in Learning Places is often a bit of a challenge, hearing about the focus on the city and the disciplines of the faculty, placing the students in unfamiliar territory. Two recent student reflections address this point.

Student 1 final reflection:

> I really didn't know what to expect my first day of the Learning Places class. I said to myself "Understanding the City", ok I can work with this, then I heard the word architecture, and suddenly I wasn't too sure anymore. I was aware of the architecture major students in class and now I'm thinking "those architecture students got one up on me, should I stay? or maybe leave and try again another time." I was unaware that it WAS my time, and I'm so happy I stayed. Starting off with taking daily tours of the downtown, Metro-Tech area I gradually started to get a glimpse of what direction the professors were trying to go with the class. Then, moving forward with the case study neighborhood analysis of my neighborhood was like unveiling important facets of researched facts about my neighborhood that was always right there in front of me, but now uncovered. Honestly, I'll never look at my neighborhood the same because of this class, let alone the Brooklyn downtown and Metro-Tech areas. My

vision is clear to the information, insight, and knowledge in reference to these places since taking this class. Both professors, with their diverse style of teaching the class made me want to push myself, and dig further into my research assignments.

Student 2 final reflection:

I had no idea what this class entailed until I actually showed up on the first day. I just took the class because it fit into my schedule. When I got to class and realized that it was about studying neighborhoods, buildings and the like, I made up my mind to drop it the same day. My first thought was, "this has absolutely nothing to do with my major (Legal Studies), so I'm out." By some act of fate, I was unable to find another class and decided to go to the second class meeting. This is when I met Professor Phillip and somehow she made the coursework seem a bit more manageable. We did our first voice impromptu observation memo, and as hard as it was, that was what motivated me to stick with the class for the rest of the semester. I can honestly say this class forced me out of my comfort zone, pushed me to learn new things and bond with my classmates. I am more aware of the changes taking place in the city and city planning. My vocabulary has been expanded tremendously with terms I've learnt in this class. Believe it or not, I even see where there were overlaps with this class and some of my legal classes. For example, the changes in zoning laws over the years. I recently did a presentation in my Real Estate Law class about zoning laws and thanks to this class, I was able to apply my knowledge about Metro-Tech to make arguments. Indeed, this class was not what I expected, and I am quite happy about that.

Conclusion

The AAC&U report cites William Cronon's essential view of liberal education: "more than anything else, being an educated person means being able to see connections that allow one to make sense of the world and act within it in creative ways."[31] Learning Places helps students see connections across a range of topics rooted in the investigation of the built envirnonment and deeper their understanding of this world they move through every day. The broad accessibility of place-based research in an undergraduate setting is a critical component of this engaging approach to undergraduate research. While the typical image of undergraduate research is a motivated STEM student working closely with a

scientist in the lab, the approach presented here is seeking to do two things: first, bring the built and natural environments into the minds of undergraduate students as important context and subject for examination and research; second, to engage students in a highly viable and tangible research process that motivates students away from performance goals toward learning goals.[32] These goals foster continued growth by providing a clear methodology the students can apply to other research work in their education to make it more engaging and meaningful to them. Student reflections confirm the findings of the NSSE survey: they claim the undergraduate research experience in Learning Places to be a life-changing experience they report that they now see things they never paid attention to before, they affirm that the course has deepened their learning and given them a sense of control and confidence in their abilities to "take measure of events and actions and put them in perspective," helping them see themselves in relation to and connected to the larger world around them in a new way.[33]

Notes

1. George D. Kuh, *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter* (Washington, DC: Association of American Colleges & Universities, 2008).
2. Kuh, *High-Impact Educational Practices*, 10.
3. For succinct discussion of the benefits of place-based learning, see Gregory A. Smith, "Place-Based Education: Learning to Be Where We Are," *Phi Delta Kappan* 83, no. 8 (2002): 584–594. Cf. Reneta D. Lansiquot and Sean P. MacDonald, eds., *Interdisciplinary Perspectives on Virtual Place-Based Learning* (New York: Palgrave, 2019); Reneta D. Lansiquot and Sean P. MacDonald, eds., *Interdisciplinary Place-Based Learning in Urban Education: Exploring Virtual Worlds* (New York: Palgrave, 2018).
4. For example, see Kevin Francis, et al., "Collaborative Teaching and Interdisciplinary Learning in Graduate Environmental Studies," *Journal of Environmental Studies and Sciences* 8 (2018): 343–350.
5. According to a UN report, over a 100-year period (1950–2050) projections indicate that the world population will flip from 2/3 rural to 2/3 urban. See Department of Economic and Social Affairs, *World Urbanization Prospects: The 2018 Revision* (New York: United Nations, 2019). This report precedes the COVID-19 pandemic, which may have an impact on these projections.
6. In fact, the notion of place-based, experiential, inquiry-based learning is rooted in environmental studies. The application to urban environments

is an adaptation of this pedagogy. For more discussion, see David A. Gruenewald, "The Best of Both Worlds: A Critical Pedagogy of Place," *Educational Researcher* 32, no. 4 (2003): 3–12.

7. Based on the principles of John Dewey, found in John Dewey, *Experience & Education* (New York: Collier, 1963).
8. John Berger notes "seeing comes before words" while Rudolph Arnheim makes the argument for the power of visual thinking that has its own processes and analysis distinct from cognitive thought. See John Berger, *Ways of Seeing* (London: Penguin Books, 1977), 1; Rudolf Arnheim, *Visual Thinking* (Berkeley: University of California Press, 1971).
9. Deep learning about a specific problem is often discipline specific while the broad learning is where many disciplines are brought to bear on a complex problem.
10. This can include the specific goal of building the students' information literacy to improve the quality of the sources examined during the research work.
11. Mick Healey and Alan Jenkins, *Developing Undergraduate Research and Inquiry* (New York: Higher Education Academy, 2009).
12. Smith, "Place-Based Education."
13. They note that student research often fails when the research topic is too broad or ill defined.
14. Chanthou Thoeun, "Situating Systems Thinking Between Past & Future: Hannah Arendt's Discourse on the Multicultural 'World'," *Multicultural Education* 21, no. 1 (2013): 8. In this article Theoun draws upon Hannah Arendt's observation of growing placelessness in the twentieth century.
15. Thoeun discusses the concept of de-placement. De-placement impacts the "loss of a common sphere among humans presents a pressing concern for Arendt because the loss signals the sense of 'de-placement' that Orr (2004) speaks of. The loss of place results in the loss of a common sphere, and vice versa as humans fail to connect with one another in terms of values, beliefs and practices."
16. For example, see David Gosselin, Steven Burian, Tim Lutz, and Julie Maxson, "Integrating Geoscience Into Undergraduate Education About Environment, Society, and Sustainability Using Place-Based Learning: Three Examples," *Journal of Environmental Studies and Sciences* 6, no. 3 (2016): 531–540. See also Linda Keane and Mark Keane, "STEAM by Design," *Design and Technology Education* 21, no. 1 (2016): 61–82.
17. See Virginia Anderson and Lauren Johnson, *Systems Thinking Basics* (Cambridge, MA: Pegasus Communications, 1997).
18. Charlane Starks, "Connecting Multiculturalism, Sustainability, & Teacher Education: A Case for Linking Martin Luther King Streets & the Power of Place," *Multicultural Education* 21, no. 1 (2013): 33.
19. David A. Gruenewald, "The Best of Both Worlds."

20. Kuh, 3.
21. Kuh, 10.
22. It is also important to consider that in the case of City Tech, a Hispanic-serving institution (HSI) and majority minority college, place-based research is proving accessible and meaningful to a broad range of students across many disciplines.
23. The National Survey of Student Engagement (NSSE) that grounds the high-impact educational practices research documents the benefits of inquiry-based learning along with the students' enriched learning when they receive guidance and feedback on collaborative research projects. Students who do research with a faculty member spend a fair amount of time with that faculty member; as a result, students learn firsthand how a faculty member thinks and deals with the inevitable challenges that crop up in the course of an investigation. Students who do research with faculty also are more likely to persist, gain more intellectually and personally, and choose a research-related field as a career.
24. Gregory A. Smith and David Sobel, *Place- and Community-Based Education in Schools* (New York: Routledge, 2010).
25. Unfiltered here means not already curated and interpreted by others.
26. Here it is important to place the students' research findings in context; the critical goal is to guide and motivate the students' research activity such that the research is genuine and reflective, generated by students' actual engagement, rather than a performance driven response to perceived expectations.
27. The New York Public Library's Map Warper is on useful tool for this process, where digitized historic maps are geo-rectified to allow study of the differences between historic and current conditions. See http://maps.nypl.org/warper/.
28. As many courses that require student papers do not require annotated bibliographies, the students often lack familiarity and experience of producing a rigorous compilation of properly formatted citations with summaries of the source material and how it relates to the research question and hypothesis.
29. See https://www.audacityteam.org.
30. Francis, et al., "Collaborative Teaching and Interdisciplinary Learning in Graduate Environmental Studies."
31. Kuh, 12.
32. See Susan A. Ambrose, et al., *How Learning Works: Seven Research-Based Principles for Smart Teaching* (Somerset, NJ: John Wiley & Sons, 2010).
33. Ambrose, et al., *How Learning Works: Seven Research-Based Principles for Smart Teaching*, 16. See Table 3. In addition, it is important to note that Learning Places' emphasis on undergraduate research addresses the

AAC&U documented lower participation rates of minority students, first time college students, transfer students, and younger students.

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CHAPTER 5

Using Monuments to Teach About Racism, Colonialism, and Sexism

Susan Phillip

Abstract This chapter examines how an interdisciplinary high-impact practice approach to teaching and learning using selected contested monuments can reveal intersections of racism, colonialism, and sexism, and lay the foundation for students' civic engagement. In place-based and virtual experiences, students observe and investigate local and national monuments, integrating knowledge from multiple disciplines, including history, psychology, art, culture, and tourism. Students make critical analyses about how monuments reveal power relationships in our society. Students from various disciplines explore the origin of contested monuments, the evolving national and local debates around them, and their effect on students' learning to evaluate historical, contemporary, and cultural perspectives while developing their own supported opinions to nurture civic engagement and lifelong learning.

Keywords Colonialism · High-impact practices · Interdisciplinary · Monuments · Place-based education · Racism

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R. D. Lansiquot (ed.), *Interdisciplinary Team Teaching*,
https://doi.org/10.1007/978-3-030-56302-8_5

This chapter explores interdisciplinary teaching that incorporates place-based learning in a course that uses the built environment, specifically monuments, to examine broader social contexts. It is based on the experience of creating and improving an interdisciplinary course that was developed as a response to debates about Confederate and other contested monuments. The special topics interdisciplinary course and its theme of investigating the built environment to reveal past and present social issues are outlined. The framework of interdisciplinary teaching and learning, including content, reading material, assignments and assessment, and experiential learning to promote inquiry and to engage students in civic discourses, is presented. The effectiveness of place-based learning as a pedagogical strategy is examined.[1] The relationship of place-based education to the Association of American Colleges and Universities' (AAC&U) "Effective Learning Outcomes" and high-impact practices is illustrated.[2] What worked and what did not, as well as the challenges in co-teaching an interdisciplinary course, are discussed. The interdisciplinary, place-based model of this course, Learning Places: Understanding the City, and the ways it can be sustained are highlighted.

Interdisciplinary Place-Based Learning and Co-teaching

Learning Places: Understanding the City is a special topic interdisciplinary course at New York City College of Technology (City Tech), a part of the City University of New York. City Tech is in Downtown Brooklyn, a rapidly transforming neighborhood, whose social context offers a laboratory for teaching and learning. The values, skills, and knowledge of general education (gen ed) are infused into the college's curriculum and the effectiveness of place-based learning to meet gen ed outcomes is supported by research.[3] Place-based learning using the local environment, such as museums, cultural organizations, parks, and other attractions, is practiced in tourism programs at the undergraduate and graduate levels. There is a growing body of research correlating the relationship of place-based learning with student engagement.[4]

The course presents a scaffolded approach to interdisciplinary learning that uses thematic case studies culminating in a final site analysis. Since its inception, semester-long themes have focused on sociopolitical and economic issues surrounding the development of MetroTech, an urban business center; Barclays Center, a sports and entertainment venue; Grand

Central Terminal, a transportation hub; the Brooklyn Bridge; and the cultural transformation of the Vinegar Hill neighborhood from one of Irish immigrants to African Americans. The course was developed jointly by library and architectural technology faculty and it is one of several that fulfill City Tech's interdisciplinary course requirement. Students from a variety of departments engage in on-site exploration and in-depth research that combine physical examination with information research and data collection using case study methodologies from multiple disciplines.

The course discussed in this chapter was developed against the backdrop of the violent clash in Charlottesville, VA, in 2017 between white nationalists protesting the removal of a Confederate statue and counterprotesters, and President Donald Trump's equivocal response, which drew heightened attention to the growing debate about monuments. New York City's own contested monuments offered the ideal opportunity to focus the course on the deeper political, social, and cultural chasms surrounding them. The goal of the course was to enable students to become knowledgeable about the historic context of the debates and to develop perspectives about them that would serve as an entry point to question broader societal issues.

With this is mind, the course offers an interdisciplinary approach to investigating our built environment using a case study focused on a specific place each semester. It combines physical examination with information research and data collection using methodologies developed in multiple disciplines. This perspective of the course had me, a professor of tourism, and my colleague, Dr. Amanda L. Almond, a professor of psychology, co-teaching, and thus focusing on material through our respective disciplinary lenses.[5]

In my teaching, place is pedagogy in which the built environment, including monuments, neighborhoods, museums, and cultural institutions are both attractions and resources.[6] The goal was to view monuments in historical context and as more than attractions. While New York does not have explicitly Confederate monuments, there are some that reflect similar symbolism and messages. In addition, New York City also has its share of monuments that have been "subject to sustained negative public reaction,"[7] and they were all familiar to me. The debates surrounding the statue of Theodore Roosevelt and its depiction of racial hierarchy were especially familiar, as I had worked at the American Museum of Natural History for many years.[8] I regularly pass Brooklyn's Grand Army Plaza on my commute home or at the Saturday produce

market in Brooklyn's Prospect Park, for which it serves as a gateway. The Four Continents,[9] at the entrance to the Smithsonian's National Museum of the American Indian, is a frequent stop on walking tours of Lower Manhattan with students in my urban tourism course. The statue of Henry Ward Beecher is steps away from City Tech's campus. Monuments are destinations for tourists, on "must see" lists and featured on Facebook. I wondered what, with more contextual information, students would "see." Educators have written about using monuments to teach. Percoco's use of monuments to teach US history to secondary-school students is among the earliest.[10] Developing this theme, Das noted "cognitive gains" and student engagement using Smithsonian Museum exhibits to teach economics to two-year college students.[11] Further, Baldwin et al. affirmed that "place matters because it encourages new ways of questioning and being in the world."[12]

The multidisciplinary nature of tourism informed the development of the course. The debate on whether tourism is an academic discipline notwithstanding, it is generally agreed that it draws on multiple disciplines, including cultural studies, psychology, sociology, history, geography, economics, and women's and gender studies. My approach to teaching encompasses using a variety of tools and information from multiple disciplines to convey the aspects of tourism, including (but not limited to) cultural and physical geography, economics, transportation, business, planning, marketing, and psychology. The economic, environmental, and social impacts of tourism are standard topics in courses. Interpretations of the past and how they perpetuate racial stereotypes have been examined in ethnographies such as that of Handler and Gable.[13]

The psychology perspective contributed knowledge and insights on the construct of race, the psychology of prejudice and discrimination, and the stages of change. The "fit" in interdisciplinary co-teaching is not always obvious, but if we are open to it, it presents many opportunities for learning to both student and teacher. Co-teaching perspectives supported a range of integrated student learning outcomes (SLOs), which were categorized in three ways: course, gen ed, and interdisciplinary. Place-based learning was integral to achieving SLOs in all categories, with a focus on inquiry, analysis, and critical thinking (see Table 5.1).

As it predominantly used seminars, the class size for this course was limited to 20 students, which facilitated site visits and social interactions. The course runs for over two hours twice a week to allow enough time for site visits. Dr. Almond and I co-taught the first week together to

Table 5.1 Integrated student learning outcomes

Course-intended SLOs	*Gen Ed SLOs*	*Interdisciplinary SLOs*
Use the city as a laboratory for learning	Knowledge: Develop knowledge from a range of disciplinary perspectives and develop the ability to deepen and continue learning	Purposefully connect and integrate across-discipline knowledge and skills to solve problems
Develop a methodological approach to research	Skills: Inquiry and analysis derive meaning from experience, as well as gathering information from observation	Synthesize and transfer knowledge across disciplinary boundaries
Understand the cultural, social, and economic processes that guide the physical development of the built environment	Integration of information literacies: Gather, interpret, evaluate, and apply information discerningly from a variety of sources	Apply integrative thinking to problem-solving in ethically and socially responsible ways
Use analytical skills to investigate places	Values, ethics, and relationships: Demonstrate social and civic knowledge [regarding social, political, economic, and historical issues]	Recognize varied perspectives
Develop, document, catalogue, and organize information to make it accessible to the public		Think critically, communicate effectively, and work collaboratively

explain the nature of an interdisciplinary class, our disciplinary perspectives, and our approaches to teaching and course assessment. Thereafter, the teaching was fifty-fifty, with each of us meeting the class on particular days, providing complementary content. For example, my lecture on "The Depiction of Blacks and Native Peoples in Monuments" was followed by Dr. Almond's "The Psychology of Racism"; I followed with a lesson on Seneca Village, a community of largely Black property owners in the early nineteenth century, which was destroyed to create Central Park. This session included a visit to an outdoor exhibit of it in the park. The lesson on Seneca Village was followed by a viewing and discussion led by Dr. Almond of the film, *Race—The Power of an Illusion*,[14] which examined racism in institutional policies and its effect on housing.

The course addresses the question of what should happen to contested monuments in public spaces: Should they remain, be recontextualized,

or be removed? While the national debate has centered on Confederate monuments in the south, that spotlight has revealed debates about monuments in other cities, including New York City. Monuments are a means to investigate how public memory is formed, the power relations they reflect, and whose memory and history are honored and whose are not. Students learned how Confederate monuments were constructed to legitimize power relationships and the "lost cause" ideal of Southern heritage. The absence or representation of African Americans, other minorities, and women in monuments is a focus of the course. Through reading materials, discussion, and observation, students acquire insights about how power is conveyed through monuments. They analyze the motives for creating them, questioning their legitimacy in public spaces. Scaffolded student practice deepens their observational and analytical skills. Five case studies presented in the course allowed them to practice and receive feedback.

The experience of place is an effective pedagogical practice essential to achieving the course outcomes. Students observed monuments that illustrated the themes of the course, as a precursor to discussions on how the monuments connect to past and present social issues. Examples of case study sites in New York included (1) the Henry Ward Beecher Monument; (2) the monuments of Grand Army Plaza, specifically, Soldiers and Sailors Memorial Arch monuments; (3) the Four Continents, statues representing Asia, America, Europe, and Africa, at the Alexander Hamilton US Custom House (site of the Smithsonian National Museum of the American Indian); (4) *Civic Virtue* at Green-Wood Cemetery; and (5) the statue of Theodore Roosevelt at the American Museum of Natural History. Students also visited the September 11 Memorial and Museum and the African Burial Ground National Monument to observe alternative ways of commemoration.

Visual learning supported by guided observation is an important aspect of place-based education. We taught students how to observe monuments in preparation for the visits. Students prepared for the visits by reading and viewing assigned texts and videos, and they used them as secondary sources in their site documentations. An early exercise to practice observation and fuel inquiry was an assignment to visit and write a short response on the statue of Henry Ward Beecher, located a few yards from the campus.

Students were asked to reflect on their observation of the Beecher Monument and to explain whether they felt that there should be more information about the monument on-site and the message they thought

the creator of this monument wanted to convey. They were asked whether they had made any observations about race or gender in the monument. In response to these questions, one student thought there should be more information about the Beecher Monument, because there was no information on "who he was or what he did in order for someone to make a statue of him." Beyond his birth and death dates and a small inscription, there was no indication that he was "a social reformer and speaker known for his support of the abolition of slavery." Another student was concerned that the statue seems to promote prejudice, "with Beecher overlooking the black woman while she looks up at him as a sort of savior and the white children are casually playing." This student was also confused by a cryptic quote on the back: "I believe there should be a sort of message that reveals the symbol on the front of the statue, underneath Beecher's name and a brief but detailed description of why Beecher is so important and why that statue was even created." Regarding race and gender, a third student observed that "Beecher is at the center of the monument in a dignified posture with two white children to his right playing and admiring some plant, while to his left stands an African American woman staring high up in a revering posture." This does not promote healthy views of African Americans, even if the effect is subliminal for many people.

Place-Based Education and High-Impact Practices

As noted above, most students admitted that even if they passed the Beecher Monument regularly, they did not pay it much attention and none ever stopped to read the inscription or to analyze the composition of the statue. Students were taught how to observe monuments, formulate questions about their surroundings, and become aware of monuments in their local environment, near the campus, and in their neighborhoods.

City Tech faces the national challenge of how to educate a large, diverse, and often previously underserved student body. To address educational inequities in communities nationally, the AAC&U identified a set of effective educational practices to guide students in their college learning and to create a framework of excellence based on "broad knowledge, intellectual and practical skills, personal and social responsibility and integrative learning."[15] These "effective educational practices" have evolved into high-impact practices, which are increasingly embraced to

close the education gap.[16] The most important of these practices are first-year seminars and experiences, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity/global learning, e-portfolios, service learning and community-based learning, internships, and capstone courses and projects.

While place-based learning is not on this list of high-impact practices, field-based, experiential learning is included as a subset of service learning and community-based learning. Kuh proposed that "The idea is to give students direct experience with issues they are studying in the curriculum and with ongoing efforts to analyze and solve problems in the community."[17]

Using place in pedagogical practice originated in John Dewey's[18] seminal work, *Experience & Education*, which criticized traditional education and offered students' experiences of the environment around them, place, through place-based learning, as a more effective means of understanding society and of having agency in it. Dewey did not debunk traditional education, but suggested that it be practically applied to the needs of students and their communities. In later years, Sobel saw place-based learning as "a process of using the local community and environment as a starting point to teach concepts in language, arts, mathematics, social studies, science, and other subjects across the curriculum."[19] In time, experiential and place-based learning have become interchangeable and are practiced widely across many age boundaries. Gruenewald connected place-based learning to "experiential learning, contextual learning, problem-based learning" and to "multicultural education, community-based education" and other approaches that prioritize community.[20]

Advocates of place-based education cite Dewey's ideas on experiential curricula for community and culture. Building on Dewey, researchers like Gruenewald[21] advocated for a critical pedagogy of place with contextual curricula, grounded in achieving both personal and community well-being as the solution. In such views, cognitive success alone is an inadequate and outdated means of meeting the social and environmental challenges of the twenty-first century. Inquiry-based, place-based education, as described in this chapter, is gaining traction in higher education.

Exploring Racism, Colonialism, and Sexism Through Monuments

As student reactions to the statue of Henry Ward Beecher indicate, monuments can convey racism, but they can also convey colonialism and sexism. To emphasize this, during the course, students learned about the important components of place-based learning: "reflection, respecting multiple perspectives, democratic dialogue, and situating complex issues of social and ecological justice within a cultural, historical, and community context."[22] Lectures and scaffolded assignments were designed to inform students about selected issues and to give them the tools for further inquiry to answer the central question of whether the monuments should remain, be recontextualized, or be removed. Instruction utilized case studies to explore commemorative forms and ways to "read" monuments; for example, when the class visited the Grand Army Plaza monuments,[23] students were able to observe for themselves the racial hierarchy in monuments they had read about in Savage's *Standing Soldiers, Kneeling Slaves*.[24] One student observed, "The kneeling African American in the Soldiers and Sailors Arch depicts that he is on a lower level [than] the other soldiers. It represents a hierarchy of color."

Interpretation and contextualization were defined and how they could be used in deciding the fate of monuments was discussed. Examples of recontextualized monuments were given.[25] Students visited the American Museum of Natural History's special exhibition "Addressing the Statue,"[26] which responded to the debates surrounding the Roosevelt monument, and they were able to analyze the recontextualization of the statue.

Course Overview

The first class included viewing the PBS film, *Documenting Hate: Charlottesville*.[27] It provoked strong reactions from the students. Their reactions in both semesters of the course are summed up in the following response: "The Charlottesville segment we watched at the beginning was also very insightful. It was a great discussion opener for the start of the semester and focused a light on the monuments that hold racist view[s] and glorify those who stand behind racist actions."

An early lesson included an episode of the documentary, *The Civil War*,[28] which helped students to understand the causes of the Civil War. A key source of information early in the semester that provided an overview and context for the monuments was the Southern Poverty Law Center's (SPLC's) "Whose Heritage? Public symbols of the Confederacy."[29] The reading and video from the SPLC documented highpoints of construction of Confederate monuments following *Plessy v. Ferguson* (1896), which legalized segregation and ushered in the enactment of Jim Crow Laws; in the 1920s, a period of revival of the Ku Klux Klan; and in the mid-1950s, amidst the growing Civil Rights Movement.

In a guided walking tour led by a City Tech librarian, expert on the Civil War and Brooklyn's Grand Army Plaza monuments, and also a licensed guide, students observed firsthand the power relations and myths represented in Civil War memorials, even in the north. Prior to the visit, students read from Kirk Savage's *Standing Soldiers, Kneeling Slaves*,[30] but in situ they could observe how the book's title is clearly depicted in the Soldiers and Sailors Memorial Arch. At the site, they see the standing soldier and the kneeling slave in reality, and not in a photo. In place, students get firsthand experience of the power dynamic and symbolism about which they have read.

By combining the knowledge from readings and student observation of how power is conveyed in monuments, students develop their own insights. Students are also actively learning with their peers as they visit museums, observe the monuments, and engage with each other at the sites. This social dimension can strengthen learning.[31] Students draw on their observations and research to complete site documentation reports. Visits to five monuments serve as case studies from which students choose one for a final analysis of more extensive research.

The site documentation tool was designed for students to record their observations in a structured way that develops skills of inquiry and analysis, critical thinking, integration, and information literacy to enable them to successfully complete the final site analysis. By writing five earlier site documentation reports, students developed evidence-based arguments on whether a chosen monument should remain, be removed, or be recontextualized. The difference between the site documentation report and the final site analysis is that students make a choice of one of the five monuments previously visited and argue its fate based on a hypothesis supported by primary and secondary sources. More analysis of the monument in its historic context is required to support the choice. Students

are also required to revisit the monument to make additional observations. An annotated bibliography, for which instruction was given, was also required. There were class discussions after each site documentation report was submitted in which students shared their insights about the particular monuments. The project also included a final reflection on the course.

In addition to putting Confederate monuments into historical context, the first part of the semester examined racism in government policies. Seneca Village, Urban Renewal, and gentrification were included in lesson topics and students noted their similarities in classroom reflections, excerpts of which are below:

> In Seneca Village people were forced to give their land to the government for public use.… [Now] big cooperatives that have power and money to invest… buy it from you.… [T]he sense of community and support … in the neighborhood is gone. Moving with time is good, but it shouldn't happen at the cost of community and unity and especially the culture that was built during a period of years.

Another student offered a similar view:

> People are being pushed out of their homes and then buildings that were 3-6 stories bump up to skyscrapers for luxury condominiums. Seneca Village was similar to Downtown Brooklyn. Seneca Village is now Central Park. Downtown Brooklyn used to be more affordable; now it's an expensive place to live.

Team-Teaching Approach

Racism, cultural stereotypes, colonialism, and sexism are common threads in many of the monuments. My co-instructor, Dr. Almond, examined the origin and construction of race and explored racism, prejudice, and discrimination from a psychological perspective. Her lectures focused on racism, prejudice, and discrimination in its many forms, specifically on how they are manifested in housing. She explored the Transtheoretical Model (Stages of Change), which was a helpful reference for students as they evaluated the fate of the monuments, considering behavioral and cultural changes in people, institutions, and the society associated with them over time. This and other interdisciplinary courses benefit from the perspectives of multiple instructors and guest lecturers. A social

science guest lecturer examined cultural wars, illuminating the "heritage" argument made by white Southerners in defense of Confederate monuments. As the semester progressed, the relationship of the interdisciplinary concepts and theories provided in the lectures and site visits became apparent to students.

Monuments are a means of studying societal issues and cultural myths, and the course highlighted how they are perpetuated by popular media. The stereotype of Southern hospitality was juxtaposed with the perils of African Americans traveling in the South. Students were able to recognize the dissonance in the so-called Southern hospitality that did not extend to Black visitors like Emmet Till. A second class discussion on Southern hospitality took place after the film *Green Book*[32] received the Academy Award for best picture. Again, the irony was not lost on students, because the original *Green Book*, *The Negro Motorist Green Book*,[33] was a guide used by African Americans to find safe accommodation as they traveled in the Jim Crow South. In class discussions, students demonstrated that they understood the film as a sugarcoated Hollywood version of the experience of African Americans traveling in the South. Students saw the film as another example of Hollywood's complicity in sugar-coating racism. Students had previously explored the topic of Black representation in film by watching excerpts from *Birth of a Nation*[34] and *Gone with the Wind*[35] (most for the first time) and discussing how the media, and these two films in particular, have shaped society's views of African Americans and perpetuate the "lost cause" ideology of Southern people protecting their way of life. *Birth of a Nation* represented African American men as degenerate sex fiends, whose assault on white womanhood could only be stopped by the heroic Ku Klux Klan. *Gone with the Wind* portrays Black slaves similarly, without the sexual fiendishness, but with shuffling male slaves and mammies accepting of their places. The "alternative histories" of slavery, the Civil War, and Reconstruction portrayed in the films are also represented in loyal mammies, kneeling slaves, and the heroic soldiers of Confederate monuments. In contrast to the heritage narrative, former New Orleans Mayor Mitch Landrieu argued for the removal of Confederate monuments. Student reflections showed that they were collectively and emotionally moved by Landrieu's speech.[36]

Reflecting on Landrieu's speech, one student wrote: "The South had won the peace because the fictional, sanitized Confederacy Landrieu referenced, and not the terror it perpetuated, had become the dominant image of the South in popular culture." Another student's observation

was similar to those of the rest of the class: "Mayor Landrieu had a very important and sincere speech in regards to the removal of four Confederate statues in New Orleans. He seemed motivated and passionate about restoring US history to ensure that past events of slavery and racism in America are no longer excluded [from] history."

The portrayal of Native Americans was explored in visits to the Theodore Roosevelt statue at the American Museum of Natural History[37] and the *Four Continents* at the US Custom House.[38] Students observed the twin ironies of the *Four Continents*, which viewed Asia, America, Europe, and Africa through imperialistic and colonizing lenses; the monuments flank the entrance of the Museum of the American Indian, and that also features a mural of Christopher Columbus in its main hall.

The viewing of the Theodore Roosevelt Monument was followed by student discussion and a lecture topic on the role of museums, especially natural history museums, in portraying Native Peoples. Lesson highlights included how museums used racial and cultural hierarchies in displays of Native Peoples and downplayed their treatment of Native Peoples in amassing their collections. The hierarchical racial and cultural scales used in early displays at museums such as the American Museum of Natural History was discussed. In research following the visit, students found links to eugenics in the work of the museum's early scientists and in the views espoused by Roosevelt, which they used to question the symbolism represented in the monument.

Students viewed videos from the Smithsonian's National Museum of African American History and Culture and the National Museum of the American Indian conference entitled *Mascots, Myths, Monuments, and Memory*,[39] which examined racialized mascots and contested monuments. The depiction of African Americans and Native Americans in public art was also discussed. Viewing short videos illustrating the depiction of indigenous peoples, notably Ota Benga at the 1904 St. Louis World's Fair and the Bronx Zoo, was also part of the lesson topic.

When addressing what Native American mascots and Confederate monuments have in common, a student pointed out, "They are products of the same era in American history. Native American[s] were confined to reservations and African American[s] were confined by the law in terms of segregation and Jim Crow. The Civilization Policy caused suffering to the Native Americans. Both groups had rights suppressed by the government. Americans adapted Native American symbols without regard for

the history.… Sports teams used the images to represent their teams, yet the US has done so much to destroy Native American culture."

The final site analysis allows students to choose one monument from earlier case studies for more extensive research. The excerpts below, taken from students' final reflections illustrate their progression in the course.

> I expected field trips and numerous history lessons. Both were received, but additionally, a lengthier, more profitable process of deriving meaning from monuments around the country. We were required to use the city as our laboratory, but in a way I wasn't used to. We were taught to not only observe and experience, but wonder. […] I realized that there's a lot of critical thinking, gathering information, interpreting, evaluating, and applying research involved when speaking about public monuments.

Students became more thoughtful and rational in presenting their opinions and they referenced information from earlier classes and readings as evidenced in one student's final class reflection: "When we tackled race in class, we had to take what we believed about race and put it on hold. To reserve our ideas until after we took part in research and [were] given material by the professors. Using skills of observation and evaluating was key in understating how race in the United States was and still is."

During the course, perspectives varied and students became more confident in expressing them and more aware of citing evidence as seen in excerpts from three reflections below. This is demonstrated in a student's comments that the course "taught me perspective and how to develop one with support backing it up. It taught me many new [things] about race, racism in history, America's own racist history, and expanded on what I already had little knowledge about such as the Civil War and Theodore Roosevelt. Research, asking questions, applying knowledge from class lectures plus the actual site visits helped give meaning to what I originally saw as an adornment in the middle of a random neighborhood in the city."

Students enjoyed learning in place, and this was apparent in selections from their final reflections. In a noteworthy reflection, a student believed that "[t]hrough this class I enhanced my analytical skills and knowledge to investigate places. I had the opportunity to socialize, explore and share ideas. I gained a lot of knowledge about monuments, history and race. Before this class I knew people were racist, but I did not imagine that

monuments can be racist too. I never looked at statues in the context of race: they always represented history for me. This class allowed me not only to see but recognize the bad in history." Students shared that they became more curious and critical about their environments. One student observed that "After taking the interdisciplinary course Learning Places, Understanding the City, I was able to inter-relate three major aspects in the process of analyzing and interpreting a site within the urban context. These aspects involve the use of the city and its everyday life as a laboratory for learning, the development of a methodological approach to develop research around it, and the application of integrative thinking to problem solving in ethically and responsible ways."

Assessment and Future Development of the Course

Several elements supported the success of the course. To begin with, there was mutual respect between the two instructors. The course was new, but we were both confident about the overall content and our ability to engage the students in the central questions. We divided the assignments evenly and rotated the grading of the assignments. We tried to create a learning environment of mutual respect in which students presented information about themselves and their disciplines, as did we.

Three areas were identified for improving this monument-themed interdisciplinary course based on student reflections: (1) Providing more examples of recontextualized monuments, (2) more guidance on developing the annotated bibliography and on ensuring student awareness of the course bibliography as a resource in developing knowledge to build their site documentations and final site analysis, and (3) keeping the course current.

Being mindful of new developments that may be related to course content and including them in lesson topics keeps the course current. For example, Almond's module on the psychology of gender and gender inequality in the art world contrasted earlier allegorical depiction of woman as vice and man as vanquishing hero as seen in the *Civic Virtue* monument. Recent debates about the lack of women as historical figures and Black women in statues in New York City were discussed, and content about She Built NYC,[40] an organization founded to address these issues, was provided.

Conclusion

Interdisciplinary team teaching is increasing at City Tech. This growth is driven by the faculty's desire for creative collaboration, in direct relation to the college's mission, and increasing respect for the scholarship of teaching and learning. Recent faculty research at City Tech has confirmed that faculty members participating in a gen ed seminar perceived that place-based learning effectively met gen ed learning goals and resulted in deep engagement.[41] Place-based learning provides an opportunity for students to learn about their communities and to question broader social issues, while interdisciplinary teaching models the benefits of viewing issues and their solutions from multiple perspectives. In addition, incorporating high-impact practices brings educators closer to fulfilling their commitment to students. Taken together in one course, place-based learning, the use of high-impact educational practices, and interdisciplinary perspectives have the potential to realize Dewey's vision of education that benefits the individual and the community.[42]

Notes

1. Cf. Karla Armbruster, "Place-Based Education: Connecting Classrooms and Communities," *Interdisciplinary Studies in Literature and Environment* 13, no. 1 (2006): 238–240.
2. See George D. Kuh, *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter* (Washington, DC: Association of American Colleges & Universities, 2008); George D. Kuh and Ken O'Donnell, *Ensuring Quality and Taking High-Impact Practices to Scale* (Washington, DC: Association of American Colleges & Universities, 2013); Cindy A. Kilgo, Ezell Sheets, and Jessica Pascarella, "The Link between High-Impact Practices and Student Learning: Some Longitudinal Evidence," *Higher Education* 69, no. 4 (2015): 509–525.
3. Reneta D. Lansiquot and Sean P. MacDonald, eds., *Interdisciplinary Place-Based Learning in Urban Education: Exploring Virtual Worlds* (New York: Palgrave, 2018); Reneta D. Lansiquot and Sean P. MacDonald, eds., *Interdisciplinary Perspectives on Virtual Place-Based Learning* (New York: Palgrave, 2019).
4. Ethan Lowenstein et al., "Place-Based Teacher Education: A Model Whose Time Has Come," *Issues in Teacher Education* 27, no. 2 (2018): 36–52; Daniel Dustin et al., "The Promise of a Park, Recreation, and Tourism Education in a Participatory Democracy," *Journal of Leisure*

Research 50, no. 4 (2019): 359–371; Connor Sloan, "Transforming Multicultural Classrooms through Creative Place-Based Learning," *Multicultural Education* 21, no. 1 (2013): 26–32.

5. See Chapter 7.
6. See James D. Nunez, "Examining the Myth of Antebellum Glory through Confederate Memorials," The Councilor: A *Journal of the Social Sciences* 79, no. 2 (2018); Paul A. Shackel, "Public Memory and the Search for Power in American Historical Archaeology," *American Anthropologist* 103, no. 3 (2001): 655–670; Stewart Waters and Sara Demoiny, "Using Civil War Monuments as a Catalyst for Race Discussions in Secondary History Classrooms," *History Teacher* 51, no. 3 (2018): 369–386; Stewart Waters and William B. Russell III, "Monumental Controversies: Exploring the Contested History of the United States Landscape," *Social Studies* 104, no. 2 (2013): 77–86; Stewart Waters and William Benedict Russell III, "Monuments All Over the World: Using Historical Monuments to Teach Cultural Geography," *Social Studies Research and Practice* 7, no. 3 (2012): 33–46.
7. See the report of the Mayoral Advisory Commission on City Art, Monuments, and Markers, commissioned by New York City Mayor Bill de Blasio to assess monuments "subject to sustained negative public reaction," https://www1.nyc.gov/assets/monuments/downloads/pdf/mac-monuments-report.pdf.
8. As of the writing of this chapter, the mayor's office announced its approval to remove the President Theodore Roosevelt statue from the front of the American Museum of Natural History in New York City.
9. The Four Continents Monument—four separate statues representing (left to right) Asia, America, Europe, and Africa—at the Alexander Hamilton US Custom House site of the Smithsonian's National Museum of the American Indian: https://americanindian.si.edu/visit/newyork/architecture-history; http://www.blueofthesky.com/publicart/works/fourcontinents.htm.
10. James Percoco, *A Passion for the Past: Creative Teaching of U.S. History* (Portsmouth, NH: Heinemann, 1998).
11. Satarupa Das, "Using Museum Exhibits: An Innovation in Experiential Learning," *College Teaching* 63, no. 2 (2015): 72.
12. Lyn Baldwin et al., "Affective Teaching: The Place of Place in Interdisciplinary Teaching," *Transformative Dialogues: Teaching & Learning Journal* 6, no. 3 (2013): 1–20.
13. Richard Handler and Eric Gable, *The New History in an Old Museum: Creating the Past at Colonial Williamsburg* (Durham, NC: Duke University Press, 1997).
14 *Race—The Power of an Illusion* (California: Newsreel, 2003), DVD. https://doi.org/10.2307/3660866.

15. Kuh, *High-Impact Educational Practices*.
16. Kuh and O'Donnell, *Ensuring Quality*. Also see Jennifer Culhane et al., "Exploring the Intersections of Interdisciplinary Teaching, Experiential Learning, and Community Engagement: A Case Study of Service Learning in Practice," *International Journal of Teaching and Learning in Higher Education* 30, no. 2 (2018): 412–422; Carrie B. Kisker, Dayna S. Weintraub, and Mallory Angeli Newell, "The Community Colleges' Role in Developing Students' Civic Outcomes," *Community College Review* 44, no. 4 (2016): 315–336.
17. Kuh, *High Impact Educational Practices*.
18. John Dewey, *Experience & Education* (New York: Collier, 1963).
19. David Sobel, *Place-Based Education: Connecting Classrooms & Communities* (Great Barrington, MA: Orion Society, 2005).
20. David A. Gruenewald, "The Best of Both Worlds: A Critical Pedagogy of Place," *Educational Researcher* 32, no. 4 (2003): 3–12.
21. Gruenewald, "The Best of Both Worlds."
22. Ethan Lowenstein et al., "Place-Based Teacher Education: A Model Whose Time Has Come," *Issues in Teacher Education* 27, no. 2 (2018): 36–52.
23. See "Grand Army Plaza Highlights: NYC Parks," https://www.nycgovparks.org/parks/B040/history.
24. Kirk Savage, *Standing Soldiers, Kneeling Slaves: Race, War, and Monuments in Nineteenth-Century America* (Princeton, NJ: Princeton University Press, 2018).
25. For example, see "A Brief Historical Contextualization of the Confederate Monument at the University of Mississippi," https://history.olemiss.edu/wp-content/uploads/sites/6/2017/08/A-Brief-Historical-Contextualization-of-the-Confederate-Monument-at-the-University-of-Mississippi.pdf. Currently, Ole Miss is expected to relocate a Confederate monument standing at the university entrance to an on-campus cemetery where hundreds of Confederate soldiers are buried. https://www.washingtonpost.com/education/2020/06/19/colleges-grapple-with-racist-legacies-monument-ole-miss-will-finally-go/.
26. See "Addressing the Theodore Roosevelt Statue: Special Exhibit| AMNH," https://www.amnh.org/exhibitions/addressing-the-theodore-roosevelt-statue.
27. An investigation of the Charlottesville rally by FRONTLINE and ProPublic: *Documenting Hate: Charlottesville*, directed by Richard Rowley, aired August 7, 2018 on PBS, https://pbsinternational.org/programs/documenting-hate-charlottesville/.
28. *The Civil War*, directed by Ken Burns (1990; Burbank, CA: PBS Home Video, 2015), DVD.

29. See "Whose Heritage? Public Symbols of the Confederacy," https://www.splcenter.org/20190201/whose-heritage-public-symbols-confederacy.
30. Savage, *Standing Soldiers*.
31. Das, "Using Museum Exhibits."
32. *Green Book*, directed by Peter Farrelly (2018; Universal City, CA: Universal Pictures, 2019), DVD.
33. See *Green, Victor H. The Negro Motorist Green-Book* (New York City, 1937). https://digitalcollections.nypl.org/items/88223f10-8936-0132-0483-58d385a7b928#/?uuid=898496a0-8936-0132-27a9-58d385a7b928.
34. *Birth of a Nation*, directed by D. W. Griffith (1915; Century City, CA: 20th Century Fox, 2017), DVD.
35. *Gone with the Wind*, directed by Victor Fleming (1939; Burbank, CA: Warner Home Video, 2006), DVD.
36. The full speech is available at https://www.americanrhetoric.com/speeches/mitchlandrieuconfederatemonuments.htm.
37. See Note 21.
38. See Note 6.
39. See "*Mascots, Myths, Monuments and Memory*," Smithsonian, 1 Mar. 2018. Press release. https://www.si.edu/newsdesk/releases/mascots-myths-monuments-and-memory-symposium-examines-racist-mascots-fate-confederate-statu.
40. See "She Built NYC," https://women.nyc/she-built-nyc/.
41. Karen Goodlad and Anne E. Leonard, "Place-Based Learning Across the Disciplines: A Living Laboratory Approach to Pedagogy," *InSight: A Journal of Scholarly Teaching* 13, no. 1 (2018): 150–164.
42. Dewey, *Experience & Education*.

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CHAPTER 6

Deconstructing the Heritage of Imperialism Toward Life-Long Learning: High-Impact Practices that Further Student Self-Actualization and Social Justice Analyses

Javiela Evangelista

Abstract The interdisciplinary model, which facilitates student engagement with a range of guest experts, encourages the reconceptualization of imperialism in time, space, geography, and self-relation. Through place- and community-based learning, a class field trip to *Democracy Now!* Studios emphasizes how imperialism is historical and contemporary. The model reconceptualizes spaces of imperialism, such as our lecture by a doula to demonstrate how the territory seized by imperial entities may include our minds and bodies. Students explore imperialism as a global entity and participate in the high-impact practice of diversity/global learning. Actively unlearning by interacting with experts from a range of fields, often people of color, students are more likely to deconstruct biases and limitations that may inhibit their own aspirations.

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R. D. Lansiquot (ed.), *Interdisciplinary Team Teaching*,
https://doi.org/10.1007/978-3-030-56302-8_6

Keywords *Democracy Now!* · Imperialism · Place-based learning · Social justice · Team teaching

New York City College of Technology (City Tech), one of the campuses of the City University of New York (CUNY), "is a baccalaureate and associate degree-granting institution committed to providing broad access to high quality technological and professional education for a diverse urban population."[1] Given the science, technology, engineering, and mathematics (STEM) emphasis of instruction at the college, a general education model provides needed exposure for all students, but especially STEM majors to "an applied and interdisciplinary education that is global in its scope, and as a result, meaningful and useful to students in their everyday lives and beyond their tenure at the college."[2] As a part of the general education program at City Tech, baccalaureate students are required to complete one interdisciplinary liberal arts and sciences course prior to graduation. Interdisciplinary courses focus on "questions, problems, and topics too complex or too broad for a single discipline or field to encompass adequately; such studies thrive on drawing connections between seemingly exclusive domains."[3] As Assistant Professor of African American Studies, in response to the need for courses that yield high-impact general education outcomes, I developed the interdisciplinary course The Heritage of Imperialism.

To be designated as an interdisciplinary course at City Tech, the course must be team-taught by more than one faculty member from two or more departments in the college. In addition to being co-taught with at least two departments at the college, The Heritage of Imperialism includes multiple invited guest lectures, which contributes to the college's mission where a "multi-disciplinary approach and creative collaboration are hallmarks of the academic programs."[4] In The Heritage of Imperialism, learning from a range of experts has enabled student exploration of the terms of imperialism in innovative ways. In fact, this chapter aims to demonstrate how the team-taught guest lecture model, coupled with place-based learning, has furthered student self-actualization and social justice analyses, indicating potential life-long learning.

Marable, a historian of African American Studies and Civil Rights activist, argues that due to racial inequality, which results in omissions and misrepresentations in knowledge production, African American Studies

as a discipline has always been and should continue to be, not only descriptive, but also corrective and prescriptive.[5] This is a guiding pedagogical principle not only of the discipline, but in all of my courses. The descriptive, corrective, and prescriptive approach emerged out of the need to address inequalities in African descendant communities, however its importance extends beyond African American Studies. In all disciplines, educators and educational institutions may benefit from such an approach, especially for those built around general education values.

A field trip to *Democracy Now!* Studios every semester facilitates the high-impact educational practices of community- and place-based learning where students have a "direct experience with issues they are studying in the curriculum and with ongoing efforts to analyze and solve problems in the community."[6] In all of my courses, students engage in "pracademics," essentially the theory that those who research inequality should also contribute to changing it, in practice.[7] My own research projects are also informed by these principles. As a public anthropologist, I engage in participatory research that counters inequalities, particularly at the intersections of citizenship and racialization in the Caribbean and the African Diaspora. In service of the public, as a researcher I participate in collaborative work with those impacted by the issues addressed, from research design through implementation. As educators, from our pedagogical approach to our publications, it is important that we strive toward equity by way of social transformation, transparency, and increasing access to knowledge and knowledge production. In this light, interdisciplinary and place-based learning opportunities from courses like The Heritage of Imperialism may benefit students, instructors, and the general public alike.

During the initial weeks of The Heritage of Imperialism, when asked to define the course's central term, many students refer to imperialism as a country (often in Europe or the United States) that expands its domination by way of extending territory, and imposing political and/or economic control. These responses defer to traditional texts on imperialism and modern world history.[8] While accurate, these responses only demonstrate partial understanding of the term, which as a result also limits the potential counter-narratives to imperialism. Alternately, the interdisciplinary course model, which facilitates student engagement with a range of guest experts in examination of imperialist paradigms from various disciplines (including medicine, human rights, technology, theology, mathematics, and ethnography), actively works toward the

reconceptualization of imperialism. The interdisciplinary multiple guest lecturers and place-based model facilitates a more complex worldview of imperialism that aims to be current and meaningful to students, and thereby more applicable for students as they deconstruct implicit biases at the foundation of imperialism. In the end, such an expanded understanding of imperialism, learned through high-impact educational practices across a range of disciplines, furthers student self-actualization and social justice analyses.

Expanding Course Terms, Challenging Biases

This chapter considers the evolution of The History of Imperialism interdisciplinary course, which used open educational resources[9] and was hybrid, partially online. The various course structures provide insight on a range of issues that may be improved and also shed light on new information and potential avenues for course improvement. The first two weeks of the course emphasize the definitions of and theoretical approaches to imperialism. A focus on definitions and theoretical approaches offers an opportunity for the instructor to assess student understanding of basic concepts central to the course early on. On the first day of class, students are asked: "How would you define imperialism? What does it mean?". One student responded, "'[i]mperialism is a policy of extending a country('s) power, peaceful or by force. It means that some country seek ways to exert their control over the less power ones. These [*sic*] control can be as police, social, cultural, etc." Another student responded, "I think imperialism is the act of entering/invading of another country in order to find resources, land and possibly colonize. Usually when a country is discovered, it ends in a brutal enslavement and killing of the native people." The initial weeks of the course offer an opportunity for the critical deconstruction of preconceived and often limited notions of imperialism, which is particularly important due to the implicit biases that discriminatory processes such as colonialism and imperialism have often facilitated. The establishment of terms the first two weeks prepares students for the complexities that develop later in the course with the guest lecturer model and also creates common ground as a group. At the inception of the course, many responses are limited in scope and bearing assumptions or biases. At the conclusion of the course, exposure to experts from multiple fields yields results that are more complex and

self-reflective and indicate the possibility of continued growth after the course ends.

Since I began team-teaching this now interdisciplinary existing course, there have been evolutions in the course structure in order to challenge limited conceptualizations of imperialism and also in consideration of our changing times. Readings on capitalism and racism as the driving force of colonialism and imperialism have remained.[10] The two points are inseparable, as it has been argued that the study of imperialism in the modern world is the study of capitalism.[11] Another staple from the original course, students learn that although the term decolonization signals an end to colonization, the era of decolonization in fact continued colonization, simply in new forms.[12] The course outline has evolved to analyze even more recent ways in which decolonization has continued and its impact in the modern era.[13] Topics that were not incorporated in early texts on imperialism, such as the impact of imperialism on climate change[14] and movements to decolonize technology,[15] whether rethinking artificial intelligence or the digital divide, are now included. It is important for course material to reflect evolving times, and multiple interdisciplinary guest lecturers and place-based learning opportunities provide contemporary updates that push course content ahead.

The interdisciplinary model better enables the realization of the numerous course objectives of The Heritage of Imperialism. The course aims to help students define and utilize the concepts of imperialism, race, and diaspora while demonstrating an understanding of the vast application and complexity of these concepts. The course also encourages students to analyze contemporary connections to imperialism for African descendants in consideration of various points of view. For example, students learn that contemporary continuities of imperialism may manifest in communities that are economically and politically marginalized, as well as privileged communities. Likewise, students understand the legacy of imperialism as not solely oppressive, but also resisted. Another objective is for students to analyze how race, ethnicity, gender, sexuality, migration, capitalism and labor, the state and militarism, and ideals of expansion and expulsion are related to the historical and contemporary development of various African diasporic societies and hence the heritage of imperialism within the African diaspora. Furthermore, students analyze and discuss the central role that race, ethnicity, class, gender, sexual orientation, and language have played and continue to play in imperial pursuits and also in resistance against imperialism. Toward this end, students analyze

cultural formations, and political and revolutionary movements emerging from the African diaspora. Students employ such analysis within larger conversations of geography and political economy.

The course aims for students to critically engage in life-long learning by responding to the heritage of imperialism, in spaces that are relevant in their lives, including academia. By studying networks such as Decolonize this Place[16] and The Movement for Black Lives,[17] students gain a greater understanding of the value and utility of social responsibility, civic engagement, and scholarship for the public. Throughout the course students map connections between regional and diasporic social movements and processes and understand the geography of central points of discussion concerning the heritage of imperialism as it relates to the African diaspora, on a global scale. The course schedule and the range of readings assigned and discussed reflect global cultural diversity. Finally, the course encourages students to identify and apply fundamental concepts and methods from several disciplines. Students evaluate ethnographic texts from anthropology in order to understand ethnographic methodology and value the contributions of people whose perspectives may not be privileged in other mediums. Students learn to use concepts in art, political economy, and geography as analytical tools of the heritage of imperialism. Students analyze historiographical sources and understand the contributions of primary and secondary sources and archival research and furthermore, how sources may work to contribute to or eradicate inequities.

After foundational concepts have been established, it is the interdisciplinary multiple guest lecturer and place-based learning model that ultimately facilitates greater student understanding of the above-mentioned course objectives through four critical lenses: time, geography, spaces, and self-actualization.

The Reconceptualization of Time

The interdisciplinary multiple guest lecturer and place-based learning course model facilitates a reconceptualization of the timeframe in which imperialism is often framed. Often imperialism is associated with the past. Yet is not only the damage that imperialism has caused in the past that must be understood, but the continued erasure and misrepresentation of the voices of those who have been most impacted by imperialism.[18] In The Heritage of Imperialism, students analyze the ways in which

oppressions of yesterday continue today.[19] For example, trends in globalization[20] and "new imperialisms" such as U.S. interest in the oil industry in the Middle East[21] after the decline of the British empire,[22] concepts which were not fully developed when the course was initially taught are included. These concepts have also helped to expand the limited timeframe in which students at times bind their evaluation of imperialism.

Place-based learning furthers the lesson on imperialism's widely variable timeframe. A class field trip to *Democracy Now!* Studios once a semester, where students view a live broadcast, tour the studio and have a discussion on the day's coverage with staff (at times including special guests and host Amy Goodman), emphasizes how imperialism is not merely historical, but functions in a contemporary context in continuity with the past. For security reasons, the class is never made aware of the guest speaker until they arrive on set. During a visit to *Democracy Now!* Studios on March 27, 2018, we learned that Chelsea Manning was the featured guest.[23] Chelsea Manning, a trans woman and former U.S. army soldier who was convicted of sharing military documentation, had just been freed from incarceration. When students asked Manning how imperialism continues today, Manning shared that the documents and footage she released provide current examples of the heritage of imperialism. The students were also able to discuss Manning's concerns around U.S. empire, freedom of expression, the carceral system, and sexual identity.

While visiting the *Democracy Now!* Studios, students learn about the value of independent media as a corrective within our society. In consideration of the course objective that implores students to understand imperialism as resisted, students evaluate independent media as an anti-imperial tool. In preparation for the visit, students read an excerpt from *News for All the People: The Epic Story of Race and the American Media* by *Democracy Now!* co-host Juan Gonzalez and author Joseph Torres. *News for All the People* charts evolutions in the developments of mainstream media and the need for independent media alternatively to tell stories that were not being covered in the mainstream.[24] Prior to the visit, in preparation, students complete a writing exercise to analyze how stories are framed. Students are tasked with comparing *CNN* coverage of the 2015 "riots" following the murder of Freddie Gray in Baltimore, with *Democracy Now!* coverage of the same events discussed as an "uprising." How are stories labeled and promoted? Who gets to tell their stories? Who doesn't? Why? These exercises help students to consider power and the production of knowledge. Students define and utilize the concepts of

imperialism (and race for example) while demonstrating an understanding of the vast application and complexity of these concepts. They examine how independent media and even social media may provide spaces for marginalized voices to be heard or to collaborate that may not be available in the mainstream. As avid users of social media, this discussion holds particular relevance for many students and offers an opportunity for evaluation of their own practices beyond the course.

The Reconceptualization of Geography

Multiple interdisciplinary guest experts aid in the exploration of imperialism as a global entity that may also proliferate on a local or domestic level, in addition to internationally, thus complicating ideas of what imperialism is and where it may occur. During the guest lecture entitled "The Task of the Artist in the Time of Monsters," musician, author, and theologian, Reverend Osagyefo Sekou,[25] discusses his single "Loving You is Killing Me," a critique of the abuses of the American empire against its own people.[26] For Sekou, loving his country as a black man has not only been painful but can prove to be fatal. The song is a love story and the premise is that North America has broken Sekou's heart and that of many black people. In preparation, for the lesson, students read "Song of the Mississippi"[27] an article written by Sekou as a part of a Federal Project series where "American artists look back at the projects created during the New Deal, and make work that reflects the United States now."[28] This lecture allows for reflection on the relationships between race, patriotism, police brutality, the history of the southern United States dating from the colonial era to Jim Crow segregation, as well as the anti-imperial role of the arts in the production of knowledge. Geographical locations and concepts not typically at the center of studies of imperialism, such as Mississippi and police brutality, are prime for self-reflection, as they bring student analysis of imperialism closer to home than many would have imagined.

One of the assigned readings, *The New York Young Lords and the Struggle for Liberation* by Darrel Wanzer-Serrano also highlights domestic violations of imperialism within the U.S. empire, thus challenging imperialism as being solely projected from empire out to developing countries. Students learn that in the 1960s, frustrated with filth in their neighborhoods, the New York Young Lords launched a garbage offensive where they collected garbage as an act of self-reliance and also obstructed traffic

with it in protest of neglect by the city's Sanitation Department. The New York Young Lords' garbage offensive offered a critique of racism, capitalism, and the legacy of colonialism charting their neighborhoods domestically in New York much like those of their family members out of the country in Puerto Rico.[29] The New York Young Lords positioned themselves as a diasporic group tracing connections and continuities between inequalities in El Barrio, New York, and Puerto Rico. Although Wanzer-Serrano addresses some of the complications that arise with revolutionary nationalism (and transnational activism), he argues that for the New York Young Lords, nationalism produced norms in a shifting context and provided an alternate path where diasporas could engage. The author explores an important tension for the New York Young Lords as nationalism implies love for one's country, whereas revolution speaks to uprooting. This provides an important point of dialogue between Mississippi and New York and Puerto Rico as we link back to the heartbreak caused by the nation in "Loving You Is Killing Me." Much like Sekou, the New York Young Lords navigated differential consciousness, where a sense of double consciousness, a split between one's race and their nation is evoked, speaking to marked connections and continuities within the lives of people of color within the confines of empire,[30] and even further across time.[31] Ultimately, by emphasizing how the New York Young Lords imagine and reconstruct their own history, while addressing the structural obstacles they experienced, this reading situates a lens on some of the critical genealogies within the lives of people of color on a global scale: migration for greater stability, marginalization by the state, and the development of local organizations to provide social services and efforts toward self-reliance. Charting diasporic anti-imperialist movements contributes to the expansion of student geographical analyses of imperialism.

The readings of male and female theorists and activists of color (and other minoritized groups), are centered and prioritized in the course. The authors read hail from a range of geographical areas, including Africa,[32] Caribbean,[33] and the United States.[34] The authorities in the course, are not those who have often been in positions of power to produce what is validated as the official primary and secondary documents of record. Working against top-down geographical constructions of imperialism, the course acts as a corrective to omissions and misrepresentations,[35] such as the privileged perspective (evident in student responses the first week of class) that imperialism generally extends from the United States or

Europe into "developing countries." Student understanding and ultimately deconstruction of imperialism, are informed by those who have experienced and continue to survive imperialism on a global scale. Toward life-long learning, students ascertain how to analyze information differently and how to create their own value systems, skills they are encouraged to further outside of class.

Place-based learning has also extended the geographical reach of the course. Students leave their classroom in Brooklyn to visit *Democracy Now!* Studios in Manhattan. Broadcasts we have participated in as a class have covered issues in Africa, the Americas, Asia, and Europe almost equally. In fact, the course centers geographical areas that receive less coverage in the mainstream media. Thinking through imperialism globally and beyond common biased points of entry, students participate in the high-impact educational practice of diversity/global learning where they "explore 'difficult differences' such as racial, ethnic, and gender inequality, or continuing struggles around the globe for human rights, freedom, and power."[36]

The Reconceptualization of Spaces

The interdisciplinary multiple guest lecturer and place-based learning course model better facilitates a reconceptualization of the range of spaces that imperialism may inhabit as well. Prior to our guest lecturer with Camalo Gaskin, a doula and Huffington Post columnist in Berlin (via *Skype*), students read about how sterilization campaigns in Puerto Rico, and in the United States against Native American and Black women, often targeting those who rely on government assistance.[37] The readings provide historical context for doula Gaskins discussion which spans geographical space and bridges the historical with the contemporary. During our conversation with doula Gaskin, students learn how higher infant mortality rates and mother mortality rates for black women in the United States today, as compared in 1850, result from the compounded lived experience of being a black woman in America. This lesson demonstrates how the territory marked and seized by imperial entities may also include our minds and bodies.[38]

During a class visit to *Democracy Now!* Studios, the featured guest was Dr. Linda Villarosa, a Professor at City College, CUNY and author of *The New York Times* article, "Why America's Black Mothers and Babies Are in a Life-or-Death Crisis." I could not have planned it better. Throughout

the *Democracy Now!* broadcast Villarosa echoes much of Gaskin's lecture. Villarosa argues that lower birthrates for African descendant women are not related to genetics, but instead "race and racism," which over time cause black women "weathering," like a "rock by the ocean" or by a house.[39] This weathering is physiological.[40] The unequal medical treatment that black people have received historically and continue to receive is also at the center of higher infant and birth mortality rates for black women.[41] During the broadcast, Villarosa connects this attack on black people to the Tuskegee experiments where from the 1930s–1970s approximately 600 black men in Tuskegee Alabama, largely sharecroppers, were solicited with the offer of free healthcare by the U.S. Public Health Service, but instead those with syphilis were not notified about of the disease and were and left untreated, as data was collected.[42] The public learned of this egregious violation decades later, after several of the participants had died.[43] Villarosa then moves on to highlight the complications experienced by black female Olympian tennis player, Serena Williams during her pregnancy and the birth of her daughter Olympia. Williams repeatedly told her nurse that "she needed a CT scan with contrast and IV heparin, a blood thinner, right away," yet the nurse did not listen and claimed that Williams appeared to be "confused."[44] When Williams eventually received a scan, it revealed blood clots in her lung, confirming the concern that Williams had attempted to express.[45] As one of the wealthiest women in North America, Williams' case demonstrates that class does not protect black women from the inadequate treatment that often results from race and racism and from weathering. In our classroom with Gaskin and with Villarosa at *Democracy Now!* Studios, students consider spaces beyond land that may be infiltrated by imperialism, such as our bodies and minds, as well as the long-term consequences of such impositions. The interdisciplinary guest lecturer model and place-based learning provides openings, not found in typical textbooks, a lesson important for all, but in this case especially students in the medical field and some STEM fields in the course.

Student Self-Actualization

On the first day of class, I ask students, "How does imperialism relate to you?" The student population at City Tech is 34% Hispanic, 29% Black non-Hispanic, 20% Asian, and 10% White non-Hispanic.[46] If their academic experiences have not pushed students to understand the

complexities of imperialism or how imperialism may relate to them in their lives, their lived experiences as minority students often generate connections to imperialism. For example, in response to the question, "How does imperialism relate to you?" one student pointed out, "I am from Jamaica, which was once ruled by Great Britain." Several others confirmed this sentiment and noted similar histories from the Dominican Republic to Nigeria. However, for other students, their positionality in the United States has led them to believe that they are not connected to imperialism. Another student noted, "Since I have lived my whole life in the United States, imperialism isn't widely demonstrated, but this isn't the case i[n] other countries, especially Third World countries, where people don't have a lot of rights nor freedom of speech."

Implicit biases may be defined as "the attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner. We are often unable and/or unwilling to acknowledge our biases."[47] Someone may believe that women and men should be associated with science equally, however, their automatic associations may show that they (like many others) associate men with science more than women, despite their belief in equality because of what they have been taught or observed repeatedly overtime.[48] Implicit biases may have severe consequences and they can predict behavior. Implicit biases may impact the decisions of medical practitioners as discussed in the previous section or inform the impulsive reactions of police officers. They may impact the decisions of bankers offering loans for example. Implicit biases can be dangerous. Students not only focus on strategies for reducing implicit preferences but also strategies that deny implicit biases the chance to function. The lesson then becomes one of unlearning, deconstructing, or as some have termed "decolonizing."[49] One of the goals in The Heritage of Imperialism is to consider what gets into our minds, and make an effort to influence it. Imperialism is not only something we can point our finger toward in a distant place or only occurring with others. It is a constructed reality from which many of our own biases may be learned, and in some cases have been learned.

Students explore some of the assumptions, biases within academia. For example, students consider how the field of international relations has placed the United States, Europe, and some Asian countries at the center of its analysis and African and Caribbean nations at the periphery.[50] Students learn to break down the assumptions laden in this field and become skilled at shifting the center of their own analysis and

research. Guest lecturer Dr. Renata Ferdinand, an award-winning auto-ethnographer and Associate Professor of English at City Tech, helps students to consider her positionality as a black woman who corrects omissions in the archives by recreating the stories of enslaved women who are excluded from most official written records.[51] Students learn the value of research techniques such as literary archaeology as an act of recovery.[52] Dr. Ferdinand also revisits the concept of weathering as she addresses the toll that erasures have had on her as a black female PhD. She demonstrates the heritage of imperialism, and the impact of implicit biases in her discussion of higher rates of school expulsion for black girls as a form of historical marginalization that continues in new forms today.[53] Guest lecturer Dr. Camille Fair, a mathematician, furthers this discussion in her lecture on how implicit biases about black girls negatively impacts their entrance into STEM fields. Important points of reflection to the many technology-related majors in the course, guest lecturer Dr. Lisa Tagliaferri, a Fellow at the Harvard University Center for Italian Renaissance Studies, discusses how fields of technology disproportionately reflect white men in positions of power; whereas, people of color are in the lower ranking positions of mining for materials needed for technology or used as programmers. The City Tech mission highlights the value of "applied skills and place-based learning built upon a vibrant general education foundation equips students with both problem-solving skills and an understanding of the social contexts of technology that make its graduates competitive."[54] Especially as an interdisciplinary multiple lecturer place-based model, The Heritage of Imperialism furthers the college's mission. Guest lecturer Dr. Brittney Roberts, Assistant Professor of Nursing at City Tech highlights the need for mental wellness given the implicit biases, weathering, and post-traumatic syndrome disorder (PTSD) that often results from race, racism, and ultimately the heritage of imperialism. Offering insight to medical majors in the classroom, Dr. Roberts cautions that many people of color may not seek the assistance needed given their concerns about historical and current inequities in treatment.

Students learn that it is their responsibility to bring such stories to the center and to undo misrepresentations and erasures in their own work and in their own minds. We all have implicit biases.[55] We may form implicit biases against others, in favor of others, in favor of ourselves, and even against ourselves. In reference to the latter, during the *Brown v. Board of Education* case, as proof that segregation negatively impacted

associations of blackness, a doll test was administered in schools. When presented with black and white dolls, both the black and white children overwhelmingly selected the white doll. When the study has been replicated in the last decade the results have been similar.[56] Activities are assigned where students can conduct practices of rethinking and undoing regularly. Students may "blind" themselves from learning a person's gender, race, etc. when making a decision about them (e.g., remove names from a resume). Students may watch television programs and movies that portray women and minority group members in positive or counter-stereotypical ways.[57] MTV Look Different has daily assignments where students can practice unlearning biases.[58] By the end of the course students are thinking differently about the world, themselves, and their careers or majors in relation to it. Dr. Roberts discusses interventions in the medical field, for example the creation of the Peoples Free Medical Clinic by the Black Panther Party, to address the mistreatment of black communities.[59] In a school that has a STEM focus, this is especially valuable. Arguably most importantly, the goal with these activities is a transformation that will last, be life-long and that can be taught to others and infused into the work that they do—naturally providing possibilities for life after course completion and for interventions. Actively unlearning by interacting with experts from a range of fields, who intentionally are often people of color, from medical practitioners to activists, students are more likely to deconstruct biases and limitations that may inhibit their own aspirations.[60]

At the conclusion of the course I asked students again, "What does imperialism mean to you?" to see whether their responses had expanded and increased in rigor after a semester in the course. The findings are encouraging and signal success. One student noted, "It makes me see things differently as a black woman. I can see how certain campaigns are in place … its caused me to ask more questions, think more, look deeper." Another student noted, "Imperialism has affected many parts of the world. It's a combination of many things such as capitalism, decolonization … We don't see it because we are so caught up with our own lives, but we are all part and effects of imperialism." A different student stated, "Imperialism relates to my field because of inequality. There are many instances when African American people get more [jail] time than other races." A different student talked about "Fighting against the health care industry to provide health care to those with no insurance." The students' reflections were personal and concerned changes to their own perspective

and possibly their approach to their professions or disciplines, moving toward greater equality. These are indicators of long-term learning potential beyond the course. Ultimately, by expanding our temporal, spatial, and geographical understanding of imperialism in relation to ourselves, which is measured by a culminating reflective exercise at the conclusion of the course, the interdisciplinary multiple guest lecturer and place-based learning model employs high-impact educational practices for results that further social justice analyses and student self-actualization.

General Education Connections in Any Setting

This multiple interdisciplinary guest lecturer, place-based learning model can work in a variety of settings. Being at City Tech is not a deciding factor. The student's discipline is not a deciding factor. In fact, the specific combination of disciplines represented in the course does not matter either. General education goals should serve as guiding principles, as they have in The Heritage of Imperialism. One of the goals of general education is for students to develop "broad cross-cutting skills" such as "critical thinking, analytical thinking, and to communicate effectively across time zones."[61] This value may be centered in any course. Another goal of general education, which may be centered in any course, is to attend to "the commons." How may the findings in any field in conjunction with multiple guest lecturers and place-based learning further critical thinking or attend to the commons? These are questions we must ask ourselves as educators.

The benefits of general education have been proven and continue to inform the future of higher education.[62] The interdisciplinary multiple guest lecturer place-based learning model enhances these general education learning outcomes. Like many U.S. colleges, general education is at the heart of City Tech's mission. The lessons learned at City Tech are applicable anywhere general education is valued. According to City Tech mandates, The Heritage of Imperialism engages the following general education learning outcomes: knowledge, skills, integration, values, ethics, and relationships. In the class, in consideration of knowledge as a general education outcome, students engage in critical inquiry, research, and analysis concerning imperialism as related to people of African descent on a global scale by use of Materials and methods from African American Studies and other disciplines. To develop general education skills, students learn to analyze material from different disciplines,

devise research strategies and methodology, and develop critical arguments about contemporary issues with historical grounding. To further values, ethics, and relationships, concepts fundamental to general education, students consider citizenship, human rights, civic engagement, social responsibility, and scholarship for the public as central components of the course. At a college that focuses on STEM fields, these lessons are particularly important.

The expansion of student analysis from the start of each semester of The Heritage of Imperialism to the conclusion of the semester demonstrates that students learn to express their evaluations for themselves and why they are important to them, as well as the tenets of general education.[63] Ultimately at the end of any course, the hope is that students have profound integration of not only the content but also the concepts. The interdisciplinary multiple guest lecturer place-based model strengthens this anticipated outcome. The course model has challenged students to attend to the commons as a part of their work as students, but also within their profession, values that hopefully they come to hold for the long term. These lessons generally taught by experts of color (or other minoritized groups) also encourage students to include minoritized groups in their analysis, to think deeply about these world issues in relation to themselves and to express it in their own words as demonstrated in the reflective writing assignments, "Defining Imperialism" and "What Does Imperialism Mean to You?". This is beneficial whether the students represent a specific population themselves, or not. Due to my training as a cultural anthropologist, ethnography and testimony are centered in my courses to amplify marginalized concerns and to explore strategies that may serve as correctives. Yet in any course, in any discipline, centering experts (in person and on the text) that have been marginalized and insufficiently addressed and thus challenging students to find and correct such gaps in their professions may be transformative in the ways described in this chapter. In any course, critical themes may be expanded and implicit biases broken down, much like model of The Heritage of Imperialism furthered student understanding of time, spaces, geography and self-actualization in relation to imperialism. It is important for course material to reflect evolving times (much like the impact of climate change), and multiple interdisciplinary guest lecturers and place-based learning provide such updates and push course content ahead. The use of open educational resources and our regular visit to *Democracy Now!* also provides a model of how to take seriously access, place-based learning and to be

critical of power and the production of knowledge, even in students' own usage of social media. Students are not simply repeating the material, they are analyzing with a greater purpose, in different situations, and learning to view from multiple perspectives.[64] Teaching this course, it has become clear that general education at its best, is descriptive, corrective, and prescriptive like African American Studies. Ultimately, institutions interested in furthering general education aims, such as student social justice analyses and self-actualization in the context of life-long learning, may benefit from models such as the interdisciplinary guest lecturer and place-based The Heritage of Imperialism course offered by the African American Studies department at City Tech.

Notes

1. See City Tech mission, http://www.citytech.cuny.edu/about-us/mission.aspx.
2. Javiela Evangelista, "What Gen Ed Means to Me," *Nucleus: A Faculty Commons Quarterly* 8 (2017): 6.
3. City Tech general education interdisciplinary requirements, http://www.citytech.cuny.edu/advisement/interdisciplinary.aspx.
4. See Note 1.
5. Manning Marable, "Black Studies and the Racial Mountain," *Souls* 2, no. 3 (2000): 17–36.
6. George D. Kuh, *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter* (Washington, DC: Association of American Colleges & Universities, 2008).
7. Dana-Ain Davis, "What Did You Do Today? Notes from a Politically Engaged Anthropologist," *Urban Anthropology* 32, no. 2 (2003): 147–173.
8. Mashood Danmole, *The Heritage of Imperialism: A Study in Historical and Economic Analysis* (New York: Asia Publishing House, 1974); John A. Hobson, *Imperialism: A Study* (London: Cosimo, 1902).
9. Library Resources for CUNY Central Employees: Open Educational Resources, *City University of New York*, https://guides.cuny.edu/libraries/oer.
10. Mashood Danmole, *The Heritage of Imperialism*; Walter Rodney, *How Europe Underdeveloped Africa* (London: Bogle L'Ouverture Publications, 1973).
11. Danmole, *The Heritage of Imperialism*.
12. Raymond Betts, *Decolonization: The Making of the Contemporary World* (London: Routledge, 1998); Kwame Nkrumah, *Neo-colonialism: The Last Stage of Imperialism* (New York: International Publishers, 1966).

13. Martin Shipway, *Decolonization and Its Impact* (Oxford: Wiley-Blackwell, 2008).
14. George Monbiot, "The Earth Is in a Death Spiral: It Will Take Radical Action to Save Us," *The Guardian* (November 14, 2018), https://www.theguardian.com/commentisfree/2018/nov/14/earth-death-spiral-radical-action-climate-breakdown.
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16. Decolonize this Place, https://decolonizethisplace.org.
17. Black Lives Matter, https://blacklivesmatter.com.
18. Michel Rolph Trouillot, *Silencing the Past: Power and the Production of History* (Boston: Beacon Press, 2007).
19. Michelle Alexander, *The New Jim Crow: The New Jim Crow: Mass Incarceration in the Age of Colorblindness* (New York: The New Press, 2010).
20. Steven Gregory, *The Devil Behind the Mirror: Globalization and Politics in the Dominican Republic* (Berkeley: University of California Press, 2014); Leith Mullings, "Race and Globalization: Racialization from Below," *Souls* 6, no. 2 (June 2004): 1–9.
21. David Harvey, *The New Imperialism* (New York: Oxford University Press, 2003).
22. Shipway, *Decolonization and Its Impact*.
23. *Democracy Now!*, "'We Cannot Wait for Change'–Freed Whistleblower Chelsea Manning on Iraq, Prison, and Running for Senate," March 27, 2018, https://www.youtube.com/watch?v=1hC6ojvH9Us.
24. Juan Gonzalez and Joseph Torres, *News for All the People: The Epic Story of Race and the American Media* (London: Verso, 2012).
25. Rev. Sekou, like the other guests who will be mentioned in this chapter, returns to the course each semester as long as his scheduling allows.
26. Osygefou Sekou, "Loving You Is Killing Me," *When We Fight We Win*, 2017.
27. Osygefou Sekou, "Song of the Mississippi," Federal Project No. 2: Reexamining America, *Topic Magazine,* 2019. Accessed January 11, 2020, https://www.topic.com/fp2/song-of-the-mississippi.
28. Federal Project No. 2: Reexamining America, *Topic Magazine*. Accessed January 5, 2020, https://www.topic.com/fp2.
29. Darrel Wanzer-Serrano, *The New York Young Lords and the Struggle for Liberation* (Philadelphia: Temple University Press, 2015).
30. W.E.B. DuBois, *The Souls of Black Folk* (Chicago: AC McClurg and Company, 1903).

31. Thus highlighting how many of the course themes overlap and inform one another, much like oppressions and resistances overlap and inform one another as well: across space, time, geography.
32. Danmole, *The Heritage of Imperialism*; Mahmood Mamdani, *When Victims Become Killers. Colonialism, Nativism and Genocide in Rwanda* (Princeton: Princeton University Press, 2002); Kwame Nkrumah *Neo-colonialism*.
33. Aime Cesaire, *Discourse on Colonialism* (New York: Monthly Review Press, 2000); Frantz Fanon, *Black Skin, White Masks* (New York: Grove Press, 1952); Marcus Garvey, "The Back to Africa Movement (1922)," in *Black Protest: History, Documents, and Analyses 1619 to the Present*, ed. Joanne Grant, 164–169 (New York: Fawcett Publications, 1968); Walter Rodney, *How Europe Underdeveloped Africa* (London: Bogle L'Ouverture Publications, 1973); Michel Rolph-Trouillot, *Silencing the Past: Power and the Production of History* (Boston: Beacon Press, 2007).
34. Renata Ferdinand, "Remember, Me: An Interlocking Narrative of Black Women's Past and Present," *Cultural Studies ↔ Critical Methodologies* 18, no. 1 (2018): 52–60; Alondra Nelson, *Body and Soul: The Black Panther Party and the Fight Against Medical Discrimination* (Minneapolis: University of Minnesota Press, 2011); Sekou, "Song of the Mississippi"; Darrel Wanzer-Serrano, *The New York Young Lords and the Struggle for Liberation*.
35. Rolph-Trouillot, *Silencing the Past*.
36. Kuh, *High-Impact Educational Practices*.
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38. Ricki Lake and Abby Epstein et al., *The Business of Being Born* (Burbank: California, Ample Productions and Barranca Productions, 2008); Linda Villarosa, "Why America's Black Mothers and Babies Are in a Life-or-Death Crisis," *New York Times Magazine*, April 11, 2008, https://www.nytimes.com/2018/04/11/magazine/black-mothers-babies-death-maternal-mortality.html.
39. *Democracy Now!*, 'We Cannot Wait for Change.'
40. See Note 39.
41. See Note 39.
42. James Jones, *Bad Blood: The Tuskegee Syphilis Experiment* (New York: The Free Press, 1981).
43. Jones, *Bad Blood*.
44. See Note 39.
45. See Note 39.

46. Fact Sheet 2019–20, City Tech, http://www.citytech.cuny.edu/about-us/docs/facts.pdf.
47. Kirwan Institute for the Study of Race and Racism, The Ohio State University, "Understanding ImplicitBias." Accessed November 11, 2019, http://kirwaninstitute.osu.edu/research/understanding-implicit-bias/.
48. See Note 47.
49. Linda Smith, *Decolonizing Methodologies: Research and Indigenous Peoples* (London: Zed Books, 2013).
50. Sanjay Seth, *Postcolonial Theory and International Relations: A Critical Introduction* (New York: Routledge Press, 2013).
51. Ferdinand, "Remember, Me."
52. Jenny Sharpe, *Ghosts of Slavery: A Literary Archaeology of Black Women's Lives* (Minneapolis: University of Minnesota Press, 2003).
53. Ferdinand, "Remember, Me."
54. See Note 1.
55. Mahzarin Banaji and Anthony Greenwald, *Blindspot: Hidden Biases Good People* (New York: Bantam Books, 2016).
56. American Anthropological Association, "A Girl Like Me," *Understanding Race Project*, https://www.understandingrace.org/AGirlLikeMe.
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CHAPTER 7

A Psychologist's Perspective for Coordinating Interdisciplinary Courses

Amanda L. Almond

Abstract Developing a student evaluation for interdisciplinary teaching revealed a clearer goal for interdisciplinary course assessment. This chapter summarizes how interdisciplinary course assessment is a cooperative and reflexive process. Using professional judgment and a working group of peers, interdisciplinary courses maintain their integrity through regular reviews. A reflection on experiences with team-teaching, guest lecturing, and learning-communities is also included. Best practices for interdisciplinary course maintenance and concepts of validity are applied to the debate between evaluation and assessment methods. By fostering transparency, accountability, and peer-led critiques, interdisciplinary learning objectives within courses are sustained each semester. Recognizing concerns regarding evaluation, flexible approaches to assessment are driven by data and remain distinct from professional benchmarking.

Keywords Assessment · Course integrity · Interdisciplinary learning objectives · Peer-review · Student evaluation of teaching

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R. D. Lansiquot (ed.), *Interdisciplinary Team Teaching*,
https://doi.org/10.1007/978-3-030-56302-8_7

This chapter describes how a faculty debated the concepts of internal, external, and construct validity in relation to interdisciplinary courses. My hope in bringing it to you is that a process that took faculty a couple of years and much reflection can jump-start your process. This chapter will share ways that your process can be transparent and collaborative. But first, for those not familiar with the concepts of internal, external, and construct validity, here is how I explain it to my psychology students.

For readers familiar with teaching issues of validity, you will likely know of the misconceptions and ah-ha moments learners can have. One of the livelier debates among students in my team-taught Introduction to Psychology learning community course is around the topic of validity. Without direction to do so, a line is always drawn in the sand: is it more important for a psychological study to be internally or externally valid? Arguments are built around the idea that one type of validity matters more than the other. Small, in-class, group discussions allow students to recognize that a person's position within an environment impacts which type of validity is deemed as essential, frequently making the impression that the other is irrelevant.

Those who favor internal validity over external validity often align with the thinking of the scientist and cite the scientific method as the gold standard for understanding the world around us. They make the argument that regardless of the real-world implications a study might have, if it is poorly designed and executed, none of the findings would matter, or in their words "be real." Internal validity refers to the design of an investigation. To increase internal validity, a researcher should do their best to ensure that confounding variables, or other potential explanations for the phenomena they wish to study, are ruled out. Achieving high internal validity equates to an experiment determining cause and effect without disturbances from potential sources of error.

External validity, on the other hand, has to do with the generalizability of a study's findings. It assures that the research can be replicated beyond the confines of a laboratory or other controlled environment. On this side of the debate are those who see psychologists as capable of sparking social change. They argue that the design of a study is not nearly as important its real-world applications. If advances in psychological science aim to help and improve society, then research findings should be accepted regardless of the characteristics of their design. They state, "isn't that the point of science… to improve the human condition?" When external validity is

high, then the implications of a study can be applied broadly and across a number of contexts.

Rebuttal from the "internalist" includes points like "if a study cannot determine cause and effect then it is not useful, in fact it might be harmful." While "externalist" refutes "not everything can be understood from a laboratory perspective"; one student added "we have not proven that smoking cigarettes causes cancer through experiments in a lab because that would be impossible, but we know better. We can help reduce cancer because we understand there is a very strong relationship between the two, and the methods are less important than saving lives." Once the debate gets to the point of reciprocity, I am contented as a professor, seeing that my students are actively engaged in an important part of the learning process: taking different perspectives and communicating their points to one another.

But alas, I have another trick up my sleeve, and I slyly introduce the concept of construct validity with a hypothetical study: "What if I were to tell you that a study had found that having larger feet was related to increased reading comprehension?" They often glance up at me with a puzzled look in their eyes. I assure that the research was internally valid, conducted with a large sample using reading comprehension tests and tape measures and the I ask, "is this research valid?" First, we discuss external validity—even if this were "true," what implications does it have for the real world and could the study be replicated? Should students strive to work with one another based on shoe size? Then we turn to internal validity, "who were the people in this study?" This research example is based on school-aged children. I tell them "don't you see? As children get older so do their feet, and during this time, their reading comprehension skill also increases."

Construct validity is yet another aspect of validity that is fundamentally important and refers to the extent to which a series of questions encompasses a concept.[1] Was it really shoe size that related to reading comprehension, or was it age? The proxy for age in this study was shoe-size, but this alone does not comprise the age of a child. To say that age and shoe-size are synonymous significantly decreases construct validity, as well as threatens internal and external validity. Furthermore, children grow at very different rates and by adulthood, our feet stop growing, so such a relationship would no longer exist. Other predictors of reading comprehension include congenital conditions or economic disadvantage, and by failing to acknowledge this, the usefulness of the study is reduced.

The negotiation and awareness my students have about different types of validity mirror what I have seen faculty and administrators grapple with when it comes to evaluating interdisciplinary courses. How does one measure the success of team-teaching in an Interdisciplinary course? What implementation of a course would show construct validity? How can faculty be assessed, fairly, in terms of maintaining the interdisciplinary structure of a course, over time?

Context

The context, New York City College of Technology (City Tech), I am working in is a technical college. Faculty are invested in interdisciplinary values that include deep thinking, integration, creativity, lifelong learning, and synthesis.[2] The mission statement of City Tech includes the phrase "a multi- disciplinary approach and creative collaboration are hallmarks of the academic programs." Due in large part to the efforts of the Interdisciplinary Studies Committee, all baccalaureate students are required to complete one interdisciplinary liberal arts and sciences course.[3]

Our Interdisciplinary Studies Committee is charged with helping faculty design and implement interdisciplinary pedagogy at the College. An interdisciplinary course is defined as having a focus on questions, problems, and topics too complex or too broad for a single discipline or field to encompass adequately; such studies thrive on drawing connections between seemingly exclusive domains.

Interdisciplinary courses are operationalized at City Tech largely by the teaching structure. Courses are to be either team-taught by two or more professors from different disciplines (i.e., comprised of 20% guest lecturers from different disciplinary backgrounds, as part of a learning community merging two or more courses from different disciplines, or co-taught) and have an interdisciplinary theme at its nucleus. My own experiences include three distinct approaches: guest lecture, learning community, and co-teaching. In my Health Psychology course, I collaborate with professors from disciplines that address complex questions at the nucleus of my course (e.g., philosophy, economics). By sharing the aims of my course, I invite these colleagues to lecture about how their discipline approaches similar problems (i.e., racial health disparities). Their integration into my course is reflected in the assignments given to students. The other side of this coin is my offering guest lectures in my English, Philosophy,

Economics, and Communication colleagues' interdisciplinary courses. For my Introduction to Psychology learning community course, collaboration looks very different. In the previous semester, I attended regular workshops with my colleague in the English Department where we developed an integrative assignment, created and shared a virtual platform where students could connect, and organized the content of our introductory psychology and English courses to achieve an overall flow. Last is an interdisciplinary course that uses co-teaching. Learning Spaces: Understanding New York City is a course that I co-teach with a Hospitality Management professor.[4] We work side-by-side over the course of the entire semester, organizing field trips, and holding joint office hours. We provide the content of our course to students both in-person and online. We also work together to grade assignments and offer consistent feedback to our students. While different, these three pedagogical approaches enhance the student's learning experience. However, at one point, little was known about how this was maintained in courses designated as "interdisciplinary."

When I first started on the Interdisciplinary Studies Committee there was a pragmatic concern as to whether or not modes of co-teaching remained intact beyond the original course proposal. When faculty members co-taught, there was an artifact of this in terms of credit distribution tracked by administration, but these data were not being collected. If there were guest lecturers, we were unsure of who they were and if this changed from one semester to the next. Once a course received the committee's approval for designation as interdisciplinary, it was "released into the wild," ran for continuous semesters, and it was unclear if the team-teaching structure remained. In other words, without tracking the teaching structure over time, construct validity was uncertain. We wanted to know the degree to which interdisciplinary courses were being team-instructed and how that team structure was serving the students and lecturers.

Walking the Line: From Measurement to Professional Judgment

My rationale to gauge whether new Student Evaluations of *Interdisciplinary* Teaching were warranted was clear. A standard measure, an evaluation of teaching, was being used in a course where the nature of the teaching itself was no longer standard. Interdisciplinary pedagogy and a

measure designed to evaluate *one* professor's teaching, fails as a proxy for *synthesis,* the product of team-teaching.

Student Evaluations of Teaching (SETs) were discussed among Interdisciplinary Studies Committee members, as many were also teaching interdisciplinary courses. Given the wording of certain questions on the standard SETs, it is unclear which professor(s) were being evaluated in a course with two or more instructors. For example, one question asks if the instructor "Generally met class on time and held class to end of period." A student might respond to this question as it pertains to the guest lecturers in the course, however the evaluation is intended to be about a single professor. The solution used to solve this problem is to administer more than one SET for co-taught courses.

From a practical stance, administrating multiple evaluations of teaching for a team-taught course fails to measure the product of faculty members' efforts (i.e., low construct validity). Not only that, but it is time consuming and redundant, which reduces the reliability of such a measure.[5] Faculty collaboration, interactions, and the content cross-over between disciplines, are ignored in the standard SETs, and these are among the core characteristics of interdisciplinary courses. While College Council, the governing body that is responsible for establishing policies that affect students and curriculum, shapes the academic and physical environment, it does not assess the requirement for interdisciplinary courses to be team-taught; and therefore, the ownness is on the Interdisciplinary Studies Committee.

In anticipation of the rhetoric surrounding interdisciplinarity at the local level in addition to assessment at a more global level, I considered the well-established criticisms of student evaluations as a place to start. For example, in evaluations of teaching, the underlying factors (or concepts) that questions comprise are often unidentified.[6] Even when these different factors are made clear, typically, an uneven number of items per factor remains.[7] Student Evaluations of Teaching are also found to lack a strong correlation to student achievement,[8] therefore Barnes and colleagues suggested "an inductive approach [be] used to explore the construct domain."[9] This information helped me to design my research and produce a new evaluation of teaching for interdisciplinary studies.

Tailoring Student Evaluations to Measure Effective Interdisciplinary Teaching

Taking an inductive approach, I collected my first sample from which a new evaluation for interdisciplinary teaching measure could be developed: faculty members who taught Interdisciplinary courses. Interdisciplinary faculty members represented the full range of team-teaching pedagogies and generated ideas about the questions that ought to be included in a Student Evaluation of Interdisciplinary Teaching (SEIT), such as asking students, "Did studying this topic through multiple disciplines enhance your learning?" "I found myself considering certain ideas and perspectives for the first time in my life," and, "Was working in a collaborative team useful in learning and applying the course material?"

Following this phase of generating new items for the measure, the standard Student Evaluation of Teaching (SET) was given to the second sample of interdisciplinary faculty members, along with the new questions. This sample represented 63% of the interdisciplinary faculty. They rated each question in terms of its usefulness for evaluations of teaching on a 5-point Likert-type scale ranging from "Not at All Useful" to "Extremely Useful."

The next step helped determine which items would comprise a SEIT. This was a multi faceted approach with which I developed two versions. The first version of the SEIT kept items rated as "Very Useful" and "Extremely Useful," prioritizing the expertise of our interdisciplinary faculty members. The result was a nineteen-item measure with no factors identified (see Table 7.1).

The second version of the SEIT used the statistical method of principal components analysis, which identifies questions' underlying factors by consulting a matrix of intercorrelations among faculty member's ratings of usefulness. The result of the statistical analysis was a twelve-item measure targeting three underlying factors: "General Course Outcomes," "Interdisciplinary Outcomes," and "Uniqueness of Course" (see Table 7.2). Each factor, or theme, contained an unequal number of questions and was named by the Interdisciplinary Studies Committee, following an open conversation that achieved consensus.

Table 7.1 Standard SET questions plus items generated by interdisciplinary faculty members

Instructions: Please take a moment to evaluate the overall instruction you have received in this course	*Response choices*
1. Instructor communicated in a way I understood	Strongly agree Agree Not Sure/Neutral Disagree Strongly disagree
2. Instructor took time to explain material when students did not understand	
3. Students were encouraged to ask questions and were given meaningful answers	
4. Students were encouraged to express their own ideas and participate in class activities	
5. Instructor treated students with courtesy and respect	
6. Instructor spoke clearly and could be heard in class	
7. Grading system for course clearly was explained	
8. This course was notably different from non-interdisciplinary courses I've taken in the past	
9. Content from multiple disciplines was connected throughout the course.	
10. The instructors made the format of the course clear (e.g., team-taught, guest lecturers, teaching in modules)	
11. The collaboration of the instructors worked well for this particular course topic	
12. I have a better idea of what kinds of questions and answers to expect (or not expect) from each discipline	
13. I have a better understanding of the limits of disciplines and their characteristic methods of producing or discovering knowledge	
14. The class held my interest and attention	
15. Faculty were available to students for discussion or conferences	
16. Faculty generally met class on time and held a class to end of period	
17. The course was well-balanced in terms of including information from each discipline	
18. I clearly understand the way in which materials from all instructors/lecturers related to the topic/title of the course	
19. Overall teaching was effective	

The two versions of the SEITs were presented to the Interdisciplinary Studies Committee, the Personnel Committee (responsible for the evaluation of curriculum), and the Committee on Students (responsible for the evaluation and formulation of policy pertaining to the activities of

Table 7.2 Items retained after principal components analysis

Instructions: Please take a moment to evaluate the overall instruction you have received in this course	*Response choices*
1. Instructor communicated in a way I understood	Strongly agree Agree Not Sure/Neutral Disagree Strongly disagree
2. Instructor took time to explain material when students did not understand	
3. Students were encouraged to ask questions and were given meaningful answers	
4. Students were encouraged to express their own ideas and participate in class activities	
5. Instructor treated students with courtesy and respect	
6. Instructor spoke clearly and could be heard in class	
7. Grading system for course was clearly explained	
8. The various disciplines were well-connected to better explain the topic	
9. The topics from the multiple disciplines were understandable and clearly defined	
10. The collaboration of the instructors worked well for this particular course topic	
11. I have a better idea what kinds of questions and answers to expect (or not expect) from each discipline	
12. I have a better understanding of the limits of disciplines and their characteristic methods of producing or discovering knowledge	

Note Three Factors: Items 1–7 *General Class Outcomes*, Items 8–10, *Interdisciplinary Outcomes*, and Items 11–12, *Uniqueness of Course*

students). Subsequent feedback was discussed. Items were rephrased to avoid redundancies before administering these measures to students for pilot testing. At the semester's halfway mark, a sample of students enrolled in interdisciplinary courses was randomly given one of the two versions of the SEIT and told they were expected to complete the standard SETs at the end of each semester. The students were also asked to provide us with the grade they expected to receive in the course. Perceived student achievement can help to establish predictive validity, a notion based on previous empirical work.[10] Also, the same question is asked on the standard SETs used for all courses and is listed separately from the evaluative questions.

We conducted a second principal component analysis, this time examining a matrix of intercorrelations among *students'* evaluations of teachers. We used the results to reduce the measure to ten items, with two underlying factors: teaching effectiveness and course-related outcomes (see Table 7.3). The names of these factors remained intact from the consensus achieved by the Interdisciplinary Studies Committee in the previous phase. This final version embodied perspectives from both students and faculty members and correlated with perceived student achievement at a level of statistical significance (something that the nineteen-item and twelve-item measures failed to do, likely because they were developed in the absence of student perspectives). The final SEIT's correlation to student achievement replicated what has been established in previously published literature: there was a weak but statistically significant relationship between evaluations of teaching and perceived student achievement.[11]

Table 7.3 Final Student Evaluation of Interdisciplinary Teaching (SEIT)

Instructions: Please take a moment to evaluate the overall instruction you have received in this course	*Response Choices*
1. Communicated in a way I understood	Strongly agree Agree Not Sure/Neutral Disagree Strongly disagree
2. Took time to explain material when students did not understand	
3. Treated students with courtesy and respect	
4. Spoke clearly and could be heard in class	
5. Grading system for course was clearly explained	
6. The various disciplines were well-connected to better understand the topic	
7. The topics from the multiple disciplines were understandable and clearly defined	
8. The collaboration of the instructors worked well for this particular course topic	
9. I have a better idea of what kinds of questions and answers to expect (or not expect) from each discipline	
10. I have a better understanding of the limits of disciplines and their characteristic methods of producing or discovering knowledge	

Note Two Factors: Items 1–4, *Teaching Effectiveness*; Items 5–10, *Course-Related Outcomes*
Item retained loaded onto one of the two factors with Eigenvectors >0.30
Cronbach's alpha (reliability statistic) = 0.917
Correlation to Perceived Student Achievement: ($R^2 = 0.0867$, $F = 1.91$, $p = 0.09$)

The final product, along with an overview of the study's phases, was presented in a meeting to the Provost. Issues regarding faculty reappointment, tenure, and promotion were discussed because student evaluation ratings can be part of personnel processes. The director of assessment and institutional research was also consulted regarding implementation logistics. A collective goal was identified by everyone involved: pilot the SEITs for one academic year in addition to standard evaluations of teaching, so that the newly developed measure would have no bearing on personnel action. It was encouraged that this plan goes before the College Council, which requires favorable votes from the aforementioned committees (Personnel Committee and Committee on Students).

The Assessment vs. Evaluation Debate

The pilot never took place because the plan never made it to the College Council floor. This was not the result of inaction. The plan passed in the Committee on Students; however, it was presented before the Personnel Committee twice and never came to a vote. In the first meeting with the Personnel Committee, a mix of negative and supportive comments emerged, and a motion to vote was never made. While some were redundant, the concerns brought up were vetted among the Interdisciplinary Studies Committee and interdisciplinary faculty, as mentioned before, prior to the administration to students in the final phase of the study. The Personnel Committee was given a report that detailed the entire project along with subsequent conversations that assured their comments had been considered and integrated (e.g., the Provost was consulted for assurance that this pilot would not relate to promotion/tenure). The second meeting with the Personnel Committee resulted in a filibuster, and with the end of the semester approaching, getting the proposed SEIT pilot plan to council was impossible.

A sense of disfavor for piloting an evaluation of interdisciplinary teaching emerged, but fortunately, a time for reflection presented itself. This type of assessment work was certainly a people-process. At one point I was warned of the pitfalls in my pursuit of this endeavor (e.g., professional stagnation that could stall reappointment). Others told me I was "barking up the wrong tree." My confidence and expertise in measurement were challenged and, in some circumstances, I was laughed at. Clearly, I had hit an institutional nerve. The following year, the chair of Interdisciplinary Studies was on sabbatical. I stepped into the role of

Interdisciplinary Studies Committee secretary, and I was also awarded a writing fellowship from the university to write up research I had conducted in my disciplinary area of focus. While on this new path, an underlying flaw to my approach revealed itself.

Common is the frustration of hindsight bias. What became obvious to me after a year away from the project is a point emphasized by Stowe and Eder: assessment and evaluation are very different from one another.[12] Mandated assessments and accountability activities that benchmark professional development should not be confused or replace assessment of interdisciplinary courses. Although some elements of assessment and evaluation overlap (e.g., they can be both comprehensive and constructive), that is not the case for their outcomes. Assessment collects data to improve learning and teaching; evaluation uses data to judge worth and value. Those who create and instruct courses for interdisciplinary studies require a valid evaluation of teaching that focuses on integration and synthesis.

While seemingly philosophical, the question addressed in the SEIT study was, "if a measure was designed to evaluate *one* professor's teaching, can that same measure be proxy for the *synthesis* of two or more professors' teaching ability?" The study was capable of assessing the construct validity of student evaluations, which inform promotion, tenure, and benchmarking. My own revelation when considering a new student evaluation, one year later, was the point that the success of interdisciplinary studies is not the product of just one course, but rather the concerted efforts within an institution.

Interdisciplinary assessment required data that could address my initial inquiries: how can an organization be sure that the interdisciplinary courses are interdisciplinary as intended to be operationalized? How can an organization be sure that this is made obvious to the students taking interdisciplinary courses? And how can faculty be assessed, fairly, for maintaining the interdisciplinary nature of a course, over time?

Like my own students learn, to solve complex problems, their own discipline is necessary, but alone it is not enough. Assessment needed to involve departmental, programmatic, and institutional levels, not just individual courses. City Tech's adoption of interdisciplinary values does not equate to all faculty members, nor all disciplines/departments, being equally responsible for upholding these values. Asking questions is a dynamic process, and eventually answers, and people, come around.

Professional Judgment as Assessment: A New Role and Working Group

Despite my energy and optimism for conscientious measure development, a thorough reflection and examination of what transpired were just as productive. The complexity inherent to interdisciplinary studies requires balancing approaches that exist along a continuum from quantitative to qualitative methods. Stowe and Eders refer to this as ranging from measurement to goal-free discovery.[13] A strength of quantitative research design includes reliability and validity, but its technical nature can discourage faculty. Qualitative approaches aim for discovery among subjects, allowing for unintended outcomes to arise. Methods of assessing interdisciplinarity are integrative of these two approaches and require "imagination, energy, and perseverance."[14]

Focusing on the culture among interdisciplinary faculty members fosters perseverance and unification. Shared beliefs include enriching student's classroom experiences with disciplinary expertise and fostering collaborative spirit. Faculty members drawn to developing and teaching interdisciplinary courses are knowledgeable and passionate about their respective disciplines; assessment, however, has varying disciplinary interpretations. Implementing an assessment strategy requires negotiation. Assessment within interdisciplinary studies is "fundamentally a people process," and requires goodwill from stakeholders and feedback in a timely, transparent manner.[15]

As interdisciplinary courses continue to run, there is ample opportunity for discovery. The Student Evaluation of Interdisciplinary Teaching pilot attempt brought forth new goals and clearer assessment objectives. The time for measurement development is arguably yet to come. Somewhere in the middle, between measurement and discovery is the application of reasoned professional judgment—consultation by an observer who develops informed questions. In this approach, the data assist, rather than replace the role of expert. A middle ground for interdisciplinary assessment, professional judgment, emphasizes "experience, judgment, and intuition over measurement."[16]

Today I maintain a formal role within the office of the Provost, earned by my experience with getting interdisciplinary assessment off the ground, which exemplifies professional judgment. Although my primary role is scheduling interdisciplinary courses across the college (several are within my own department), I maintain efforts to assure teaching structure and

effective coordination within interdisciplinary courses. Assessing interdisciplinary courses depends on more than just my disciplinary inclination to develop measures. Transparent and collaborative efforts need to involve interdisciplinary faculty, the Interdisciplinary Studies Committee, Deans, the Provost, and department chairs. This integrative approach to assessment at City Tech uses me as the primary observer and working group of volunteers for peer-led reviews.

At City Tech, the Ad Hoc Course Integrity Working Group is an organic outcome the Interdisciplinary Studies Committee's response to not achieving the Student Evaluations of Interdisciplinary Teaching. Rather than being evaluative, this group assesses interdisciplinary courses each semester. This group embodies qualities such as being localized, cyclical, and separate from mandated evaluations. To uphold the mission of interdisciplinary studies, cycles of feedback need to be applied at key points and at a local, rather than institutional, level.[17] Because there are many stakeholders and the process of assessing and coordinating course structure cannot be done by one person, the review is led by peers.

The Ad Hoc Course Integrity Working Group facilitates assessment among colleagues at the same level within the academic hierarchy (i.e., not department chairs or college council). Faculty members occupy different roles in an organization, both within the hierarchies of academia, and also within work capacities. To increase accountability among faculty teaching interdisciplinary courses, using a low-stakes, peer-led process has proven successful. Each semester the group consists of volunteer faculty members from the Interdisciplinary Studies Committee and strives to maintain the construct validity of interdisciplinary courses. In other words, they assess the operationalization of interdisciplinary courses at City Tech. To achieve this, I coordinate the collection of syllabi for interdisciplinary courses for the group to review. The purpose of the review is straightforward: make sure the interdisciplinary course is offered as proposed when recommended for interdisciplinary designation. As course coordinator, I then follow-up with interdisciplinary faculty members and share resources that help fulfill requirements, such as team-teaching (e.g., an updated list of willing guest lecturers from around the college and their discipline/area of expertise). Other follow-up actions include reminding interdisciplinary faculty members to include their interdisciplinary learning objectives on the syllabus, indicate "interdisciplinary" at the end of their course code number, and to be certain that the word interdisciplinary, at the bare minimum, is featured within their syllabus.

These steps help to make the interdisciplinary course designation obvious to students who are required to take these courses in order to graduate. It also achieves Angelo's recommendation to make expectations public and explicit, and to use information to document, explain, and improve performance.[18]

Conclusion

The product of negotiation and awareness is an identification of needs, which helps to guide and inform matters of assessment. Future directions for course coordination rely on the data points collected by the Ad Hoc Course Integrity Working Group (e.g., syllabi, course-format changes). Revisiting the debate of which type of validity ought to matter most—internal, external, or construct—there is no other way to deeply understand the value of each than arguing their merits by pitting one against the other. This process generates questions essential to assessment.

It is important to get everyone on board with the working definitions of concepts like assessment and interdisciplinary courses. Not conflating assessment with evaluation exemplifies the importance of construct validity. It is also important to take an approach that matches the complexity of the situation (i.e., internal validity). An example of this from the present study was the convergence of student and faculty perspectives to create a new measure of teaching evaluation. The outcomes of assessment need to map onto the initial objectives and not inadvertently achieve something else (i.e., external validity). Detaching assessment from the evaluation can improve learning and teaching rather than evaluate instructors on a course-by-course basis. Each type of validity matters equally, but depending on the timing, process, urgency for a solution, and various institutional levels involved, certain types of validity can seem more crucial than others.

Suggestions for future applications include localizing the assessment process. Allow data to lend themselves to questioning. Create a peer-led, low-stakes working group and a singular role of "expert" question-asker who sits alongside the data and observes them for clues that relate to outcomes. Work collaboratively to achieve accountability and transparency. Consider the disciplinary backgrounds of faculty members so that assessment and coordination efforts are not too technical or subjective and therefore are less susceptible to resistance. Rendering aspects of the process as more essential than others moves us away from the mission

of academic institutions. Because the mission of interdisciplinary studies is student-focused, it needs to be handled with care. College-wide efforts of interdisciplinarity, in best practice, are synchronous and effectively uphold the desired outcomes for students.

Notes

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2. Elisabeth Spelt, et al., "Teaching and Learning in Interdisciplinary Higher Education: A Systematic Review," *Educational Psychology Review* 21, no. 4 (2009): 365–378.
3. For detailed background information on interdisciplinary studies at City Tech, see Reneta D. Lansiquot, "Introduction: An Interdisciplinary Approach to Problem Solving," in *Interdisciplinary Pedagogy for STEM: A Collaborative Case Study*, ed. Reneta D. Lansiquot, 1–18 (New York: Palgrave, 2016).
4. See Chapter 5.
5. Truman Kelley, *Interpretation of Educational Measurements* (Oxford: World Book Co., 1927).
6. Willia Bosshardt, and Michael Watts, "Comparing Student and Instructor Evaluations of Teaching," *Journal of Economic Education* 32, no. 1 (2001): 3–17.
7. Suzanne Young, and Dale Shaw, "Profiles of Effective College and University Teachers," *The Journal of Higher Education* 70, no. 6 (1999): 670–686.
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14. Stowe and Eder, 84.

15. Stowe and Eder, 99.
16. Stowe and Eder, 95.
17. Stowe and Eder, "Interdisciplinary Program Assessment."
18. Thomas Angelo, "Reassessing Assessment: Embracing Contraries, Bridging Gaps, and Resetting the Agenda," *AAHE Bulletin* 47 (1995): 10–13.

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Epilogue

Reneta D. Lansiquot

This book describes a community of practice engaged in interdisciplinary team teaching while using high-impact educational practices.[1] Due to the Coronavirus Disease 2019 (COVID-19) pandemic, all courses at the New York City College of Technology (City Tech) were moved to a fully online format. This provided an unexpected opportunity for all faculty to make use of learning management systems. *Blackboard* access was already available for all courses. Faculty taught asynchronously and synchronously; courses met synchronously mainly in *Blackboard Collaborate* or via *Zoom*. Students also interacted with faculty asynchronously and faculty were able to record lectures. Plans were developed for students to interact with guest lecturers if the lecture was recorded. In co-taught courses, faculty connected with fellow instructors to plan the rest of the semester. Unfortunately, as of this writing, there was no clear plan for virtual clinical or lab courses.

All in all, the pandemic did provide an unexpected opportunity to make use of virtual place-based learning.[2] This was especially necessary for the special topics interdisciplinary course, Learning Places: Understanding the City.[3] In one of its sections, this course supports undergraduate research using the city as a laboratory. In the other section, the course examines how an interdisciplinary high-impact practice approach to observing public monuments can reveal intersections of racism, colonialism, and sexism.

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https://doi.org/10.1007/978-3-030-56302-8

Google's Tour Creator[4] and other tools can also be used by students to create virtual tours. Students used virtual resources such as Google Earth to view monuments. As monuments are used as a tool for teaching, the guiding question for students is whether contested public monuments should remain the way they are, be recontextualized, or be removed.[5] Interestingly, this question has gained new urgency, as the protests sparked by the murder of George Floyd have given rise to the fall of many Confederate monuments across the U.S. In addition to these symbols of racism, protesters have also toppled statues of slave owners. In so doing, they have also inspired the removal, albeit delayed, of other manifestations of our racist past, such as the statue of Theodore Roosevelt by the entrance of the American Museum of Natural History in New York City.

Meanwhile, interdisciplinary courses such as Science in the Kitchen[6] prove once again that necessity is the mother of invention. Organized every semester by City Tech's Honors Scholars Program, the semi-annual Honors and Undergraduate Research Poster Presentation was for the first time a virtual event and introduced the Dr. Jean Hillstrom Interdisciplinary Research Award[7] to the best undergraduate research project conducted in an interdisciplinary course.[8] This inaugural virtual poster presentation facilitated more efficient poster judging and began a discussion about likely continuing the virtual poster presentations, even after we eventually return to the new post-pandemic normal. It also necessitated the development of online versions of required workshops for students who are conducting undergraduate research. This crucial scaffold provided by the Honors Scholars Program has the positive unintended consequence of providing even evening students with the opportunity to conduct undergraduate research as the required workshops will now be made available to them.

As interdisciplinary courses at the City Tech, which are required of all baccalaureate students, are focused on questions, problems, and topics too complex or too broad for a single discipline or field to encompass adequately,[9] the major global upheaval that has occurred in the past few months will no doubt prompt the reimagining of several courses. One such course is Weird Science: Interpreting and Redefining Humanity, the first course officially designated as interdisciplinary at City Tech.[10] Housed in the English department, this writing-intensive interdisciplinary course allows students to explore the literature of shifting and expanding definitions of humanity and post-humanity from the perspectives of the natural and social sciences, technology, and engineering, and to do so

by incorporating digital media. The enduring question of the course is: What does it mean to be human? Originally, this course had a dozen guest lecturers including not only biology but also a range of diverse disciplines from philosophy, economics, and psychology to computer science, physics, and emerging media technology. Now, the next time this course is team taught, the pandemic will provide the theme of the course. Guest lecturers will be charged with elucidating this theme by, for example, a professor from the nursing department explaining the fact that racial and ethnic minority groups are at increased risk of getting COVID-19 or experiencing severe illness, as well as being hospitalized, regardless of age. Likewise, the current joint economic and sociology lecture that originally focused on what consumerism and the 2008 financial crisis revealed about the assumptions regarding human nature underlying mainstream economics will now use the concept of economic externalities to examine both the ways that capitalism often fails to serve human well-being and the system's surprising ability to often turn even these failures into a means of perpetuating its existence.

Notes

1. Faculty share a passion for interdisciplinary studies, and learn how to do it better. For a detailed theoretical treatise on situated learning, the social nature of learning, see Jean Lave and Etienne Wenger, *Situated Learning: Legitimate Peripheral Participation* (Cambridge: Cambridge University Press, 1991). Also see George D. Kuh, *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter* (Washington, DC: Association of American Colleges & Universities, 2008).
2. Models of using virtual tools to foster interdisciplinary place-based learning are documented in Reneta D. Lansiquot and Sean P. MacDonald, eds., *Interdisciplinary Perspectives on Virtual Place-Based Learning* (New York: Palgrave, 2019).
3. See Chapters 4 and 5.
4. *Tour Creator*, https://arvr.google.com/tourcreator/.
5. See Chapter 5, "Using Monuments to Teach About Racism, Colonialism, and Sexism."
6. See Chapter 2, "Demystifying the Kitchen: A Collaborative Interdisciplinary Study of Science in the Kitchen."
7. The award was named after the late Dr. Jean Hillstrom, who proposed this award in the first place and to whom this volume is dedicated.
8. See https://openlab.citytech.cuny.edu/posterpresentation/.

9. City Tech general education interdisciplinary requirements, https://www.citytech.cuny.edu/advisement/interdisciplinary.aspx.
10. Reneta D. Lansiquot, ed. *Interdisciplinary Pedagogy for STEM: A Collaborative Case Study* (New York: Palgrave, 2016). This book includes a compilation of chapters from guest lectures in this course.

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https://doi.org/10.1007/978-3-030-56302-8