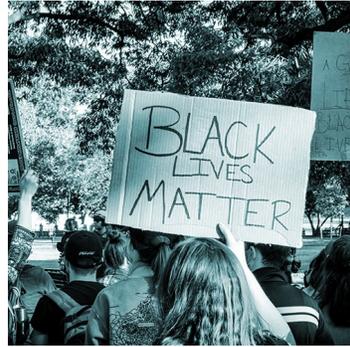


IMPACT

THE JOURNAL OF THE CENTER FOR INTERDISCIPLINARY TEACHING & LEARNING



VOLUME 10, NUMBER 1, WINTER 2021

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ABOUT US

Impact: The Journal of the Center for Interdisciplinary Teaching & Learning is a peer-reviewed, biannual online journal that publishes scholarly and creative non-fiction essays about the theory, practice and assessment of interdisciplinary education. *Impact* is produced by the [Center for Interdisciplinary Teaching & Learning](https://citl.submittable.com/submit) at Boston University College of General Studies. *Impact* accepts submissions throughout the year and publishes issues in February and July. Please submit your essays for consideration at <https://citl.submittable.com/submit>.

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EDITORIAL STATEMENT

Dear Readers,

This is my first issue as editor of *Impact*, but this is the second issue of *Impact* that came to fruition in the midst of Covid–19. As we have all struggled to meet our (sometimes new) professional and intellectual obligations as the pandemic has raged on, it is heartening to publish work by scholars and writers who have still found ways to reflect on and explore interdisciplinary work despite doing so in the midst of the ongoing global pandemic.

In this issue, a central question explored is, what kinds of programs and approaches can enhance interdisciplinary teaching and student learning? The essays in this issue explore this question in distinct and insightful ways.

Grounded in her own experiences developing and running a Latin American and Caribbean Studies minor, one contributor argues that the minor enhances students' interdisciplinary learning by exposing students to ethnic and racial difference, enriches student understanding of the depth and breadth of geo-cultural diversity, and prepares students to engage and work in multicultural settings. Writing together, two health educators highlight how various applications of service-learning pedagogy, such as traditional vs. online classroom approaches to service learning, application of service-learning strategies in the context of health education and health promotion, via internship courses and funded service projects, and the role of service-learning in enhancing core areas of responsibilities for certified health education specialists (CHES), can be a powerful interdisciplinary teaching and learning tool in health education. Finally, two faculty from the University of Tennessee interested in the Biglan/Becher taxonomy of disciplines, collaboratively show how the Biglan/Becher taxonomy of disciplines can be used to analyze disciplinary interrelationships in STEAM (STEM + Arts), with the ultimate goal of categorizing ways STEAM approaches can facilitate student learning in higher education.

Our *Impact* book reviewers inform readers about new interdisciplinary and ground-breaking work in the under-researched area of parental incarceration, one author's suggestions for how to teach undergraduates and still feel good about it, notes from a white professor in terms of teaching about race and racism in the college classroom, and, finally, another author's arguments about how democracy can handle climate change.

We hope you enjoy the various insights shared within this issue, and we continue to wish all our readers and writers good health and fortitude as 2021 continues to unfold.

All the best,
Lynn

Lynn O'Brien Hallstein, Editor-In-Chief, Director of the Center for Interdisciplinary Teaching & Learning

ABOUT THIS ISSUE'S AUTHORS

Richard Samuel Deese is a Senior Lecturer for the Division of Social Sciences at Boston University. He is the author of *We Are Amphibians: Julian and Aldous Huxley on the Future of Our Species* (2015), *Surf Music* (2017), and *Climate Change and the Future of Democracy* (2019). In 2020, he helped to convene the online symposium "How Democracy Survives: the Crises of the Nation State" in conjunction with the Pardee Center for the Study of the Longer-Range Future and the Center for Interdisciplinary Teaching and Learning at Boston University. His research interests include the history of science, global environmentalism, and transnational democratic movements since the end of World War Two.

Laura Driscoll PT, DPT, MS, Board Certified Clinical Specialist in Geriatric Physical Therapy is a Clinical Assistant Professor in the Doctor of Physical Therapy program at Boston University and practices clinically as an acute care physical therapist at Beth Israel Deaconess Medical Center. She holds a master's degree in Gerontology and is currently pursuing a PhD with a focus on the social determinants of health over the life course, specifically aging in the U.S. prison system. She has completed a Master Class for Inclusion Practitioners, with Dr. Kathy Obear, from the Center for Transformation and Change and holds an additional role of Director of Faculty Diversity and Inclusion for the College of Health and Rehabilitation Sciences: Sargent College, at Boston University.

Lorena Fuentes is the Associate Director of the ESL pre-collegiate and undergraduate programs at UMASS Boston. Before becoming a program administrator, Lorena was a full time faculty member at UMASS Boston where she taught composition courses for seven years across all levels in undergraduate studies. She has also taught ESL from K-12 for close to eight years. She is currently pursuing her PhD in Higher Education Leadership.

Amar Kanekar is an Associate Professor and Graduate Program Coordinator for Health Education and Health Promotion at the University of Arkansas at Little Rock. His fourteen years of teaching experience involves more than 30 different courses (undergraduate and graduate) in the areas of public health, health education and health promotion. Recipient of numerous teaching awards at the international, national and local levels, his pedagogical techniques involve online distance learning, hybrid, and face-to-face courses with web enhancement using instructional technology such as synchronous and asynchronous student interaction. His research areas of interest focus on adolescent health, measurement in health education, global health, online and hybrid pedagogy, and health behavior interventions. He is widely published in both national and international journals, and he currently serves on several public health education journals and committees.

Cathy Marie Ouellette is an Associate Professor and Chair of History and Director of Latin American and Caribbean Studies at Muhlenberg College. She is an historian of gender, race, and identity in modern Brazil and her teaching centers on race, ethnicity, and gender across Latin America and the Caribbean. Her current research explores the impact of diversity courses and integrative learning on student development and global engagement. She most recently published an article in *Inside Higher Ed* offering insight into leadership and inclusion strategies during the pandemic.

Anchalee Panigabutra-Roberts is an Associate Professor and Head of Cataloging at University of Tennessee Libraries in Knoxville, Tennessee. Her past work experience has been in cataloging and metadata in academic libraries at American University in Cairo, University of Nebraska – Lincoln, Saint Cloud State University in Minnesota and Cornell University, with a few full-time teaching positions. Her exposure to interdisciplinary studies came from her past experience as a subject librarian in education and women's and gender studies. Her research interests include STEAM, knowledge domain mapping, researcher identifiers and linked data. ORCID ID: 0000-0002-9333-1102

Janea Snyder is an Assistant Professor at the University of Arkansas at Little Rock in Health Education and Promotion for the School of Counseling, Human Performance and Rehabilitation. She completed her Ph.D. at Texas Woman's University in Denton, Texas where she majored in Health Studies. Dr. Snyder serves as a state representative for the American Heart Association's Southwest Affiliate Health Equity Committee, is a member of the Arkansas Coalition for Obesity Prevention (ArCOP) and serves as a board member for the University District Development Corporation. Dr. Snyder serves as a host for *Community Development Minute* an educational program for KUAR radio, which highlights the work of community development organizations like the University District Development Corporation (UDDC) in which she shares informative and health education related PSAs. She also serves as the coordinator for the Growing Healthy Communities initiative for the University District community of Little Rock. Dr. Snyder has served in the capacity of a reviewer for a variety of manuscripts for education and health related journals and has publications in both respected professions. Her research interests include health disparities, heart disease, online education, service learning, comprehensive sex education, obesity prevention, and community health.

ABOUT THIS ISSUE'S AUTHORS

Thomas A. Underwood, a Master Lecturer in the Arts & Sciences Writing Program at Boston University, is the author of *Allen Tate: Orphan of the South* and is coeditor of *Blacks at Harvard: A Documentary History of African-American Experience at Harvard and Radcliffe* and of *The Southern Agrarians* and the *New Deal: Essays After I'll Take My Stand*. A recipient of the Arthur G.B. Metcalf Cup and Prize for Excellence in Teaching, Boston University's "highest teaching honor," he is currently teaching in the Boston-London Program in the College of General Studies.

Jeanine Williamson is a Professor in the University Libraries at the University of Tennessee, where she is a research librarian for Engineering and Veterinary Medicine. She previously worked at the University of Rhode Island. She has been interested in the Biglan taxonomy of disciplines for many years.

ANNOUNCEMENTS

Latest Announcements

Interdisciplinary Approaches Within and Encompassing the Natural Sciences

Impact: The Journal of the Center for Interdisciplinary Teaching & Learning is currently soliciting contributions to a special issue examining interdisciplinary approaches to, or which include, the natural sciences. This issue is scheduled for online publication in the summer of 2021. Submissions across all academic disciplines are welcome on topics related to interdisciplinary learning experiences that include the natural sciences. In the narrowest sense, these would include multidisciplinary approaches within the natural sciences. More broadly, we are also interested in examples that integrate other disciplines into a natural science curriculum. In addition, learning experiences that incorporate some aspect of the natural sciences into curriculum for other disciplines are also highly encouraged.

Book reviews related to interdisciplinary treatments of topics encompassing the natural sciences are also welcome. Two current and highly relevant examples would be infectious disease transmission and climate change.

Word limit: 3,000 words. MLA Citations, please. Submissions should be received by March 1, 2021 to rhulbert@bu.edu. For general inquiries about the issue, contact one or more of the co-editors: Sandra Buerger (sbuerger@bu.edu), Robin Hulbert (rhulbert@bu.edu), or Sal Genovese (benthos@bu.edu).

Creating an Antiracist Classroom through Interdisciplinary Teaching, Learning, and Curriculum

Impact: The Journal of the Center for Interdisciplinary Teaching & Learning based at Boston University currently solicits pieces for a special issue on creating antiracist teaching, learning, and/or curriculum, slated to appear in the summer of 2022.

We welcome submissions on topics related to creating an antiracist classroom through interdisciplinary teaching, learning, and/or curriculum. For example, what are the core elements of antiracist teaching, learning, and/or curricula? What can an interdisciplinary perspective bring to antiracist teaching and/or learning? What does a successful interdisciplinary antiracist assignment in your class or discipline look like? What are the different ways to assess students' learning experiences in antiracist assignments or learning activities? How can we build effective partnerships with antiracist organizations and create networks of faculty interested in antiracist curricula?

We seek pieces that offer insight from specific teaching experiences as well as articles detailing research conducted on antiracist curriculum. Book reviews related to antiracist teaching and learning are also welcome.

Word limit: 3,000 words. MLA Citations, please. Submissions should be received by September 15, 2021 to Lynn O'Brien Hallstein at lhallst@bu.edu.

Impact publishes both scholarly and non-scholarly essays of varying lengths, as well as work in other modes and media. General information about *Impact* can be found on <http://sites.bu.edu/impact/>.

Please refer to CITL's website for additional announcements: <http://www.bu.edu/cgs/citl/>.

IMPACT ESSAY COMPETITION

Every December, the editors of *Impact: The Journal of the Center for Interdisciplinary Teaching & Learning* invite submissions of scholarly and creative non-fiction essays between 1,000 and 5,000 words on any aspect of interdisciplinary teaching or research. The author of the winning essay will receive a \$250 award and publication in *Impact*.

Essays should be readable to a general, educated audience, and they should follow the documentation style most prevalent in the author's disciplinary field. Essays for this contest should be submitted by the first Monday in December to <http://CITL.submittable.com/submit>. See our general submission guidelines in Submittable.

CITL reserves the right to not publish a winner in any given year. Faculty and staff from the College of General Studies are not eligible to submit to this contest.

Reflections on Global Learning: Why Area Studies Programs Are So Critical to Student Development

Cathy Marie Ouellette, Ph.D., Muhlenberg College

Introduction: Global Learning, Area Studies, and Student Development

Global awareness and intercultural competence as outlined by the American Association of Colleges and Universities are critical for twenty-first century challenges, and the role of higher education in shaping students' skills and identity is more important than ever. Central to these goals is a broad grasp of the relationship of the United States to the world and vice versa; hence the urgent need for area studies programs that develop student insight into their place in the world and instill the cultural knowledge necessary for success after graduation. And yet, higher education is witnessing increasing support for pre-professional "practical" skills and study, often at the expense of programs underscoring cultural aptitude. Responding to these changes in higher education, this piece analyzes the important role of area studies in developing student versatility (breadth) and cultural knowledge (depth) in a nation where, according to the 2019 United States Census, Latinx inhabitants are the largest minority population. Area studies programs such as Latin American & Caribbean Studies are invaluable in creating avenues that underscore the global range of experiences of historically underrepresented populations. It is the contention of this piece that Latin American & Caribbean Studies augments student exposure to ethnic and racial difference, enriches student understanding of the depth and breadth of geo-cultural diversity, and prepares students to engage and work in multicultural settings.

Particularly important in this conversation is the role of area studies programs that prepare students in the United States for their role in a multicultural society that includes a significant Spanish-speaking population. Born out of an era of political and social turmoil across the United States, a first wave of area studies programs emerged in the 1970s, coinciding with the establishment of Hispanic Heritage Month in 1968. Latin American or Latino Studies programs materialized geographically according to migratory and immigration patterns, and eventually settled into minor and major area studies programs; this notwithstanding that Spanish was the first European language in the United States, and Hispanics (speakers of Spanish) represent the largest minority group in the country. Increasingly, employers seek college graduates who exhibit the essential learning goals and skills of the practical *and* intellectual through broad and deep study. More specifically, organizations value [global learning outcomes](#) among their employees, which include the capacity to work with people of different demographics and cultures. Thus, programs in higher education that impact the cultural competence of students are even more indispensable.

The moment to examine global learning at Muhlenberg College, a private four-year small liberal arts institution affiliated with the Evangelical Lutheran Church in America, is ideal. A predominantly white institution whose student body draws largely from Pennsylvania, New Jersey, and New York, Muhlenberg College is situated in a valley with a substantial Latinx population; 2019 United States Census [data](#) indicate that 26% of Lehigh County identified as Hispanic or Latino. Over the past several years, Muhlenberg has worked to address student outcomes that suggest lacunae in diversity learning in curricular and co-curricular experiences. HERI data from 2008 and 2012 revealed that students of color were more likely to have interacted with students from another racial or ethnic group than white students, and graduating seniors reported fewer interactions with diverse peers (Diversity Strategic Plan 10-11). White students and students of color conveyed comparable experiences in intellectual discussions, however, not all graduating seniors achieved equal exposure to courses that advance student cultural understanding and appreciation.

In an effort to bridge these intellectual and cultural divides, Muhlenberg College approved a [diversity strategic plan](#) in 2014 that renewed its commitment to diversity, equity, and inclusion. Goals four and five encourage engagement with the diverse inhabitants and institutions of the Lehigh Valley and renew the college's commitment to strengthening diversity in the curriculum. External funding from the Mellon Foundation supported course development to enhance diversity offerings in the form of a Human Diversity and Global Engagement requirement. One particular focus of the diversity strategic plan included faculty development and curricular revisions directly addressing student perceptions about the lack of diversity at the college. More specifically, grants supported faculty and curricular development "addressing transnational, multicultural, and global subjects of social justice and equality" (Diversity Strategic Plan 18).

Prior to this, I began drafting a proposal for a Latin American & Caribbean Studies Minor, which I proposed to the Curriculum Committee in 2012, four years after I arrived at the College. Upon conclusion of its eighth year, assessment of the program reveals the extent to which the minor is in line with Muhlenberg College's commitment to curricular programs that privilege diverse human experiences and worldviews. This area studies program is particularly timely

ESSAYS – CONTINUED

given the location of Muhlenberg and the United States Census [projection](#) that the Latinx population, the largest minority group in the country, will number approximately 111 million by 2060. Programs in higher education that contribute to the cultural competence of students with regard to this specific demographic are even more indispensable.

Program Structure, Assessment, & Methodology

Now in its ninth year, the Latin American & Caribbean Studies minor at Muhlenberg remains on the periphery of institutional structure. Lacking appointed faculty or allocated resources, the program depends entirely on the director—me—for advising, mentorship, and all of the associated administrative tasks, including recruitment, a necessary component given its marginal place in the curriculum. I have overseen several curriculum revisions based on the departure of eight key instructors who participated in the minor, and the addition of two new faculty members. The minor requires six total courses, including at least one advanced language course, one history survey course (Colonial or Modern Latin America), and four additional electives from the humanities, social sciences, and sustainability studies. Students can select from Spanish and French language electives, the only two languages offered from the multitude of languages spoken across the region; language acquisition in additional languages through study abroad or heritage exposure and development, is strongly encouraged. Ideally, students will take electives from at least three different disciplines, depending on available course offerings. Due to staff constraints, there is no introductory interdisciplinary course, nor a culminating capstone course, although students in the minor are welcome to take the History Capstone with me, which I teach every three years. Study abroad is not required, but is very much encouraged for students to develop proficiency and depth in their training.

Students participating in the minor complete at least two assessments on the extent to which their coursework in Latin America & the Caribbean meets the following learning goals:

- Foster a comprehensive understanding of the diverse human experience
- Instill an appreciation of the complex past and contemporary issues
- Encourage proficiency through the study of language and literature on campus and abroad
- Promote the interdisciplinary study of the histories, cultures, literatures, and language(s) across the region

Because students take one history survey course—Colonial or Modern Latin American History—they complete assessment data then, typically during the sophomore or junior year. At the conclusion of the senior year, they take a comprehensive exit survey that asks them to consider the entirety of their experience in the program. Assessment questions are aligned with the curriculum language of the [Human Diversity and Global Engagement](#) General Academic Requirement in the specific core course they are taking, which includes:

- Understand the multiple contexts (e.g., cultural, ethnic, racial, national, socioeconomic, religious, biological, etc.) that shape our constructions of human differences
- Recognize how hierarchies and disparities shape and are shaped by institutions and social relations

Additional questions reference the Human Diversity and Global Engagement guidelines that integrate the language of global learning, difference, and student development, of the specific course, which includes:

- Foster global awareness by focusing on social practices, structures, and histories of cultures and nations outside of the United States
- Explore how the construction of difference is often linked to histories and experiences of injustice in the United States and global contexts
- Offer sustained insight into the social and cultural practices of different states or regions
- Empower students with the theoretical frameworks, intellectual tools and learning experiences to critically reflect on their own participation and action in a diverse and interconnected world

ESSAYS – CONTINUED

In combining the expectations of the curriculum committee with the learning goals of the minor, additional questions ask students to articulate the extent to which the core course (in the sophomore or junior year) and the entire minor program (in the senior exit survey) have fostered a broad understanding of the diversity of the human experience and an appreciation of past and contemporary issues across Latin America & the Caribbean. The exit survey invites students to consider the value of interdisciplinarity, language acquisition, and diversity and difference in their learning. In both the mid-point assessment and the exit survey, students contemplate the central elements of an education centered on Latin America & the Caribbean, including: their understanding of the complexities and diversity of the human experience in this broad region; their understandings of the multiple hierarchies drawn along racial and ethnic lines; and their individual achievements in global learning, language acquisition, and cultural competency. Remaining questions are open-ended and center on individual skills acquired; challenges and surprises encountered in the content and structure of the minor; suggestions for improvement; and general comments. Approximately 5% of students did not complete the core course/sophomore year assessment, while the exit survey is required for graduation certification.

It is well known that assessment data often raises more questions than answers. Kember and Wong, by example, trace the history of standardized assessment practices utilized for student evaluation of teaching, highlighting the embedded biases. They conclude that “imposing a model of teaching upon a questionnaire can be avoided if the items ask about learning outcomes rather than teaching. There might also be greater improvements to teaching and learning if the questionnaires were seen more as a source of feedback and less as a method of judgement” (Kember and Wong 95). The informal, non-standardized, short answer response assessments utilized here follow this method, employing “greater reliance upon the student perspective rather than the predominant researcher-driven perspective common to much of the research on this topic” (Kember and Wong 95).

The bias implicit in student evaluations of teaching suggests that even “valid” assessments are still [deeply flawed](#). The approach utilized here, however, encourages student reflection on their specific learning experiences independent of individual instructors, and in the case of the exit survey, independent of particular courses. It follows the model outlined by the [National Institute for Learning Outcomes Assessment](#), which endorses equity-minded and culturally responsive assessment through focus on the student population, appropriate and culturally responsive language, and attention to improvement in the student learning experience (Montenegro and Jankowski 7). Assessment, which is “not an apolitical process,” must draw attention to the issues of hierarchy, power, and exclusion in the learning process, and examine “the interplay between culture, bias, power, and oppression in the assessment process” (Montenegro and Jankowski 7). This student-centered approach removes white students as the normed data pool and acts “as a mechanism that helps close opportunity, persistence, and attainment gaps between different student populations” (Montenegro and Jankowski 8).

This assessment process is designed to collect feedback on the structure of the minor and student growth and achievement of the goals outlined in the diversity strategic plan, the human diversity and global engagement perspective, and the minor. Selected quotes are representative of the collective experience of graduates of the minor, including their critiques and suggestions for improvement. Several students are quoted more than once where their expressive and evocative thoughts are representative of the larger sentiment. However, solicited input is anonymous and coded for language that correlates to the ways in which the program contributed to student intellectual, cultural, and global proficiency. In order to protect the identity of each graduate, the data and quotations are anonymized, and thus students are only identified by the year in which they completed the assessment. Of the students who have participated in the minor, 25% identify as heritage students, 40% identify as people of color, 20% identify as male and 80% as female, and 70% completed some form of study abroad. One student created a self-designed major in Latin American & Caribbean Studies. Accompanying majors range broadly, with multiple double majors in Environmental Science, History, International Studies, Public Health, and Spanish, and single numbers in Anthropology, Art, Biochemistry, Dance, Theatre, and the Education Certification Program. Assessment data for this area studies program corresponds with the American Association of Colleges and Universities’ guidelines for higher education for the twenty first century in several ways, including the achievement of global perspectives, cultural competency and language acquisition, and engagement with diversity and difference.

Outcomes: Global Perspectives & Area Studies

Assessment data from the Latin American & Caribbean Studies minor reveals student appreciation for and development of worldviews that are deeply rooted in interdisciplinary exposure to global perspectives. This is particularly important and significant, given that employers increasingly value college graduates equipped with the ability to work with diverse populations, apply expertise to real-world problems and settings, and exercise ethical judgment in their problem-solving.

ESSAYS – CONTINUED

Martha Nussbaum argues that global citizenship and the imaginative understanding is achieved via “carefully crafted courses in the arts and humanities, which bring students into contact with issues of gender, race, ethnicity, and cross-cultural experience and understanding” (46). Securing the opportunity for global engagement, particularly at predominantly white institutions, is critical to success in the professional world. The outcomes of graduates in this area studies minor indicate that students engaged in this learning process through multiple courses within and beyond the humanities, while also developing their own worldviews on citizenship in the process.

Graduates from this program reflected on their citizenship through multiple countries and hemispheres, beginning from the perspective of learning in the United States, to adjusting to courses and sources exposing them to global perspectives about the United States in the world. They underscored their “learning about the variety of cultures and reflecting what it means for me to be a U.S. citizen when the U.S. has intervened in Latin American nations, often in destructive and detrimental manners” (Fourth Year). Along similar lines, students “learned that it is important to keep an open mind and to understand that not everyone has the same views as the United States” (Fourth Year). Yet, students were also thoughtfully reflective on the ways in which the Americas—broadly speaking—had some form of shared history. This perspective of connectivity cultivated additional growth and maturity in students’ understanding of their global citizenship. In studying regional and national histories and events, this program connected the positioning of the region to the rest of the world, teaching students “the most important skill: to look at history and contemporary issues on a micro and macro scale and draw connections between international events” (Third Year). Learning from different disciplines further ingrained the lessons of global awareness, citizenship, and student identity development. The outcomes are very much in line with research concluding that curriculum should “equip them as citizens with the drive, values, capacity to question, and ability to develop solutions in order to advance social progress” (Hurtado and DeAngelo 14).

In the spirit of student global development, outcomes unequivocally address Nussbaum’s imperative nudge toward the “concept of a link between liberal education and a deeper and more inclusive kind of citizenship” (45). This course of study led multiple students to reevaluate their positions as “global citizen[s] and consumer[s] in global commodity chains” while also “coming to terms with what [this] country has done to Latin American nations” (Fourth Year). Multiple students deliberated their own complicit behavior in perpetuating global systems of inequity and began “thinking critically about [their] participation in systems that reinforce unjust labor practices and inequality” (Third Year). The minor not only encouraged students to study and travel to a region not comprehensively covered in the education system in the United States, but also compelled students to confront cultural unfamiliarity and personal discomfort. Recent research reveals that coursework in global learning augments students’ abilities to develop worldviews through a global lens. Ortiz and Santos found that “when students took courses that emphasized the histories and experiences of groups other than their own, they experienced dramatic learning that contributed to their multicultural competence and ethnic understanding. Even white students, who often felt discomfort in courses that focus on other-ethnic groups, realized that their worldviews changed substantially as a result” (4).

Assessment outcomes of Latin American & Caribbean Studies at Muhlenberg College identify the global emphasis through interdisciplinarity as “critical components of the program” that “broadened [student] knowledge of the region in a way that would not have been possible without interdisciplinary studies” (Fourth Year). The curriculum cultivated breadth and depth because “the interdisciplinary study of various subjects was heavily promoted and was without a doubt an integral part of this minor” (Fourth Year). This resulted in students acquiring knowledge beyond one or two disciplines and through multiple lenses and cultures, and also encouraged students to take certain risks and develop a global framework for the work they pursued. Multiple graduates ruminated on the value of this breadth, noting that their understanding of Latin America and the world broadened from these perspectives. “I don’t think I would have been driven to take courses such as these [sociology, political science, history, and Spanish] when I did if it weren’t for the minor, because they allowed me to make interdisciplinary connections. I found those connections to be interesting and pushed me to learn more” (Fourth Year). These disciplinary perspectives “and even classes in sustainability and environmental history,” intersected and complemented traditional majors, and were one of the “most rewarding aspects” of the course of study. The minor “really taught me how to think about Latin America through multiple lenses because of the various classes I took in different fields” (Fourth Year).

The program’s achievements are directly in line with support for global education that challenges parochial education and embraces interdisciplinarity, because ultimately “globalization itself is a multifaceted process” (Stearns 18). Designing opportunities for all students to learn through multiple disciplines throughout their educational experience ensures that “students can develop global competencies along multiple educational pathways: in general education, in major-readiness courses, in professional and technical programs, and in developmental education” (Jaswal and Rush 1). Such openings also encourage students to explore the ways in which their engagement in the world informs conceptualizations

ESSAYS – CONTINUED

of citizenship and social responsibility. As such, students can surmount provincial restrictions, challenge their own frameworks and biases, and become more self-aware. Graduates found the “most rewarding aspect [. . .] was the fact that it was an interdisciplinary minor that allowed me to take courses in various fields of study” (Fourth Year), and they were “surprised at how much each course changed my way of thinking about their subject and how well they applied and worked with my other courses outside of the minor” (Fourth Year). Overall, the program’s dedication to tackling major issues on a global scale through connectivity of the disciplines resonated with graduates. “History, culture, and language are all interconnected” (Second Year), one student observed, while affirming a personal transformation through the depth and breadth of perspectives covered.

Outcomes: Cultural Competency & Language Acquisition

Among graduating students in the Latin American & Caribbean Studies Minor, cultural competency and language acquisition were a point of reference that promoted transformative academic experiences and rich relationships. Although study abroad is not a required component of this program, it is strongly endorsed. As such, more than two-thirds of graduating students participated in some form of study abroad—either for a semester or a few weeks—with one student doing both. These experiences are in line with [NSSE](#) data that highlight student learning and development through peer collaboration and interaction with peers from a variety of backgrounds. Language acquisition and study abroad form an important bridge to peer learning and cultural competency. Assessment outcomes indicate unanticipated openings into cultural proficiency, connections to the people and cultures of the study destination, and the ability to communicate with host communities.

Graduating students achieved cross-cultural competency in multiple forms through the minor. One student acknowledged that the program “fostered a deep understanding of the experiences of Latin American & Caribbean culture, which is useful in conversations with Spanish speakers. In addition, I studied cultures that have a tremendous presence in the United States. The knowledge of Hispanic culture and language allows me a deeper connection than most with Spanish speakers” (Third Year). The study of language prompted students to deliberately make “connections between the history of colonization to the lingering effects of it today” (Fourth Year), because the study of the past “is very applicable when talking to Spanish speakers today” (Third Year). Students reflected that “proficiency was encouraged in all things” (Fourth Year), with opportunities to compose essays in languages of the region in non-language classes that fortified the development of bilingual and cross-cultural analytical frameworks.

Achieving such cultural fluidity is in line with Nussbaum’s fundamental claim about cultivating student humanity through coursework outside of Europe and the United States. Students should “learn to inquire in more depth into at least one unfamiliar culture” and cultivate the imaginative understanding that teaches, “the ability to think what it might be like to be in the shoes of a person different from oneself” (Nussbaum 46). Moreover, “the foundations of our society and our democratic government require us to be able to talk respectfully with people who hold different opinions and have different backgrounds than we do [...] We need to nurture students’ capabilities to see the world from many different perspectives” (Haring-Smith 8-9). One student who traveled to two Spanish-speaking countries expressed sentiments embedded in the assessment outcomes of graduating students with regard to citizenship and diverse worldviews. Through study abroad, “I reflected critically on my citizenship and privilege” through the comparative study of class and race inequalities in health care in each country: “I cannot fully express what an impact my studies abroad have had on my ambitions for the future and changed the framework that I approach academics with” (Fourth Year).

The intersection of classroom and first-hand experiences abroad resulted in personal and professional transformations for all students who studied away. For one student, the experience “helped me accomplish my academic goals in that I was able to examine the history of the region from a different vantage point after having studied religious and ethnic diversity. I was able to improve my ability to speak Spanish. . . .The experience helped broaden my horizons” (Fourth Year). Studying abroad was often an unanticipated, unplanned event for students, but they found the experience educational and transformative. “Going to Cuba was an incredible opportunity that allowed me to learn about various communities in and outside of the classroom. This trip meant so much to me because I was able to connect with my host family and relate to some of their everyday struggles” (Fourth Year).

One student summarized that the minor “promoted opportunities for me to study abroad and engage with other cultures and...fostered my exploration of courses I would not have thought to take otherwise (and that I ended up enjoying immensely)” (Fourth Year.) One of the most significant qualities of the minor program was “being provided the opportunity to engage directly with my course of study by traveling abroad” (Fourth Year). The experience of living abroad propelled students “to engage in questions of racial and ethnic hierarchies head on” (Fourth Year). In addition, study abroad programs that incorporated self-designed research projects further inspired students to pursue academic interests in languages other than English.

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Even students who did not study abroad revealed deep engagement with Latin American & Caribbean history, culture, and other disciplinary areas through the minor. Course materials reinforced the study of language, topics, and literature to a “significant” degree, according to assessment, which resulted in cultural proficiency outside of and within the United States. Several heritage Spanish speakers affirmed a connection they felt with their culture, while non-heritage students remarked on their achievements in conversational and content-based understanding with other Spanish speakers: “I fostered a sense of similarity and connection with Spanish speakers. I was able to relate to Spanish speakers through our shared knowledge of Hispanic culture and language learned in the classes” (Third Year). These skills, accompanied by the program’s emphasis on global perspectives and diversity and difference, further contributed to student development and understanding of place in the world.

Outcomes: Diversity & Difference

One of the most valuable aspects of an area studies program that develops the breadth and depth of global perspectives in students is the accompanying appreciation of diversity and difference. Meacham argues that “students should understand how gender, race, ethnicity, class, and religion affect those who are different from themselves, but they should also understand how these forces affect them” (3). Additionally, exposure to challenging and controversial themes and topics results in students who are more likely to report positive civic-related outcomes (Hurtado and DeAngelo). Jaswal and Rush support global education for “all students at all levels of education,” in order to “create diverse, ethical, and compassionate leadership that will define our world’s future course” (emphasis in original 1-2). To that end, this program directly addresses the American Association of Colleges and Universities’ commitment to privileging diverse human experiences and worldviews, encouraging citizenship locally and abroad, and fostering inclusivity. It simultaneously enhances student understanding of global citizenship and promotes cultural competence.

Exit assessment data collected from graduating students indicates that courses in Latin American & Caribbean Studies challenged student assumptions about the region and its inhabitants, prepared them for an understanding of contemporary issues, and taught them an appreciation for the diversity and range of individual experiences. Most significant was student recognition of the overwhelming breadth embedded within the program, and the ways in which diversity affects every aspect of life—social, environmental, familial, political, professional, and so on—in the region. Students reflected on the intentionality of course materials, especially primary accounts of the human experience, that led them to contemplate the intricacies of the region in multiple ways. They cogitated how colonialism transformed the lives of common people as they struggled “to form and maintain unique identities that were distinct from their conquerors” (Fourth Year). Furthermore, “readings of personal accounts ... fostered a personal human perspective of the region, illustrated emotional and historical depth [and] fostered an understanding of complex and often intertwined issues” (Second Year). Multiple courses across the academic divisions “greatly expanded my knowledge and understanding of the subject matter [and] also fostered a great appreciation for the intricacies of the region’s complex past and a fascination with the more contemporary issues affecting the area today” (Third Year).

When prompted with an inquiry into the ways in which the minor’s emphasis on race and ethnicity engendered an appreciation for diversity, students revealed that “through critical reading, class discussions, and analytical writing, the minor solidified [their] understanding and appreciation of the complexities of the region in regard to race and ethnicity” (Fourth Year). Graduates echoed these sentiments: “I had very little, if any comprehension of the subject prior to joining the program. During my course of study in the minor, I learned the core distinctions between the terms and how they related to the study of the region” (Fourth Year). The curriculum “pushed me to think seriously about the complexities and the different understandings of race and ethnicity within different countries and groups of people” (Fourth Year). It further enhanced their understanding of the formation of “unique identities” and “created a deeper understanding” of the diversity of race and ethnicity across the region, as one student summarized: “I gained an appreciation for the economic, political and social processes that go into defining race beyond ascribed physical characteristics and what it really means for a race to be socially constructed,” adding that the national and regional differences were “surprising” (Fourth Year). Course material complicated previous impressions of the region, as graduates articulated:

The minor prepared me well and challenged me to critically engage in issues of race and ethnicity. Because of the vast complexities of race and ethnicity in Latin America & the Caribbean, I was able to study these factors without generalizing or coming to a simple conclusion. I found that this minor really challenged and changed my preconceived notions of race and ethnicity. (Fourth Year).

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The consistent challenge for students was “approaching and talking about issues of race and ethnicity eloquently and encouraging others to view these issues open mindedly” (Fourth Year). The process was enhanced by the “vastly different courses” in different disciplines that intentionally promoted the “most important skill” of discussing race, class, and ethnicity “properly” and with maturity (Fourth Year).

Key themes of colonialism, oppression, power, and social and racial hierarchies further complicated the course of study and resonated with students, who gained “insight into the human experience” (Fourth Year). Students reflected on the ways in which their classes deliberately required them to engage with power and oppression “head on,” especially “through concepts such as the existing relationships between nature of the core and periphery, interactions between conquerors and the conquered, and so on” (Fourth Year). The diversity of difference underscored intricate distinctions between the individual and the nation, where “skin, heritage, and socioeconomic status are all combined to develop identity, which can vary from regions” (Fourth Year). In addition to unpacking the complexities of race, course discussions and materials “demonstrated that several of the issues (i.e. oppression, hierarchical systems) persist in the contemporary world” (Second Year). One student concluded, “I know that there is still more for me to learn about in regards to Latin America & the Caribbean, as well as understanding race & ethnicity within these areas, but I know that I’m leaving Muhlenberg with a stronger foundation than when I started” (Fourth Year).

Conclusions

In spite of the previously mentioned accomplishments in the minor and American Association of Colleges and Universities’ data supporting these initiatives, Latin American & Caribbean Studies remains a peripheral program at Muhlenberg College, with no faculty appointed to the program, no interdisciplinary introductory course, and no capstone experience. Many students lamented this marginality, noting that the thematic, linguistic, historical, and geographical diversity of the region cannot be adequately covered in six separate classes. One of their consistent grievances was the lack of course elective offerings each semester, both in terms of low numbers of offerings and in scheduling conflicts given the small number of electives. Graduates articulated that they “would like to see more consistency with the available courses offered each semester. Often times, there was very little to choose from” (Fourth Year). Students noted that they genuinely had to plan ahead due to the lack of consistency in course rotation and the few electives available. They recognized the limitations of their instructors in terms of expanding course offerings, and suggested institutional changes in supporting the program. “There were often not enough resources and not enough classes per semester... Hopefully, Muhlenberg will recognize the importance of this minor and help it expand more” (Fourth Year). They also noted that the minor isn’t publicized on the college website, at admissions events, and on campus in general.

I would recommend advertising the minor more. Many people I have spoken to are not aware that it is a minor, which is unfortunate because it has been a central part of my education at Muhlenberg. I think several students who end up minoring in other areas such as Spanish or history would benefit from exploring the possibilities of a LACS [Latin American & Caribbean Studies] minor because of the wide array of classes and experiences in it. (Fourth Year)

Lastly, graduates expressed their hope that the program “could become a Major someday, so that there can be more courses focused on specific countries or major events that changed Latin America and the Caribbean” (Fourth Year).

Area studies programs have historically played decisive roles in the formation of student identity and their worldviews; hence the urgent need for area studies programs that educate students about their global citizenship, expose them to the historical threads of complex and uneven cultural exchanges, and encourage intellectual agility. Latin American & Caribbean Studies programs offer consistent and meaningful opportunities to engage deeply with diversity. And although not aimed exclusively toward engagement with ethnic/racial diversity on campus or measuring positive outcomes for minority students, this program has contributed to the development of “diversity-related skills” as outlined in Muhlenberg College’s diversity strategic plan. Area studies programs such as Latin American & Caribbean Studies are invaluable in creating interdisciplinary avenues that capture the extensive scope of experiences of historically underrepresented populations, and have a profound impact on student learning in the present and the future. Together, intentional curriculum design develops global awareness, engenders cultural competency, and encourages student understanding of diversity outside of and in relation to the United States. It simultaneously addresses Nussbaum’s concern that “because America is so dominant, it is easy for Americans to go through life in a bubble of American-ness, speaking English and rarely venturing out of the secure setting of American culture, even when we travel” (44).

Prioritizing programs that are intentionally inclusive will improve campus climate, address student concerns about the lack of resources and course offerings, and support student desires for “more opportunities for engaging with the larger campus about the issues we talked about in class” (Fourth Year). The peripheral location of area studies may be

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“because [they] cannot be located unequivocally in any one discipline or university teaching and research structure” (Allatson 1), despite evidence affirming the positive learning outcomes of area studies. However, research demonstrates that “when colleges and universities invest resources in creating programs such as cross-cultural centers, ethnic studies programs, minority faculty and staff associations, gender equity initiatives, and campus-wide diversity and inclusion awards, they are demonstrating the high premium they place on inclusion and excellence” (Muñoz and Murphy 3). Purposeful commitment to and growth of area studies programs will also allow for additional research on student outcomes. The information provided in student exit surveys suggests two general trends depending on exposure to culture and language prior to entering college. In general, Latinx students acknowledged a proximity to aspects of their cultural heritage, while English-language speakers affirmed that course material and language study opened up anticipated doors. For Latinx students, “the most rewarding aspects of following this course of study were learning more about my heritage and also learning more about Latin America in general” (Fourth Year).

Exit assessment data from graduating students in the Latin American & Caribbean Studies Minor is overwhelmingly positive. Students expressed gratitude for the coursework, the unanticipated surprises of interdisciplinary and global classes, the experiences of learning abroad, and the individualized treatment each advisee received from the program advisor. In addition, students complimented the writing and reading skills taught throughout the experience, which helped prepare them for graduate programs and professional lives. Accrued evidence suggests that such environments are important instruments for learning, and that faculty who teach in diversity-related programs serve in powerful, and inspirational, roles where diversity is a central component of educational development. An institutional commitment to this program will allow for continued student success in the areas outlined here, and aptly arm students with the level of preparation and skills required for success in culturally diverse environments, and a globalized world.

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Role of Service-Learning Pedagogy in Enhancing Health Education Competencies

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Abstract: Service-learning provides a multitude of benefits to students including: increased engagement of civic responsibility and the development of effective communication, leadership, and social skills. The current narrative review highlights various applications of service-learning pedagogy such as traditional vs. online classroom approaches to service learning, application of service-learning strategies in the context of health education and health promotion, via internship courses and funded service projects and the role of service-learning in enhancing core areas of responsibilities for certified health education specialists (CHES). Additionally, explored are options to apply service-learning in interdisciplinary work and collaborations.

Key words: service-learning, pedagogy, application, interdisciplinary

Research has demonstrated that techniques such as active and experiential learning can generate or enhance students' understanding and interest in a particular subject and may also engage the students in the classroom (Brown & King, 2000; Lundenberg & Yadav, 2006; Newmann & Twigg, 2000, p. 249). Experiential education by definition deals with a "learner-centered approach" where "students are directly engaged in the phenomenon" to be studied (Carver et al., 2007). Service-learning an integral aspect of experiential education, and, among various definitions attributed to this pedagogical technique, "is a credit-bearing educational experience in which students participate in an organized service activity that meets identified community needs and reflects on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline and an enhanced sense of civic responsibility" (Bringle, & Hatcher, 1996, p.222). Despite course delivery, e.g., traditional classroom settings or online, students' benefits of service-learning on a spectrum range from enhanced learning to the development of civic-engagement skills.

Service-Learning: Traditional vs Online Approaches

Traditional classroom settings have notably been effective in implementing service-learning activities and providing students with an array of positive learning outcomes and impactful experiences. However, online courses can be just as effective (Harasim, 1996; Markus, Howard & King, 1993; McGorry, 2012). It has also been concluded that there was no difference in students' service-learning experiences whether they were delivered completely online or in a traditional classroom setting (McGorry, 2012). For faculty who teach health-education courses online or are considering incorporating a service-learning component within their courses, it is important for them to know that service-learning experiences in an online course will be just as effective. This will grant future health-education specialists with impactful experiences, while also increasing their knowledge of health education core responsibilities.

Areas of Responsibility for Health Education and Service-Learning Initiatives

The National Commission for Health Education Credentialing (NCHEC) indicates 8 Areas of Responsibility of a Certified Health Education Specialist (CHES), and these responsibilities include: I. Assessment of needs and capacity II. Planning, III. Implementation, IV. Evaluation & Research, V. Advocacy, VI. Communication and VII. Leadership, and Management, VIII Ethics and Professionalism (NCHEC, 2020). Health-education faculty often use these CHES responsibilities as a foundation when it comes to assessing their course curriculum in preparing undergraduate and graduate health-education students in their programs. Service-learning in health education holds tremendous promise as a curricular strategy for preparing students for their roles as health professionals and changing the way faculty teach (Seifer, 1998).

Yet, some faculty still question this approach, because research, in general, is the domain of the academy; the service-learning research agenda has been driven by academic concerns, not only about student learning but also about faculty perceptions of this pedagogy. Thus, the focal question has been, "Where's the learning in service-learning?" (Cruz & Giles, 2000, p.28). The answer is: it takes a faculty member who has an interest in wanting to provide their students with such experiences to commit to taking the initiative to make it happen. Faculty will also need support from the administration of their university. Service-learning continues to develop as an integral component of higher-education curricula, with administrators embracing the positive impact that it can have on the communities involved. The higher-education environment, however, has changed in recent years (Klentzin & Wierzbowski-Kwiatkowiak, 2013). Despite the varying approaches to course instruction (online, hybrid, face-to-face) in today's society, service-learning should be a requirement

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in higher-education health-education programs. The academic benefits and enhanced social responsibility that students derive from service-learning, defined as experiential learning that ties community service to academic courses, have been well documented. However, Chamberlin (2015) concludes that for a college to fully institutionalize service learning, a high proportion of faculty need to include service-learning in their courses.

Faculty at the University of Arkansas at Little Rock in the health education and promotion degree program agreed to this importance and provided their online health-education students the opportunity to participate in a variety of community service-learning activities. With established partnerships with local community-based organizations, health professionals, and grant-funded projects, faculty have been able to provide excellent opportunities for service-learning, volunteerism, and professional experiences for their students. Another definition of service-learning states that it is a form of community-centered experiential education that places emerging health professionals in community-generated service projects and provides structured opportunities for reflection on the broader social, economic, and political contexts of health (Sabo et al., 2015). It moves students beyond cultural awareness toward the development of cultural competence that is grounded in both health education and in the realities and complexities of a multicultural community (Flannery & Ward, 1999). This cultural awareness is what faculty have realized to be of importance for health-education students, being exposed to diverse communities, while also gaining the importance of embracing cultural competence, which is very important for health-education specialists.

Application of Service-Learning in Health Education/Health Promotion

The literature on generalist student learning outcomes when they are engaged in service-learning projects include but are not limited to personal growth and leadership skills, a sense of personal and social responsibility, ability to apply theory to practice, enhanced critical-thinking skills, interpersonal and communication skills and finally enhanced cultural and racial understanding (Jacoby, 2015). Some of the salient student-learning outcomes when a service-learning approach is incorporated in health-education/promotion courses include: change in attitudes towards various health issues prevalent in the community (Rukavina, Li, & Rowell, 2008), promoting social and health advocacy (Wyatt, & Peterson, 2008), and building cultural competence (Housman et. al., 2012). Please see Fig 1 for the intersection of service-learning with diverse academic and interdisciplinary areas.

Examples of how Health Education Responsibilities are Enhanced for Health Education Students through Service-Learning Online Courses:

Online community health agency course. When enrolled in the online Community Health Agency course, students are required to complete 20 hours of community service at a health-related organization over the course of the 15-week semester. Students are provided a list of established partnerships of community health agencies who meet our course criteria in granting students an opportunity to complete service hours. Online health education students who live a greater distance from the University of Arkansas at Little Rock's main campus, including those in other states, can complete their service hours at a health-related organization where they live upon approval from faculty. They are encouraged to complete their service hours at non-profit agencies similar to that of the American Heart Association. However, all students are open to select any agency that meets the criteria of the course requirements. Faculty are required to confirm the credibility of the placement. Students are also required to submit a contract to the faculty for approval before completing their hours.

For example, the University of Arkansas at Little Rock Children International is a non-profit program close to the University of Arkansas at Little Rock's main campus that provides services to low-income families. Many students enrolled in the Community Health Agency course have been able to complete their service hours with Children International's after school programs, personal health classes for children, and physical education programs, while also learning the professional roles and responsibilities of a health education specialist. Upon completion of their 20 hours of service, students are required to write multiple reflection papers that focus on their service-learning experiences. This reflection approach grants students the opportunity to reflect on their experiences. There is evidence to suggest that service-learning programs that thoroughly integrate service and academic learning through continuous reflection promote the development of knowledge, skills, and cognitive capacities necessary for students to deal effectively with the complex social issues that challenge citizens (Eyler, 2002).

Students are also encouraged to share a photo of themselves serving in the community and a brief description of their experience to the online course discussion board. This allows students the opportunity to learn about the various service-learning experiences of their peers and grants them the opportunity to learn about health agencies in different communities. According to Seifer (1998), students engaged in service-learning are expected not only to provide direct community

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service but also to learn about the context in which the service is provided, the connection between the service and their academic coursework, and their roles as citizens.

Online health education internship course. Academic programs can also engage students in the community given that they create a variety of experiential-learning opportunities for their students, for example, clinicals, internships, field experiences, practicums, and student teaching (Bringle & Hatcher, 1996). The following example illustrates this point: students enrolled in the online Health Education and Promotion 200-hour internship course are granted the opportunity to select an internship based on their interest, but it must meet the expectations of being a health-related organization. Students often complete their internships at various places, including but not limited to campus health services, hospitals, community-based and non-profit organizations, K-12 schools, medical research centers, and fitness-wellness centers. Formal and informal education about service-learning is important for site supervisors, directors of volunteer services, and agency directors (Bringle & Hatcher, 1996). Therefore, internship supervisors are informed about the expectations before they supervise a student. Students provide a copy of their internship packet to their internship supervisor upon their initial meeting. It details the expectations and responsibilities of the student and internship supervisor, includes a contract that must be signed by both the student and internship supervisor, and includes evaluation forms required to be completed near the completion of the internship. Both student and internship supervisor are instructed to email their evaluations directly to the faculty. This evaluation strategy grants both the student and internship supervisor the opportunity to rate each other.

The internship supervisor indicates which of the 8 Areas of Responsibility of a Certified Health Education Specialist the student achieved and or was exposed to during the internship. The faculty then uses this information for assessment purposes for the program. Students in return evaluate if their internship supervisor and overall experience were beneficial to them and confirm whether the placement would be suitable for future health-education interns. A month before a semester concludes, the faculty, student, and internship supervisor convene in person at the internship placement, a conference call, and/or engage in an interactive virtual meeting such as FaceTime or Skype. This approach allows for the faculty, student, and internship supervisor to converse about the student's experience and progress regarding the internship. However, the most common methods of measuring service-learning outcomes are self-administered scales where students report what they have learned in a service-learning experience (McGorry, 2012; Yin, 2009). Thereby, students before the conclusion of the semester are required to compile a written report and prepare a PowerPoint presentation highlighting their overall internship experience. All students are required to post their presentations to the discussion board. Students who live close to the University of Arkansas at Little Rock's main campus are invited to present in person, and those who are not close to campus are required to video record their presentations or voice narrate their PowerPoint presentation before posting it to the online discussion board.

Faculty grant-funded service projects. Another approach that has contributed to increasing participation of service for the University of Arkansas at Little Rock online health education students is granting them opportunities to get involved in service-learning through faculty grant-funded projects. Given that a large portion of the online health education students enrolled in the online health education and promotion program live in Little Rock, students with limited distance to the campus have the benefits of being granted the opportunity to engage with classmates and faculty in serving their community.

For example, on behalf of health education and promotion faculty the University of Arkansas of Little Rock was awarded an Arkansas Coalition for Obesity Prevention grant, which funded projects that were designed to help increase access to healthy foods and increase physical activity to help combat obesity. Faculty granted online health education students the opportunity to work on various growing healthy communities' projects, which focused on growing a healthier university district community (comprising neighborhoods near the University of Arkansas main campus). Health education students, as well as nursing students, have volunteered for annual campus community wellness fairs, farmers markets, delivering and setting up raised bed gardens to area residents, and taking on the role of a health education specialist in educating the community about health-promoting behaviors like healthy eating, and the importance and benefits of regular physical activity. For faculty, service-learning methods can lead to increased student-teacher reciprocity, address a variety of student learning styles, promote community-engaged research and lead to new collaborations for research and publication, provide students with real-world experiences, and enhance course discussions and scholarly discourse by connecting theory and practice in a meaningful, relevant way (Hall & Pelco, 2015).

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Role of Service-learning Pedagogy- Interdisciplinary Teaching and Learning Tool

The above examples delineate the role of service-learning as a course-based tool, a field-experience tool, and a faculty application-based tool. Service-learning is an effective pedagogical tool, which transcends specific fields and can be jointly used as an “interdisciplinary” teaching and learning tool in fields of engineering and health (Najem et al., 2019), social work and law (Boys, Quiring, Harris, & Hagan, 2015), and nursing and dental hygiene (Allen, Gunaldo & Schwartz, 2019) or to implement team-based learning in remote places (Craig, Phillips, & Hall, 2016).

Implications for Practice for Health Education Specialists

Service-learning often benefits five important stakeholders: students, faculty, academic institutions, community organizations, and community members (Seifer, 1998). Given the popularity of online education today and its potential future, faculty who teach online or will eventually teach online should strive to incorporate service-learning activities into their online health-education courses. E-service learning (Strait & Nordyke, 2015), which is a comparatively newer area in the field of service-learning, has a potential of taking various turns and advancements in future areas. Three areas are: a) **pedagogy**: having more technology integrated into the course work in terms of group work, media-based presentations, asynchronous and synchronous 3-way communications between community partners, faculty, and students and generation of richer student narratives of their experiences. There is also a potential for having a model where both the service and the instruction for this course that could happen online. In terms of b) **scholarship**: richer contextual and qualitative and quantitative data about student learning outcomes and experiences can enhance scholarship. Finally, c) **service**: Opportunities to develop a future workforce with civic, leadership, communication, and strong value-based skills can develop.

Faculty who use service-learning often discover that it brings new life to the classroom, enhances performance on traditional measures of learning, increases student interest in the subject, teaches new problem-solving skills, and makes teaching more enjoyable (Bringle & Hatcher, 1996). Service-learning practitioners must begin to explore the design of effective and sustainable university/community partnerships and how to optimize the intersection between online learning and service-learning (Waldner, McGorry & Widener, 2010). Furthermore, the impact of this strategy globally deals with developing engaged citizenship, cross-cultural understanding of health and ethical issues and engagement in research across international boundaries (Howard, Rao & Desmond, 2010; additional skills such as teamwork and communication are built inherently as well (Zhang, et al., 2011). Future health-education specialists would greatly benefit from such skills and experiences as well as the communities in which they serve.

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An analysis of STEAM disciplinary interrelationships described in abstracts of higher education articles

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According to Spelt et al. (2009, 365), the “integration or synthesis of knowledge is seen as the defining characteristic of interdisciplinarity.” STEAM approaches to education (STEM plus Arts Education) offer students interdisciplinary experiences that can further a number of pedagogical goals, such as engagement, development of creative skills, and chances to see how disciplines can be applied in other areas. STEAM approaches have been highlighted in several papers in *IMPACT* (Jay, 2014; Novotny & Wright, 2020; Ross, 2016). This paper shows how the Biglan/Becher taxonomy of disciplines can be used to analyze disciplinary interrelationships in STEAM (Becher & Trowler, 2001; Biglan, 1973), with the ultimate goal of categorizing ways STEAM approaches can facilitate student learning in higher education. There is not just one approach to STEAM; there are many, and a Biglan/Becher analysis underscores and helps make sense of this diversity.

The Development of STEAM (STEM + Arts)

The American educational system is deeply rooted in Western and European intellectual history and practices. The idea of experiential learning essential in STEAM can be traced back as early as that of John Locke, the late 17th-century empiricist. In his *An Essay Concerning Human Understanding* (1690), Locke argued that ideas come from experience, through the senses, perception and reflection (Encyclopedia Britannica, 2001a). Giambattista Vico, professor of rhetoric at the University of Naples from 1699 to 1741, also argued in his book, *New Science* (1725), that human beings in their origins are not rational like philosophers, but imaginative like poets (Encyclopedia Britannica, 2001). These examples of arts and science connection with the interaction among the mind, experience and imagination were acknowledged by both thinkers and influencers of education in the 17th century or the age of Enlightenment.

A classic and well-known example of arts’ integration with science is the works of Leonardo Da Vinci. He embodies the integration of arts and science in his anatomic drawings and his arts based on his studies of human anatomy via post-mortem human dissection (Sterpetti, 2016). Thus STEAM in the history of education and in practice existed long before the acronym was coined. However, the creation of the acronym, STEAM, was a turning point in the modern American educational history. STEAM influenced the change in curriculum and educational standards since Georgette Yakman coined the term, *STEAM*, and developed it as a new framework in integrative education (Yakman, 2008). Yakman has worked to promote STEAM as an educational model of how the traditional academic subjects (silos) of science, technology, engineering, mathematics and arts, can be structured into a framework by which to plan integrative curricula. She posited that the integration could be done in two ways: by each discipline’s inclusion of elements of other discipline(s) into its own standards and practices or based on the concept and practices of STEM when the subjects are purposefully integrated (Yakman, 2010). While Yakman’s framework was established in 2008 based on her earlier research, Rhode Island School of Design (RISD) took on the STEAM acronym to promote its new STEAM Initiative in 2010 as the foundation for STEAM movement in education in the U.S. and worldwide (Allina, 2018). At RISD, the objectives of the STEAM movement are:

- Transform research policy to place Art + Design at the center of STEM
- Encourage integration of Art + Design in K-20 education
- Influence employers to hire artists and designers to drive innovation (ibid).

The school applied STEAM in studio-based learning initiatives, from RISD’s Nature Lab, where gourds, taxidermy, microscopy, and art/design/nature/science comingle, to the Maharam STEAM Fellowships in Applied Art and Design, where students were funded to complete internships in local government and at places like the Mayo Clinic and NPR Science (Maeda, 2013).

As RISD promoted STEAM beyond its campus to the Capitol Hill in Washington, D.C., STEAM has become a focal point in U.S. policies in the early 21st Century. Allina (2018) reviewed and traced the development of STEAM educational policy in the United States to National Research Council’s 2003 report on the major benefits of the integration of information technology and creative practices (ITCP) in the art and design and encouraged the U.S.’s strategic investment in this domain of the ITCP (National Research Council (U.S.), 2003). Another key U.S. policy development was a House resolution in 2010 introduced by Congressman Jim Langevin with the call of action that by adding art and design to STEM fields, it encouraged innovation and economic growth in the U.S. (reintroduced in 2015 (U.S. House. H.Res.247 (IH), 2015)). In 2013, a bi-partisan STEAM Caucus was formed in February, led by Congresswoman Suzanne Bonamici (D-

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OR) and Congressman Aaron Schock (R-IL) (Bonamici, 2013). The landmark policy for STEAM as a culmination of political effort was the inclusion of STEAM in new federal *Every Student Succeeds Act (ESSA)* – which superseded *No Child Left Behind* (P.L. 114-95, 2015). Another crucial bill in the same year, *America Competes Reauthorization Act of 2015*, integrated STEAM into Federal STEM programming, research, and innovation activities. It captured the rationale to add STEAM into the U.S. education and research policies as follows:

- (3) STEAM, which is the integration of arts and design, broadly defined, into Federal STEM programming, research, and innovation activities, is a method-validated approach to maintaining the competitiveness of the United States in both work force and innovation and to increasing and broadening students' engagement in the STEM fields;
- (4) STEM graduates need more than technical skills to thrive in the 21st century workforce; they also need to be creative, innovative, collaborative, and able to think critically;
- (5) STEAM should be recognized as providing value to STEM research and education programs across Federal agencies, without supplanting the focus on the traditional STEM disciplines;
- (6) Federal agencies should work cooperatively on interdisciplinary initiatives to support the integration of arts and design into STEM, and current interdisciplinary programs should be strengthened (U.S. House. H.R. 1898 (IH). Sec. 204, 65, 2015).

Since the development of STEAM as a concept, we can see the surge in STEAM practices, research and publications as reflected in the publications by year on STEAM based on *Web of Science* database as shown in figure 1:

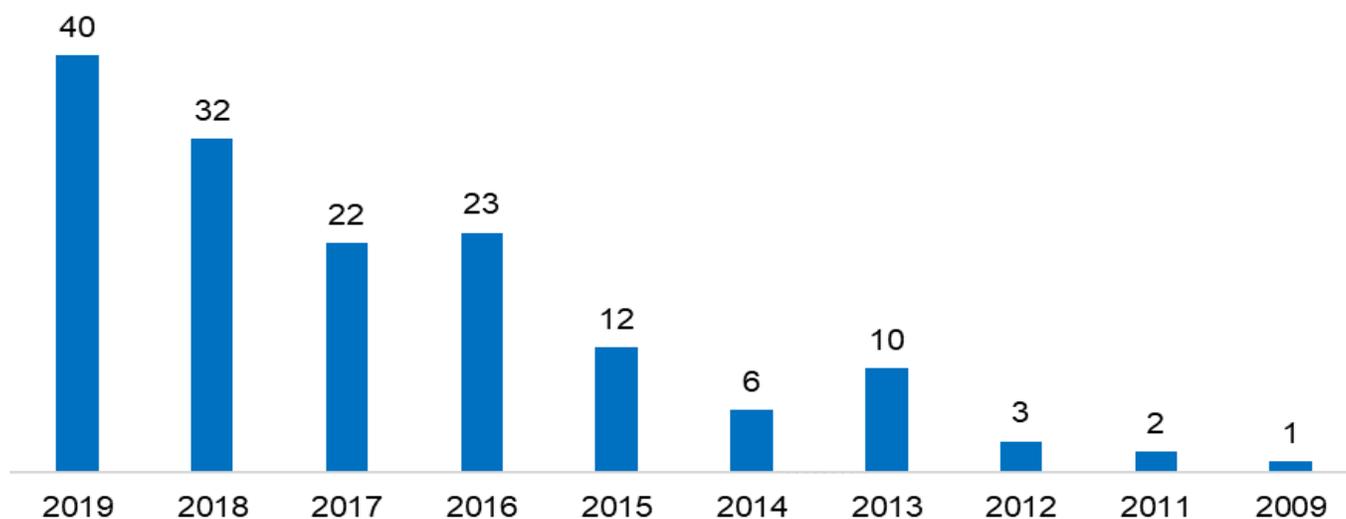


Figure 1. STEAM's Publication Trend, 2009-2019 (Web of Science, accessed July 18, 2020)

The integration of Arts into STEM = STEAM happened in diverse ways over time. We are interested in how the interaction among the disciplines in STEAM would produce new educational methods, knowledge and even products. We found that STEAM integration resulted in new exciting knowledge, but also had its own complexity that continues to make STEAM an elusive subject to grapple with, as reflected in the STEAM literature and in our further discussion.

Application of Biglan/Becher Taxonomy of Disciplines to STEAM

Despite the growing development of STEAM, consensus has not been reached about what STEAM should encompass. Perignat and Katz-Buonincontro (2019) recognized that there have been a number of definitions of STEAM in the literature, prompting them to write an integrative review. One reason why there may have been many definitions of STEAM is the variety of disciplines combined in STEAM educational techniques. We argue that using a simplifying conceptual-

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ization of disciplines could help make sense of the disciplinary interrelationships in STEAM, suggesting similarities and differences between the co-occurring disciplines. Biglan (1973) developed such a conceptualization. The Biglan taxonomy of disciplines is based on three dimensions: hard/soft, pure/applied, and life/non-life. In this paper, the first two of these dimensions were used. An example of a hard-pure discipline in Biglan’s system is chemistry. An example of a hard-applied discipline is engineering. Art is a soft-pure discipline, and education is a soft-applied discipline. Becher and Trowler extended the Biglan system decades later and gave detailed definitions of the hard-soft dimension and the pure-applied dimension (2001).

Hard-pure knowledge is concerned with universals and has a quantitative emphasis. Soft-pure knowledge is “in contrast, reiterative, holistic, concerned with particulars and having a qualitative bias” (Neumann et al., 2002, 406). Multiple authorship is common in hard-pure disciplines, whereas solo inquiry is typical in soft-pure disciplines.

Hard-applied knowledge is “concerned with mastery of the physical environment and geared towards products and techniques,” whereas soft-applied knowledge is “concerned with the enhancement of professional practice and aiming to yield protocols and procedures” (Neumann et al., 2002)

While the Biglan/Becher framework is old, it is still being used (Simpson, 2017), and we found it to be a useful simplifying system for the diversity of interrelationships in STEAM.

Methods

We analyzed abstracts of 51 articles and conference papers on STEAM approaches in higher education, or in higher education publications. To find the articles, a search of Web of Science was done covering the time period from 2012 to May 31, 2020. The search terms were STEM AND arts in the Topic field refined by STEAM AND arts. Of the 148 records found, 51 pertained to a higher education context.

Once we had downloaded the abstracts and bibliographic information, we coded the disciplines described in the abstracts as hard or soft and pure or applied. For example, art was coded as soft-pure. The Biglan/Becher system lists which disciplines belong to the four categories. We chose to focus on abstracts, even after looking at the full text papers where available, because abstracts delineate the central focus of an article. We believe that authors have pinpointed what they consider the most salient points of articles in abstracts. In addition, we found that the full text of those articles we examined did not yield additional disciplines beyond those described in the abstracts. The Biglan categorizations for disciplines mentioned in the abstracts are shown in Table 1. After coding the abstracts, we then looked for patterns in the co-occurrence of disciplines.

Biglan Classification of disciplines
Hard-Pure
Chemistry, Biology, Anatomy, Physics, Mathematics
Hard-Applied
Engineering, Computer Science, Materials Science
Soft-Pure
Art, English, Philosophy, History
Soft-Applied
Education, Business

Table 1 Disciplines Identified in the Study

Results

Eleven abstracts described combinations of soft-pure disciplines (usually art) with hard-applied disciplines (usually computer science or engineering). (See Figure 2.) Of these, about half reported on combinations of hard-applied disciplines and soft-pure disciplines in specific STEM or art projects or creations. For example, one abstract described using materi-

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als science to understand the materials used in stained glass windows or cave paintings (Perez et al., 2018). Similarly, abstracts described the use of computer science in a music remixing project (Freeman et al., 2015), the use of computer science in a games design project of new media arts (Moumoutzis et al., 2017), and aerospace engineering in a cultural heritage project (Richter et al., 2014). Origami was used in engineering in one case (Kennedy et al., 2016), an example of the application of art to a hard-applied discipline. Finally, several topic areas were described as useful for combining aspects of both hard-applied disciplines and soft-pure disciplines: green IT (Lamb & Marimekala, 2018), e-textiles (Peppler, 2013), robots (Jeon & Park, 2016), additive manufacturing (Williams et al., 2016), 3D printing (Chien & Chu, 2018), and nano projects (Claville et al., 2019).

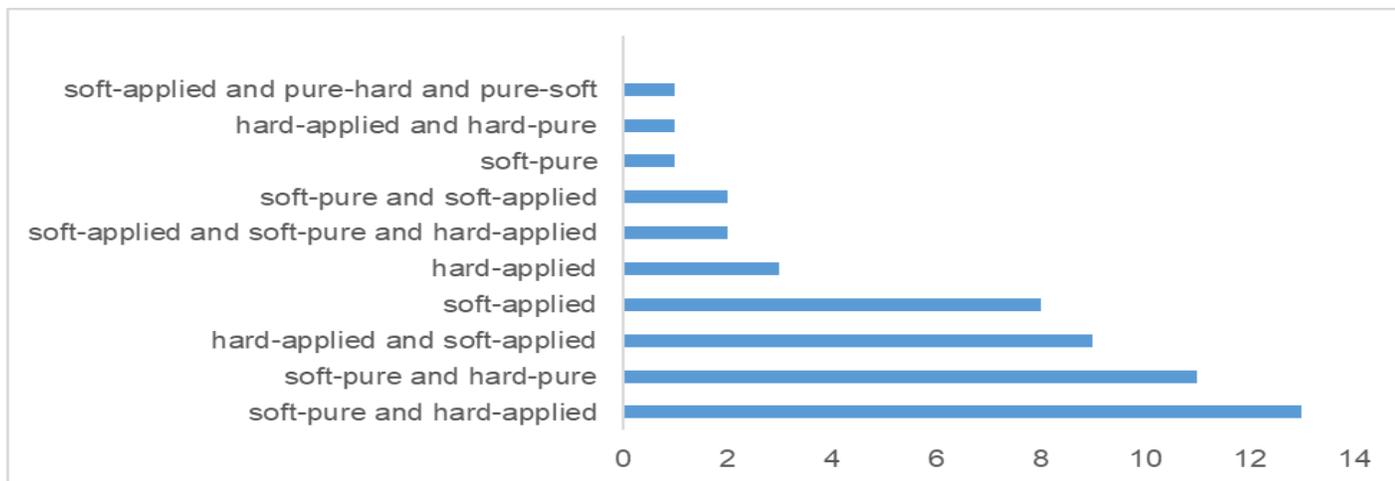


Figure 2. Disciplinary Combinations in STEAM Implementation.

Other abstracts described more general combinations of hard-applied and soft-pure disciplines that could have applications beyond specific STEM or art disciplines. These included applications of art in transdisciplinary STEAM projects at Drexel University (Kim et al., 2019), the development of presentation skills in an English for Specific Purposes class (Saienko et al., 2019), and the combination of STEM and art disciplines (in this case, environmental engineering and arts education) in a multidisciplinary class (Sochacka et al., 2016). Additional general abstracts discussed the STEAM approach (STEAM and design) (Donohue et al., 2013) and maker movements (Clapp & Jimenez, 2016). Other abstracts explored psychological or cognitive benefits of engineering and art interrelationships, such as developing creativity and curiosity in engineers (Donohue et al., 2012) and reflecting on the similar visual thinking of artists and engineers (Robinson & Baxter, 2013).

A few abstracts discussed a combination of soft-pure and soft-applied disciplines. Philosophy (soft-pure) was combined with education (soft-applied) in a STEAM position paper (English, 2017), a conceptual model of STEAM (Quigley et al., 2017), and a philosophy of STEAM in the Anthropocene (Guyotte, 2020).

A hard-applied discipline was combined with a hard-pure discipline in a STEAM example of two thermal machines (mechanical and human) (Garcia et al., 2018).

Abstracts that focused primarily on soft-applied disciplines were all in education, including ones on arts integration in STEM university programs (Ghanbari, 2015) and a discussion of women in STEM programs (Lopez-Gonzalez, 2017). Two abstracts discussed the views of education students towards STEAM (Jamil et al., 2018; So et al., 2019).

Several abstracts described the combination of hard applied and soft applied disciplines, particularly engineering with education. For example, a quantitative STEAM study compared STEAM and non-STEAM teaching methods in engineering (Yee-King et al., 2017). Similarly, engineering related abstracts discussed the unwillingness of engineering faculty to try active learning approaches because of their “disciplinary egocentrism” (Connor et al., 2015) and the encouragement of women in engineering by offering them an art minor (Dahle et al., 2017). Two abstracts about AI also combined hard-applied with soft-applied disciplines. One discussed the application of AI to business (predicting

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stock market characteristics) as a pedagogical technique (Song, 2017). Another described the development of “AI thinking” in students learning about artificial intelligence (How & Hung, 2019).

Many abstracts reported on combinations of soft-pure and hard-pure disciplines. For example, the International Day of Light resulted in a garden exhibit illustrating photonics concepts (Posner et al., 2016). Abstracts discussed the potential interrelationships of music and science (Minces et al., 2016); history in STEM education (Leslie, 2014); and humanities and chemistry (Faulconer et al., 2020). Other STEM and art combinations included film and dinosaurs (Sumida & Jefcoat, 2018); mathematics and Op Art (Chehlarova, 2019); and the artistic applications of the brain-computer interface (Andujar et al., 2015). Other abstracts discussed the benefits to art students from STEM (Guyotte et al., 2015) and science-inspired art (Poindexter et al., 2016). Scientific outreach was the focus of a NASA STEAM project (Zevin et al., 2015) and in a combination of microbiology and art (Segarra et al., 2018). Table 2 gives examples of coding employed in our study with topics drawn from the abstracts’ full texts to illustrate the interdisciplinary dynamics.

Soft-Pure Discipline	Hard-Applied Discipline	Topic	Article
Art (painting)	Material science	Materials used in stained glass windows or cave paintings	Perez et al., 2018
Music	Computer Science	Music remixing project	Freeman et al., 2015
Art (media)	Computer Science	Game design project	Moumoutzis et al., 2017
Art; Archeology; Architecture	Aerospace engineering	Cultural heritage diagnostics	Richter et al., 2014
Art	Engineering	Origami	Kennedy et al., 2016
Art (design)	Computer science; Engineering	Modular Robotic Construction Kit	Jeon & Park, 2016

Soft-Pure Discipline	Soft-Applied Discipline	Topic	Article
Philosophy	Education	STEM integration; STEAM	English, 2017
Philosophy	Education	Philosophy of STEAM education	Guyotte, 2020

Hard-Pure Discipline	Hard-Applied Discipline	Topic	Article
Anatomy; Biology	Material science & engineering	Comparing food metabolism (human body) and fuel combustion (internal combustion engine)	Garcia et al., 2018

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Soft-Applied Discipline	Hard-Applied Discipline	Topic	Article
Education	Engineering	Comparing STEAM and non-STEAM teaching methods in engineering	Yee-King et al., 2017
Education	Engineering	Women in engineering and an art minor	Dahle et al., 2017
Education	Computer science; Business	Application of AI to business (predicting stock market characteristics) as a pedagogical technique	Song, 2017

Soft-Applied Discipline	Topic	Article
Education	Arts integration in STEM university programs	Ghanbari, 2015
Education	Women in STEM programs	Lopez-Gonzalez, 2017

Soft-Pure Discipline	Hard-pure Discipline	Topic	Article
Art (exhibit; design)	Biological Sciences (Horticulture) & Hard-Applied Discipline Engineering (Photonics)	International Day of Light; a garden exhibit illustrating photonics concepts; with optical fiber optics integrated into a garden exhibit	Posner et al., 2016
Art (animation & visual-effect artisty)	Biology (animals' anatomy)	Animation and visual-effect artists and biological understanding of animals' anatomy	Sumida & Jefcoat, 2018

Table 2. Case Examples of the Integration of STEAM Disciplines with the Outcome

Discussion

Overall the abstracts show both divergence in disciplinary combinations, as when hard-applied disciplines co-occur with soft-pure disciplines (with no shared Biglan/Becher dimensions), and in other cases the combining disciplines share dimensions (for example, as with soft-applied/hard-applied, soft-applied/soft-pure, and soft-pure/hard-pure) as shown in Figure 2.

Divergence in Biglan/Becher dimensions: Hard-applied with Soft-pure combinations

The most frequent type of disciplinary combination was hard-applied with soft-pure. The hard-applied disciplines (usually engineering) have an emphasis on products and techniques, whereas the soft-pure disciplines (usually art) have a holistic, qualitative emphasis concerned with particulars (Neumann et al., 2002). Sometimes the emphasis was on how the techniques of hard-applied disciplines could be applied in artistic endeavors (stained glass windows and cave paintings, cultural heritage diagnostics, sound remixing, etc.), whereas in other cases artistic techniques were seen as useful additions to engineering fields (for example, additive manufacturing).

Even though art is very different from engineering in the Biglan/Becher taxonomy, the STEAM abstracts described ways the two disciplines could be complementary and share similar aims. For example, art was seen as being useful to stimu-

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late creativity and curiosity in engineers, mental traits useful both to artists and engineers. Another abstract described how both engineering and art employed visual thinking.

This leads to the observation that STEM and art disciplines have both similarities and differences. For example, John Maeda, one of the original developers of STEAM at RISD, wrote a blog discussing why artists and scientists were more alike than different. He pointed out, “Artists and scientists tend to approach problems with a similar open-mindedness and inquisitiveness — they both do not fear the unknown, preferring leaps to incremental steps.” (Maeda, 2013, July 11, par. 7) Wilson (2002) listed several similarities and differences between science and art. An example of a similarity was “Both value the careful observation of their environments to gather information through the senses.” Both science and art also seek to create works of universal relevance. An example of a difference was that art favors emotion and intuition whereas science favors reason. In addition, art mostly uses visual communication, whereas science mostly uses narrative explanation. Whether the similarities or differences of STEM and art are emphasized, the disciplines can complement one another in several ways, since the results show a wide variety of purposes for combining art and STEM disciplines.

Shared Biglan/Becher dimensions

Soft-pure and soft-applied combinations

This relatively infrequent type of co-occurrence usually combined philosophy with education. The emphasis was on how educators were theorizing about STEAM. Soft-pure disciplines have a holistic, qualitative emphasis concerned with particulars, whereas soft-applied disciplines are concerned with the enhancement of professional practice (Neumann et al., 2002). Soft-applied disciplines tend to apply soft-pure knowledge (Neumann et al., 2002), as the abstracts in this type of combination do. In this case, the education abstracts apply philosophy.

Hard-pure and hard-applied combination

Similar to soft-applied and soft-pure, hard-applied knowledge applies hard-pure knowledge (Neumann et al., 2002). Hard-applied disciplines are focused in developing products and techniques while hard-pure disciplines are focused on universals concerning the physical environment (Neumann et al., 2002). Our results showed that hard-applied and hard-pure was a rather infrequent combination in the STEAM literature (just one instance). A possible reason for this is that this combination leaves out art, one of the essential elements of STEAM.

Soft-pure and hard-pure combination

This was a more frequent combination, in which Science was combined with Art. Hard-pure and soft-pure disciplines on the face of it are different, in that hard-pure disciplines have a quantitative focus and are concerned with universals while soft-pure disciplines have a qualitative focus and are concerned with particulars (Neumann et al., 2002). Still, observation is a key component of both categories of disciplines (Wilson, 2002), and perhaps the two categories are similar in that they are basic rather than applied (concerned with a product, technique, or improvement of a professional program) (Neumann et al., 2002).

Hard-applied and soft-applied combination

Our results showed that this combination frequently included engineering or computer science and education. This makes sense since the abstracts of the articles in our data set were chosen for their relevance to higher education and, by the definition of STEAM, could include Technology disciplines (engineering). Although art is not explicitly a focus of these abstracts, it is assumed that the articles are connected to STEAM pedagogy. The applied element of hard-applied and soft-applied disciplines gives them a point of commonality, even if these disciplinary categories are rather different on the face of it.

Pedagogical implications of the disciplinary combinations

The disciplinary combinations have the potential for engaging students in different ways. In the case of hard-applied and pure-soft combinations, students can benefit from immersion with the differences of technology and art. In some cases, art serves as a way of making technology more interesting to students in order to increase the number of students studying STEM. In other cases, technology is given an interesting application in an artistic context, showing the wider importance of technology in perhaps unexpected areas.

In the case of combinations with one or both shared Biglan/Becher dimensions, students can benefit from seeing both similarities and differences with the co-occurring disciplines. For example, with soft-pure and soft-applied combinations, students learn about both exploratory or expressive knowledge and professional, applied knowledge. With hard-pure

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and hard-applied disciplines, the student sees both knowledge concerned with discovering universals about the physical world and applications of this knowledge. This can be useful in giving students a useful real-world context for the pure knowledge.

With soft-pure and hard-pure combinations, the students can see similarities between hard and soft disciplines that share the pure dimension, namely the exploratory or observational characteristics of both kinds of knowledge, although hard disciplines are concerned with universals and soft disciplines are concerned with particulars. With soft-applied and hard-applied disciplines, students also see potential similarities between another kind of combination of hard and soft disciplines, with both kinds of combining disciplines having an applied focus, or practical application in the world.

This analysis of STEAM articles' abstracts provided a snapshot of the growth of STEAM as an interdisciplinary subject area over the past decade. Applying the Biglan/Becher taxonomy to analyze these abstracts yielded insight into the dynamics among the STEAM disciplines as influenced by the maker movement, digital media and technologies, with increasing interests in robotics and artificial intelligence. The case examples provided concrete ideas for STEAM implementation, especially in education. While STEAM is no longer a new interdisciplinary subject area, it is still an uncharted territory with much left to explore in teaching, learning and research for all educational levels.

Conclusion

The Biglan/Becher taxonomy provided a useful method for analyzing interrelationships of disciplines in STEAM articles' abstracts. An interesting finding was that, while some combinations of disciplines contained shared Biglan/Becher dimensions, many did not. One might surmise from this finding that STEAM focuses on differences between disciplines as much or perhaps even more than similarities in its disciplinary interrelationships. The unexpected application of art to technology or technology to art can be a powerful source of engagement for students. Higher-education instructors could highlight the Biglan/Becher dimensions in future STEAM instruction if they want students to think about similarities and differences between STEM and art. Overall the analysis yielded interesting insights about STEAM approaches in higher education, making us aware of the often interdisciplinary nature of STEM and art combinations. We consider students' reflection on similarities and differences between STEM and art to be one important interdisciplinary synthesis of knowledge produced by STEAM approaches. Future analysis could examine the full text of the articles in more detail to look for specific examples of ways similarities and differences between STEM and Art are used to further pedagogical goals in higher education interdisciplinary studies.

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BOOK REVIEWS

Book Review: Johnston, Denise, and Megan Sullivan, editors. *Parental Incarceration: Personal Accounts and Developmental Impact*. Routledge, 2016. 177 pp. ISBN (paperback) 978-1-138-18322-3.

Thomas A. Underwood, Boston University

The most euphemistic of modern military phrases may be the term “collateral damage,” the bombing of civilians not intended as targets in air raids. Of the numerous terms one might choose to describe the children of incarcerated parents, this military expression is at first glance the most tempting. Such children, innocent due to their status as minors, are, by virtue of their parents’ imprisonment, betrayed by parental absence; victimized by exposure to a culture of crime and substance abuse; upended by foster care placements and schooling interruptions; torn between their desire for love and feelings of resentment; and paralyzed by shame and guilt. This path-breaking book by Denise Johnston, an expert in child development and a mother once incarcerated, and Megan Sullivan, a writing professor and the child of an incarcerated father, suggests that such damage plays out in myriad ways for children, some of whom succumb to their parents’ world and others of whom survive and transcend that world.

Based upon more than five years of careful, interdisciplinary work in an under-researched area, *Parental Incarceration* fills a critical gap for both clinicians and students. Each of the five chapters—“Relationships,” “Safety and Protection,” “Care and Guidance,” “The Experiences of Parental Arrest, Incarceration and Reentry,” and “Adults Who Experienced Parental Incarceration as Children”—combines a miniature literature review (an accomplishment in itself considering the paucity of literature on the subject) with tentative conclusions based partly on thirty-five autobiographical narratives by incarcerated parents or the children of incarcerated parents whom the coauthors call “contributors.” Johnston and Sullivan do not cite Joan McCord’s seminal 1978 work, “A Thirty Year Follow-up of Treatment Effects,” which demonstrated the critical importance of longitudinal research to ensure that intervention to assist juveniles is helpful rather than harmful to them, but they reinforce McCord’s work by prudently acknowledging the need for scientifically-responsible, long-term research studies focusing on adults who endured all or portions of their childhoods with their parents in prison. Inspired by their own painful experiences yet insisting on scientific evidence, Johnston and Sullivan (a valued colleague of mine for many years) have produced a work to remind social scientists of the need to keep studying intervention, recidivism, and parenting.

Yet *Parental Incarceration*, a call to anyone studying childhood development, is more than a rich secondary resource for criminologists, social workers, and psychologists. The appended firsthand accounts, in which inmates reflect on their parenting skills (or lack thereof) and adult children of prisoners provide what amount to victim impact statements, offer a valuable compendium of primary sources. The contributors’ devastating and inspiring testimonies, from which Johnston and Sullivan mine illustrative quotations for analysis and distillation, cry out for pedagogical application in writing courses, in social sciences classes, and in prison classrooms. The accounts draw readers into a world of abject poverty, alcoholism, crack babies, bad marriages, mental illness, hunger, sexual abuse, prison maternity wards, domestic violence, and homelessness. It is impossible to come away from such narratives without seeing the harmful effect on family structure that results from criminalizing addiction. The stories are equally poignant for documenting their authors’ deep yearning for guidance, for comfort, and—most of all—for family bonds. Indeed, the narratives by inmates, some of whom are serving life sentences for murder, often reveal their authors’ profound acquisition of self-knowledge about both their failures and their love for their children. While the bleakest of the inmate narratives call to mind the observation of eighteenth-century minister Thomas Adam that “Hell is truth seen too late,” the book’s raw narratives make for arresting reading and testify to the human will to survive, to learn, and to adapt.

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BOOK REVIEWS – CONTINUED

Book Review: Coplin, Bill. *The Happy Professor: How to Teach Undergraduates and Feel Good about It*. London: Rowman and Littlefield, 2019. 137 pp. ISBN: 9781475849059 (paperback).

By Lorena Fuentes-Rabe, University of Massachusetts–Boston

Teaching at the undergraduate level may be a challenging task for professors, who are positioned in a place of authority and usually rely on the traditional sequence of assigning readings, lecturing, and assessing students' knowledge. Professors in every discipline experience conflicts between their expectations and student performance, and sometimes assume that students' lack of attention and responsibility are obstacles to what is expected of functional adults with promising career prospects. These discrepancies tend to create unhappiness among professors, who already experience extra pressure to publish, to perform advising work, and to manage administrative activities that take them away from teaching. As an effort to prevent a dynamic that creates anxiety and unhappiness, professors at the undergraduate level are encouraged to make adaptations and evaluate themselves when designing, delivering, and evaluating courses. Such adaptations and self-evaluations are intended to make their lives as scholars more rewarding and happier, while encouraging them to prepare students for careers and citizenship. Yet, this process is not always a success. Bill Coplin calls for readers to recognize that traditional undergraduate teaching involves power dynamics that position professors as the only authority who can dictate what to teach and how to evaluate academic content, and students as mere recipients of knowledge who need to process information. The divide between expectations of professors and those of students, Coplin argues, is mostly attributable to the fact that professors do not perceive undergraduates as functional adults, but as learners who need mediation and guidance in the form of effective organizational tactics and strategies for engagement. Coplin instead calls for professors to "recognize the importance of the individuality of the learner, of skills for careers and citizenship, and of experiential learning" (Coplin 2019, p. 125). While he does not outline familiar guidelines, tactics, or recommendations for effective teaching to guide professors in all fields to greater enjoyment of their practice, he does advance a more radical call for a revolution in undergraduate education, one more responsive to the social and economic changes of modern societies.

The Happy Professor: How to Teach Undergraduates and Feel Good about It begins with the author explaining his long teaching career and what motivates him to share his anecdotal evidence: he describes the effectiveness of his teaching by documenting successful experiences of what students say and do during their college career and after they graduate. Following this, the author skillfully provides a series of roles, strategies, and tactics, grouped into six sections that explain the meaning and importance of exercising transformational adaptations to the curriculum, which, according to the author, could help professors treat undergraduates more like adults and encourage instructors to "be ready to at least entertain the idea that [their] job should be fun and not just building [their] students' knowledge base but helping them find viable career paths and become effective citizens" (Coplin 2019, p. xiii).

In Part 1, Coplin discusses the multiple roles that undergraduate professors are required to perform in order to increase happiness and help students help themselves. The author highlights the role of prioritizing professors' self-interest, happiness, creativity, coaching, advising, and mentoring of students during their college career. The author addresses the significance of these roles as a viable path to becoming a happy undergraduate professor because in this way they create opportunities to satisfy students' individuality and draw a clear mission to their teaching. Furthermore, the author suggests a list of ten skills sets that most undergraduate students should develop and encourages professors to design and evaluate their courses and students' performances based on these skills, which aim at developing students' responsibility, physical health, verbal and written communication, social skills and influence, information gathering talent, use of quantitative tools, cogent formation and response to questions, and problem solving. Coplin outlines these skills and frames them as the foundation for the rest of the book, since he discusses organizational, engagement, remedial, and citizenship tactics by using the skill sets he delineates as reference. Additionally, the author uses the skill sets to promote the development of academic skills, the creation of a sense of independence among students, and the decentralization of professors' power and authority.

In Part 2, Coplin outlines five broad strategies that have had a revolutionary impact on his teaching because they justify the need to see students as adults and to establish criteria for a minimalist approach to teaching whereby students learn the basics and "are capable to go as far as they want" (Coplin 2019, p. 35). A minimalist viewpoint has the potential to generate pressure and fear, but it also produces effective outcomes that highlight the individuality of the learner and create a balance between effective teaching and happy professors. In this section, the author explicitly outlines the effects of what he calls the "closed trinity" to refer to the sequence lecture-readings-test that dominate undergraduate education. Coplin stresses the importance of promoting teaching and learning through experience so students can function

BOOK REVIEWS – CONTINUED

independently and find applications to real life instead of memorizing, repeating, and comparing concepts and theories. In other words, Coplin suggests a pedagogy (or, to use his neologism, andragogy) that moves from dictatorial relationships to a more collaborative stance through which mutual learning and responsibility are shared between professors and students. The following parts in the book (Parts 3 and 4) provide an outline of tactics that professors may use to enjoy their teaching. Each of the tactics the book provides is supported by suggestions on what to do in the classroom, materials needed, and skills sets practiced.

In Part 3, Coplin suggests a list of tactics for achieving educational goals and engaging students in the process of learning. If activities are inviting and engaging, it is likely that professors and students will experience happy and conducive learning environments. Coplin describes engagement tactics, which include activities that are mostly student-centered and require oral discussions in a show-and-tell fashion. Coplin also advises the implementation of small group projects, role-plays or simulation exercises, and lectures that decentralize teacher discourse and allow students to participate more actively. In Part 4, the author describes organizational tactics for consolidating content and facilitating the outcomes discussed in the first three parts. For instance, Coplin argues for the importance of prompting students to talk about their own experiences and incorporating their voices in assignments and research projects, as well as templates that can guide them through the learning process and additional support in the coaching process. Part 5 outlines a series of remediation tactics to help all students perform tasks that fulfill professors' high expectations. The author describes the importance of motivating students to write to communicate and to develop basic computational skills, which are central to college education. Finally, the author provides ideas in Part 6 about how to help students develop citizenship skills that go beyond any ideological constraints and highlight their experience and character, which are essential for careers and citizenship.

The Happy Professor: How to Teach Undergraduates and Feel Good about It is a valuable pedagogical resource for college professors who may experience unhappy teaching careers due to students' seeming lack of engagement and unpreparedness. The book offers pragmatic strategies, roles, and tactics that professors across all disciplines may follow to tackle burdensome activities inherent to teaching, such as grading, dealing with large classes, and being a productive scholar. The book further provides examples of teaching that aid in finding a balance in what is supposed to be covered in undergraduate courses and effective and feasible strategies to make teaching more manageable. The idea of integrating students' experiences and conceiving students as young but functional adults seems to be one of the major contributions of this book. Several of the chapters describe multiple tactics that do not necessarily call for a change in teaching paradigms, but instead for feasible curricular and practical adaptations to guarantee years of happiness and accentuate students' potential to become professional individuals. *The Happy Professor: How to Teach Undergraduates and Feel Good about It* aims to de-centralize professors' discourse within classroom structures without subtracting power and authority, but rather by reframing the role of professors as artists, skill coaches, advisers, and bosses. It further critiques the traditional monologues that take place during lectures in alignment with readings, content, and assessment, which have the tendency to create highly unhappy professors and adverse learning environments. This book promotes undergraduate teaching from a skill-based approach that aims to reduce frustration and anxiety and to prepare students for career and citizenship.

BOOK REVIEWS – CONTINUED

Book Review: Kernahan, C. *Teaching about Race and Racism in the College Classroom: Notes from a White Professor*. Morgantown: West Virginia University Press, 2019. Series: Teaching and Learning in Higher Education. ix + 238 pp. ISBN (paperback): 978-1-949199-24-6.

By Laura C. Driscoll, Boston University

In *Teaching About Race and Racism in the College Classroom: Notes from a White Professor*, Cyndi Kernahan takes an evidence-based approach to present effective pedagogy for facilitating learning about race and racism. Relying heavily on extant literature, she clearly outlines common issues that arise with students, the classroom environment, and the presentation of specific content, as well as providing concrete guidance as to how to move through the tension that so often accompanies studies of racial identity.

Kernahan presents a clear main thesis at the introduction of the book and revisits this consistently as evidence is presented. The crux of the thesis is that teaching the subjects of race and racism is difficult, and educators must accept the struggle as part of the learning process, rather than avoiding it. Each chapter presents a different aspect of the teacher / student relationship as well as the classroom environment and is supported by copious examples grounded in personal experiences of the author, colleagues, and students as well as pertinent evidence for the behaviors presented. The book is organized in a way to be both easily read and referenced later, with each chapter concluding with a summary and an outline of key points.

The early chapters focus on difficult conversations, and how professors' understanding of the material differ from students. Kernahan is able to provide guidance in facilitating students to see past the assumption that, "I am a good person," is sufficient to support the conclusion that "I am not a racist." Moving beyond that facile formulation helps students to develop a more nuanced awareness of participation in a racist structure or society, and of the fact that interpersonal biases (whether outright or implicit) do not tell the whole story of racial identity and experiences. Affirmation theory—where psychological discomfort is experienced when positive self-views are challenged—is introduced, and specific examples are provided to support the use of these techniques in the classroom. Additionally, system justification theory—the unconscious tendency to justify and defend the status quo—is presented in the setting of understanding cognitive dissonance when engaging with this material. Contrast is consistently made between the typical responses of white students and students of color, which is helpful for the reader to understand real world application of the theories.

Kernahan adeptly includes the research behind growth mindset as it applies to belonging in the classroom and works to include mindfulness approaches to enhance readiness to learn and emotional regulation. Guidance for the creation and maintenance of a positive classroom climate to help students manage feelings of guilt, blame, or shame are introduced as ways to manage the gaps in knowledge and facilitate learning for all. Ground rules and clear expectations are encouraged to be outlined and managed so that students can engage with difficult content while having the tools for their emotional and attentional regulation.

The author restates her thesis consistently throughout the book and summarizes key points in a way that allows the reader to reflect and revisit the themes from multiple angles. The book concludes with a summary review of the key highlights from each chapter and then a comprehensive list of resources in the form of an annotated bibliography, providing the reader with not only the research behind her approaches, but tools for actual implementation.

At times, the author is presumptive about the reader's knowledge and presents advanced theory, while other times she expands on more basic topics. Readers who already teach on the subjects of race and racism might find some of the material redundant to their expertise. Expansion on the tools and techniques for those experienced to maintain emotional regulation would be helpful. At the same time, the entry-level information would be more valuable to those looking to expand their own teaching to include topics pertaining to race and racism. The information presented toggles between basic and advanced approaches and could be more useful if one had been selected.

Social progress demands honest discussions and conversations regarding race and racism. It is imperative that educators have the skill set to facilitate difficult conversations. Kernahan excels at providing concrete examples allowing the reader to understand their role. While much of the content can be directed at all, who teach about race and racism, this book is centered on the challenges faced by white faculty when teaching about race, and it is they who will find this most useful.

BOOK REVIEWS – CONTINUED

Book Review: Fiorino, Daniel J. *Can Democracy Handle Climate Change?* Polity Press (2018), 160 pp. ISBN: 978-1509523962

By R. S. Deese, Boston University

First a spoiler, and then a confession. Here's the spoiler: in his book *Can Democracy Handle Climate Change?* Daniel J. Fiorino, the Director of the Center for Environmental Policy at American University, answers this question with an unambiguous "yes." In fact, Fiorino makes a persuasive case that democratic governments are probably best equipped to meet the challenge of climate change because they are "less corrupt, foster more innovation, respond better to public needs . . . and encourage longer-term thinking than occurs in any authoritarian regime" (Fiorino, 113). Now, the confession: the arguments that Fiorino refutes in this book all give me an acute and very unpleasant sense of *déjà vu*. In fact, whenever I hear someone holding forth on how protecting the environment requires abandoning democracy, I feel like am being forced to watch a terrible rerun from the 1970s. And, just as I expected, Fiorino begins his survey of anti-democratic environmentalism with some of the most prominent thinkers of that period.

During those halcyon days when Richard Nixon was president and Paul and Anne Ehrlich's *The Population Bomb* was still on the paperback shelves at bookstores, a growing number of neo-Malthusian intellectuals made a very public case that environmental protection could only be achieved through the abandonment of individual rights and a bold embrace of authoritarian rule. As Fiorino documents, one of the first prominent environmentalists to part ways with liberal democracy was Garrett Hardin, who argued that the state should take coercive control of human reproduction. Fiorino analyzes the implications of Hardin's prescription for state control of human reproduction and concludes, "It is hard to imagine coercive measures of this form, on the scale proposed, occurring in modern democracies" (Fiorino, 38). In addition to analyzing the implications of Hardin's neo-Malthusian authoritarianism, Fiorino surveys other thinkers who toyed with the idea of environmental autocracy, such as the prominent economist Robert Heilbroner, who speculated in his 1974 book *An Inquiry into the Human Prospect* that democracy might not be capable of adequately addressing the ecological crises and resource disruptions that lay ahead in the next two decades, and could well be replaced by a new kind of autocracy that would combine a "religious" orientation with a "military discipline" in order to ensure a stable socioeconomic order (Fiorino, 38). The political scientist William Ophuls also predicted in his 1977 book *Ecology and the Politics of Scarcity* that democracy had no conceivable chance of survival in the coming age of overpopulation and resource depletion. He predicted that if human civilization were to endure, it would have to embrace a sort of technocracy, or rule by experts, managed by an elite of "ecological mandarins" (Fiorino, 37).

When he considers more recent thinkers who have cast doubt upon the ability of democracy to weather the mounting crisis of climate change, Fiorino first examines the arguments of the noted ecologist James Lovelock, who speculates that we may have to suspend democracy in order to deal with climate change, just as democracy has sometimes been temporarily suspended during war. Fiorino doubts Lovelock's claim that such a suspension of democracy could be temporary, because climate change is a deep-rooted and complex process that we can expect will affect us for the foreseeable future: "The problem is that this will be a perpetual war. Climate change will always be with us" (Fiorino, 36). In the face of such a long struggle, authors David Shearman and Joseph Wayne drop any rationalizations about temporarily suspending democracy in their book *The Climate Challenge and the Failure of Democracy* and appear to embrace the prospect of long-term authoritarianism modeled on the government of Singapore (Fiorino, 41).

In response to these critics and others, Fiorino explains that any regime that suppresses political difference through autocracy will prove too rigid to respond to the unpredictable future that climate change has in store for us. For this reason, "climate change cannot be managed by a denial of politics in favor of some form of ecological technocracy" (Fiorino, 43). And, while advocates of democracy are often labeled as naïve, Fiorino detects a more fatal naïveté behind the calls for ecological authoritarianism that have been with us for half a century now. Critics of democracy, he observes, "seem to envision an idealized, benign, ecological autocracy that places climate action above other social and economic priorities and makes the tough choices that democracies are incapable of making. But what does the evidence tell us? Actual cases of environmental authoritarianism are hard to find" (Fiorino, 53). Fiorino backs up his argument with a very thorough analysis of contemporary governments, in which autocracies lag far behind in controlling greenhouse gas emissions, protecting forests, and advancing renewable energy (Fiorino, 58–61). Revisiting the issue of population growth that sparked the vogue for ecological authoritarianism in the 1970s, Fiorino presents evidence supporting the argument that more civil rights, especially for girls and women, offers a better path to sustainable population and greenhouse gas reductions: "Overcoming barriers to educating girls reduces family size and population growth . . . with potentially 60 billion tons of avoided emissions" (Fiorino, 94).

BOOK REVIEWS — CONTINUED

When one considers broader history of both modern democracy and environmentalism, it is a little bit surprising that so many came to view them as incompatible in the 1970s, and that some continue to do so today. In fact, the book that started the modern environmentalist movement, Rachel Carson's 1962 bestseller *Silent Spring*, serves as a textbook example of the democratic process yielding tangible environmental progress. As an experienced naturalist and a concerned citizen, Rachel Carson used the First Amendment to awaken the public to the dangers posed by the overuse of chlorinated hydrocarbons such as DDT. By offering a detailed critique of the talking points presented by self-proclaimed experts in the chemical industry and at the Department of Agriculture, she ignited a decade-long debate that ended in the elimination of the use of DDT in the United States in the early 1970s. Many naturalists credit the domestic ban on DDT with allowing the recovery of bald eagle populations in North America during the decades that followed. The return of this living symbol of our nation could be perhaps be taken as a sign that a commitment to environmental sustainability and an abiding faith in the institutions of democracy may not be so incompatible as some pessimists have supposed.

While we should never be complacent about our system of government, we should recognize that setting aside our longstanding democratic traditions on the unproven hope that an authoritarian government might be more effective at dealing with climate change presents a tremendous risk, and not only for ourselves. As Fiorino concludes: "Exposing future generations to the harms caused by coercive, corrupt, and self-serving governance on the basis of muddled arguments about the inability of democracy to address climate change would be a colossal mistake" (Fiorino, 116–117). Here he articulates what may be his strongest argument against the recurring temptation to embrace authoritarian rule in the face of a crisis. Democracy, once abandoned, is not easily restored.

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