Journal of Interdisciplinary Studies in Education is aimed at those in the academic world who are dedicated to advancing the field of education through their research. JISE provides a range of articles that speak to the major issues in education across all content areas and disciplines. This journal is peer-reviewed through a blind review process that utilizes a national and international editorial board and peer reviewers. JISE aspires to advance research in the field of education through a collection of quality, relevant, and advanced interdisciplinary articles in the field of education. For more information, visit www.ojed.org/jise

Journal of Interdisciplinary Studies in Education

None, Vol. 10 No. 1 (2021)

Volume 10/No 1 | May 2021

Journal of Interdisciplinary Studies in Education

https://www.ojed.org/jise/

STAR SCHOLARS NETWORK

STAR Scholars Network titles are also available as e-books.

Volume 10, Issue No 1 (2021)

JOURNAL OF INTERDISCIPLINARY STUDIES IN EDUCATION

A Biannual International Referred Journal

ISSN: 2166-2681 Print/ ISSN: 2690-0408 Online
Access this journal online at; http://ojed.org/jise

OJED
OPEN JOURNALS IN EDUCATION

STARSCHOLARS
NETWORK

Published by: STAR Scholars Network

Disclaimer

Facts and opinions published in *this journal* express solely the opinions of the respective authors. Authors are responsible for their citing of sources and the accuracy of their references and bibliographies. The editors cannot be held responsible for any lacks or possible violations of third parties' rights.

Editorial Board

OJED
OPEN JOURNALS IN EDUCATION

Journal of Interdisciplinary Studies in Education
Volume 10, Issue No 1 (2021)
http://ojed.org/index.php/jise

- Ketterlin Geller Leanne, Southern Methodist University
- Kimberly Kappler Hewitt, University of North Carolina Greensboro
- Lisa Merriweather, University of North Carolina at Charlotte
- Lydia Kyei-Blankson, Illinois State University
- Manhong Lai, the Chinese University of Hong Kong
- Mari Koerner, Arizona State University
- Mariano Narodowski, Universidad Torcuato Di Tella, Argentina
- Martha McCarthy,Loyola Marymount University
- Maysaa, Barakat, Florida Atlantic University
- Michael Owens, Brigham Young University
- Michele M. Welkener, University of Dayton
- Paula Cordeiro, University of San Diego
- Peggie Constantino, The College of William & Mary
- Rosalyn Eder, University of Fribourg (Switzerland)
- Rosita López, Northern Illinois University
- Shantalea Johns, Wayne State University
- Shuhua Chen, Shanghai Jiao Tong University
- Stephen Kotok, St. John's University
- Tiedan Huang, Fordham University
- Tomika Ferguson, Virginia Commonwealth University
- Valerie Hill-Jackson, Texas A&M University
- Venus E. Evans-Winters, Illinois State University
- Victoria Sherif, Wichita State University
- William Hill, Wayne State University
- Yi-Chin Wu, Kent State University
- Terrell L. Strayhorn, LeMoyne-Owen College

Editorial Review Board (2019-2021)

- Alice M. Jackson, Morgan State University
- Alvin L. Crawley, George Mason University
- Amrit Thapa, University of Pennsylvania
- Anne Corwith, University of Maryland
- Bal Krishna Sharma, University of Idaho
- Bala Nikku, Thompson Rivers University
- Basu Sharma, University of New Brunswick
- Becky Atkinson, The University of Alabama
- Carol Griffiths, University of Leeds, UK
- Damodar Khanal, The University of Manchester
- Derya Ucuz, Lamar University
- Dinesh Paudel, Appalachian State University
- Ellen Carm, Oslo Metropolitan University
- Felicia A. Shanklin, Southern New Hampshire University
- Harry Bhandari, University of Maryland Baltimore County
- Jason Bryant, Auburn University
- Jeet Bahadur Sapkota, University of Tsukuba
- Jesus ‘Chuey’ Abrego, The University of Texas Rio Grande Valley

Aims & Scope

Journal of Interdisciplinary Studies in Education is aimed at those in the academic world who are dedicated to advancing the field of education through their research. ***JISE*** provides a range of articles that speak to the major issues in education across all content areas and disciplines. The Journal is peer edited through a blind review process that utilizes a national and international editorial board and peer reviewers. JISE aspires to advance research in the field of education through a collection of quality, relevant, and advanced interdisciplinary articles in the field of education.

JISE (ISSN: *2166-2681)* is published bi-annually by the Center for Excellence in Education at Arkansas State University. The journal publishes interdisciplinary and multidisciplinary theoretical and empirically based-research articles and book reviews related to all aspects of teaching and learning in K-12 and Higher Education. JISE serves as an intellectual platform for the research community. The journal does not have an article submission fee.

The journal is listed/indexed with all major databases.

Among the topics that *Journal* focuses on are:

- Educational leadership and culture of the academy
- Intercultural communication, intercultural relations, student involvement
- Globalization, internationalization, cultural influences
- Internationalization of teaching, learning and research
- Multiculturalism, diversity, and individualism

Published bi-annually, the journal encourages submission of manuscripts by US and international scholars that use quantitative or qualitative methods. Articles combine disciplinary methods with critical insights to investigate major issues shaping national, state, and institutional contexts.

For questions –

Editor-in-Chief: Amany Saleh, Ph.D. E-mail: asaleh@astate.edu

Cross-Cultural Narratives

Stories and Experiences of International Students

Edited by Ravichandran Ammigan (2021)

Praise for this book

Through rich and engaging stories, *Cross-Cultural Narratives* offers important personal accounts of the challenges and triumphs of international students navigating diverse and foreign academic and cultural landscapes. This inspiring and thought-provoking collection adds to other noble qualitative documentation of the international student experience.

Anthony L. Pinder, EdD
Associate Vice President for Academic Affairs – Internationalization & Global Engagement
Emerson College, USA

***

This is a great resource for researchers, university staff, and students to (re)-situate themselves in the day-to-day reality of international students at U.S. universities. In our data driven world abounding with echo chambers, it is critical that we as humans continue to nurture and attend to diverse individual narratives of challenge, success, failure, humor, learning, shock, community, belonging, and resiliency. Let us listen to the next generation as they share the ties that bind us across differences.

Nelson Brunsting, PhD
Director, RAISE Center
Research Associate Professor, International Studies
Wake Forest University, USA

***

This edited collection of stories offers insight into the concrete details of US life that international students find confounding: that bread is soft and sweet, that everyone asks, "How are you?" but no one wants to know the answer, that fellow students don't know the metric system, and that people are startled if you kiss them on the cheek in greeting. All of these examples, in the students' own voices, will be valuable to practitioners and faculty who want to understand how life on and off campus appears from multiple perspectives.

Martha C. Merrill, PhD
Associate Professor, Higher Education
Kent State University, USA

Routledge Studies in Global Student Mobility Series

This Routledge Series offers a scholarly forum for original and innovative research to understand the issues and challenges as well as share the best practices related to international student mobility in K-12 and beyond, education abroad, and exchange programs globally that creates a professional network of researchers and practitioners. Submit your proposal via emails.

Series Editors
Dr. Chris R. Glass & Dr. Krishna Bista

For questions and submission, email at Krishna.Bista@morgan.edu

---

Published Titles

Inequalities in Study Abroad and Student Mobility

The Experiences of International Faculty in Institutions of Higher Education

International Students in Community Colleges

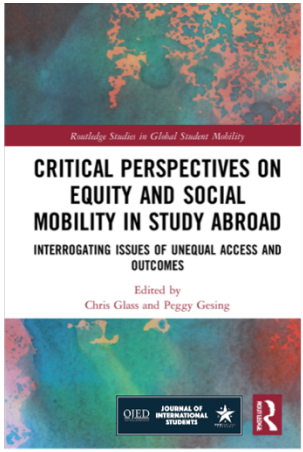
Critical Perspectives on Equity and Social Mobility in Study Abroad

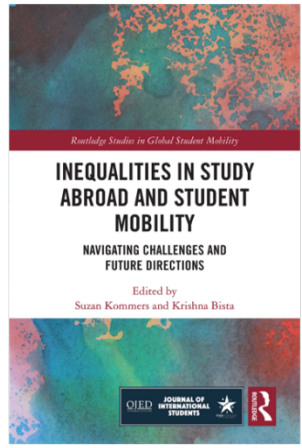
Online Teaching During COVID-19 in Global Higher Education

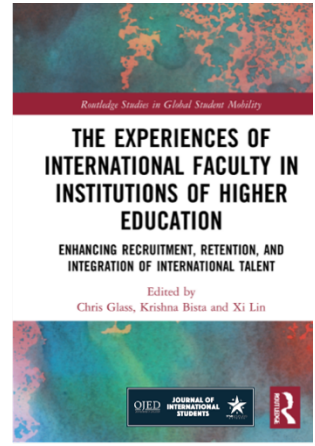
International Student Support and Engagement

Impact of COVID-19 on Global Student Mobility and Higher Education

Recent Publications







Open Journals in Education (OJED) publishes high quality peer reviewed, open access journals based at research universities. OJED uses the Open Journal System (OJS) platform, where readers can browse by subject, drill down to journal level to find the aims, scope, and editorial board for each individual title, as well as search back issues. OJED journals are required to be indexed in major academic databases to ensure quality and maximize article discoverability and citation. Journals follow best practices on publication ethics outlined in the COPE Code of Conduct. Explore our OJED Journals at www.ojed.org

***

A. Noam Chomsky Global Connections Awards celebrate the power of human connections. The awards recognize distinguished service to the global mission of the STAR Scholars Network. Several individuals with a deep impact on advancing global, social mobility are recognized every year.

OJED
OPEN JOURNALS IN EDUCATION

Volume 10, Issue No 1 (2021)
Journal of Interdisciplinary Studies in Education
ISSN: 2166-2681Print 2690-0408 Online
https://ojed.org/jise

CONTENTS

OJED
OPEN JOURNALS IN EDUCATION
ISSN: 2166-2681 Print/2690-0408 Online
Volume 10, Issue 1 (2021), pp. i-v

http://ojed.org/jise

The Critical Role of Global and Culturally Responsive Leadership for Higher Education in the 21st-Century

D. Eric Archer
Yuqian Zhang
Western Michigan University, USA

ABSTRACT

This short essay discusses the critical role of global and culturally responsive leadership for higher education in the 21st-Century. Using the concept of Complex Adaptive Systems (CAS), global and culturally responsive leadership should be emergent and interactive to respond in an agile way to the fast-paced, volatile context of the knowledge era.

Keywords: culturally responsive leadership, global leadership, higher education

"We are on the precipice of an epoch," in which 21st-Century organizations are facing a complex, competitive landscape driven largely by globalization and the technological revolution (Hitt, 1998, p. 218). As such, Bikson et al. (2003) urged universities to develop a global leadership curriculum, based on their prediction of a future shortage of global leaders, whether in the public, for-profit, or nonprofit sectors. Yet, most universities have been slow to develop such a curriculum (Osland et al., 2018), with the focus of international education efforts being primarily confined to student mobility (Fischer, 2019). The eager embrace of global education among colleges in the US often lacks attention to basic tenets, such as international knowledge, intercultural competence, and global citizenship. In the contemporary

context of nationalism and populism, the views of the well-educated, within and beyond the academy, are not shared by all.

Globalization has resulted in the emergence of complex global socio-ecological systems that do not operate in predictable ways and give rise to nonlinear change and conditions of uncertainty (Young, 2017). Systems thinking offers a lens to assist global leaders in responding to these growing organizational complexities by shifting leadership from a traditional bureaucratic model to a more adaptive model (Morgan, 2006; Senge, 1990). Using the concept of Complex Adaptive Systems (CAS), global and culturally responsive leadership should be emergent and interactive in order to respond in an agile way to the fast-paced, volatile context of the Knowledge Era (Uhl-Bien et al., 2007).

A critical stance on globalization juxtaposes multiple ways of knowing and contradictory realities within a single discourse, with the intent to make citizens' preexisting frames and metaphors open to discussion and amenable to change (Folkman, 2006). Culturally responsive frames push leaders from a mindset of simply "thinking about leadership" for social justice toward the habits of "thinking about leadership practice" and thinking about qualities that result in social justice and equity (Santamaría & Santamaría, 2016, p. 6). Rather than having diversity reveal limitations in our leadership, university graduates need to practice culturally responsive leadership, which can inspire transformation, improvement, and achievement for all learners (Santamaría, 2014).

As more graduates have moved around the globe, the increase in intercultural interactions has resulted in concerns about cultural, social and religious conflicts (Spring, 2008). Contemporary views on global culture are often characterized not by diversity but by individualism, Western values, and homogenization in general, triggering numerous cultural reactions against this process (Finger, 2005). Globalization requires the infusion of non-Western and indigenous perspectives into our thinking about learning (Saudelli et al., 2012). Bush et al. (1998) stressed that "all theories and interpretations of practice must be 'grounded' in the specific context … before they can be regarded as useful" (p. 137). Further, Walker and Dimmock (2002) warned against "decontextualized paradigms" in researching leadership, which "has developed along ethnocentric lines, being heavily dominated by Anglo-American paradigms and theories" (pp. 1-2). They argued that the field of leadership education is lagging conceptually and epistemologically behind the globalization of policy and practice, leading to the need for a comparative branch of study that is rigorous and reflects a cross-cultural dimension.

Finally, to successfully navigate the postmodern world, college and university graduates must be able to engage in dialectical thinking; the acceptance of inherent contradictions and alternative truths (Merriam & Caffarella, 2007). Kegan (1994) argued that the pressure to engage in dialectical thinking comes from our need as adults to respond to culture's curriculum, defined as the mental demands the postmodern world places upon us. The key idea is that the parties in conflict should move beyond trying to "win" for a specific position. Rather, what is needed is the recognition that "the other side will not go away, [and] probably should not" (Kegan, 1994, p. 319).

Our culture determines what we know about others, and vice versa, others' cultures influence what they know about us (Schein, 2010); this truth has important implications for foreign policy, intelligence, media, business, and education. Meaningful cross-cultural relationships require rejecting surface-level, national stereotypes and caricatures portrayed in the popular press and rather, prioritizing learning to communicate at a deeper level through a shared understanding of values (Graen, 2008). For the global leader, "It takes a leap of the imagination to understand all culture as multiple and relational, to understand one's own society as just another culture, albeit one's own, and to see life as others see it" (Marginson, 2016, pp. 115-116).

REFERENCES

Bikson, T., Treverton, G., Moini, J., & Lindstrom, G. (2003). *New challenges for international leadership: Lessons from organizations with global missions*. RAND Corporation.

Bush, T., Qiang, H. Y., & Fang, J. M. (1998). Educational management in China: An overview. *Compare: Journal of Comparative and International Education, 28*(2), 133-140. https://doi.org/10.1080/0305792980280202

Finger, M. (2005). Globalization. In L. M. English (Ed.), *International encyclopedia of adult education* (pp. 269–273). Palgrave Macmillan.

Fischer, K. (2019, March 28). How international education's golden age lost its sheen. *Chronicle of Higher Education*. https://www.chronicle.com/interactives/2019-03-28-golden-age

Folkman, D. V. (2006). Framing a critical discourse on globalization. In S. B. Merriam, B. C. Courtenay, & R. M. Cervero (Eds.), *Global issues and adult education: Perspectives from Latin America, Southern Africa, and the United States* (pp. 78-89). Jossey-Bass.

Graen, G. B. (2008). Linking Chinese leadership theory and practice to the world: Leadership secrets of the Middle Kingdom. In C. C. Chen & Y. T. Lee (Eds.), *Leadership and management in China: Philosophies, theories, and practices* (pp. 272–297). Cambridge University Press.

Hitt, M. A. (1998). 1997 Presidential address: Twenty-first-century organizations: Business firms, business schools, and the academy. *The Academy of Management Review, 23*(2), 218–224. https://doi.org/10.5465/amr.1998.533223

Kegan, R. (1994). *In over our heads: The mental demands of modern life*. Harvard University Press.

Marginson, S. (2016). *The dream is over: The crisis of Clark Kerr's California idea of higher education*. University of California Press.

Merriam, S. B., & Caffarella, R. S. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). Jossey-Bass.

Morgan, G. (2006). *Images of organizations* (Updated Edition). Sage.

Osland, J., Li, M., Petrone, M., & Mendenhall, M. (2018). Global leadership development in the university setting and future directions for advancing global

leadership research. *Advances in Global Leadership, 11*, 347–366. https://doi.org/10.1108/S1535-120320180000011010

Santamaría, L. J. (2014). Critical change for the greater good: Multicultural perceptions in educational leadership toward social justice and equity. *Educational Administration Quarterly, 50*(3), 347–391. https://doi.org/10.1177/0013161X13505287

Santamaría, L. J., & Santamaría, A. P. (2016). *Culturally responsive leadership in higher education: Promoting access, equity, and improvement*. Routledge.

Saudelli, M. G., Mogadime, D., & Taber, N. (2012). A conversation with Sharan Merriam: Globalization and adult education. *Brock Education, 22*(2), 3–10. https://doi.org/10.26522/brocked.v22i2.346

Schein, E. H. (2010). *Organizational culture and leadership* (4th ed.). Jossey-Bass.

Senge, P. (2006). *The fifth discipline: The art and practice of the learning organization*. Doubleday.

Spring, J. (2008). Research on globalization and education. *Review of Educational Research, 78*(2), 330–336. https://doi.org/10.3102/0034654308317846

Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The Leadership Quarterly, 18*(4), 298–318. https://doi.org/10.1016/j.leaqua.2007.04.002

Walker, A., & Dimmock, C. (2002). *School leadership and administration: Adopting a cultural perspective*. Routledge.

Young, O. R. (2017). *Governing complex systems: Social capital for the Anthropocene*. MIT Press.

Bios

D. ERIC ARCHER, Ph.D., is an associate professor of educational leadership in higher education in the Department of Educational Leadership, Research, and Technology at Western Michigan University. His research interests include issues of diversity and inclusion in postsecondary education with an emphasis on the internationalization of higher education. Email: eric.archer@wmich.edu

YUQIAN ZHANG, M.S., is a doctoral student in the Educational Leadership program at Western Michigan University. Her research interests include global leadership and the internationalization of higher education.
Email: yuqian.zhang@wmich.edu

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

Volume 10, No 1 (2021), pp. 1-15
Journal of Interdisciplinary Studies in Education
ISSN: 2166-2681 Print 2690-0408 Online
https://ojed.org/jise

Teaching and Learning as *CANVAS Ambassadors* During the COVID-19 Pandemic: Faculty Experiences at One Historically Black College and University

Laura Dorsey-Elson, Celeste Chavis, Kesha Baptiste-Roberts, Krishna Bista, Ahlam Tannouri, Akinyele Oni, Michelle Rockward Sharlene Allen-Milton, Antony Kinyua, Natasha Pratt-Harris, Daniel J. Brunson, and Steve Efe
Morgan State University, USA

ABSTRACT

In this article, we explore the experiences and self-reflections of faculty as CANVAS Ambassadors at Morgan State University, a Historically Black University in Baltimore, Maryland, during the COVID-19 global pandemic. The university transitioned to remote/online instruction using the CANVAS™ learning management system in March of 2020. The findings include several themes and lessons: the positive impact on colleagueship when faculty train faculty, the ability to close technology gaps, and the opportunity to broaden overall faculty teaching and learning development at the university. The paper suggests an example of transferable learning experience to other universities and suggests future research plans in preparation for unpredictable teaching and learning in education.

Keywords: CANVAS Ambassador, Learning Management System, COVID-19, Historically Black College and University, Faculty Experience

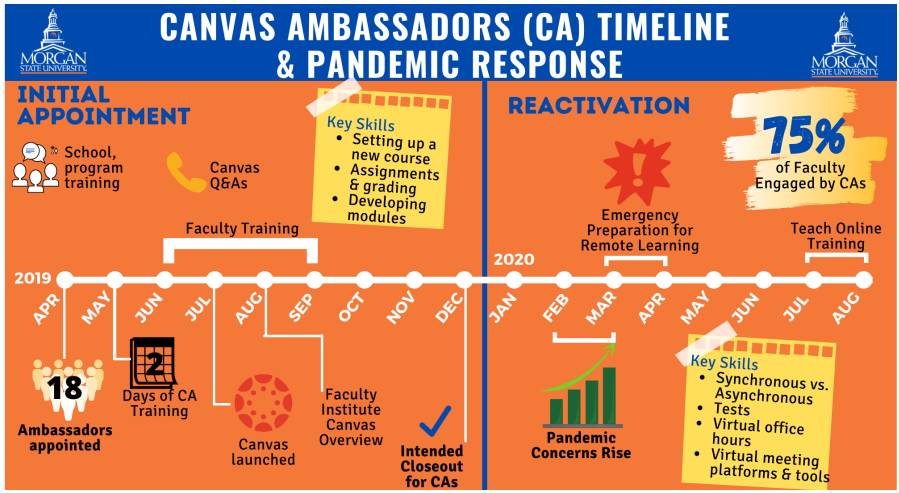
INTRODUCTION

In the early spring of 2020, university and college faculty around the world were in the midst of familiar and eventful semesters. At the time, midterms were in progress, commencements were in planning, campuses were abuzz with the usual activities, and news about a mysterious and deadly illness occurring in eastern parts of the world were starting to be heard. Many felt the illness was far away and not an immediate concern. The terms COVID-19, quarantine, and social distancing were not commonplace in the lexicons of a majority of faculty, students, administrators, and staff, nor was the idea of emergency remote teaching and distance learning. This changed in an instant. By the middle of March, nearly all colleges and universities around the world, including the nearly 5,300 in the United States, were quickly transitioning into a completely new state of operation with remote learning and work becoming the norm. Morgan State University, a Historically Black College and University (HBCU) located in Baltimore, Maryland, was among them.

Morgan State University (MSU) has a valued historic reputation for excellence in teaching, intensive research, effective public service, and community engagement. Its administrators, staff, and faculty dedicate themselves daily to preparing diverse and competitive graduate and undergraduate students for success in a competitive global and interdependent society. MSU is a medium-sized campus that enrolls approximately 8,000 students, many of whom are first-generation college students, in its ten colleges and schools. It offers degrees at the undergraduate, masters, and doctorate levels. Recently, MSU celebrated its 152nd anniversary, and is legislatively designated as the State of Maryland's Pre-eminent Public Urban Research University. The Mission of MSU is to serve the local community and the larger society as an intellectual and creative resource (McLane-Davison et al., 2019).

Excellence in teaching lies at the forefront of the MSU vision statement. The university uses the CANVAS Learning Management System (LMS) to offer academic courses. This platform was approved by both faculty and students because of its ease of use and its ability to facilitate a high-quality active learning and monitoring environment for both face-to-face and online classes. Simultaneously with the adoption of CANVAS LMS, the university administration established a cutting-edge *CANVAS Ambassadors* (CA) program based on the train-the-trainer model, an incredibly useful tool for professional development and training. This involved the nomination and extensive training of faculty representatives in the functionality and applications of CANVAS LMS. These *Ambassadors* would then similarly train the faculty, staff and in some cases administrators in their College or School in exchange for a small stipend. This multi-staged training process

began in June of 2019. By the spring of 2020, most employees, in particular, the faculty, had received substantial CANVAS training and were uniquely prepared for the dramatic shift to emergency remote teaching and learning. The below figure outlines the journey of MSU *CANVAS Ambassadors* from the beginning of the program to MSU preparation for the uncertainty of the 2020-2021 academic year, given the persistence of the COVID-19 pandemic.



MSU's *CANVAS Ambassadors* consist of full-time faculty of varying ranks. They are excellent teachers in their own classrooms and are also dedicated to learning best practices in online teaching pedagogy including the mastery of learning management systems like CANVAS. They must balance their research agendas and tenure pursuits with their commitments, as selected ambassadors, to the role of a professor teaching fellow professors. This commitment translates into a great deal of training, emails, phone calls, and in-person coaching on various aspects of the teaching and learning CANVAS features (Smith et al, 2020). The *CANVAS Ambassador* role at MSU is thus both demanding and rewarding. Moreover, MSU *CANVAS Ambassadors* became essential when all classes shifted to distance learning. Their peer faculty interaction activity increased exponentially, and they were required to be experts in a new LMS as well as in discipline-specific software and video conferencing platforms. Thus, those faculty who held this role became a primary driving force for continuing teaching excellence at MSU during this global pandemic, and in doing so, the faculty experienced, accomplished, and learned a great deal. This article will examine the unique experiences of MSU *CANVAS Ambassadors* during the shift to emergency remote teaching and offers some valuable lessons learned.

LITERATURE REVIEW

At the time of writing this article, the development of a body of literature specific to the response to the COVID-19 pandemic within higher education had only just begun. Throughout the beginning of the Spring Semester of 2020, colleges and universities were temporarily closed and started, at a rapid pace, exploring options and alternatives to continue teaching and learning. Administrators and faculty members frequently called urgent meetings, assessed online resources, and ran several surveys to ensure a smooth transition to educational delivery and student learning (Baker, 2020). This sudden shift to online learning or remote instruction was one of best possible alternatives --at schools and colleges, whether big or small, whether private or public, whether in the United States or elsewhere. To support faculty during the pandemic, Baker (2020) has recommended opportunities for social and emotional support along with peer to peer learning by a) creating a faculty community on social media as a forum to share tips, concerns, and strategies, b) organizing disciplinary/thematic programs using resources such as Zoom or Google Meet or Microsoft Teams; and c) re-envisioning career development policies and practices to address the needs and experiences/well-being of vulnerable students and faculty (disabled, underprivileged, non-tenured, less technologically skilled). The MSU *CANVAS Ambassadors* exemplified Baker's recommendations.

At the beginning of the pandemic, the major focus of the faculty and university leadership was how to continue curricula and connect with students when everything was shut down. As McMurtrie (2020) pointed out, faculty struggled "with two basic teaching challenges: How to modify their course content when assignments become impossible to do from home, and how to keep their students engaged at a time when everyone is operating under a lot of stress" (para 2). In addition to faculty, administrative staff including the senior leadership team -- presidents, provosts, deans-- explored options and alternatives for remote operations during this pandemic and "highlighted the role of technology as an institutional backbone" (Blumenstyk, 2020, para 4).

Some argue that students endured a higher level of psychological distress during the Spring semester of 2020, as compared with the previous semester, to keep up with course work, assignments, internships, and research experiences while balancing the demands of family and employment. According to the Active Minds Report (2020), 80% of college students reported that the COVID-19 crisis has negatively affected their mental health and 20% of them were "significantly worsened" during this time. In the *Chronicle of Higher Education*, Brown, and Kafka (2020) documented, through several interviews, the intense sadness, isolation, and anxiety of college students during the pandemic.

Many reports (Miller, 2020; Supiano, 2020; Zhu & Liu, 2020) indicated that faculty and administrators were successful in identifying essentials for students and setting up ways to keep moving forward as the pandemic progressed. For example, Miller (2020) indicated that a) faculty members were provided with support to teach fully or partially online or to teach remotely, and their interactions with students were rewarding; b) a transition from spring semester to summer semester or fall semester was aligned with programs and materials (syllabi, readings); and c) institutions sought additional resources and external supports from the government, private, and other federal agencies to ensure continued smooth operations of their institutions.

Although many colleges and universities had to cancel classes for a couple of days or even weeks in March of 2020 when the pandemic appeared, that was deemed to be the best transitional approach to assess the resources and seek alternatives. These institutions posted information and instructions on their websites on how to remain healthy and maintain social distance as well as how to teach and learn in the time of COVID-19. Pinsker (2020, last para) has beautifully summarized the condition during pandemic this way:

> The experience of Covid-19 taught me we must learn to live with illness and extreme uncertainty, and we must do so with resilience and grit. Experimentation, learning, intellectual curiosity and engagement, communication, compassion, and honesty — the hallmarks of a liberal education —are essential to pass over to the other side.

METHOD AND RESULTS

We collected data from thirteen *CANVAS Ambassadors* during the final week of course instruction in Spring 2020. The survey was administered online and consisted five open-ended questions focused on activities performed, sources of enjoyment working with faculty, and challenges encountered working with faculty in their role of *CANVAS Ambassador*. Additionally, there was one closed-ended question on the number of faculty members with whom the *CANVAS Ambassador* interacted with during the pandemic. Through general thematic analysis (Braun & Clarke, 2006) which emphasizes identifying, analyzing and interpreting patterns of meaning (or "themes") within responses, five themes emerged.

CANVAS Ambassadors were essentially called upon to provide a sense of calm during an incredibly high-stress moment for all Morgan State faculty. There was a tremendous amount of work to be accomplished. Faculty transferred thousands of undergraduate and graduate course materials to the remote learning modality in a matter of days. *Ambassadors* approached their

challenge to support the faculty with a consistent "can do" demeanor. Amidst the final transition from face-to-face to remote/online instruction, *CANVAS Ambassadors* did enjoy aspects of the work, as evidenced in two key themes.

Theme 1: New Level of Collegiality

During the pandemic, the transition to remote/online instruction engaged faculty in ways that they had never before experienced. *CANVAS Ambassadors,* as faculty themselves at the same institution, noted what seemed to be a new level of depth to the colleagueship with their fellow faculty when asked to partner with them during such a high-demand time. Some of the survey respondents, in addressing this theme, stated that they enjoyed and valued the increased quality of their faculty peer relationships. For example, one faculty ambassador said, "Hearing personal stories of each faculty member and their transition to online learning," Another faculty ambassador added, "Speaking with them and learning about them and their interests; it provided a great platform for higher level of personal engagements and becoming friends from the workplace, particularly with colleagues from different programs and units."

Such responses indicated that faculty revealed more about themselves and their need for professional development specific to online instruction. In doing so, they enhanced their professional relationships and did so across ranks and disciplines. With the inevitable vulnerability that the COVID-19 pandemic brought to higher education, new connections, and the true satisfaction arising from *CANVAS Ambassadors'* ability to help their colleagues, emerged.

Theme 2: Multiple Roles of Teacher, Helper, Learner, Problem-Solver

In addition to the new level of collegiality that MSU *CANVAS Ambassadors* reported, the data also revealed that they experienced an intersection of a multitude of roles when engaging with their faculty colleagues. One respondent emphasized the teacher role when stating "I did enjoy the opportunity to talk about teaching beyond the technical nuts-and-bolts of how to use the LMS or university procedures, even though we were constrained by the needs of emergency remote instruction." Another noted the problem-solver role that the *CANVAS Ambassadors* were called to fulfill by writing that they enjoyed "learning the problems that each colleague faced and being able to assist where possible." Finally, another respondent noted enjoyment in "...helping fellow colleagues in teaching and learning activities." What appeared to be true for many ambassadors was that they found themselves moving fluidly across each of the ambassador roles and enjoyed the unpredictability of what would be asked of them from each interaction.

Theme 3: Answering the Call(s)

In March, the Provost's Office at the university called upon *CANVAS Ambassadors* to support the Academic Technology Services and Center for Excellence in Teaching and Learning in helping faculty quickly convert face-to-face courses online. The tasks presented to *CANVAS Ambassadors* were to (1) conduct a weekly webinar for faculty and (2) be available during business hours to answer email or consult with colleagues. The results of the ambassador survey showed that the latter task dominated their duties. Faculty respondents shared the following challenges including, "long personnel phone calls," "issues dealing with their family, classes, and other pressures of deaths and illness in families," and "pedagogical advice."

Faculty had two weeks including Spring break to prepare their courses. The initial shift in the instructional delivery was met with some resistance and uncertainty by faculty and students alike. Various forms of communication took place between the *CANVAS Ambassador*s and faculty members. In the beginning, many ambassadors conducted live and pre-recorded webinars for faculty. However, due to time limitations and unique needs, one-on-one sessions between faculty and *CANVAS Ambassador*s were preferred. Some questions were answered via email, but the majority of questions were best served via phone or web. Several ambassadors noted that they had long one-on-one phone conversations providing guidance on how to set up various aspects of courses or to offer pedagogical advice. Web Conferencing with screen sharing was preferred during these sessions to enable quick problem-solving. Ambassadors noted that flexibility was necessary as their colleagues were balancing classes and personal issues, such as homeschooling children and the pressures of death and illness due to the pandemic.

Theme 4: Identifying Key Elements of Emergency Remote Learning Pedagogies

The quick transition to online delivery required ambassadors to identify the most pertinent elements for immediate success. Initial discussions centered on the pros and cons of asynchronous and synchronous learning, syllabus modifications, and student engagement. Since CANVAS was new to many faculty, there was disparate use of the learning management system. Ambassadors assisted with the course's organization; some instructors chose weekly modules and others preferred topic-based modules. Some programs faced special challenges. Laboratory, project-centric, art and design, and practicum courses were presented with unique challenges due to the need for specialized equipment or software, person to person interaction, and workplace restrictions. *CANVAS Ambassadors* stated the following challenges: "Rushing to put incoherent pieces together to create a course from scratch for those who never used CANVAS before," "The setting of exams

and assignments (within CANVAS)," and "Being stuck" in the old styles of teaching and delivery of materials."

Effectively engaging and assessing students required pedagogical innovation, adaptability, and technology. Some faculty were behind with use of technology and resources pertaining to their subject matter. Delivery was also hindered by not having the appropriate tools at home. For example, computational courses were more effective when tablets or touchscreen computers were used to work out problems in real-time. Students were also limited in their infrastructure as many did not have personal computers or Wi-Fi. However, faculty were very creative in helping students in these situations. Office hours were a bit of a challenge and various approaches were used, such as online appointments, email to schedule an appointment, or logging into a web conferencing platform at an appointed time. Students and faculty had to navigate a variety of platforms. At the onset of remote learning, the University had access to Google Meets and a limited number of seats of Big Blue Button through CANVAS. Though Morgan acquired a site license for Zoom in early April of 2020, faculty had adopted a variety of web conferencing platforms and not all transitioned to Zoom.

Theme 5: Closing Digital Literacy Gaps

CANVAS Ambassadors navigated a wide spectrum of technology literacy with faculty and at times some ambassadors worried about appearing *all-knowing* when this was far from the reality. The shift to online learning was received with some resistance by some instructors who faced unfamiliar territory. Not all faculty took advantage of the available resources and training during the initial adoption of CANVAS in the summer and fall of 2019 and the emergency resources developed in the spring of 2020. Some Schools provided Ambassadors the ability to view all courses in their School or College. Using CANVAS LMS reports such as course storage, last user access, unpublished courses, and unused courses, the Ambassadors targeted faculty who were not well versed in the CANVAS LMS platform.

There was an overwhelming sense among Ambassadors that the transition to a new LMS followed by the pandemic provided a unique opportunity to improve pedagogy and close digital literacy gaps. By investing in the CANVAS Ambassador Program, Morgan State positioned its faculty to make large gains in course delivery. One *CANVAS Ambassador* wrote *"This pandemic was a great opportunity to close the technology gap of faculty. There is proof that there is a gap now - this was a grand experiment where [the ambassadors] were able to reach most of the faculty."*

Lessons Learned for Consideration

After careful analysis of the data and emergent themes, five lessons are offered below. They range from technological considerations to leveraging the benefit for all organizational members in university context when some (in this case faculty) are given the opportunity to help others. Although these lessons reflect the experience of Morgan State University *CANVAS Ambassadors* specifically, they may have applicable value for other education contexts and put forth with this in mind.

The Pandemic was, Ironically, a Great Opportunity to Lessen the Technology Gap among Faculty

The *CANVAS Ambassador* experience put the need for pedagogical innovation into perspective and brought forth new thinking on developing meaningful and technology-based instructional skills for the current (and future) generation(s) of students. This paradigm shift was received with some resistance as many instructors faced unfamiliar territory and needed a quick fix to an unanticipated big problem. MSU *CANVAS Ambassadors* started by convincing the faculty that they needed a quick design strategy for CANVAS starting with a syllabus, followed by modules to be implemented. Some instructors chose weekly modules, and others preferred topic modules. The course content included in modules was not an issue; however, students' engagement and assessment presented great challenges which further illuminated the need for pedagogical innovation and adaptability. Once the quick course design was drawn in the faculty mind, training in the navigation of the CANVAS tools proceeded through group webinar, videos, screencasts, Google Meets, and one-to-one guidance calls and screen sharing.

This Experience Highlighted the Need to Invest in Faculty Course Design Training

CANVAS Ambassadors were central to maintaining the continuity of teaching excellence even in the midst of the global pandemic. And although success was achieved in the training and development of over 400 faculty in the CANVAS Learning Management System, the experience also revealed that faculty needed professional development in foundational course design as well. Best pedagogy at any education level underscores the need for faculty to understand the role that course learning outcomes, goals, and assessment strategies play in overall course design. Moreover, learning management systems such as CANVAS are tools to support these foundational course delivery considerations and cannot be used to create them. MSU *CANVAS Ambassadors* found themselves coaching their faculty peers on the difference between the two aspects of good pedagogy and the importance of training and development for both.

Faculty Need Remote/Online Instruction Tools

The technology needs of MSU students were accurately anticipated as the move to remote/online instruction began. What was not anticipated were similar needs among the faculty once campus offices were deemed inaccessible due to the global pandemic. Some faculty needed laptops and desktop computers with greater memory and speed to handle the demands of remote/online instruction. Others needed to upgrade their home internet speed to support the uptick in traffic while working and living their lives from home. While this came as a surprise for *CANVAS Ambassadors,* it afforded the opportunity for many faculty to address these needs and to attain greater preparedness for an uncertain future.

Faculty-to-Faculty Training Benefits Both Parties

The CANVAS Ambassador program, which is modeled after the "train the trainer model," demonstrated the benefit of using faculty from each school/college who were already familiar with the school/college culture to train and assist their peers' transition to remote instruction. This experience was deemed beneficial to both the *Ambassador* and the faculty. The *Ambassadors* were able to see exactly what their colleagues' needs were and were able to assist and share ideas on pedagogy. This went beyond the narrow scope of teaching their peers how to utilize the learning management system. The unique situation also increased readiness for learning because there was immediate relevance, which made the experience mutually beneficial. The *Ambassadors* experienced personal satisfaction, and the faculty were reassured they could continue to deliver content, engage their students, and achieve the objectives of their courses during this time of remote instruction.

Faculty are Willing to Answer the Call to Serve

Despite the challenges and heavy workload, *Ambassadors* answered the call to serve willingly. In the midst of working on transitioning their own courses, they were willing to assist their colleagues and were innovative in doing this in an efficient way. In some instances, they sacrificed their own productivity in order to assist their colleagues to ensure successful course completion.

CONCLUSIONS

In this paper, we focused on the experiences of a special task force of faculty known as *CANVAS Ambassador*s at MSU. *CANVAS Ambassadors* have indeed answered this call to serve the needs of students, faculty across our schools, and departments at the university. Ambassadors were faced with training faculty to adjust remote learning and the new CANVAS LMS as the

university transitioned from Blackboard the same year. Due to the brevity of time, the input of other faculty and students was not included in this paper. However, upcoming manuscripts will document responses by Morgan's faculty and students to a survey and interviews to provide a more in-depth analysis of their experiences during this transition to CANVAS LMS and online/remote instruction. A closer analysis of lessons learned by the Ambassadors proves to be worth investigating and sharing with other institutions and colleagues.

At the writing of this paper, the *CANVAS Ambassadors* were asked to continue training faculty for the 2020-2021 academic year. We see great value in self-study of the efficacy of the program as it is delivered and intend to continue this research so that it may benefit MSU and other institutions. We will explore whether this training made a difference in the instruction and learning at MSU and discover which specific strategies made the most impact. We believe that MSU faculty now embrace the use of technology to facilitate learning in their classes because of the focused faculty-to-faculty training that has directly impacted our students. Moving forward, additional research will demonstrate this scientifically. There is still more work to be done related to teaching and learning professional training at the university, and the *CANVAS Ambassadors* are ready. At the time of finishing this article, the university has implemented several initiatives, including mandatory training for online teaching, and Quality Matters (™) training. The university has also created a blue-ribbon teaching and learning committee to develop best practices for the university. The university also designated graduate technology teaching assistants to assist nearly 400 faculty members with Learning Management System integration as part of best pedagogical practices.

Acknowledgements: The authors would like to thank first, MSU administration, Schools and Colleges for facilitating with resources and foresight, the smooth transition to remote/on-line teaching; secondly, colleagues Ms. Karen Rubinstein and Ms. Heather Laird for their outstanding leadership of the MSU *CANVAS Ambassador* program; finally, the students, staff and faculty peers who heroically became CANVAS compliant in record time.

REFERENCES

Active Minds. (2020, October). *COVID-19 impacted college students' mental health hardest, according to a nationwide survey of students*. https://www.activeminds.org/press-releases/active-minds-and-association-of-college-and-university-educators-release-guide-on-practical-approaches-for-supporting-student-wellbeing-and-mental-health-copy/

Baker, V. L. (2020, March 25). *Recommendations for how colleges can better help faculty during the pandemic*. *Inside Higher Ed.*

https://www.insidehighered.com/views/2020/03/25/recommendations-how-colleges-can-better-support-their-faculty-during-covid-19
Blumenstyk, G. (2020, May 13). *Students' internships are disappearing. Can virtual models replace them?* The Chronicle of Higher Education. https://www.chronicle.com/newsletter/the-edge/2020-05-13
Braun, V., & Clarke, V, (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3* (2), 77–101. doi:10.1191/1478088706qp063oa
Brown, S., & Kafka, A. C. (2020, May 11). Covid-19 has worsened the student mental-health crisis. Can resilience training fix it? *The Chronicle of Higher Education*. https://www.chronicle.com/article/covid-19-has-worsened-the-student-mental-health-crisis-can-resilience-training-fix-it/
McLane-Davison, D., Allen-Milton, S., Archibald, P., & Holmes, R. (2019). Of common bonds: Accounting for intergenerational culture competency in community policing. *Race and Justice*, *9*(1), 8–21. https://doi.org/10.1177/2153368718810368
McMurtrie, B. (2020, May 7). *Urban gardens and Princess Leia: How professors got creative in teaching from home*. The Chronicle of Higher Education. https://www.chronicle.com/newsletter/teaching/2020-05-07
Miller, M. D. (2020, May 6). *5 takeaways from my Covid-19 remote teaching*. The Chronicle of Higher Education. https://www.chronicle.com/article/5-takeaways-from-my-covid-19-remote-teaching/
Pinsker, S. (2020, May 7). *Teaching through a bout with Covid-19*. The Chronicle of Higher Education. https://www.chronicle.com/article/teaching-through-a-bout-with-covid-19/
Smith, J., Duckett, J., Dorsey-Elson, L. ., Moon, J., Hayward, A., & Marshall, D. (2020). Teaching lessons from COVID-19: One department's story of transformation -- An HBCU narrative. *International Journal of Multidisciplinary Perspectives in Higher Education, 5*(2), 13–32. Retrieved from https://www.ojed.org/index.php/jimphe/article/view/2551
Supiano, B. (2020, May 14). *What it's like to teach with Covid-19*. The Chronicle of Higher Education. https://www.chronicle.com/newsletter/teaching/2020-05-14
Zhu, X., & Liu, J. (2020). Education in and after Covid-19: Immediate responses and long-term visions. *Postdigital Science and Education*, *2*, 695-699. https://doi.org/10.1007/s42438-020-00126-3

Bios

LAURA DORSEY-ELSON is Director of Instruction and an associate professor of strategic communication in the School of Global Journalism & Communication at Morgan State University in Baltimore, MD. Dr. Dorsey-Elson specializes in a variety of oral communication areas including leadership and conflict management and also researches the benefit of experiential learning as a high-impact teaching practice in higher education. Her latest publication is *Beyond Distraction: Using Technology to Support Communication Skills Development for Urban-Educated Millennials.* (Lexington Books, 2018). E-mail: laura.dorseyelson@morgan.edu

CELESTE CHAVIS is an Associate Professor in the Department of Transportation & Urban Infrastructure Studies in the School of Engineering at Morgan State University in Baltimore, MD. Dr. Chavis is a registered professional engineer in the State of Maryland. Her research explores the intersection of transportation operations and planning, and equity in the United States and abroad. Dr. Chavis specialized in instructional technology, STEM education, and ABET accreditation.
E-mail: celeste.chavis@morgan.edu

KESHA BAPTISTE-ROBERTS is an Associate Professor in the Public Health Program at Morgan State University, School of Community Health and Policy. She completed a PhD and postdoctoral training in Epidemiology at the Johns Hopkins University Bloomberg School of Public Health. Dr. Baptiste-Roberts is an accomplished researcher having authored or co-authored over 26 scientific publications including journal articles and book chapters. She is the co-editor of a book titled "Obesity in Pregnancy". Dr. Baptiste-Roberts has published research in the areas of maternal and child health, women's health, type 2 diabetes, obesity and racial/ethnic health disparities. Her early work was primarily focused on pregnancy-related factors and their influence on cardiometabolic outcomes for both mother and offspring along the life-course. Her current research efforts are focused on health among sexual minority women and substance abuse.
E-mail: kesha.baptisterobert@morgan.edu

KRISHNA BISTA is Associate of Higher Education in the School of Education and Urban Studies at Morgan State University, Maryland. Dr. Bista is the founding editor of the *Journal of International Students*, a quarterly publication in international education. His recent publications include *Online Teaching and Learning* (2022, Routledge), *International Faculty in Higher Education* (2021, Routledge), *Higher Education in Nepal* (2020, Routledge) and *Rethinking Education Across Borders* (2020, Springer). E-mail: krishna.bista@morgan.edu

AHLAM TANNOURI is a lecturer of Mathematics at Morgan State University, School of Computer, Mathematics and Natural Sciences. She completed a PhD in Computational Mathematics at the Sorbonne University, Pierre & Marie Curie, Paris France. In her teaching at the undergraduate level and graduate engineering level, Dr. Tannouri believes in the strategic potential of technology to develop students' understanding, stimulate their interest, and increase their proficiency in mathematics. She is an experienced online faculty and *Quality Matters* Master Reviewer evaluating online courses. Her current research efforts are focused on Machine Learning and using *Culturally Responsive Teaching* to develop new modules and courses. Her latest publication is *The Morgan SEMINAL Project: Incorporating Principles of Culturally Responsive Teaching in a Pre-Calculus Course*, (PRIMUS, 2020).
E-mail:ahlam.tannouri@morgan.edu

AKINYELE ONI is a faculty member in the Department of Biology at Morgan State University. He earned academic degrees in Biological and Chemical Sciences, and a PhD in Bio-Environmental Sciences with a research focus in "Emerging Environmental Contaminants". Dr. Oni has experience teaching online and hybrid

courses across STEM disciplines in addition to STEM curriculum development initiatives such as "the training of students from diverse academic majors in biomedical research" towards graduate and medical school admissions; "Reconciling Evolution and Religion"; "Introduction to Probability and Decision Making"; "Environmental Data Driven Inquiry and Exploration"; "Experiment Centric Pedagogy" among others. Email: akinyele.oni@morgan.edu

MICHELLE ROCKWARD is a Lecturer and Assistant to the Chair in the Mathematics Department at Morgan State University. She has been teaching at the collegiate level for over 20 years. She has completed her first Quality Matters course and plans to continue her training to prepare better online classes.
E-mail: michelle.rockward@morgan.edu

SHARLENE ALLEN-MILTON is a wife and mother and serves as Assistant Professor of Social Work in the School of Social Work at Morgan State University. She also serves as Concentration Chair for the School Social Work Area of Specialized Practice. Dr. Allen-Milton has authored multiple peer reviewed publications. Her research interests are dispersed/remote work and work-life balance for women of color. E-mail: Sharlene.Allen@morgan.edu

ANTHONY KINYUA has been a member of the Physics Department since 2003. He is also a member of the All Nations University-Space Systems Technology Laboratory (ANU-SSTL) and a technical advocate for the new global economy to benefit Ghana, Africa, and the USA using space science and technology. Dr. Kinyua is a dedicated, innovative and assiduous Educator and Physical Research/Scientist with a diversified educational background comprising Chemistry, Nuclear Engineering Science, Earth Sciences, Engineering Physics, Mathematics and Rocketry. Currently he is engaged as Co-PI in several projects at the Schools of Engineering and Computer Mathematics and Natural Sciences.
E-mail: antony.kinyua@morgan.edu

NATASHA PRATT-HARRIS is an associate professor and coordinator of the Criminal Justice program in the Department of Sociology, Anthropology, and (Criminology/ Criminal Justice) with Morgan State University. She has been selected as the 2015-16 academic year Faculty of the Year. Dr. Pratt-Harris is the only Black female criminologist who grew up in the city of Baltimore, attended k-12 public schools in the city, and is a current full-time tenured professor, teaching in the discipline, in the city. E-mail: Natasha.PrattHarris@morgan.edu

DANIEL J. BRUNSON is an Assistant Professor in the Department of Philosophy & Religious. His research focuses historically on classical American pragmatism, and thematically on issues in social epistemology and philosophy of technology, such as the ethics of surveillance. He has been designing and teaching online courses for over a decade and is particularly committed to accessibility.
E-mail: daniel.brunson@morgan.edu

STEVE EFE is an Assistant Professor in the Department of Civil Engineering at Morgan State University in Baltimore, MD. He is also the assistant director of the Center for Advanced Transportation and Infrastructure Engineering Research (CATIER). His research explores machine learning for large datasets, high performance materials, earthquake engineering, failure analysis of structures, vibration control of structural systems, and material behavior and constitutive modeling. Dr. Efe also specializes in multi-criteria decision-making analysis, instructional technology, STEM education and hands-on learning.
E-mail: steve.efe@morgan.edu

Manuscript submitted: ***August 5, 2020***
Manuscript revised: ***March 24, 2021***
Accepted for publication: ***May 10, 2021***

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

ISSN: 2166-2681 Print/2690-0408 Online
Volume 10, Issue 1 (2021), pp.16-40

http://ojed.org/jise

Incorporating Eastern and Western Learning Perspectives into a Western Learning Environment

Bo Chang
Ball State University, USA

ABSTRACT

This paper focuses on incorporating Eastern and Western learning perspectives into an American learning environment. The design-based research approach is employed. The following principles influenced by the Eastern and Western perspectives of learning were implemented in course design: providing pre-sequenced materials with high structure and flexible options, valuing group collaboration and individual autonomy, and promoting diverse ideas and critical thinking. Responses from 38 participants show that students from the Western learning environment also favor the pre-sequenced course materials with high structure. Even though they prefer independent and individual work, in an online environment a certain degree of collaborative work is necessary to create interactive dynamics and a sense of presence. Critical thinking in an online environment is not always adequately executed, which does not support the Western learning perspective of favoring critical thinking.

Keywords: Autonomy, collaboration, critical thinking, diverse ideas, structure

INTRODUCTION

The world itself was never isolated. International students from all over the world choose to study in other countries (Moody, 2019). The enrollment of international students since 2016-2017 is decreasing as follows: in academic year 2016-2017, enrollment was 903,127; in 2017-2018, it was 891,330; and in 2018-2019, it was 872, 214 (*Enrollment trends*, 2019). One of the factors causing the decreasing enrollment of international students is the competition

from European and world universities for international students (Moody, 2019). Competition for international students can become fierce, and the policy restrictions on international students who pursue higher education degrees in the United States will lead to a further decrease in international enrollment, even though such impact is currently not very obvious (McKivigan, 2020). To attract more internationals students, it is necessary to develop world-class universities with foreign faculty (Horta 2009; Munene, 2014). Some universities may not have many international students; nevertheless, it is important for them to hire foreign-born faculty members because their wide perspectives on teaching and research and their voice on globalization in higher education are important in connecting universities to the rest of the world and can also help students expand their horizons and their knowledge in a bigger context (Theobald, 2013).

Foreign-born faculty members have the advantage of providing different perspectives and diverse interpretations of events due to their foreignness and authentic approach (Alberts, 2008). Foreign-born faculty "bring linguistic and cultural diversity, different worldviews, and international skills to American colleges" (Bista, 2016, p. 23) and, in turn, these worldviews to their students and institutions.

However, faculty from foreign countries are challenged due to their cultural identity, affiliation, and the culture of their affiliated institution (Munene, 2014). "In the classroom, students' expectations clashed with professors' language and teaching styles, leading to tensions and, sometimes, student aggression" (Munene, 2014, p. 464). Alberts's (2008) study indicated that an accent is not a major obstacle for foreign-born professors. The challenge lies in their adaptation to the American cultural and educational systems while at the same time maintaining their own cultural and belief systems. Alberts (2008) stated that "the professors struggle more with trying to adjust to the American system. Even though they may not agree with some practices, they recognize that they are the ones having to make most of the adjustments since they are teaching in the US" (p. 197). Adapting to the learning environment in U.S. is necessary for foreign-born faculty.

There is a considerable amount of studies on foreign-born faculty members in the United States (e.g., Alberts & Hazen, 2013; Lalwani et al., 2019; Mamiseihvili, 2010; Sun et al., 2019). Considering that the largest number of international scholars in American universities from 2018 to 2019 are from China (47,964 or 35.1%) (*Places of origin*, 2019), in this paper, I will specifically target how I as a foreign-born Chinese faculty member adapted to the American learning environment, and at the same time incorporated Eastern and Western learning perspectives into an American learning environment since this intersection of learning perspectives is rarely discussed in the literature. The research questions were: (a) How are the Eastern and Western learning perspectives integrated into America's learning environment in course design? and (b) How do students react to or evaluate

such course design? Specifically, do they like or dislike such course design? If they dislike it, what are their suggestions? In this paper, "foreign-born faculty members" refer to the faculty members who were born in foreign countries, had lived and studied in foreign countries for a period of time, but now work in United States. They can be American citizens, residents, or permanent residents. I used the abbreviated name of America or American to refer to United States of America.

LITERATURE REVIEW

In this section, I will review Western and Eastern perspectives of learning. The Western perspectives here refer to the perspectives influenced by Western civilization and culture of the United States, a place advocating for freedom, liberty, equality, and prosperity (McNeill, 1997). The Eastern perspectives here refer to the perspectives influenced by Confucianism and Chinese culture.

Individual Learning Versus Collaborative Learning

The Western perspective of learning favors questioning, exploration, analysis and reflection (Bybee, 2002). Learning is individual driven, self-directed, independent, and rational (Merriam et al., 2007). It favors direct and explicit communication. It values learning through rigorous scientific method (Merriam et al., 2007). Liu et al. (2010) stated that compared with Eastern students, American students are independent and confident, and they prefer individual work to group work. American learning environments value a learner-centered, process-oriented style and focus more on interaction and participation. Based on the literature reviewed, Kang and Chang (2016) stated that the Western perspective of learning values dialogue and interaction and problem-solving skills in real life. It values open curriculum and self-directed learning, which combines the multiple learning resources as the course contents and multiple perspectives, instead of mainly focusing on the limited contents from textbooks. Even training in mathematics is not purely repetition. It highlights "the intersectionality of different categorical lines in influencing participants' experiences" (Heng, 2019, p. 615).

Less Structured Peer Learning Versus Structured Authority Learning

The sequence of instruction in an American learning environment "was less structured and more inductive in the U.S. (i.e., teaching from examples to general principles), while Eastern education was highly structured and more deductive in its instruction approach (i.e., teaching from general principles to examples)" (Liu et al., 2010, p.185). Dewey (1907) stated that the purpose of education is not just the acquisition of new knowledge and skills, but to help students relate new knowledge and information to their prior experiences and real life. Influenced by Dewey's

educational thought, American education emphasizes learning through experience and generating general principles or knowledge from examples and activities (inductive learning).

Eastern perspectives of learning maintain hierarchical structure and surface harmony and do not challenge the authorities (Corcoran, 2014; Elashmawi, 2001; Marquardt et al., 2004). It values personalized networks based on mutual benefits (Elashmawi, 2001). For example, Chinese culture respects authority and values compliance with norms. Criticism is not appreciated since it challenges another's authority and can cause the other to lose face (Guo, 2013). Because of this, the Chinese are not active in sharing their thoughts or asking questions, and they were comparatively quiet and reserved compared with American students. American students have a higher rate of critical thinking and dealing with complex issues compared to Chinese students taught through memorization (Donnellan & Edmondson, 2019). In the United States, critical thinking and applications of theories are highly encouraged.

Influenced by Confucius culture, Eastern learning perspective values authority knowledge from teachers; they emphasize pre-sequenced, well-structured learning activities/materials; and they use explicit and measurable criteria to evaluate students' learning progress (Chen & Bennett, 2012; Liu et al., 2010). These perspectives were observed in Wu's (2017) study about how teachers' practices were influenced by their cultures and assumptions: Tracy, representative of the Eastern learning perspective, valued order, rules, students' full attention to teachers (teacher-initiates-student-responds structure), and collaborative participations among students; and teachers were the authorities who transferred knowledge to students. Bei-Jen, representative of Western learning perspective, valued freedom, creativity, student-centered, individual autonomy, and interactive environment; teachers are facilitators and cheerleaders who support students' explorations in learning. Reports from the observers of this research indicated that both perspectives have their own advantages. For example, students learned more knowledge from Tracy's class influenced by Eastern learning perspective, and students were active and creative in Bei-Jen's class influenced by the Western learning perspective.

Divergent Thinking, Creative, and Open-Ended Learning Versus Abstract Thinking, Reasoning, and Essential Knowledge Acquisition

American teachers, under the Western perspective, value students' creativity, divergent, and open-ended problem-solving ability; Chinese teachers, with an Eastern learning perspective, value students' abstract thinking, reasoning, and interconnection of complex concepts (Wang & Lin, 2005). Based on the existing literature, Wang and Lin (2005) stated that Chinese teachers in mathematics "offer more complex explanations and feedback to their students" (p. 7). Unlike U.S. teachers who perceived mathematics concepts as "arbitrary collections of facts and rules and saw

mathematics learning as following established step-by-step procedures to arrive at solutions" (p. 6), Chinese teachers saw these concepts as interconnected concepts which required students to use reasoning, justification, and multiple approaches to find solutions (Wang & Lin, 2005).

Eastern perspective learning, impacted by Confucius, valued pragmatic learning, behavioral changes and essential knowledge acquisition (Huang & Cowden, 2009; Tweed & Lehman, 2002). This is echoed by Song and Trybus (2018) who observed that Chinese professors usually elaborated the contents in detail, and they expected students to grasp in-depth contents, which is different from American scholars who generalized topics without detailed elaboration since they required students' pre-class preparation based on required readings.

Low Context Based Learning Versus High Context Based Learning

Under the Eastern perspective of learning, communication is highly context based and is not transparent; thus, information is filtered through a subjective perspective rather than objective facts. Inexplicit knowledge is gained in local context (Marquardt et al., 2004). In a high contextual society such as China, messages are context based; they are not coded or explicit as that of a low context society such as America. People living in a high context society gain knowledge and information through communicating in close relationships and networks among friends, family members, and colleagues. That is also one of the reasons why collaboration is valued more than individualism. This is different from people from the low context setting of Western society, who gains new information through elaboration and extensive communication to clarify explicitly about background information (Guo, 2013).

RESEARCH METHOD

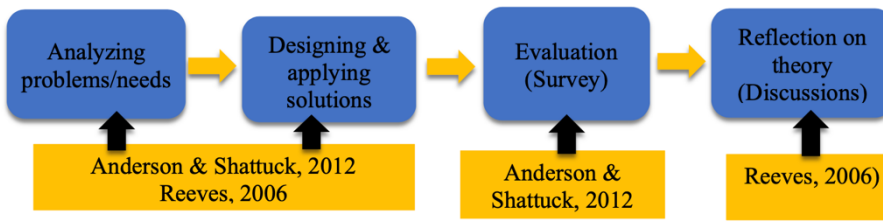
This study employed the design-based research approach. I used design-based research because of its advantage compared with the traditional qualitative research methods. It can help us understand how theoretical ideas can be transformed and implemented into practice. It can generate plausible causal factors to the problems in learning context by analyzing the outcomes of the interventions and "linking processes to outcomes in particular settings" (The Design-Based Research Collective, 2003, p. 6). Design-based research is action based and can solve the practical problems through designing and implementing interventions, which is different from traditional qualitative research which studies a subject to understand its underlying principles.

There are various models of design-based research. In this study, I used the models from Anderson and Shattuck (2012) and Reeves (2006) as a frame of reference since I incorporated some elements from their models in designing the interventions in my courses (please see Figure 1). Both models

include the process of analyzing the problems in practice, designing solutions to the problems, and applying solutions to practice. The final step of Reeves's (2006) model is to reflect on the theoretical ideas and practical implications, and the final step of Anderson and Shattuck's (2012) model is to evaluate and modify the solution. In this study, I will introduce how Eastern and Western learning perspectives are implemented to address the issues/problems in the selected courses, followed by the responses from 38 participants who evaluated these courses. Based on the responses from these participants, I will reflect on the theoretical and practical insights.

This project is a qualitative design of three online graduate courses in a research university in the Eastern part of America, each with separate subject matter. Western and Eastern learning perspectives were integrated into course A, course B and course C. Course A is about adult learning theories, course B is about strategies of how to teach adults, and Course C is about the foundation of adult/communication education. Even though the course contents were different, these courses have a similar course design. That is, the Eastern and Western learning perspectives were used to frame the overall course design. In May 2020, sources were collected from students' open-ended survey. The questions were approved by the IRB committee. Data were inductively analyzed, with the research questions and theoretical perspectives in mind.

Figure 1:
Model of Design-Based Research



Note. The step of Evaluation is reflected in the survey where students evaluated the courses and provided their opinions of the courses. Reflection on theory is reflected in Discussions where I summarized students' evaluation and relate the findings of their evaluations to the theoretical ideas in literature.

The courses were taught during similar terms (Course A and B were taught in Fall 2019 and Spring 2020, and course C was taught in Fall 2019). The class sizes were also similar, ranging from 14 to 18 students. The age of the students ranged from 20s to 50s. Demographically, students were 90% white, and there were several international students. Some students have been enrolled in online courses before.

My Philosophical Views on Education

As I mentioned in research methodology, this is not a traditional research paper, but a design-based research. I included my philosophy on education in this paper since my personal philosophical views on education, influenced by both Western and Eastern learning perspectives, guided me in designing these courses. I was raised in a culture which highly values academic excellence. As a member of the ethnic Han group in my home country, China, I was not aware that I was a minority in America when I studied for my doctoral degree program. For years, I was not aware of the necessity of "adjusting from majority to minority status in the USA" (Hernandez et al., 2015, p. 534). However, after years of studying and teaching in American institutions of higher education, I have been gradually influenced by American culture and the American system of education. As a result, my education philosophy has been influenced by both Western and Eastern perspectives.

Education philosophy is the belief system that drives one's action of teaching and learning (Conti, 2007). My education philosophy influenced my teaching practice. To identify the "elements" of my education philosophy, in 2015, I used LabR Learning Resources (http://www.labr.net/paei/paei.html) to assess my Philosophy of Adult Education. The following lists my philosophy score:

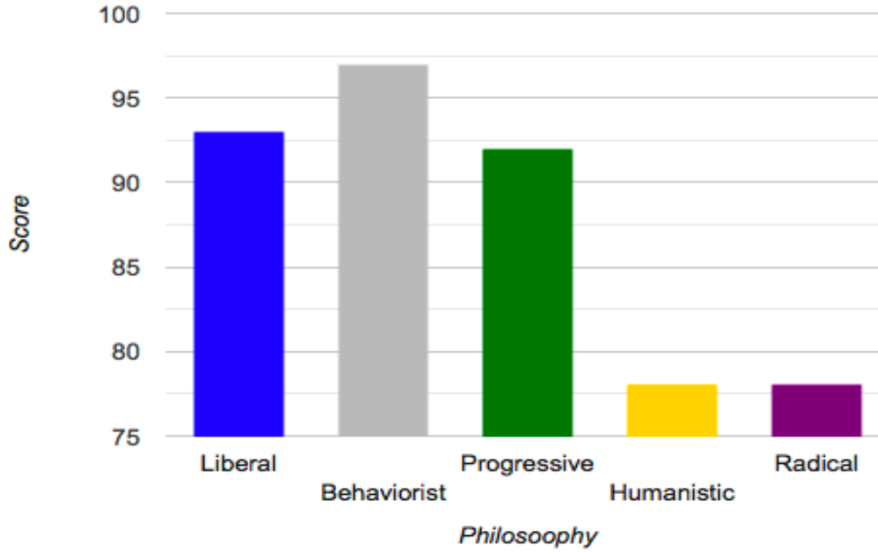
Table 1:

Respondent Comparison

Philosophy	Your Score	Number of Scores Lower than Yours	Number of Scores Equal to Yours	Number of Scores Greater than Yours
Liberal	93	28662 (95.15%)	300 (1.0%)	1161 (3.85%)
Behaviorist	97	28089 (93.25%)	421 (1.4%)	1613 (5.35%)
Progressive	92	22967 (76.24%)	962 (3.19%)	6194 (20.56%)
Humanistic	78	16506 (54.8%)	1013 (3.36%)	12604 (41.84%)
Radical	78	19753 (65.57%)	895 (2.97%)	9475 (31.45%)

This list reflects the influence of my original culture and that of American culture on my teaching philosophy. I aim to develop learners' intellectual powers and liberate them in the broadest sense. In practice, I follow the structured standard in designing course activities and evaluation criteria. I expect students to follow the instructions of the course activities to do their assignments, and improve their learning based on the feedback from me. Every activity is designed to have its own educational purpose and learning objectives to achieve. I expect students to be able to follow these structures to complete the activities, which in turn guarantee that the desired knowledge and skills are achieved. The criteria are referenced in the rubrics and are given points to reinforce the instructions of the assignments.

Figure 2:
Philosophy Scoring



Even though I was influenced by authoritative education philosophies and emphasized the importance of the expert knowledge, I was also trained in an American higher education environment. I strongly believe in students' pragmatic knowledge, experience-based knowledge, and project-based learning activities. Influenced by the Western perspective on learning, I introduced dialogue and reflections in teaching activities and train students' critical thinking skills. I started to value students' autonomy and their individual freedom in pursuing knowledge.

I am not a strong social, emotional, or radically driven person. I try to be objective and I usually do not overly praise students, but I do provide them adequate comments, both positive and negative, in order to reflect what I think about their performances. I believe that the highest reward for students is to train them to become experts in their areas of interest. When students are confident in their academic work and are able to build a solid foundation of knowledge, then they can easily expand their perspectives from various angles.

Courses Design and Application

Influenced by the Eastern and Western perspectives of learning, I designed my online course activities according to the following principles: highly structured course design with the pre-sequenced materials and the flexible options for students, valuing group collaboration and individual autonomy, and promoting diverse ideas and critical thinking.

Providing Pre-Sequenced Materials with High Structure and Flexible Options

Students in my online courses were adult learners with multiple roles in their lives. When instructors design the course activities, they need to consider the needs of adult learners and make schedules and course management flexible. For example, adult learners need to be able to access all the online course activities and materials in advance so that they can work on their assignments at any time when they have time. To help adult learners easily manage their online learning, courses need to be highly structured. Adult learners are self-directed, practical, and they need to see the immediate application of their learning in practice. They also need guided examples and materials to help them learn independently and in a self-directed manner (Knowles, 1984).

I designed my courses for adult learners making sure to carefully integrate the above needs. All course materials are pre-sequenced into weekly units before the semester starts. In each unit, there is a package with materials including:

- Readings (including the summary of the readings and external resources about how theories are embedded in practice)
- Videos (introducing both theories and practical application)
- Recorded PowerPoint
- Online discussion questions (structured questions and options, some good responses from previous students)
- Assignments (project-based assignments, including instructions, examples, templates, and summary tables)

I summarized the main points of the required readings and elaborated on some ideas which were difficult for students to comprehend so that students could focus more of their energy on deeper knowledge exploration. In online discussions, students were required to answer the questions based on the following structure: students first introduce the main theoretical ideas they have learned from the readings, then provide practical examples, and interpret the practical examples with the theoretical ideas (*Eastern perspective: highly structured design with deductive instruction approach from general principles to examples*). Such structured format is to make sure that students learn the theories and are able to apply theories in practice.

The assignments were project based and were sequenced—the results of one assignment tie to the next, and the final project is the demonstration of all the small projects that have been accomplished during the semester. To help learners understand the expectations of the assignments, I provided step-by-step instructions of how to complete each assignment. I shared with students some good examples. I also laid out the main structure of certain assignments and wrote the beginning sentences of required paragraphs as a model for students. To help students see the structure of their assignments, I

required them to fill out a summary table of what they had completed in each assignment (*Eastern perspective: Using examples, templates and tables to show students general structure of how knowledge is produced*).

Based on my observation, students' online learning was less influenced by their age or whether or not they were enrolled in online courses before since we used Canvas, which has a very simple interface. Students were more influenced by their ability to manage their time, and how much they were able to learn new skills. Therefore, in addition to the above weekly units, in an independent unit, I provided students a large number of previous students' examples and instructions about how to use the different tools, manage their time, manage their projects in blogs, and how to do their assignments. Usually if students followed the instructions and flow of the course, they were able to gain a good grade, regardless of age or online experience (*Western perspective on low context explicit knowledge: Providing extensive information to clearly elaborate the background information so that students in an online environment can understand explicit knowledge without interacting with the physical context*).

Even though the online discussion board is structurally designed, students have the option of selecting the questions they would like to respond to or of creating their own questions. They also have the options of choosing the materials that they would like to read if they do not like the reading materials I provided. They do not need to read everything, only the ones which meet their needs (*Western perspective: Valuing individual freedom and autonomy*).

Valuing Group Collaboration and Individual Autonomy

Group collaboration is important; however, it was very difficult to successfully collaborate online as a group due to various reasons, such as lack of motivation to work with other students who could not make commitment on group work, lack of individual autonomy and flexibility to pursue individual interests, and difficulty in managing group work with multiple group members who had different preferences.

I value group collaboration, but at the same time respect individual autonomy. In these online courses, group projects were highly emphasized. To address the above problems, in each group assignment, I provided the guidelines about how to divide the assignment into small components (*Eastern perspective: dividing tasks into small unit structure*) to allow individual group members to break up the tasks and complete one portion of the assignments independently (*Western perspective: Individual autonomy*) while they collaborated on the overall group project design and implementation (*Eastern perspective: Group collaboration*). Both group collaboration effort and individual contributions were integrated into the grading rubrics and were evaluated in self-evaluation and peer evaluation. To encourage collaborative knowledge sharing, all students' assignments were

posted in their blogs and open to the whole class. To motivate the individual efforts, each individual student was required to read and comment on others' assignments (*Western perspective: Open learning environment and individual effort*).

Promoting Diverse Ideas and Critical Thinking

Due to lack of physical contact, in online discussions, students were afraid of confronting other students' opinions since they were not sure how other students would react to their challenges. When students commented on their peers' posts, they usually agreed with their opinions, or provided them further information without providing critical dialogue and diverse perspectives.

I promoted diverse ideas and encouraged students' critical thinking. To address the above problems, I acted as a facilitator and encouraged students to have three types of dialogues in online discussions: (1) grounding dialogue in which students provide factual or procedural related knowledge. For example, students agreed on their classmates' opinions or provided additional information relevant to the topics; (2) critical dialogue in which students break the taken-for-granted knowledge and are aware of the complex and divergent viewpoints of the topic. For example, students were encouraged to provide their divergent opinions about the practical cases and controversial topics in weekly discussions and in blogs. Students disagreed with or challenged their classmates' opinions and critically pointed out different ideas; and (3) reflective dialogue in which students integrate and generalize accepted arguments and draw lessons from experiences (Schwarz et al., 2004). For example, students would reflect on the process of how they completed their projects, and what they had learned in the course, etc. (*Western perspective: Valuing open dialogues, diverse and critical knowledge*, *and background, process and procedural knowledge).* These different types of the dialogues are used to promote diverse ideas and critical thinking.

STUDENTS' RESPONSES TO THE COURSE DESIGN

Thirty-eight students participated in the open-ended, anonymous text-based survey about their opinions on their graduate level online courses designed with Western and Eastern learning perspectives.

Responses to the Pre-Sequenced Materials

Most of the participants liked the quantity and quality of the large amount of pre-sequenced course content added to the courses. For example, the participants shared the following information:

> I liked the amount of content and supporting resources to support the content. I was worried about there being a lack of depth in an online course, but this was not the case.
> I liked the amount of work. I felt it was manageable and appropriate with the group work.
> I liked the amount of resources and the questions were thought-provoking and engaging.
> I really liked the additional resources for us to answer questions. They were very interesting and added to my knowledge base.
> I liked the flexibility of the course as well as the expansiveness. The course offered a lot and covered so much ground, as a proper introduction course should. The amount of articles and readings offered was a bit overwhelming, but I appreciated that they were offered and that Dr. Chang was flexible in her requirements for the readings.

These data show that the participants were satisfied with the scope and depth of the course materials provided in these courses. Even though the amount of the resources is large, it was manageable. However, some felt overwhelmed by the amount of the course content provided and the complexity of the course. For example, some participants said:

> I appreciate the amount of information shared, but it was sometimes hard to narrow down and explore the topics. I feel as if we were just skimming the top.
> I understand that adults love options, but too many topics and too many options also do not help.
> I think there were too many writing prompts and resources. The topics were vague. What was likely meant to be helpful, but providing many options, seemed to be too much.

For some students, it is not so easy to even choose which materials to read. It might be necessary to simplify the course contents based on students' needs.

Responses to Highly Structured Course Activities with Flexible Options

Some students appreciated the pre-sequenced course materials which provided flexibility to adult students who have many duties in their daily lives:

> I liked that everything was released at the beginning of the semester so I could work ahead.
> The biggest perk of this format was the flexibility to schedule the readings and assignments at times that worked for me throughout the week and the ability to work ahead. Planning ahead and scheduling time throughout the week are strategies that worked well for me.

> Dr. Chang posts all of the online discussions and assignments in Canvas at the start of the semester. This allowed me to plan ahead and schedule time throughout the week for schoolwork and also to dig deeper on the topics that really interested me.
> I learned so much from this class, thanks in large part to the structure of the assignments which pushed me to interact in ways I had not previously done.

Even though the course is highly structured, I also gave students the option to select the interesting topics within the structure. Students really like such options which allow for individual autonomy. For example, some participants said:

> I enjoyed the idea that even though each discussion had several pre-designed questions, we could still opt to make our own questions and answer them or discuss some subject closely related to the provided questions.
> I also appreciated the flexibility to choose our discussion questions or pose our own. It led to more authentic discussion posts.

Structured course design with flexibility helped students build a solid foundation of the topics they are studying, and it also enriched students' personal interests. For example, one participant said:

> I have learned that examinations are not the best way to assess knowledge. Examinations can be written so that true knowledge can be assessed; however, this is often not done... This course heavily relies upon formulating opinions and ideas about related topics through discussion posts and large assignments. I have been able to learn concepts while putting a spin on the assignments with my own thoughts. This type of format produces educated and unique facilitators.

The structured course design is also reflected in projects which were designed using the progressive approach. The participants really loved such design. For example, some participants shared:

> The projects all worked together very cohesively. Each project lead into the next project well and allowed us to build to our final demonstration.
> I liked the way every assignment was well crafted and lead to the culminating project.

Promoting Diverse Ideas and Critical Thinking

The courses are structured to promote diverse ideas and critical thinking. Overall, the participants enjoyed the different ideas and open conversations found in the online discussions. For example, some participants shared their thoughts:

> There were good conversations, and many different ideas presented in the discussions, and they helped me gain a broader understanding of the content.
> This class has allowed us to put a spin on our opinions and respond to other's opinions.
> I enjoyed the lack of memorization. I am very good at memorization, which reflects well on a transcript. However, this does not promote true learning. This class has pushed me to create my own opinions on the topics discussed.
> I enjoyed that they [online discussions] were more open-ended.
> I really enjoyed the question posed and the additional resources that were included each week. They went beyond the normal questions.

However, some participants stated that there was a lack of critical thinking in online courses. One participant stated that the majority of the posts were reflective. For example:

> Because we all have different learning styles, I liked that Dr. Chang encouraged us to use different types of dialogues in our weekly discussions. The majority of my weekly posts were reflective.

In online discussions, some students mainly provided facts related information without in-depth critical thinking, even though it was necessary. For example, one participant stated:

> I did feel that there were a lot of repetitive answers; however, it was nice reading answers from different perspectives. I really enjoyed when classmates would share other materials to reference. This helped me dive deeper into the lesson that was being taught that week.

Responding to Flexibility and Individual Autonomy

Individual autonomy is valued by allowing students to choose topics that interest them for discussions and for completing their projects. Most of the participants like such flexibility which promotes individual autonomy. For example, some participants stated:

> She (the instructor) allowed us to choose the areas that interested us most to engage in…I really enjoyed the ability to select which articles/readings/audio I wanted to engage with and respond to.
> I like the flexibility of choosing which readings and discussion questions to focus on. This allowed me to go deep with a few topics each week rather than scramble to fit everything in.
> I really liked the online discussions…I liked the options to answer a question proposed by the professor or to write on our own.
> I liked that we could define roles and work on our own.
> I liked the flexibility of choosing to either engage with other posts, or to simply write four of my own posts. I felt that this catered well to different styles of learning and didn't make discussion feel as forced as it might have been without the option to post more on my own thoughts.
> I liked the variety of topics we could discuss. There was always an option for a topic of choice in case we did not like the 4 previous options. The flexibility was great.

These data show that students like that they can have options to choose the topics for discussions, the readings, the roles they will play in their projects, and whether or not they can replace comments with posts.

Responding to the Collaborative Work

The participants had mixed feelings on collaboration in the form of group work. Even though some participants learned a lot from working in a group, other group members did not like the group work. Their dislike was mainly due to the difficulties presented by working with other students. They stated that:

> More individual projects and writings, rather than group projects. While group projects can be very beneficial, an online format is very difficult.
> I enjoyed the opportunity to share work on a project and rely on different individual's strengths. I did not like having to navigate different schedules with students from varied time-zones and with vastly different schedules. It is an added layer of complexity to simply working with others on a project.
> I felt like we spent more time coordinating the logistics of the group project due to vastly different schedules availability and that it would have been nice to have had more time devoted to the actual group project itself. Group projects are rather challenging for those students who elect to take courses online. Most students who elect to take courses online have made that decision based upon the flexibility that

> is offered. Group projects eliminate the flexibility and elevates challenges and frustration.

These data show that students like the flexibility of working alone instead of coordinating others' schedules. There are also a variety of other reasons which made the collaborative work not enjoyable. For example, one participant stated that:

> I did not like the group work. First, it was really hard to work with a group that could never physically meet, and we did not all mesh well as a group. We learned differently, we interpreted assignment differently, and the way we put together our work was different. I also didn't like how the groups were assigned. It just seemed like they could have been more evenly set up. Also, we all have our own interests and that makes it hard too. I think we have to remember that adult education is much more individualized, and we need to be able to do things on our own. I do also see the benefit of working within a group, even a difficult one. I just really didn't like it in this particular class. I was also not a fan of being required to use a blog to post assignments. One, I have no desire to learn the technical side of learning to blog or to use the blog and I don't care to have my work on display in the future. The blog was a hassle more than anything else and I don't think it's an attractive way of displaying my work or my groups work.

This participant listed multiple reasons which made the group collaboration difficult, such as lack of physical contact, different ways of working, different ways of interpreting the assignment, different interests, technical issue, and favoring the individualized work and the freedom of working alone.

Even though the participants liked the freedom of doing their project alone to avoid the constraints from the group members, some suggested a more structured environment in order to make the group collaboration more efficient. For example, two participants provided the following suggestions about how to make the collaboration more structured and manageable:

> I would suggest detailed instructions on how to set up and post things to your blog. It was very nice to be able to look through previous years blogs to see how to set things up. I would also suggest a naming system for the blogs to follow. For example, it could be 0635Group#TermYear (0645Group1Spring2020.blogspot.com) I think that would help out organization greatly so students could easily view previous blogs.
>
> To better support learning in this class I would have liked more consistency with meeting times so I think in the future it should be a

component of the first group assignment for each group to decide on a regular weekly or bi-weekly meeting time and stick with it for the rest of the semester, and the ability for students to adhere to that schedule should be a component of their grade. This gives an online class some of the useful temporal structure of a physical class.

Having some structure, both in scheduling and in managing the group projects, might make the group collaboration easy and accountable.

CONCLUSIONS AND DISCUSSION

The participants like the pre-sequenced materials and the step-by-step, progressive way of developing their projects, and the application of the theories in practice. Such design combines Western and Eastern perspectives of learning. Pre-sequenced, well-structured learning activities/materials is not just the main feature of Eastern learning perspective, as some scholars stated (Chen & Bennett, 2012; Liu et al., 2010). It actually was highly accepted by the American students in this study too. Even though the scope and depth of the course contents are large, it is manageable for most students since it is highly structured. Providing background information and procedural steps can help students learn in-depth knowledge (Song & Trybus, 2018). Procedural knowledge, knowledge created through step-by-step and progressive way, is operational. It uses tools and practical modeling to help students understand the process of how knowledge is created (Hiebert & Lefevre, 1986; Österman & Bråting, 2019; Sudarmani et al., 2018). The deductive discussion design (*from theories to application*) enables students to understand theories and easily learn the application of theory in practice. Conceptual knowledge, which was highly emphasized in these courses, is a web of knowledge that is interconnected, abstract, and free of context. Such conceptual knowledge can be used as a rationale to explain the relationship between facts and results (Hiebert & Lefevre, 1986; Österman & Bråting, 2019; Sudarmani et al., 2018). To help students understand how theories interconnect to practice and how theories were used as rationales to guide practical activities, templates, examples, and summary tables were provided so that students could see how conceptual knowledge is structured and formed.

Most of the participants liked the flexible course design. Such a structured design with flexible options promoted open conversations and individual personal interests and autonomy; it helped students build a solid knowledge foundation. Adult learners especially have the desire to self-direct their learning and manage their learning based on their personal interests and needs (Knowles, 1984). By valuing autonomy-support and intrinsic goals, students' learning and performance can be improved (Vansteenkiste et al., 2004).

Collaboration in the form of group work was not well received due to various reasons, such as difficulty of working online and difficulty in collaborating with others due to differences in working and learning styles, and a greater interest in individualization and in the freedom of working alone. The courses were designed to promote diverse ideas and critical thinking. Different ideas and open conversations were produced in these courses. Students enjoyed diverse ideas and open conversations since they broadened their perspectives and helped students form their own ideas without memorizing the concepts. However, knowledge shared in these courses was mainly fact related and reflection based. There was a lack of the critical thinking in students' discussions. Students sometimes provided repetitive points and fact-related information without in-depth critical thinking.

This study supports the Western perspective learning which favors exploration and reflection (Bybee, 2002). It supports the Western learning perspective which values individual work, dialogue, interaction, problem-solving skills, self-directed learning, and diverse perspectives and resources (Kang & Chang, 2016). However, the data in this project also indicates that there is a lack of critical thinking and a challenge to the authority's knowledge, which is similar to non-Western perspectives of learning (Corcoran, 2014; Elashmawi, 2001; Marquardt et al., 2004). It is unclear whether or not this is because of the online learning environment which lacks the body language and physical cues that are often helpful in identifying hidden information. This study also supports the Western perspective which favors individual learning, not collaborative learning (Merriam et al., 2007). However, this scenario may change if certain conditions are satisfied, such as using technology to support virtual communication and decrease the logistic issues involved in group projects and streamlining the format of the group projects to make them easier to manage.

Foreign-born faculty members might be challenged due to their culture and language differences (Munene, 2014). However, this study indicates that foreign-born faculty members can also integrate their cultural heritage into a Western learning environment to benefit students and expand learning perspectives. It is necessary for foreign-born faculty members to adjust to the American educational environment by valuing interactions, open dialogues, and learner-centered learning environment. However, the foreign-born faculty members do not need to lower their education standards (Alberts, 2008) to please American students. They have their different perspectives and cultural diversity (Bista, 2016), and such diversity can serve as a teaching asset that can contribute to the American education system.

IMPLICATIONS

With more and more foreign-born faculty members joining Western higher education institutions, it is necessary to mentor them to adjust to the

new working environment. It is also valuable to integrate their values, cultural heritage, and teaching practices into the Western learning environment. This study contributes to the practice and literature by combining the Eastern and Western teaching philosophies, learning perspectives, and their relevant strategies into practice, specifically in an online learning environment. With coronavirus continuously spreading throughout the world and online learning becoming the new norm, this study is timely since it provides a concrete case of how to integrate Eastern and Western learning perspectives into an online learning environment with a design-based approach.

This study shows that students from the Western learning environment favor independent and individual work. However, in an online environment, a certain degree of collaborative work is necessary to create interactive dynamics and a sense of presence. Due to a lack of physical interactions, instructors can create a well-structured learning environment with clear learning objectives, schedules, and management techniques to foster the group collaboration and a close relationship (Paralejas, 2013). For example, instructors may provide some instructions about how to structure the group projects and how to streamline the group members' schedules.

This study shows that critical thinking in an online environment is not always adequately executed, which does not support the Western learning perspective of favoring critical thinking. Giving students more options on various tasks and decision making can promote students' freedom and autonomy. Concrete guided structure is needed to support critical thinking. Critical thinking can be supported through design and organization, facilitating discourse, and direct instruction. For example, structured and scaffolded discussions can effectively support critical discussions (DiPasquale & Hunter, 2018). Using debates can push students to confront the conflicts in discussions and promote critical thinking (Kanuka et al., 2007).

To create a high-quality online learning environment, it is necessary for foreign-born professors to be exposed to the Western curriculum and design development by attending cultural activities, observing their American colleagues' teaching practices, and asking them for examples of their syllabi and the expectations of their institutions. They can attend seminars on teaching and learning in higher education and exchange practice with their academic mentors (Song & Trybus, 2018). They can have dialogues with their Western colleagues and examine their cultural scripts and how to bring them into Western teaching practice (Wu, 2017). Foreign-born professors should also use their foreignness as a teaching resource. They can provide students with their views on education and how such reviews are reflected in the course design. They can provide scaffolding to the students and show them the structure of the assignments and how to implement the projects in practice. For example, they can provide summary tables, examples, and templates for assignments to help students recognize the structure of the knowledge they

have learned. They can elaborate the readings and external materials to help students focus more time and energy on in-depth knowledge acquisition.

ACKNOWLEDGEMENT

I would like to thank the anonymous reviewers who provided very insightful and detailed suggestions, and Dr. Rose Badaruddin who helped me edit this article.

REFERENCES

Alberts, H. C. (2008). The challenges and opportunities of foreign-born instructors in the classroom*, Journal of Geography in Higher Education, 32*(2), 189–203. https://doi.org/10.1080/03098260701731306

Alberts, H. C., & Hazen, H. D. (2013). *International students and scholars in the united states: Coming from abroad*. Palgrave Macmillan. https://doi.org/10.1057/9781137024473

Anderson, T., & Shattuck, J. (2012). Design-based research: A decade of progress in education research? *Educational Researcher, 41*(1), 16–25. https://doi.org/10.3102/0013189X11428813

Bista, K. (2016). Faculty international experience and internationalization efforts at two-year colleges in the United States. In R. L. Raby & E. Valeau (Eds.), *International education at community colleges: Themes, practices, and case studies* (pp. 23–38). Palgrave Publishers.

Bybee, R.W. (2002). Scientific inquiry, student learning, and the science curriculum. In R. Bybee (Ed.), *Learning science and the science of learning* (pp. 25–35). NSTA Press.

Chen, R. T. H., & Bennett, S. J. (2012). When Chinese learners meet constructivist pedagogy online. *Higher Education, 64* (5), 677–691.

Conti, G. J. (2007). Identifying your educational philosophy: Development of the philosophies held by instructors of lifelong-learners (PHIL). *Journal of Adult Education, 36*(1), 19–37.

Corcoran, C. (2014). Chinese learning styles - Blending Confucian and Western theories. *Journal of Instructional Pedagogies, 13*, 1–10. http://www.aabri.com/manuscripts/131685.pdf

The Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher, 32*(1), 5–8. https://doi.org/10.3102/0013189X032001005

Dewey, J. (1907). *The school and society.* The University of Chicago Press. https://archive.org/details/theschoolandsoci00deweuoft

DiPasquale, J., & Hunter, W. J. (2018). Critical thinking in asynchronous online discussions: A systematic review. *Canadian Journal of Learning and Technology, 44*(2), 1–25. https://doi.org/10.21432/cjlt27782

Donnellan, J., & Edmondson, M. (2019). A comparison of pedagogy in China and USA classrooms. *Journal of Academic Perspectives, 2019* (2), 1–11.

Elashmawi, F. (2001). *Competing globally: Mastering multicultural management and negotiations.* Butterfield-Heinemann.

Enrollment trends. (2019). https://opendoorsdata.org/data/international-students/enrollment-trends/

Guo, M. (2013). Developing critical thinking in English class: Culture-based knowledge and skills. *Theory and Practice in Language Studies, 3*(3), 503–507. https://go.gale.com/ps/i.do?p=LitRC&u=munc80314&id=GALE%7CA351081939&v=2.1&it=r&sid=summon

Heng, T. T. (2019). Understanding the heterogeneity of international students' experiences: A case study of Chinese international students in U.S. universities. *Journal of Studies in International Education, 23*(5), 607–623. https://doi.org/10.1177/1028315319829880

Hernandez, K. C., Ngunjiri, F. W., & Chang, H. (2015). Exploiting the margins in higher education: A collaborative autoethnography of three foreign-born female faculty of color. *International Journal of Qualitative Studies in Education, 28*(5), 533–551. https://doi.org/10.1080/09518398.2014.933910

Hiebert, J., & Lefevre, P. (1986). Conceptual and procedural knowledge in mathematics: An introductory analysis. In J. Hiebert (Ed.), *Conceptual and procedural knowledge* (pp. 1–27). Erlbaum.

Horta, H. (2009). Global and national prominent universities: Internationalization, competitiveness and the role of the state. *Higher Education, 58*(3), 387–405.

Huang, J., & Cowden, P. A. (2009). Are Chinese students really quiet, passive and surface learners? – A cultural studies perspective. *Canadian and International Education, 38*(2), 75–88.

Kang, H., & Chang, B. (2016). Examining culture's impact on the learning behaviors of international students from Confucius culture studying in Western online learning context. *Journal of International Students*, *6*(3), 779–797. https://files.eric.ed.gov/fulltext/EJ1100335.pdf

Kanuka, H., Rourke, L., & Laflamme, E. (2007). The influence of instructional methods on the quality of online discussion. *British Journal of Educational Technology, 38*(2), 260–271. https://doi.org/10.1111/j.1467-8535.2006.00620.x

Knowles, M. (1984). *Andragogy in action*. Jossey-Bass.

Lalwani, N., Shanbhogue, K., & Tappouni, R. (2019). Survival guide for foreign-born faculty members. *Journal of the American College of Radiology, 16*(4), 528–530. https://doi.org/10.1016/j.jacr.2018.10.013

Liu, X., Liu, S., Lee, S., & Magjuka, R. J. (2010). *Cultural differences in online learning: International student perceptions*. *Education Technology & Society, 13*(3), 177–188.

Mamiseihvili, K. (2010). Foreign-born women faculty work roles and productivity at research universities in the United States. *Higher Education, 60*(2), 139–156. https://doi.org/10.1007/s10734-009-9291-0

Marquardt, M., Berger, N., & Loan, P. (2004). *HRD in the age of globalization: A practical guide to workplace learning in the third millennium*. Basic Books.

McKivigan, J. (2020). Effect of federal policy changes on international students pursuing higher education studies in the united states. *Higher Education Research, 5*(2), 60. https://doi.org/10.11648/j.her.20200502.14

McNeill, W. H. (1997). What we mean by the West, *Western Civ in World Politics*, 513–524. https://www.fpri.org/wp-content/uploads/2016/07/WH-McNeil-What-We-Mean-by-the-West.pdf

Merriam, S. B., Caffarella, R. S., & Baumgartner, L. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). Jossey-Bass Publishers.

Moody, J. (2019). *Where, how international students are studying in the U.S.* https://www.usnews.com/education/best-colleges/articles/where-how-international-students-are-studying-in-the-us

Munene, I. I. (2014). Outsiders within: Isolation of international faculty in an American university. *Research in Post-Compulsory Education, 19*(4), 450–467. https://doi.org/10.1080/13596748.2014.955637

Österman, T., & Bråting, K. (2019). Dewey and mathematical practice: Revisiting the distinction between procedural and conceptual knowledge. *Journal of Curriculum Studies, 51*(4), 457–470. https://doi.org/10.1080/00220272.2019.1594388

Paralejas, C. G. (2013). *A case study of understanding the influence of cultural patterns on international students' perception and experience with online learning*. ProQuest LLC. (UMI 3611376).

Places of origin. (2019). https://www.iie.org/Research-and-Insights/Open-Doors/Data/International-Students/Places-of-Origin

Reeves, T. C. (2006). Design research from a technology perspective. In J. van den Akker, K. Gravemeijer, S. McKenney, & N. Nieveen (Eds.), *Educational design research* (Vol. 1, pp. 52–66). Routledge.

Schwarz, B., Dreyfus, T., & Hershkowits, N. H. R. (2004) . Teacher guidance of knowledge construction. *Proceedings of the 28th Conference of the International Group for the Psychology of Mathematics Education, 4,* 169-176.
http://www.kurims.kyoto-u.ac.jp/EMIS/proceedings/PME28/RR/RR175_Schwarz.pdf

Song, Y., & Trybus, M. (2018). Perceptions of Chinese scholars at Concordia University Chicago. *Lutheran Education Journal.* https://lej.cuchicago.edu/secondary-education/perceptions-of-chinese-scholars-at-concordia-university-chicago/

Sudarmani, Rosana, D., & Pujianto (2018). Lesson learned: Improving students' procedural and conceptual knowledge through physics instruction with media of wave, sound, and light. *Journal of Physics: Conference Series, 1097, 12033*. https://doi.org/10.1088/1742-6596/1097/1/012033

Sun, Q., Kang, H., Chang, B., & Lausch, D. (2019). Teaching international students from Confucian heritage culture countries: Perspectives from three U.S. host campuses. *Asia Pacific Education Review, 20*(4), 559–572. https://doi.org/10.1007/s12564-019-09604-1

Theobald, R. (2013). International faculty: A source of diversity. In H. C. Alberts, & H. D. Hazen (Eds.), *International students and scholars in the United States: Coming from abroad* (pp. 111–130). Palgrave Macmillan. https://doi.org/10.1057/9781137024473

Tweed, R. G., & Lehman, D. R. (2002). Learning considered within a cultural context. *American Psychologist, 57*(2), 89–99.

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology, 87*(2), 246–260. https://doi.org/10.1037/0022-3514.87.2.246

Wang, J., & Lin, E. (2005). Comparative studies on U.S. and Chinese mathematics learning and the implications for standards-based mathematics teaching reform. *Educational Researcher, 34*(5), 3–13. https://doi.org/10.3102/0013189X034005003

Wu, M. (2017). Examining Mandarin Chinese teachers' cultural knowledge in relation to their capacity as successful teachers in the United States. *Asian-Pacific Journal of Second and Foreign Language Education, 2*(1), 1–19. https://doi.org/10.1186/s40862-017-0034-y

---

BO CHANG, PhD, associate professor at Ball State University. Her research interests include knowledge-related topics, different tools in learning, and the social aspect of adult learning in a variety of contexts. For more information about her, please check the following link: https://changbo111.wixsite.com/mysite ORCID: https://orcid.org/0000-0001-5820-3140 Email: bchang@bsu.edu

Manuscript submitted: ***July 29, 2020***
Manuscript revised: ***October 9, 2020***
Accepted for publication: ***January 9, 2021***

Appendix A

Design	Issues/problems that need to be addressed	Activities	Summary of the positive comments	Summary of the negative comments/suggestions for practice
Pre-sequenced materials; highly structured course activities with flexible options	Online environment needs structure to help learners learn independently and self-directedly. Adult learners are practical and pragmatic driven, they like immediate application of learning.	Provided pre-sequenced course materials accessible for learners in advance. Provided sequenced projects, summary of the readings, summary table, examples and templates of the assignments to help students see the structure of the assignments, interconnection of the concepts, and process of how to complete the assignments.	A large amount of content and supporting resources were provided in a manageable and flexible way, which adds depth to the courses and makes courses thought provoking and engaging.	Some students felt overwhelmed by the complexity and quantity of the course contents. Suggestions: Allow students to access pre-sequenced course materials in advance Provide examples and templates for assignments Provide the summary table of the assignments to show students the structure of the assignments.
Promoting diverse ideas and critical thinking	Due to lack of physical contact in online learning environment, students preferred more agreed opinions without providing critical dialogues and diverse perspectives to avoid possible conflicts.	Instructor was a facilitator and knowledge provider. Students were required to share their different ideas and their applications in practice based on structured guidelines. Critical thinking was encouraged.	Students enjoyed different ideas and open conversations since they broadened students' perspectives and helped students form their own ideas without memorizing the concepts.	Students sometimes provided repetitive points and facts related information without in-depth critical thinking. Suggestion: The courses need concrete guided structure to help students form critical ideas.
Flexibility and individual autonomy	Adult learners have multiple roles and complex schedules. They prefer flexible options and autonomy. They also prefer internal motivation and self-directed learning.	Students have options to choose the discussions topics, the readings, the roles they can play in their projects, or whether or not they can replace comments with posts.	Students enjoyed the ability to select what they wanted to engage. The flexible design allowed students to go deep with a few topics each week. It catered well to different styles of learning	Give students options to select their group members, readings, and the topics to work on.
Collaborative Work	Online group collaboration is not easy due to difficulty in managing group work, students' lack of commitment on group work, and their desire to pursue individual autonomy and flexibility.	Provided guidelines of how to divide group assignments among individual members; Integrated roles of group collaboration and individual contributions into grading rubrics and self/peer evaluations.	Students learned a lot by working with the group members.	Some students had no interest in group work due to lack of physical contact, difficulty to navigate different schedules with group members, different ways of working, different ways of interpreting the assignment, different interests, technical issues, and favoring the individualized work. Group work is an added layer of complexity; Students spent more time coordinating the logistics of the group project Suggestions: Students needed guidelines on how to create and manage blogs and guideline of how to unify the links of the group blogs.

Appendix B

Survey: Course Reflection

1. What is the name of the course?

2. What did you learn from this course? Share with us some good learning strategies/methods which are very helpful for your learning.

3. What did you like or dislike about this course in general? Why? What are your suggestions?

4. What did you like or dislike about the online discussions? Why? What are your suggestions?

5. What did you like or dislike about your group project? Why? What are your suggestions?

6. What do you suggest to better support your learning?

This is the end of the survey. Please click ">>" to submit.

Thank you!

OJED
OPEN JOURNALS IN EDUCATION
Volume 10, Issue 1 (2021), pp. 41-58
Journal of Interdisciplinary Studies in Education
ISSN: 2166-2681Print 2690-0408 Online
https://ojed.org/jise

Contributions of Multidisciplinary Peer Observation to Lecturers' Reflective Practices

Ana Mouraz
Universidade Aberta, Portugal

Isabel Ferreira
Faculdade de Farmácia, Universidade do Porto, Portugal

ABSTRACT

The goals of this paper are to explain the extent to which multidisciplinary peer observation practices may improve reflection among lecturers concerning their pedagogical practices. and identify the kind of reflection it improves. In this sense, the paper presents a study with the objective of determining the importance that lecturers give to reflection upon their pedagogical practices as they are engaged in a multidisciplinary peer observation program. Data were collected through interviews and observation records. The results suggest a confirmation, among other aspects, of a commitment to a reflective discourse both in the work carried out by lecturers and as it concerns the pedagogical issues of their training.

Keywords: Higher Education**;** lecturers' reflective practices; multidisciplinary peer observation;

INTRODUCTION

European education policies that arose from the Bologna process have been shaping the challenges facing universities regarding growing student diversity and accountability to social mandates (European Commission, 2013). Pedagogical practices of lecturers have been occupying a growing concern among institutional politics as they are closely related to Higher Education (HE) achievement rates, dropout prevention, HE democratization (Dias, 2015), and institutional quality.

Thus, the tradition of valuing scientific training and research as the only issues that matter concerning, HE lecturers' performance (Esteves, 2010) is changing both at the personal and institutional levels. Nevertheless, in the Portuguese landscape, lecturers begin teaching without pedagogical-specific training. The use of reflection procedures regarding the pedagogical action of HE lecturers has the potential to improve their performance (Hammersley-Fletcher & Orsmond, 2005; Sullivan et al., 2012). This study aims to confirm this.

Pedagogical action is the first axis of professional development of lecturers who focus on the issues related to proposing and delivering courses and classes (Esteves, 2010) and is the topic of the present study. The other axes are the educational boards, management responsibilities, and professional rank the lecturer occupies. However, these other axes are beyond the scope of the present text.

Lecturers' reflection on their performance comes from the general idea of teachers as intellectual and transforming workers (Giroux, 1988) and follows a movement initiated by Schön (1987), who considers teachers to be reflective professionals, able to change their own practices through the power of reflection. Zeichner (1993) noted the same concern when he proposed a teachers' training model aimed at developing a critical and reflective approach to the dominant ideology underlying curricula and school organizations. In other work (2010), this author pointed out the importance of knowing if teachers are reflecting on their practices, but also how and on which issues they reflect. Even though the aforementioned studies concerned teachers from basic and secondary levels of education, it is arguable that reflective practices could be used in HE.

In fact, as Vieira et al. (2017) state, these concerns are important in HE due to the banalization of reflective thinking in pedagogical discourse that frequently leads to the assumption that reflection is a natural part of participation. Therefore, it is important to distinguish levels of reflection that just adapt some practices in order to solve small problems from those kinds of reflection that could challenge key aspects of teaching and learning tasks. This is a key issue, not only to promote reflection among lecturers and use it to enhance lecturers' training, but

also to make effective the changes needed to implement the pedagogical paradigm required by the Bologna process.

According to Cosh (1998), reflection that serves a learning purpose needs to include "not only reflection in action but also reflection on action, both before and after teaching, and creative reflection - on theories and procedures" (Cosh, 1998, 173). Lopes (2019) stresses the need for teachers' education to teach teachers to apply theory to real-world situations, thus leading, through reflection on the act of teaching, a new identity for instructors. In addition, professional development must change to meet the contemporary challenges of HE. To reach such a goal, it is important to highlight the factors that facilitate the awareness movement as presented by Kortaghen (2010) in the ALACT model (the abbreviation stands for action, looking back, awareness, creating alternatives, and trial).

The ALACT model was built to sequentially organize the relationship between theory and action in order to improve the process of reflection. The reflective challenge rests between "looking back" and "awareness." How can we successfully go from the looking back phase to awareness? What are the factors that allow and facilitate this passage? And to what extent are such factors related to peer observation?

The ALACT model was utilized to improve the theoretical frame on which present work seem to be deficient, namely by adding a new question related to the power of multidisciplinary peer observation to improve reflection.

Three main issues seem to be important in lecturers' reflections: the relationship between theory and practice; the relationship with others, colleagues and or students; and the increasingly important awareness concerning teaching practices such as teaching effectiveness, measured by student achievement rates, and class appraisals. In addition, lecturers' reflective practices depend on their professional development and awareness of their roles. The literature reveals connections among these issues (Hammersley-Fletcher & Orsmond,2005; Peel, 2005).

LITERATURE REVIEW

The relationship between theory and practice

Following Korthagen's (2010) ideas, the most important factor that allows for reflective teaching is a close relationship between theory and practice. Lopes (2019) agrees. He states that whenever issues to be learned are applicable to concrete tasks to be accomplished, or when practices raise new questions that are supposed to be highlighted, theory and practice come together. This means that lecturers should be aware and must have conditions that allow them to go deeper into their practices by the utilizing the power of theory. How may theory improve

pedagogical practices? Schön (1987) suggests the relation between these two sides of knowledge production must be rethought because academia's emphasis on technical rationality undervalues knowledge gained through practice. Zeichner (2010) follows Schön and argues understanding practice is useful. He avoids the extreme, on one hand, that prioritizes technical rationality over theory, and on the other hand, the position that practice is the best and only way to learn.

The logic of this relationship must be designed in close connection with research and an intervention purpose; in addition, the relationship must also establish the intersubjective environment that characterizes teaching and the institutional landscape (Sousa, Lopes & Boyd, 2018). This is in line with the European Science Foundation's recommendations concerning strengthening the identity of academics as it centers around the concept of "teacher researchers" (Pleschová et al., 2012)

The relationship with others colleagues

Relationships with colleagues and collaborative work have been frequently identified as crucial factors of professional development among teachers of all educational levels (Vieira et al, 2017). Within these relationships, peer observations of teaching have been reported as a key issue to developing deeper and more trusting relationships among peers, "colleagues who trust and respect each other can be valuable in helping improve each other's teaching" (Cosh, 1998, 177).

In addition, peer observation was described in some studies as promoting new ways of providing teachers with work support, mainly because the focus was less on the observed and more on the active self-development of the observer (Torres, Lopes, Valente & Mouraz, 2017). In addition, giving support to change practices (Hammersley-Fletcher & Orsmond, 2005) resulted in a conceptual expansion and lasting change to teaching practices (Bell & Mladenovic, 2015).

From the curriculum development perspective, peer observation could also strengthen relationships among lecturers and be an important factor for curriculum effectiveness, as it enables lecturers to observe how other colleagues organize their lectures, face contingencies, and support students' engagement with the discipline-specific curriculum (Bell & Mladenovic, 2015). Moreover, peer observations have implications for enhancing teachers' reflections on their beliefs about learning and teaching, in conjunction with participation in continuing professional development (de Vries et al., 2013).

Less frequent are the studies conducted to assess the importance of peer observation from a collective or departmental perspective (O'Keefe et al., 2009). Nevertheless, peer observation is referred to as a path to improving institutional cohesion (Mouraz & Pêgo, 2017).

Student achievement rates and class appraisals

The third factor that is important to increase awareness concerning teaching practices is teaching effectiveness, measured by student achievement rates and students' class appraisals. As Boyd and Harris (2010) (among many others) state, a good teacher is one who reflects on the learning outcomes and achievement rates of his/her students. However, there is no direct connection between student achievement rates or students' class appraisals and peer observation. Nevertheless, peer observation forms usually include a category related to students' behaviour or class climate; this could be understood as a measure of teaching effectiveness. For instance, in a study conducted among engineering lecturers using a classroom observation system to facilitate the adoption of active learning methodologies in engineering education, results confirm the process distinguishes pedagogical practices based on active learning principles from those based on a traditional exposition model. Researchers could conclude that lecturers using active learning principles were more effective and students learned more and better than those students who were taught using a traditional exposition model (Williams & Carvalho, 2010). Therefore, it is possible to see peer observation and reflection concerning lecturer – student interaction as a measure to prevent student failure.

In sum, these factors are important factors to promote lecturers' reflection regarding their teaching tasks but are also informal training opportunities for lecturers. The purpose of the present paper goes further than these informal occasions of training as it aims to discuss the potential of multidisciplinary peer observation to improve the awareness of pedagogical practice that reflection inspires.

METHODS

A Peer Observation of Teaching (MPOT) programme with a multidisciplinary nature has been implemented since 2011 under the name "Peer to Peer." (Mouraz & Pêgo, 2017). Every semester, lecturers from 14 faculties (UO) of University are invited to participate in the program that runs in a voluntary basis. The first step of the programme is a session that brings participants together and provides information on the operation of the program. In the second step, quartets are organised with two pairs of lecturers of two different faculties, in which each lecturer observes a class from a colleague of the same faculty and another class from a colleague of a different faculty. Roles are reversed and the two observers are then observed under the same conditions. Thus, all quartet members are observers and observed to emphasise the symmetrical character of relationship among participants.

The observation cycles also involve pre-observation and post-observation moments. The post observation moment is the occasion to perform reflective analysis among quartet members. Emphasis is placed on the importance of feedback, and on the associated communication skills, in order to foster reflection and professional development among lecturers (Mouraz & Pêgo, 2017). In order to stimulate reflection for the observers, the training aspect associated with the observer's role is addressed through the use of a specific observation form to be completed anonymously during and post-observation. The third step of the program is the presentation of results during which time, the Peer to Peer participants get together again to analyze and discuss the results of the observation guidelines and share experiences.

Ethical issues are important as sensitive material regarding lecturers' behavior is reported on observation forms. The lecturers upload their forms without names of either observer or observe.

Aiming to research the effects of multidisciplinary peer observation practices, this paper focuses on the improvement of reflection among lecturers concerning their pedagogical practices. To achieve this broad aim two research questions are outlined:

1 – What effect does multidisciplinary peer observation of teaching have on reflection practices of lecturers?

2 – What kind of reflection does multidisciplinary peer observation improve?

Data were collected from the observation forms and from interviews with the MPOT participants. In total, 63 observation forms were collected concerning MPOT performed during the 2012/13 and 2013/14 school years; twenty-four MPOT participants during the life of the program, from 2011, were interviewed.

The observation forms include four sets of questions. The first set addresses course and class information. The second set of questions, to be answered during class observation, requires lecturers to quantitatively score several predetermined items of five dimensions: i) class structure; ii) class organization; iii) class climate; iv) content; and v) teacher's attitude. A third set of questions, inspired by the work of Vieira and colleagues (2004), to be answered post-observation, invites the observer to compare the observed class with her/his own classes. The fourth section covered the post-observation reflective discussion. The present paper uses information gathered from the last two sets of questions.

In the interviews, some personal and professional data were obtained, as well as data about the participation of the lecturers in the MPOT program. The lecturers were then asked about the effects of their participation on their professional practices and on the institutional practices of their faculty. In addition, some perspectives about contributions of the multidisciplinary nature of the program were asked.

Data collected from 2012 to 2014, and from the interviews conducted in 2014, were subjected to a content analysis (qualitative data and N-VIVO software, v.10). For purposes of analysis, the registration unit was the sentence or the paragraph, as the minimum unit of meaning. To this end, a set of categories in line with the data collected was defined and used as the first approach to the material under analysis. Some emergent subcategories appeared during the analysis development and were added to the previous structure. At the completion of the analysis, two main dimensions were codified as important to the aim of this paper: the existence of reflective activities and the contribution of MPOT to improving reflection.

RESULTS

Results are presented following the two dimensions of content analysis structure that were considered relevant to the present discussion: the existence of reflective activities and the contribution of MPOT to improving reflection (summarized in Tables 1 and 2).

The existence of reflective activities

The existence of reflective activities was divided into two categories that were used to understand the situations in which reflection arises, specifically, a joint or an individual circumstance.

The joined reflection was analyzed under two subcategories that arose from the material: working with peers – appreciation and pedagogical aspects. The first subcategory was organized to encompass communication within the quartet, and included the issues of constraints and difficulties, contribution of multidisciplinary practices, and sharing opportunities. The second category, pedagogical aspects, was organized according to lecturer attitude, class climate, content, structure, and organization. the relationship between theory and practice; the relationship with others: colleagues and or students; and the important increasing awareness concerning teaching practices such as teaching effectiveness, measured by student achievement rates and classes appraisals

Concerning the first subcategory, working with peers - appreciation, all interviewees indicated the most relevant theme related to communication within the quartet is that of the politeness of the quartet members. Members were always pleasant and made positive criticisms, probably because quartet members were colleagues who were making their first contact with each other. One interviewee mentioned that when the observed class is bad or not so good, the observer gives the respective feedback in polite way. This will simultaneously have an indirect benefit to the observer because in the future the observer will remember and try to avoid the mistake that was observed in the observed class.

"I think they (lecturers) learned because they have observed (…) so there is an indirect learning, I cannot do this because I didn't like, but I cannot be impolite, I must say in a gentle way, if you do like that…"

Table 1:
Dimension one: categories and subcategories

Reflective activities	Joint reflection		
		Working with peers - appreciation	
			Communication within the quartet
			Constraints and Difficulties
			Contribution of multidisciplinary practices
			Sharing opportunity
		Pedagogical aspects	
			Lecture attitude
			Class climate
			Contents
			Structure
			Organisation
	Individual reflection		
		Comparative approaches among practices	
		Organic Unity/ Faculty (UO) comparison	
		Identification of pedagogical issues that can be improved	
		Limitations to pedagogical changes that were recognised as important	

One of the most important constraints and difficulties noted in the observations was the lack of time to do a deep post-observation joint reflection, as the post-observation time was more focused on completing the observation form than on doing a real critique of the observed class. An interviewee mentioned the difficulties of giving feedback to more experienced colleagues. Another interviewee referred to the multidisciplinary feature of the programme as the main difficulty to produce pertinent reflections upon teaching.

> "Hardly the advice which underpins the observation of pairs can generate a relevant reflection if we are from different areas and from different faculties."

A contrary opinion was expressed in the appreciation subcategory. Other lecturers described the post-observation joint reflection as an opportunity to share experiences and compare strategies due to the multidisciplinary nature of the peer-to-peer program.

> "The final joint refection was (…) particularly interesting and useful because it enabled exchange of pedagogical practices of each quartet member and to reflect about the possibility and viability of explore the application (…) to other scientific areas."

Concerning the subcategory pedagogical aspects, most comments were related to the lecturer's attitude, namely vivacity and dynamism to promote student motivation, capability of knowledge systematization during class, interaction with students, speaking at the proper speed, validating student class participation, and promoting student autonomy. These issues were pointed to as the key topics of classes observed as well as difficulties shown by some lecturers.

In general, there was a coincident opinion regarding the pedagogical aspects that were considered important among lecturers regarding to deliver an effective class. "I concluded that it is important to have clarity and dynamism of presentation, have time to expose, time to ask questions, and time for students take questions home".

Additionally, there was a set of remarks concerning voice, gestures, lecturers' positions in the classroom, and the closeness of lecturers to the students that were noted as significant in spite of their simple characteristics.

Another issue related to pedagogical aspects is class climate. The students' motivation or lack thereof and the way this determines students' behavior summarizes the axes of understanding of class climate. Other adjectives such as students' commitment and class progress were referred to as determinants of a successful class climate. One interviewee noted that, in the quartet joined reflection, the lack of motivation was attributed only to students. For this participant, the reflection was superficial as it did not relate to other aspects connected with the teaching and learning process.

> "reflection was quite superficial, without being made any relationship (...) with the perception of the importance of the discipline within the general scope of the course, the worked contents, the methodology or the evaluation procedures ".

Within the subcategory pedagogical aspects, subject matter was noted as an important but beyond the scope of the participant's expertise as observers did not belong to the same fields of knowledge. Nevertheless, some reflections were

made related to including personal research findings in the subject matter and that students should be shown the usefulness of the From Peer-to-Peer program.

Relating to class structure that includes class goals and skills to be developed by students, all participants agreed these aspects were present in the classes observed. One participant noted other issues such as the establishment of a clear alignment structure from the goals to the content, methodology, and assessment, which could be an improvement emerging from reflection. The same lecturer emphasized that there had been a reflection regarding class organization and the need to improve students' participation, and that this could be achieved by doing a summary at the end of class.

Individual reflection was analyzed under four subcategories: comparative approach among practices; the UO comparison; the identification of pedagogical issues that can be improved, and the limitation to pedagogical change.

Concerning the first subcategory, comparative approaches among practices, the main themes are related to the different uses of technology and resources by the lecturer. Related to technologies, it seems that two situations were observed, as follows: (1) classrooms in which technology was used effectively, and (2) classroom in which technology was underutilized. In the first situation, observers who were not familiar with technology seemed to be favorably impressed with the use of technology. In the second situation, observers were sometimes surprised that technology was not used effectively.

(1) "I am against the use of slides in class. But (...) the colleagues that I observed, used it very well, (...) it made me somehow change a bit of opinion and realize that technology can be well used".

(2) "I think that the audio-visual and projection by the visual impact have, perhaps, made us use much less the pen, and even forget it. However, its use in some situations can be very helpful."

The aims of courses were discussed and reflected upon including technological differences. In fact, the first statement was common (three interviewees alluded to this issue) and it reveals that pedagogical efficacy and effectiveness are the main reason to use information and communication technologies (ICT). However, two interviewees noted the importance of doing explanations slowly (with old fashioned resources) and presenting the schematic production as a process, making the discussion easier for students to follow during classes.

The role of lecturer within the class was another issue of comparison highlighted by participants in the peer observation programme. Several roles were identified among observed lecturers; participants roughly distinguished between those individuals who are guides of students' learning and those who are mainly workers that actively teach.

> "And I was there as the person who helped them along the way. But students do not see the teacher this way. They cannot get there. That was one thing that I became aware [of]. Students do not see the teacher this way. They expect the teacher to be a teacher, and we need to somehow make the class ownership".

This assumption could be related to the relationship between lecturers and students and students' expectations. What came up after the reflection was, for some lecturers, an awareness of the impact of their closeness to students: some think that it is a very important issue that allows for better knowledge regarding students' abilities and difficulties; others think that students neither need, nor expect, such proximity.

Furthermore, lecturers stated that these differences depend on class type, students' behavior, and course tasks and criteria. As lecturers found out, type of classes, such as laboratorial classes, require teachers to perform a different role, different from the demonstrative and traditional way. In the lab, the lecturer is closer to students and their difficulties, and can offer them hands-on support to help them complete the tasks they are to do in the lab. Course tasks and criteria introduce different exigencies to teachers based on the Faculty in which they are based. MPOT participants realized this was due to the multidisciplinary feature of the program. In fact, these kinds of reflections were expected as the lecturers involved came from different scientific fields and teaching traditions.

> "I realized the importance of laboratorial work for students. There, the teacher's role is completely different. In a class where I expose, I answer questions from the students." "In a laboratorial class, the relationship between teacher and students is of quite different nature".

Concerning the second subcategory, the UO comparison, statements note the differences among Faculties related to organizational features and regimens. Issues like punctuality, compulsory assistance, class participation, and the creation of new sections of classes when many students wish to enroll, differentiate UO in spite of belonging the same university.

The most interesting issue regarding the comparison among UOs is related to the pre-conceptions of lecturers regarding other fields of knowledge that they had the opportunity to observe in the MPOT program.

> "It allowed me to confront different ways of teaching, and began to look at them in another way (...) Having different conditions and the objectives underlying them is that determine whether they are good or bad (...) if they result or not in students learning. This project gave me that confidence, even surpassing some prejudice, the stereotypes that eventually I would have on what are the practices of our colleagues in other faculties."

As to the identification of pedagogical issues that can be improved, suggestions could be organized into those that lecturers consider easy to include in their own classes and those they did not realize are important until the MPOT experience. Practices, such as the position of the teacher inside the room, the information on slides, the inflection in the voice, the way to organize work groups, and other small strategies were easily understood as ways to change lecturers' habits.

> "(...) Because we realize that there are other ways of doing and that we can experience.".
>
> "I never thought if it was important to be closer to the door or close the window ... I had never [been] made aware of that".
>
> "The ways to manage the intervention/participation of the working groups that do not present the same day is one of the issues that concerns me. Understand the strategies used by other colleagues to engage these students would be very interesting for me".
>
> "Put too much information on the slides, which can cause students inattention".
>
> "I learned that it is very important when we are exposed to vary the tone of voice (...) and it's worth (...) ask students on the subject that we are exposed".
>
> "[A] strategy that I found quite good, is from time to time make purposeful mistakes that could lead students to participate in correcting them."

Concerning broad problems of teaching, the lack of students' motivation was raised by only one of the interviewees; he expected the quartet proposals to solve his problem. MPOT did not solve his own known limitation, probably because of the limited number of observations.

> "What I think is the main weakness in my performance has never been approached in the peer to peer: is student motivation. (...) I think I still could not get to all students, and peer to peer has not made me suggestions to that effect. Of course, this is understandable, because one or two observations [do] not allow [someone] to cover everything".

The limitations to pedagogical change that were recognized as important are mainly due to time constraints and individual or institutional characteristics of changes.

The contribution of MPOT to reflection improvement.

Table 2- Dimension two: categories and subcategories

MPOT evaluation	Aspects to improve		
		Internal	
			Quality of reflection
			Final meeting of the MPOT
	Strong aspects		
		Impact on reflective practices	
			Encouraging critical and reflective thinking
			Possibility of joint reflection

Time or lack thereof is currently referred to as the main problem that impeaches teachers' pedagogical changes; this is related to the time required by the tasks that teachers are supposed to perform: research, teaching, and department or university service. Given all the other demands made on lecturers, teaching is frequently considered the least important of their tasks.

> "I think that, first of all, we are teachers of young people (...) but then I think that my time is already being spent on management, Scientific Council, Economics group research center, already I am disperse by so many things!"

> "Individual limitations are also depending [on] individual perspectives of career developing and [the] importance of pedagogical issues within this path. Therefore, time, as explained above, is crucial but it could be manageable if teachers see teaching [it] as an opportunity to improve their careers or not."

Diversity of observed experiences is mentioned by some as another limitation to improve pedagogical changes.

> "We now find ourselves constrained by time, by incredible pressure at the level of research work. (...) Teaching is what is less valued. (...) If we all are very militant and proactive, this improves. And, indeed, there are lacking other circumstances for this to improve."

> "Implies a profound change that moves a lot with our identities, with what we do and what we think we do well. (...) It is very difficult to pass this level of what is possible individual change to a more general change. (...) In the absence of mechanisms of mediation between individual changes and institutional changes, we end up staying closed in our tiniest changes."

MPOT evaluation respecting the reflective activities included two subcategories, namely, aspects to improve internal character, such as, the quality of reflection and the final meeting of the MPOT, and the strong aspects that impact reflective practices, namely, encouraging critical and reflective thinking and possibility of joint reflection.

Lecturers claimed that more important than observations to change their practices should be discussions about what was observed and the reasons for certain recommended practices. The criticisms arising from discussions within the quartets are described as relevant to achieving awareness of the aspects to improve, but probably in some cases, awareness was lacking because apparently the effects were not visible.

> "The discussion should focus on what this is about, and it is not necessarily observed to change what lectures do, but discuss why people do what they do."
>
> "I took my individual conclusions, but there was no assessment, or rather a reflection that would allow [me] to draw some general conclusions."
>
> "This idea of 'critical friend', focuses more on the critical and less on friend."
>
> "For me, the most important experience within the quartet, is the criticism and suggestions that we share between us."
>
> "I think there was no visible effects."

Another internal aspect that pointed out relevant activities to improve reflective is the final meeting of the MPOT. Interviewers think that the meeting should be an opportunity for a critical discussion and not only a presentation of results.

> "And this, from the point of view of sharing, prowled around these final sessions in which there was a display of results. But I think it was little. We lack this critical component. It was not to be friendly or ceases to be, is to be critical."
>
> "It should be to promote reflection and less to improve results."

Concerning the strong factors that impact on reflective practices, encouraging critical and reflective thinking and the possibility of joint reflection was appreciated by several participants.

> "Beyond the confrontation with the practice of other lecturers, program induces a reflective exercise on their own teaching practice, which proved to be very stimulating."
>
> "The ability to discuss and reflect together and seek the best solutions/outputs for a common concern to all - the continuous improvement of teaching/learning in HE."

DISCUSSION

For some participants, the multidisciplinary peer observation gives them the opportunity to share experiences and compare strategies, whereas for others the multidisciplinary feature of the program is the main difficulty to obtaining pertinent reflections upon teaching.

Related to class structure, including class goals and skills to be developed by students, all participants agreed that these aspects were present in the observed classes. Other issues were noted as important but not present within the classes observed. such as students' commitment. It is possible to conclude that these issues are quite relevant for the vast majority of teachers and could lead to a broad reflection regarding their importance.

Nevertheless, there was consensus that the reflection was superficial and in general. A deep criticism and discussion were not achieved within some quartets. This is in line with difficulties stated regarding a certain lack of trust caused by the occasional character of the program. If programs could be more systematic and lecturers could be together more often than three compulsory observations, a more trusting relationship could be more established. This is in agreement with Peel (2005), who studied the use of the peer observation of teaching (POT) techniques and argued that classroom observation alone is not enough to promote the improvement of teaching in the classroom. An active commitment with pedagogical theory, purposeful critical reflection on classroom practice, and challenging conventions through shared critical reflection is required.

Another argument used by some participants related to the difficulty to observe some classes from other fields of knowledge; this could be another reason for superficial reflection, as participants could not discuss the close relations between subject matter and some pedagogical and curricular options. Moreover, the lack of formal pedagogical training of some lecturers pushes individuals to go further in a theoretical discussion regarding what was observed.

Another issue that arose in the lecturers' discourses related to the circumstance of MPOT – it is a personal decision to be part of the program and the effects remain within personal practices. The departmental character of MPOT is absent and the commonality of purpose and perceptions about what is good teaching rests within the quartet. This is in line with Hammersley-Fletcher & Osmond's (2005) statements regarding the fact that PO usually moves lecturers beyond a position in which they feel the process is simply about the content and mechanics of the lesson being taught. If it is the reflective process in which the greatest inroads into the quality of learning and teaching are seen, then reflection needs to be emphasized for individual lecturers across the entire campus.

A second set of findings is related to the impact of MPOT effects on individual reflection. Within this set, it is possible to highlight larger and diverse

effects, mainly as observers have the opportunity to reflect on the practices they saw, so they may implement similar ones or avoid the mistakes observed in the less successful classes. In this regard, Bell & Mladenovic (2008) also note that some teachers reported a higher benefit from observing the classes of colleagues than from the feedback from their classes. There is potential in the suggestions arising from the observations that the observing lecturers learn both positive techniques to include in their own classes or see pedagogical errors they need to remove from their teaching. The lessons learned primarily include lecturer interactions with students, the lecturer's main role in the class, and the use of ICT in the classroom. This is one of the strongest benefits from the MPOT experience.

CONCLUSIONS

In summary, it could be said that MPOT has deeper effects on individual reflection than on a collective perspective. In addition, reflection seems to be more effective through the observation of others when compared with feedback received on one's own classes.

There was consensus that the reflection within the quartets was superficial and in general a deep criticism and discussion were not achieved. Such a conclusion may point to the need for more explicit training for in-classroom observation techniques.

The effective impact on simple practices that lecturers consider easy to include in their own classes and that they did not realize the importance of until the MPOT experience were recognized as the main result of the reflective activities. Practices including the position of the teacher inside the room, design of slides, the inflection and volume of one's voice, and ways to organize work groups were probably the result of superficial reflection. The indirect benefits of MPOT in professional development seem to be more relevant to the observers as they are primarily responsible for the changes they introduce in their own classes.

IMPLICATIONS

Suggestions could be to raise concerns regarding the process of MPOT to include a further reflection that could be established among each quartet of participants to foster and deepen reflection. The final meeting of participants could be used for this purpose. This could also be an important step to improve reflective practices and boost them to an institutional level.

REFERENCES

Bell, A., & Mladenovic, R. (2008). The Benefits of Peer Observation of Teaching for Tutor Development. *Higher Education* 55 (6), 735–752.

Bell, A. & Mladenovic, R. (2015). Situated learning, reflective practice and conceptual expansion. *Teaching in Higher Education,* 20(1), 24-36.

Boyd, P., & Harris, K. (2010). Becoming a university lecturer in teacher Education. *Professional Development in Education*. 36 (1-2), 9-24.

Cosh, J. (1998). Peer observation in higher education. *Innovations in Education and Training International* 35(2): 171-176.

De Vries, S., Jansen, E., & Van de Grift, W. (2013). Profiling teachers' continuing professional development and the relation with their beliefs about learning and teaching. *Teaching and Teacher Education*, 33, (2)78 – 89.

Dias, D. (2015). Has massification of higher education led to more equity. *International Journal of Inclusive Education* 19(2): 103-120.

Esteves, M. (2010). Sentidos da inovação pedagógica no ensino superior. In C. Leite, *Sentidos da pedagogia no ensino superior* (pp. 45-61). Porto: CIIE/Livpsic.

European Commission (2013). *Report to the European Commission on Improving the quality of teaching and learning in Europe's higher education institutions*. Luxembourg: Publications Office of the European Union

Giroux, H. (1988*). Teachers as intellectual.* London: Bergin and Garvey.

Hammersley-Fletcher, L. & Orsmond, P. (2005) Reflecting on reflective practices within peer observation. *Studies in Higher Education*, 30:2, 213-224.

Korthagen, F. (2010). Situated learning theory and the pedagogy of teacher education. *Teaching and Teacher Education*. 26 98–106

Lopes, A. (forthcoming 2019). Still building a better world? Research reflections on teacher education and identity. In Marta Kowalczuk-Waledziak, Alicja Korzeniecka-Bondar, & Wioleta Danilewicz (Eds.), *Rethinking teacher education for the 21st Century: Trends, challenges, and new directions* (ISBN 978-3-8474-2241-9). Opladen-Berlin-Toronto: Verlag Barbara Budrich.

Mouraz, A. & Pêgo, J.P. (2017). *De par em par na U.Porto*. Porto: Edições da Universidade do Porto.

O'Keefe, M., Lecouteur, A., Miller, J. & McGowan, U. (2009). The Colleague Development Program: a multidisciplinary program of peer observation partnerships. *Medical Teacher*, 31: 1060-1065.

Peel, D. (2005) Peer observation as a transformatory tool? *Teaching in Higher Education*, 10:4, 489-504,

Pleschová, G., Simon, E., Quinlan, K., Murphy, J., Roxa, T. & Szabó, M. (2012) *The Professionalisation of Academics as Teachers in Higher Education*. Strasbourg. European Science Foundation (ESF).

Schön, D. (1987). *Educating the reflective practitioner*. San Francisco: Jossey-Bass.

Sullivan P., Buckle, A. Nicky G. & Atkinson, S. (2012). Peer observation of teaching as a faculty development tool. BMC Medical Education, 12, 26

Sousa, R., Lopes, A., & Boyd, P. (2018). Research: An insight on how it is valued by Portuguese and English teacher educators. *Teaching Education*. doi:10.1080/10476210.2018.1495704 Scopus

Torres, A. C; Lopes, A.; Valente J., & Mouraz, A. (2017): What catches the eye in class observation? Observers' perspectives in a multidisciplinary peer observation of teaching program, *Teaching in Higher Education*, DOI:10.1080/13562517.2017.1301907.

Vieira, F; Moreira, J A; Coelho da Silva, J.; Vieira, C; Gonçalves, S & Almeida, M. J (2017). Estruturas de apoio à reconfiguração das culturas pedagógicas no ensino superior. In P. Membiela Iglesia (Ed.), *Nuevos desafios en la enseñanza superior / Novos desafios no ensino superior*. Ourense, Espanha.

Williams, B & Carvalho, I (2010). Using the lamm classroom observation system. *Joint International IGIP-SEFI Annual Conference 2010, Trnava, Slovakia*

Zeichner, K. (1993). *A formação reflexiva de professores: Ideias e práticas*. Lisboa: Educa.

Zeichner, K. (2010). New epistemologies in teacher education. *Revista Interuniversitaria de Formación del Profesorado*, 68, 123-149.

ANA MOURAZ, Ph. D., is a Senior Lecturer in the University of Aberta, Portugal. Email: ana.lopes@uab.pt

ISABEL FERREIRA, Ph. D., is a professor in the Faculty of Pharmacy at the University of Porto, Portugal. Email: isabel.ferreira@ff.up.pt

Manuscript submitted: ***August 27, 2019***
Manuscript revised: ***May,21, 2020***
Accepted for publication: ***April ,6, 2021***

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

Volume 10, Issue 1 (2021), pp. 59-82
Journal of Interdisciplinary Studies in Education
ISSN: 2166-2681Print 2690-0408 Online
https://ojed.org/jise

Arts Integration and Culturally Sustaining Pedagogy: Supporting Bi/Multilingual High School Learners in Biology

Sahar Aghasafari
University of Georgia, USA

Kelli Bivins and Brendan Nordgren
Cedar Shoals High School, USA

ABSTRACT

There has been a dramatic increase in the number of multilingual and multicultural students in U.S. schools. Because of high-stakes testing and English-only mandates, instructional practices and curricula in most urban school districts neglect the cultural and linguistic interests of their diverse student populations. In this interpretive study, we use exploratory case study methods to demonstrate how Culturally Sustaining Pedagogy (CSP) and Arts Integration (including drawing and graphic story with Photoshop) can support the learning of ten students whose first language is not English. This article introduces research activities supporting the use of culturally sustaining pedagogy and arts in a biology unit (the role of selection population) in communication skills class, particularly with bilingual and multilingual youth.

Keywords: Arts Integration; bi/multilingual learners; biology unit; communication skills class; culturally sustaining pedagogy; STEAM

INTRODUCTION

Arts integration gained attention in the 1960s and 1970s when arts partnerships among community arts organizations and public schools became common (Dreeszen, April, & Deasy,1999; Remer, 1996;). The Arts Education Partnership (2002) reflected a growing trend involving public schools, arts organizations, and universities. While not all partnerships included in the AEP documents focused on arts integration, the growth of sustained connections between art education and other disciplines contributed to the discussion of arts education in other classrooms (Burnaford, Brown, Doherty, & McLaughlin, 2007).

Art educators have long promoted interdisciplinary art education and arts integration (Stokrocki, 2005). Silverstein and Layne (2010) define arts integration as "an approach to teaching in which students construct and demonstrate understanding through an art form. Students engage in a creative process that connects an art form to another subject area and meet evolving objectives in both" (para. 3). Arts integration has been used to explore "the relevance and approaches to arts education connected to curriculum and instruction with learners of all ages, including teacher-learners" (Cahnmann-Taylor & Sanders-Bustle, 2019, p. 2). Arts integration can tie together the many components of the other disciplines. Moreover, it addresses the importance of creative production and promotes hands-on learning through artmaking as a powerful way for students to express themselves as learners and to recognize themselves as engaged in meaningful learning.

Collaborative Interdisciplinary Pedagogical Development and Implementation

As media art (digital art, computer graphics, computer animation, 3D, etc.) has become more widely available and accessible, it has fundamentally changed the way people communicate and compose. Many scholars have reported that media art, as a multimodal process, motivated students to do well with the school curriculum. For example, Bruce (2009) found that students in his elective media course were more motivated to create digital films than traditional print-based assignments. Similarly, Chandler-Olcott and Mahar (2003) maintained that the students who worked on anime and webpages of their own free will spent many hours crafting and revising their respective multimodal texts. Lawrence, McNeal, and Yildiz (2009) found that creating online comics was engaging for their students and improved their information literacy skills. For the students he worked with,

Nixon (2009) found that digital storytelling promoted agency, social awareness, and literacy.

Similarly, in *Art as a Way of Talking for Emergent Bilingual Youth: A Foundation for Literacy in K-12 Schools* (Berriz, Wager, & Poey, 2019), contributing authors share inspiring examples illustrating how arts and culture functions as a foundational literacy for emergent bi/multilingual students. Multimodality emphasizes how the many different modes within any given text intersect, interrelate, and are interpreted to make new meanings (Kress, 2000, 2003). For example, Sally Brown (2019) uses digital artwork that employs images as tools for student discussion to develop an understanding of emergent bilingual (EB) students as designers and writers. In Brown's research, which lasted an entire school year, multilingual students at an elementary school composed 26 books that incorporated text and digital art addressing four themes: "friends and family, holidays, popular culture (e.g., TV shows and video games), and animals" (p. 168). Each student integrated cultural perspectives that represented his or her life experiences to express his or her culture in narrative stories.

Through graphic novels, Jie Park and Lori Simpson (2019) engage EB high school students' critical and analytic ways of "reading" their world by supporting the development of their "critical multiliteracies" (Jewitt, 2008) through integrating arts (the graphic novel) into their teaching practice. "The arts in graphic texts promoted a different kind of reading—a kind of reading in which language-learning youth became active inquirers and critical analysts, questioning who created the text, with what intention, and with what beliefs, and worldviews" (p. 246). Hence, arts, including media arts, are significant because they cultivate the brain processes involved in knowledge acquisition and foster the higher-level skills of learning, knowing, thinking, remembering, and problem-solving that are necessary for understanding concepts more deeply.

From STEM to STEAM: Getting an A in STEM

The emphasis on STEM (Science, Technology, Engineering, Mathematics) in the U.S. began with the launch of the Russian satellite Sputnik in 1957 (Erwin, 2017). Over the next 50 years, the National Aeronautics and Space Administration (NASA) was created, science and engineering firms were launched (leading to the first cell phone, first personal computer, and first permanent artificial heart), and numerous councils related to math and science were formed to guide K-12 curricula. The first explicit use of the STEM acronym arose during a 2005 Congressional caucus advocating the creation of schools focused on science and engineering (Heitin, 2015). That same year, the National Academies of Science, Engineering, and Medicine indicated that U.S. students lacked proficiency in STEM compared to students from other countries (Erwin, 2017).

Currently, only 16 percent of American high school seniors are proficient in math and interested in STEM careers (U.S. Department of Education [DOE], 2015), and bi/multilingual learners are severely under-represented in STEM fields (National Academies of Science, Engineering, and Medicine, 2016).

In 2007, STEAM (Science, Technology, Engineering, Art, Mathematics) education emerged as a new pedagogy during a roundtable discussion on national policy by Americans for the Arts in response to the need to increase student interest and skills in science, technology, engineering, and mathematics (Perignat & Katz-Buonincontro, 2019). STEAM is "an interdisciplinary or transdisciplinary approach to teaching and learning . . . in a defined learning context" (Perignat & Katz-Buonincontro, 2019, p. 34). Today, the DOE's goal is to prepare more than 100,000 new STEAM teachers by 2021" (Erwin, 2017). While there is much interest in STEAM among researchers and educators, limited information is available regarding how instructional approaches must shift if STEAM teaching is to be effective in improving students' math and science competencies. Moreover, it requires a shift from traditional education methods to a focus on the learning process (NGSS Lead States, 2013).

One misconception about STEAM education "is that [the] arts [are focused] primarily on a finished product, rather than a process of learning through thinking, planning, and creating a work of art" (Perignat & Katz-Buonincontro, 2019, p.33). Engaging in art as a process of learning (Duggan, 2007; Patterson, 2015) is essential to facilitating learning in other disciplines, specifically STEM.

Arts Integration in STEAM Classrooms

There are several models for employing arts to strengthen STEM skills. Some artists blur the boundaries between art, design, and STEM disciplines by including science in their artwork in order to demonstrate that art can help people understand more about the artistic/creative process inherent in thinking about design, as well as the value that aesthetic inquiry can add to the sciences. In fact, "when the arts are seen as an end goal, not just an entryway to presumably more important STEM topics, thoughtfully developed STEAM curricula can truly engage sustained cross-disciplinary student learning in K-12 settings and informal education" (Bequette & Bequette, 2012, p. 43). Moreover, integrating arts into STEM may be a promising method for teaching problem-solving and creative and critical thinking. In fact, strong connections between art and STEM can be made when examining large and complex ideas, concepts, practices, and habits of mind (Hetland, Winner, Veenema, & Sheridan, 2007; Wiggins & McTighe, 2005).

Giving students opportunities to view and create art encourages them to think critically and introduces them to the power of art. For example, a lesson on using watercolors could incorporate science by asking students to explore the

effects of watercolors on different types of paper or by asking them to mix materials into water colors. In the process, learners will then be able to create their own artwork that is deliberately informed by their understanding of scientific concepts (Glass & Wilson, 2016). Schramm (2000) describes a class at Madeira Jr./Sr. High School in Cincinnati, Ohio, in which high school art and biology students integrated art with biology to create a three-dimensional genetic robot. The project was designed "to recognize individual differences in students while providing the conditions and experiences by which all students become visually and scientifically literate" (p. 41). In this class, students explored 19th-century Mendelian genetics and studied 20th-century video-sculptures by Nam June Paik. The students engaged in discovery learning through a hands-on approach as well as through memorizing isolated facts. As a result, they could make connections between the arts and science by drawing on their experience.

Metcalf (2004) describes a "lesson "designed to encourage high school students to see connections between art images and physics principals" (p. 25) in which students were shown four images by artists Lynda Lowe, Richard H. Love, Victor Vasarely, and Richard Pousette-Dart and then asked to create a visual representation of a scientific principle of their choosing using painting, drawing, or collage. Students were also required to write two paragraphs describing their artwork, how it fit the scientific principle, and how they would evaluate their success with this assignment. The significance of this study lies in its finding that integrating visual art with physics improves student achievement and provides the opportunity for deeper learning and more meaningful, relevant instructional tasks.

Another example of integrating arts into science content is SLANT, "a platform for exploring the connections between contemporary art and science and creating innovative ways to integrate and teach K-12 students" (Marshall, 2017, p. 139). SLANT created a team of representatives from the San Francisco Unified School District (SFUSD), the California Academy of Science (a natural history museum), and the M. H. de Young Memorial Museum (a fine arts museum). As Marshall (2017) describes, SLANT was "a year-long program with multiple sequential workshops" that organized participants "into cohorts of 30 to 40 teachers who worked together over an entire year" (p. 145) with the goal of designing a curriculum that would deepen understanding of scientific and artistic concepts and practices as well as developing teaching strategies that "foster and embody openness, flexibility, and curiosity in students" (p. 140). Similarly, Marshall (2010) provides evidence that integration is a significant, lively, and authentic art practice that offers teachers and students in high school practical ways to connect art with curricula. Marshall presents five models for teaching art in ways that accommodate integration: Depiction, Extension/Projection, Reforming, Mimicry, and Metaphor. The models are based on five conceptual strategies used by contemporary artists Alexis Rockman, Mark Dion, and David Wojnarowicz to

manipulate ideas and imagery in order to make meaning. According to Marshall (2010), "by providing ways to integrate art that are based on contemporary art practices and showing that art and integration go hand in hand, these strategies testify that learning through the arts is compatible with learning in the arts" (p. 19).

Marshall also illustrates the qualities of arts integration as a transdisciplinary study by "viewing arts integration through the lenses of Systems Theory and the New Sciences, [which] reveals its potential as a pedagogy of fusion and flow that could transform teaching and learning across the curriculum" (Marshall, 2014, p. 104). She uses the example of Jenna Huxley, a senior in Kimberley D'Adamo's International Baccalaureate (IB) art class at Berkeley High School in Berkeley, California, who researched human-animal relationships by taking a trip to the zoo. Huxley used language arts to examine the anatomical similarities and differences among animals in terms of humans' scientific inquiry: "She invented her own set of symbols and a communication game, Lexigram, and experimented with the artwork of her classmates" (p. 110). Jenna's images and reflections reveal how she compared and contrasted thinking and imagery in biology studies and showed how disciplinary thinking provides the context for understanding the integration that a transdisciplinary approach implies (Marshall, 2014). Huxley's project enables us to imagine how transdisciplinary arts integration could inspire new models of practice in an education system. It also suggests that arts-integrated instruction might be particularly beneficial for students who are not best served by traditional teaching methods. It also enables us to imagine how transdisciplinary arts integration can create opportunities to alter the way educators in a variety of disciplines—including art—understand arts integration.

Leysath and Bronowski (2016) found that students have fewer opportunities to demonstrate learning when schools adopt a narrow focus on numeracy and literacy. Integrating art into other disciplines creates an opportunity for "deeper instruction, learning that is more meaningful and has a greater social understanding, and a more interesting and complex view of the world" (p. 29). An art teacher in the educational leadership doctoral program at Lamar University and the chemistry teacher at an East Texas high school explored leadership in curriculum and instruction design by using ceramics to teach core concepts in chemistry. In order "to discover shrinkage rates as well as the percentage of water absorption" (p. 30), students made slabs of clay, then weighed them. The tiles were fired to bisque and then placed in water overnight. The next day, students re-measured the mass to determine water absorption percentages. Through throwing a bowl on the pottery wheel and then glazing it, students were able to explore the properties of clay as well as develop measuring skills (Leysath & Bronowski, 2016). To determine the success of the arts integration in this project, researchers developed and collected a series of interview questions for the chemistry teacher

and a focus group of five chemistry students. Additionally, the chemistry teacher made observations during one of the activities. Finally, the chemistry teacher assessed students' understanding of benchmark concepts. The data showed "all of the participants shared the perception that the learning activities provided motivation and student responsibility for learning and improved academic achievement" (p. 32). The chemistry teacher reported that scores on Curriculum-Based Assessments, given at the end of each grading period, improved from previous years. Formative assessments, such as "(1) the time necessary to use concepts for further learning; (2) student use of concepts to complete assignments; and (3) student questioning further indicated an increase in student understanding of the chemistry concepts that were taught as art-integrated learning activities" (p. 33). Arts integration increased student engagement, and, moreover, the hands-on activities increased the relevancy of the lessons to the students. They all agreed that the activities were fun.

Curriculum development has become concerned with providing students with the skills necessary to thrive in a globalized economy. Hadinugrahaningsih, Rahmawati, and Ridwan, designed a two-year plan to develop students' 21st-century skills in the chemistry classroom through STEAM integration. "The term '21st-century skill' is generally used to refer to certain core competencies such as collaboration, digital literacy, critical thinking, and problem-solving that advocates believe schools need to teach"; such skills require students to "master content while producing, synthesizing, and evaluating information from a wide variety of subjects and sources, with an understanding of and respect for diverse cultures" (Hadinugrahaningsih et al., 2017, p. 1). The study, conducted at one private and one public secondary school, introduced the topics of hydrocarbons, petroleum, solubility, and the acid-base scale. For example, students performed tests to determine the best pH conditions for both goldfish and hydroponic plants in a classroom aquarium.

Similarly, Arís and Orcos (2019) consider the role of STEAM skills in the FIRST LEGO League championships. The development of educational robotics (ER) and its application in the classroom have grown in popularity due to the development of competitions such as the FIRST LEGO League, which aims to promote scientific and technological vocations through innovation, creativity, and teamwork. The FIRST LEGO League competitions have been held in Spain since 2006 and draw child participants from more than 70 countries. Every year, students with different abilities and interest levels participate in these competitions.

Empirical studies such as those described above illustrate the vital need to integrate arts into STEM in order to enhance student academic achievement, interest, engagement, critical thinking, creativity, self-expression, and problem-solving. However, each of these two studies has weaknesses. The arts-integration in the study by Hadinugrahaningsih and colleagues was limited to decorating the

aquariums. The goldfish aquarium project could have incorporated additional elements to engage students in critical thinking, communication, and other 21st century skills. For example, works by contemporary artists could have been introduced, and the process could have been animated with computer design software such as Minecraft. Also, while the authors believe that the use of LEGO bricks in the classroom or in competition can be effective in engaging students, Arís and Orcos did not sufficiently examine how the FIRST LEGO League might promote scientific curiosity as well as social skills, which can develop students' motivation and teamwork. Research is needed that investigates how arts integration can foster collaboration, leadership, and information- and media-literacy in addition to the benefits already identified.

By engaging students in activities that develop cognitive skills and foster higher-level learning (knowing, thinking, remembering, and problem solving), the arts help students attain a deeper understanding of concepts. This, in turn, is vital in encouraging students to envision new possibilities in their academic and professional careers. However, despite the clearly rich and valid cross-curricular benefits among the arts and STEM, making those connections may become a task specifically for STEM and art educators.

Cultural Relevance in STEAM

Considering the diversity of students in the United States, teachers must incorporate culturally relevant teaching (CRT) to provide a more equitable situation for their students. In 2016, a team of college faculty members collaborated to create an innovative multimodal approach to teaching STEAM as a professional development. The professional development approach had five sections: (1) storytelling examples, (2) integration of the arts into STEM, (3) technology, (4) CRT and storytelling, and (5) participant showcase. It was designed to unpack the process by introducing techniques, procedures, methods, and pedagogies using the arts, creatively exploring STEM subjects, and considering how CRT practices could be applied. The workshop provided educators with the practices to help students develop academic knowledge "through artmaking and storytelling; gave students the voice or the cultural competence to approach standards in ways that make the information relevant; and used artmaking as a means for students to develop a socio-political consciousness and evoke change" (Hunter-Doniger, Howard, Harris, & Hall, 2018, p.50).

Including culturally relevant enrichment activities is one way to encourage more interest among, for example, Native American students in science, technology, engineering, and mathematics (STEM) courses and careers. Using case studies along with Critical Theory, Liberation Theology, and Social and

Cultural Capital Theory, Kant, Burckhard, and Meyers (2018) explored the impact of combining traditional Native arts and crafts with STEM. "The goal of the activities was to deepen STEM interest and to demonstrate relevance to the participants' daily lives and community well-being, in the hope that some of the girls would consider STEM majors and careers in the future" (Kant et al., 2018, p. 15). The girls at Flandreau Indian School (FIS) were introduced to "native plants and glassmaking because of the central importance of native fruits and glass beads in traditional Native American life in South Dakota" (p. 18). The students identified over 100 characteristics of fruits and plants with traditional uses. The group made wild rose petal perfume, and each girl tagged a plant in the FIS herbarium with her name to personalize the experience and create a sense of legacy. The group also explored different glass manufacturing techniques through hands-on work, making "traditional Lakota/Dakota glass beadwork and porcupine quillwork using brain-tanned hides, rawhide, sinew, Giant Canada Goose feathers, ermine pelts, box turtle shells, horsehair, and many other authentic materials" (Kant et al., 2018, p. 19). The techniques used to gather data included a two-part post-survey and a post focus group of participants. Data analysis indicated that "culturally relevant STEM enrichment activities combined with Native arts and crafts increased interest in STEM studies and careers for Native-American high school girls in this situation at this place, although mathematics remains somewhat problematic" (p. 22).

Each of these conceptions of culturally relevant literacies in STEAM acknowledges that students, especially emergent bi/multilingual students, bring a range of resources from culture and home language to meaning-making in and outside of the classroom. These multiple forms of literacies challenge traditional forms of schooling that exclusively spotlight restrictive print- and language-based notions of literacy.

Bi/Multilingual Learners

Educators and teachers have documented the positive outcome of arts integration into other disciplines for speakers of other languages (Aghasafari, 2019). According to the National Center for Education Statistics (2016), 9.6 percent of students in the United States currently are classified as bi/multilingual English learners. Although relatively uncommon in the United States, bi/multilingualism is the norm worldwide. Between 60 and 70 percent of the world population is at least bilingual (Martínez, 2018). In other words, speaking two or more languages is the typical human condition. Immigrants and US-born Latinx children who attend schools in the United States must learn English in order to achieve academic success. However, many older immigrant children often feel marginalized and alone at school because of cultural differences and the difficulty

of language acquisition. Additionally, "anti-immigration policies and practices in 2010 and 2011 further challenge bilingual students" (Harman & Varga-Dobai, 2012, p. 2) and cause high anxiety.

Current science education pedagogy clearly emphasizes the integration of knowledge and skills in the real-world setting (NGSS Lead States, 2013). However, science is most often taught in isolation from other subjects and from daily life, making students feel that science is irrelevant to them. Also, students are expected to interpret visual images as they interact with the text, but this skill is sometimes neglected in the school curriculum. Improving visual literacy will empower all students, not just bi/multilingual students, by creating a vehicle for understanding and communicating about natural phenomena. In particular, the arts can become a tool for "academic development, personal and community identity development, and social change/justice" (Chapell & Cahnmann-Taylor, 2013, p. 250) by challenging traditional forms of schooling that rely exclusively on restrictive print- and language-based notions of literacy. Berriz and colleagues (2019) assert that "the arts are more than an added benefit in any educational context; they are foundational literacies that engage participants in the process of observing, connecting, finding solutions, making meaning, and communicating/expressing" (p. 12). In essence, the "aesthetic languages" of the arts disciplines (e.g., media arts, visual arts, theatre, gesture, image, sound, writing, music, etc.) become meaning-making (Aghasafari, 2019) tools to help achieve empirical goals that can help educators better understand students' experiences in the classroom.

Theoretical Framework

The Language, Culture, and Teaching series has published more than two dozen titles that reflect a commitment to providing quality texts to educators who are responsible for the education of young people in our increasingly diverse and complex society. Gloria Ladson-Billings defines culturally relevant teaching as a "pedagogy of opposition, not different critical pedagogy but specifically committed to collective, not merely individual, empowerment" (1995a, p. 160). Culturally relevant teaching must include cultural integrity as well as academic achievement, and it must meet three criteria: "students must experience academic success, students must develop and/or maintain cultural competence, and students must develop a critical consciousness through which they challenge the status of the current social order" (Ladson-Billings, 1995a, p. 160).

Ladson-Billings (1995b) inspired teachers and educators to make teaching and learning relevant and responsive to the languages, literacies, and cultural practices of multicultural and multilingual students (Paris, 2012). Culturally relevant pedagogy (CRP) aims to use the connections between culture and

curriculum, home and school to enhance students' academic achievement (Baker & Digiovanni, 2005). Students in a culturally relevant classroom learn different ways of understanding and presenting class content. Diverse views give students the opportunity to experience different interpretations and perspectives and to use their strengths in the development of new skills. Hence, CRP requires

> tapping into a wide range of cultural knowledge, experiences, contributions, and perspectives. Emotions, beliefs, values, ethos [sic], opinions, and feelings are scrutinized along with factual information to make curriculum and instruction more reflective of and responsive to ethnic diversity. However, every conceivable aspect of an ethnic group's culture is not replicated in the classroom. Nor are the cultures included in the curriculum used only with students from that ethnic group. Culturally responsive pedagogy focuses on those elements of cultural socialization that most directly affect learning. (Gay, 2000, pp. 31–32)

Ladson-Billings and other researchers developed Culturally Sustaining Pedagogy (CSP) in order to modulate culturally responsive pedagogy (CRP) (Gay, 2000; Ladson-Billings, 1995a; Paris, 2012; Paris & Alim, 2017). CRP views "linguistic, literate, and cultural pluralism as part of the democratic project of schooling" (Paris, 2012, p. 93). Pedagogy needs to do more than be "responsive or relevant to the cultural experiences and practices of young people—it requires that [teachers] support young people in sustaining the cultural and linguistic competence of their communities while simultaneously offering access to dominant cultural competence" (Paris, 2012, p. 95). Culturally sustaining pedagogy strives to incorporate the languages and cultures of students while also taking "a critical stance toward and critical action against unequal power relations" (Paris, 2012, p. 95).

CSP challenges educators to regard students' cultural and linguistic ranges as a resource to be integrated into the classroom curriculum. CSP supports the multimodal and verbal reports that bilingual learners need in order to make meaning in the sciences and other subject areas. When students are encouraged to write, and talk in class, they gain understanding through active participation with peers and teachers that later can be applied to new tasks, such as writing about or enacting a scientific principle. Moreover, teachers who engage with students are able to see more clearly how their students have applied their new knowledge in completing assigned work (Fang et al., 2014).

A common misinterpretation of CSP among teachers and educators is thinking the classroom or other environments should match students' home countries, which results in teachers feeling that they cannot integrate each student's culture into a diverse classroom. However, "instead of viewing culturally

sustaining instruction as matching classrooms to home practices, teachers might consider deliberately drawing from contrasting worldviews" (Puzio et al., 2017, p. 224). Furthermore, "establishing positive relationships with students, families, and communities" is "a critical element of culturally sustaining teaching" because understanding students' communities can help educators determine how best to implement CSP (Puzio et al., 2017, p. 224). This approach to educating students represents the foundation of this study.

RESEARCH METHOD

In order to demonstrate how CSP and arts integration can be utilized to support the learning of students whose first language is not English, this qualitative study uses the exploratory case study method (Creswell, 2012, 2013; Yin, 2014) with ten bi/multilingual students at a mid-sized public high school located in the southeastern region of the U.S. Our research team includes two experienced high school biology English Second Language (ESL) teachers and a doctoral candidate in art education.

Participants

The bounded system (case) for our study was a communication skills class at a mid-sized public high school located in the southeastern region of the U.S. The class was made up of 20 language learners born in eight different countries and ranging from 14 to 18 years of age. As most of the students were newly arrived in the country and had very limited English skills, the fundamental tasks of this class were to help students succeed academically and develop a confident and stable sense of self. The sample selection criteria for this study were bi/multilingual students in both the communication skills and biology classes. Ten students participated. In the interest of brevity, we report findings from four students.

Procedures

Art was infused into the coursework at the beginning of the 2019–2020 school year. Ten computers in the school's media center were equipped with Photoshop software. Students worked in the media center up to twice weekly to learn the basics of Photoshop. The academic biology unit under analysis in this study was "the role of selection in populations." The learning targets for this unit was that populations experience environmental limits to their growth and exhibit heritable variation in traits. Traits that improve an individual's chances of survival and reproduction become more common in the population, leading the population to be better adapted to its environment (Miller & Levine, 2002).

We began the unit's work as a whole group (Figure 1) by reviewing criteria for natural selection (including genetic variation, overproduction, struggle for existence, descent with modification, and adaptation) by showing a variety of examples related to our students' daily lives, such as horses, dogs, and turtles. Next, students chose the animal whose evolution they wanted to illustrate in a graphic story. Students searched online for information (in English or Spanish) on the history of natural selection for their chosen animal.

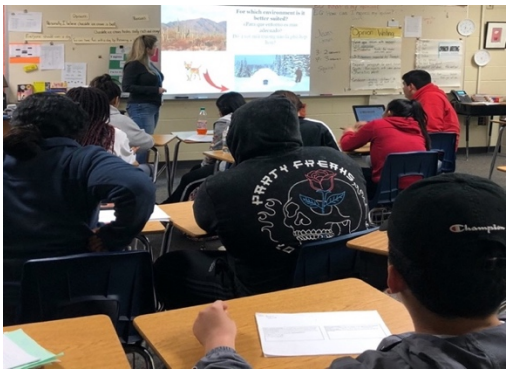


Figure 1
Class introduction to the role of selection in populations, 2019

Next, the students generated and wrote (in English, Spanish, or both) general descriptions of the evolution of their chosen animal on six panels that teachers created (Table 1). The students then drew all images for their six panels to tell the evolution story of their chosen animal. Students ultimately decided to use background images for their stories based on their animal's environment. After students finished their drawings, they added their written texts to include all the relevant information about their chosen animal.

Table 1
Six-panel graphic story based on the natural selection criteria

Panel	Graphic story based on the natural selection criteria
Panel 1	I am a/ an _____, and I want to tell my evolutionary story. My history goes back to the _____ period approximately _____ years ago. (location...if possible)
Panel 2	Genetic Variations such as _____ and _____ exist for my species and me.
Panel 3	Not all my offspring will grow up to adulthood. Often the offspring of our species die from _____ and _____.
Panel 4	I have many struggles for my existence. An example of this competition is _____.
Panel 5	I am well-suited for my natural environment based upon my heritable traits such as _____ and _____.
Panel 6	Closing the story.

Data Analysis

In Fall 2019, we began to collect data while implementing ten sessions of arts integration activities. The data for the current study were, primarily, the student-generated graphic stories of the evolution of their chosen animals. However, data for this study also included transcripts of the audio/video recordings of students participating in the Photoshop arts integration activities (both teaching and using Photoshop) and the researcher's field notes recorded throughout the study. The analyses of graphic stories are the primary focus of this study.

We deployed a version of hypothesis coding (Saldana, 2016) when analyzing the students' graphic stories. In hypothesis coding, a predetermined list of codes is used in the analysis of data. The codes themselves are generated from theories, predictions, or other means that anticipate "what will be found in the data before they have been collected or analyzed" (Saldana, 2016, p. 171). In our study, the codes were developed during the classroom discussion on animal evolution and on students' daily lives. The items identified during discussions as making up "evolution" in six panels (see Table 1) and students' daily lives comprised our predetermined list of codes. Each student's graphic story was analyzed for how well it included the "hypothesized" elements of evolution based on the natural selection criteria and students' daily lives that were worked out in advance. Hypothesis coding is ideal for this type of focused and narrowly defined project and because it seeks to "confirm or disconfirm" (Saldana, 2016, p. 171) the constructed definition of evolution and students' daily lives through an analysis of student-generated graphic stories.

RESULTS

Figure 2 depicts the assignment artwork created by Mateo (All students' names are pseudonyms). Mateo chose turtles because he had had a pet turtle in the country where he was born and raised. To do this project, Mateo did online research on the evolution of turtles through natural selection online. He first drew all his elements with Photoshop. For example, to show "overproduction," he drew a baby turtle; to show "struggle for existence," he drew a snake as turtles' enemy. After he finished his drawing, he added information he found through online resources and created his own story, choosing a comic font because he believed that "my turtle was so funny."

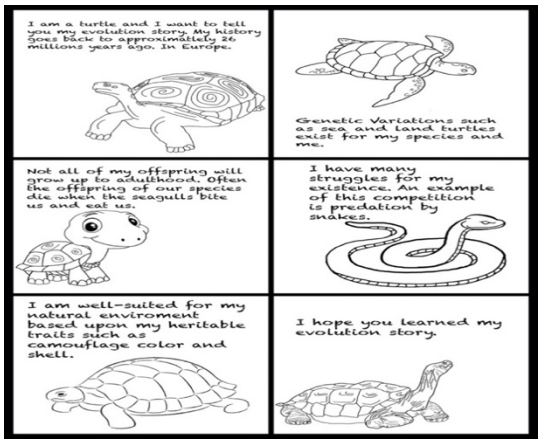


Figure 2
Mateo's design, The Evolution of the Turtles (graphic story designed with Photoshop,) 2019

Alex's graphic story is shown in Figure 3. Alex chose the evolution of the elephant. He also drew all elements of his graphic panels with Photoshop and found significant connections between the story of elephant evolution and his own life. For example, for illustrating "struggle for existence," Alex drew an alligator next to the lake as an enemy for elephants where they go and drink water. Alex also applied different backgrounds for his graphic stories' panels. According to Alex, "all the nature that I used for my background panels reminds me of the beauty of my country where I was born and raised." He also used capital words for the text in the panels texts to demonstrate the power of the elephant.

Figure 3
Alex's design, The Evolution of the Elephants (graphic story designed with Photoshop), 2019.

Santiago created the graphic story in Figure 4 about the whale. Santiago illustrated a sad baby whale to show "overproduction," and by adding text, intended to explain how some of the whales' offspring die from changes in ocean temperature and food availability. He used one background for all his panels because "whales can travel everywhere without any borders." Figure 5 shows Sara's illustration of dogs' evolutionary history. She wanted to create this story because she loves dogs and used to have dogs in her home country. Sara illustrated various breeds of dogs in the "genetic variation" panel. In the "struggle for existence" panel, Sara explained how she lost one of her dogs because of genetic defects. Sara also used one background for all the panels, saying that it "presents the beauty of nature in my city."

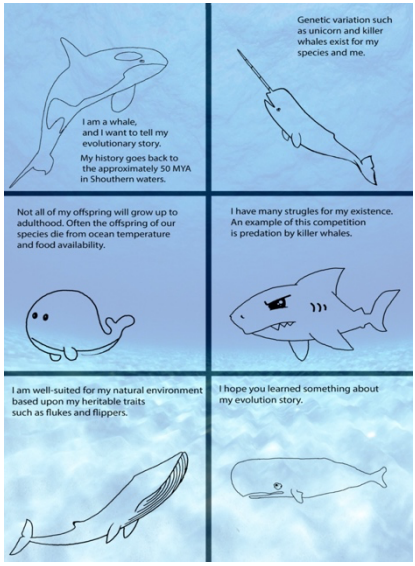


Figure 4 (left)
Santiago's design, The Evolution of the Whales, (graphic story designed with Photoshop), 2019.

Figure 5 (right)
Sara's design, The Evolution of the Dogs, (graphic story designed with Photoshop), 2019.

DISCUSSION

This study aimed to address how CSP and arts integration can be utilized to support the learning of ten students who speak English as their second language. To implement CSP in our study, instead of matching classroom practices to home cultures, we deliberately drew from contrasting worldviews, in that students and

teachers worked together to create knowledge about the role of natural selection in a population.

Creating graphic stories with Photoshop was an innovate learning opportunity that challenged and inspired students while supporting their individual goals and aspirations. Using this software gave our bi/multilingual students new skills and allowed them to be bold, expressive, and novel in their project presentation. However, access to computers is not necessary to conduct a similar project: the graphic stories can be created by hand with paper and pencil or any other art materials.

Students for whom English is a new language can often feel marginalized in U.S. schools because of cultural differences and the difficulty of language acquisition. Integrating arts activities into communication skills classes can also provide extra resources for future teachers who want to position bi/multilingual youth as significant active partners in the curriculum design. Making a graphic story gave students a stronger voice and greater competence, while also making the information required to meet academic standards more relevant to the students. It helped increase our students' confidence, as they were able to explain their biology unit to their friends and others by visually showing the graphic stories of their chosen animals. Increased confidence often unlocks profound potential in students who are reluctant learners, are shy, or have a language barrier (Brown 2019; Harman & Varga-Dobai, 2012; Park & Simpson, 2019). In fact, one student who was on the verge of quitting school stayed just to engage in and complete this project. She is on track to graduate in the spring of 2021 and has identified graphic design as a career she would like to pursue.

CONCLUSIONS

Culturally Sustaining Pedagogy (CSP) reframes how we teach bi/multilingual learners (Paris, 2012). CSP provided the foundation for integrating arts into a biology lesson. Students learned to draw on their experience and understanding to answer fundamental questions in biology in ways that made the information more relevant to them. The outcome of our work shows that integrating arts, primarily when related to students' lived experience and culture, can increase bi/multilingual student achievement, learning, interest, engagement, and skills in the science fields. Students can use the knowledge gained through the arts to deepen their understanding in other courses. Finally, allowing students to be creative increases their motivation and interest, leading to better test scores.

REFERENCES

Aghasafari, S. (2019). [Review of the book Art as a way of talking for emergent bilingual youth: a foundation for literacy in prek-12 schools, by B.R. Berriz, A.C. Wager & V.M. Poey]. *Visual Inquiry: Learning & Teaching Art, 8*(1), 91-93. Retrieved from doi: 10.1386/vi.8.1.91_5.

Arís, N., & Orcos, L. (2019). Educational robotics in the stage of secondary education: Empirical study on motivation and STEM skills. *Education Sciences, 9*(2), 73. https://doi.org/10.3390/educsci9020073

Arts Education Partnership. (2002). *Teaching Partnerships: A report of a national forum on partnerships improving teaching of the arts.* https://www.aep-arts.org/wp-content/uploads/Teaching-Partnerships_National-Forum-Report-on-Partnerships-Improving-Teaching-on-the-Arts.pdf

Baker, P.B., & Digiovanni, L.W. (2005). Narratives on culturally relevant pedagogy: Personal responses to the standardized curriculum. *Current Issues in Education, 8*. Retrieved from https://cie.asu.edu/ojs/index.php/cieatasu/article/view/1611.

Berriz, B. R., Wager, A. C., and Poey, V. M. (2019). *Art as a way of talking for emergent bilingual youth: A foundation for literacy in K-12 schools.* Routledge.

Bequette, J. W., & Bequette, M. B. (2012). A place for art and design education in the STEM conversation. *Art Education*, *65*(2), 40–47.

Brown, S. (2019). Constructing Stories Using Language and Digital Art: Voices of Multilingual Learners. In Berriz, B. R., Wager, A. C., & Poey, V. M. (Eds.), *Art as a way of talking for emergent bilingual youth: A foundation for literacy in K-12 schools.* Routledge.

Bruce, D. (2009). Writing with visual images: Examining the video composition processes of high school students. *Research in the Teaching of English, 43*(4), 426–450.

Burnaford, H. J. (2007). *Arts integration frameworks, research and practice.* Arts Education Partnership.

Cahnmann-Taylor, M., & Sanders-Bustle, L. (29 July 2019). Art-informed pedagogies in the preparation of teachers in the United States. *Oxford research encyclopedia of education.* Retrieved 5 Aug 2019 from https://oxfordre.com/education/view/10.1093/acrefore/9780190264093.001.0001/acrefore-9780190264093-e-376.

Chandler-Olcott, K., & Mahar, D. (2003). 'Tech-savviness' meets multiliteracies: Exploring adolescent girls' technology-mediated literacy practices. *Reading Research Quarterly, 38*(3), 356–385.

Chapell, S., & Cahnmann-Taylor, M. (2013). No child left with crayons: The imperative of arts-based education and research with language 'minority' and other minoritized communities. *Review of Research in Education, 37*(1), 243–68.

Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.

Creswell, J. (2013). *Qualitative inquiry and research design* (3rd ed.). Sage.

Dreeszen, C., Aprill, A., & Deasy, R. (1999). *Learning partnerships: Improving learning in schools with arts partners in the community.* Arts Education Partnership.

Duggan, T. J. (2007). Ways of knowing: Exploring artistic representation of concepts. *Gifted Child Today, 30*(4), 56–64.

Erwin, E.H. (2017). Full STEAM ahead in physical education. *Journal of Physical Education, Recreation & Dance, 88*(1), 3–4. DOI: 10.1080/07303084.2016.1249759

Fang, Z., Schleppegrell, M. J., Moore, J., Stone, C. A., Silliman, E. R., Ehren, B. J., & Wallach, G. P. (2014). The linguistic challenges of learning across academic disciplines. In C. A. Stone, E. R. Silliman, B. J. Ehren, & G. P. Wallach (Eds.), *Handbook of language and literacy: Development and disorders* (pp. 302–322). Guilford Press.

Gay, G. (2000). *Culturally responsive teaching theory, research, and practice.* Teachers College Record.

Glass, D., & Wilson, C. (2016). The art and science of looking: Collaboratively learning our way to improved STEAM integration. *Art Education*, *69*(6), 8–14.

Hadinugrahaningsih, T., Rahmawati, Y., & Ridwan, A. (2017). Developing 21st century skills in chemistry classrooms: Opportunities and challenges of STEAM integration. *AIP Conference Proceedings, 1868*(1), 1–8.

Harman, R., & Varga-Dobai, K. (2012). Critical performative pedagogy: Emergent bilingual learners challenge local immigration issues. *International Journal of Multicultural Education*, *14*(2), 1–17.

Heitin, L. (2015, April 2). When did science education become STEM? http://blogs.edweek.org/edweek/curriculum/2015/04/when_did_science_education_ become_STEM.html

Hetland, L., Winner, E., Veenema, S., & Sheridan, K.M. (2007). *Studio thinking: The real benefits of visual arts education*. Teachers College Press.

Hunter-Doniger, T., Howard, C., Harris, R., & Hall, C. (2018). STEAM through Culturally Relevant Teaching and storytelling. *Art Education, 71*(1), 46–51.

Jewitt, C. (2008). Multimodality and literacy in school classrooms. *Review of Research in Education, 32*(1), 241–267.

Kant, J. M., Burckhard, S. R., & Meyers, R. T. (2018). Engaging high school girls in Native American culturally responsive STEAM enrichment activities. *Journal of STEM Education: Innovations & Research, 18*(5), 15–25. Retrieved from http://search.ebscohost.com.proxyremote.galib.uga.edu/

Kress, G. (2000). Multimodality. In B. Cope and M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 182–202). Routledge.

Kress, G. (2003). *Literacy in the new media age.* Psychology Press.

Ladson-Billings, G. (1995a)But that's just good teaching! The case for culturally relevant pedagogy. *Theory into Practice*, *34*(3), 159–165.

Ladson-Billings, G. (1995b). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal, 32*, 465–491.

Lawrence, S. A., McNeal, K., & Yildiz, M. N. (2009). Summer program helps adolescents merge technology, popular culture, reading, and writing for academic purposes.

Journal of Adolescent & Adult Literacy, 52(6), 483–494.
Leysath, M., & Bronowski, C. (2016). An adventure in full art integration. *Art Education, 69*(6), 28–34.
Marshall, J. (2010). Five ways to integrate: Using strategies from contemporary art. *Art Education*, *63*(3), 13–19.
Marshall, J. (2014). Transdisciplinary and art integration: Toward a new understanding of art-based learning across the curriculum. *National art education association studies in art education: A journal of issues and research*, *55*(2), 104–127.
Marshall, J. (2017). SLANT professional development in science and arts integration. In G. Diaz and M. Barry (Eds.), *Preparing educators for arts integration: Placing creativity at the center of learning* (pp. 139–147). Teachers College Press.
Martínez, R. A. (2018). Beyond the 'English learner' label: Recognizing the richness of bi/multi-lingual children's linguistic repertoires. *The Reading Teacher*, *71*, 515–522. doi:10.1002/trtr.1679
Metcalf, S. (2004). Art and physics. *Art Education*, *57*(1), 25–32.
Miller, K. R., & Levine, J. S. (2002). *Biology.* Prentice Hall.
National Academies of Sciences, Engineering, and Medicine. (2016). Barriers and opportunities for 2-year and 4-year STEM degrees: Systemic change to support students' diverse pathways. DOI: 10.17226/21739.
National Center for Education Statistics. (2016). *Racial/ethnic enrollment in public schools.* Retrieved from http://nces.ed.gov/programs/coe/indicator_cge.asp
NGSS Lead States. (2013). *Next Generation Science Standards: For States, by States*. The National Academies.
Nixon, A. S. (2009). Mediating social thought through digital storytelling. *Pedagogies: An International Journal, 4*, 63–76.
Paris, D. (2012). Culturally sustaining pedagogy: A needed change in stance, terminology, and practice. *Educational Researcher*, *41*(3), 93–97.
Paris, D., & Alim, H. S. (Eds.). (2017). *Culturally sustaining pedagogies: Teaching and learning for justice in a changing world*. Teachers College Press.
Park, J., & Simpson, L. (2019). Youth Voices from In and Out of the Classroom: Emergent Bilingual Learners, Graphic Novels, and Critical Multiliteracies. In Berriz, B. R., Wager, A. C., & Poey, V. M. (Eds.), *Art as a way of talking for emergent bilingual youth: A foundation for literacy in K-12 schools.* Routledge.
Patterson, J. (2015). Employing mindfulness via art in education. *International Journal of Education Through Art, 11*(2), 185–192.
Perignat, E., & Katz-Buonincontro, J. (2019). STEAM in practice and research: An integrative literature review. *Thinking Skills and Creativity*, *31*, 31–43.
Puzio, K., Newcomer, S., Pratt, K., McNeely, K., Jacobs, M., & Hooker, S. (2017). Creative failures in culturally sustaining pedagogy. *Language Arts*, *94*, 223–233.
Remer, J. (1996). *Beyond enrichment: Building effective arts partnerships with schools and your community*. CA Books.
Saldana, J. (2016). *The coding manual for qualitative researchers* (3rd ed.) Sage.

Schramm, S. L. (2000). Genetic robots: An integrated art and biology curriculum. *Art Education*, *53*(3), 40–45.
Silverstein, L. B., & Layne, S. (2010). *What is arts integration?* The Kennedy Center for the Performing Arts.
Stokrocki, M. (Ed.) (2005). *Interdisciplinary art education: Building bridges to connect disciplines and cultures*. National Art Education Association.
U.S. Department of Education [USDOE]. (2015). *Reauthorization of the Elementary and Secondary Education Act*. https://www2.ed.gov/about/overview/budget/budget15/ justifications/a-eseaoverview.pdf
Wiggins, G., & McTighe, J. (2005). *Understanding by design*. Association for Supervision and Curriculum Development.
Yin, R. (2014). *Case Study Research: Design and Methods* (5th ed.). Sage.

SAHAR AGHASAFARI, is a Ph.D. Candidate in Art Education in the Franklin College of Arts and Science *Lamar Dodd School of Art* at the University of Georgia. Her research is an interdisciplinary study of arts and science. The purpose of her research is to examine what meanings are created for bilingual and multilingual students when visual art and biology are integrated. This study seeks to identify productive ways to integrate visual art into the study of biology to support bi/multilingual students' academic achievement while offering a research design that can be used in other disciplines. E-mail: s.aghasafari@uga.edu

KELLI BIVINS, is an ESOL teacher at Cedar Shoals High School in Athens. She has proudly served the families of Athens, Georgia as teacher, advocate, and friend for more than twenty years. Bivins also has a deep passion for nature conservation, building strong communities and is a Fulbright Teacher for Global Classrooms scholar. When not serving her students, she enjoys laughing and living with her husband and two sons, in addition to volunteering at the Athens-Clarke Animal Shelter. E-mail: bivinsk@clarke.k12.ga.us

BRENDAN NORDGREN, is an ESOL teacher at Cedar Shoals High School in Athens. She has taught in multicultural settings and unique educational programs throughout her career. The inspiration and passions she has for her students includes sustainable environmental education, school gardening and cultural justice. E-mail: nordgrenb@clarke.k12.ga.us

Manuscript submitted: ***October 27, 2020***
Manuscript revised: ***March 2, 2021***
Accepted for publication: ***April 10, 2021***

OJED
OPEN JOURNALS IN EDUCATION
ISSN: 2166-2681 Print/2690-0408 Online
Volume 10, Issue 1 (2021), pp.82-117

http://ojed.org/jise

Discovering Sustainability in New York City: An Interdisciplinary Framework for Teaching in Urban Institutions

Karyn Pilgrim
Kevin L. Woo
State University of New York Empire State College, USA

ABSTRACT

Ecological learning is enriched when students can apply course content to their own communities and gain an understanding and experience for deploying sustainable practices. Such merging of content, application, and place requires an interdisciplinary approach to grapple with the ecological and cultural issues more holistically that sustainability education explores. Guided by the ecological pedagogy of David Orr, founder of the Oberlin Project, we devised a pilot study that combines course content in environmental science, cultural studies, and writing with place-based, experiential, and hands-on learning to empower students to critically analyze their lifestyles and engage in activism for change.

Keywords: activism, experiential learning, interdisciplinary, place-based, sustainability education

INTRODUCTION

The application of student learning outside the classroom promotes academic understanding of content. Students can enhance their learning when they put into practice new skills, test theories, and think in

interdisciplinary and multifaceted ways (Barth et al., 2007; Grabinger & Dunlap, 1995). When students test their learning within their local communities, they can see firsthand how their knowledge applies to their own lives, which may foster an ethic of caring along with a greater depth of understanding. For example, it is one thing to learn about the effects of climate change and water resources and quite another to see how it affects the local watershed. Merging what happens in the classroom with experiences outside the classroom is a strategy for making higher education more meaningful and applicable to our students' everyday lives.

Another noteworthy trend in higher education is the growing presence of interdisciplinary approaches to learning and thinking in higher education. Interdisciplinary learning allows students to investigate ideas broadly, gain multiple perspectives on how cultures incorporate and implement knowledge and values, and teaches students about the interconnectedness of all things. The walls of the classroom are becoming more transparent and the artificial boundaries between disciplines are being revaluated; these are welcome developments for educators working to advance sustainability studies, which require of students an understanding of the natural environment and humanity's place in it, as well as how human attitudes and behaviors impact the health of the natural environment. Sustainability itself is a cross-disciplinary area of study (Robinson, 2008), as much a science as a cultural perspective that can, and probably should, be integrated into virtually every discipline. Indeed, it has been argued that sustainability is an important component to incorporate into core institutional degrees and should be widely implemented across curricula (Rowe, 2002; Warburton, 2003).

Initially, the drive to necessitate sustainability into the curricula was instigated primarily by academics and instructors (Klein, 2009). Functionally, successful implementation of these programs required institutional cooperation and input, such that administrators, faculty, and stakeholders collaborate to recognize sustainability's academic importance for inclusion into dynamic curricula (Krizek et al., 2012). Jointly, the desire to create courses that incorporated aspects of cultural, environmental, and social sustainability was an attractive tool academically and professionally for students. It was recognized early in consideration that content and dialogue often originated with topical areas of academic expertise (Scholz et al., 2006). While there were clear and important overlapping themes, early implementation drew narrowly from single streams of content with the attempt to identify common corridors for bridging knowledge (Redman, 2013). This led to a common tapering, sometimes exclusively segregated, of

courses that were limited in scope that failed to account for a much wider consideration of issues and approaches (Welsh & Murray, 2003).

As further institutions created more courses thematically under a sustainability umbrella, it became increasingly evident that sustainability is inherently interdisciplinary and benefits most from the cross-pollination of institutional faculty and their respective areas of expertise (Caviglia-Harris & Hatley, 2004). Consequently, this epiphany unearthed new pedagogical philosophies regarding instruction and curricular design approaches while also generating new avenues for consideration and new complexities. Historical approaches to classroom delivery also relied heavily on traditional instructional models of mere discussions of content and theory (O'Byrne et al., 2015). The most seemingly logical approach to injecting sustainability into interdisciplinary studies was to identify two core disciplines and merge the capitol subject areas while infusing aspects of how sustainability impacts the fields of study. In essence, subject area content was essentially presented within traditional academic silos and failed to integrate cross-disciplinary ideas effectively (Kurland et al., 2010; Ward et al., 2016). Some courses in sustainability appear to have an obvious relationship to the subject, such as those in the natural or physical sciences (Barth & Michelsen, 2013; Biedenweg et al., 2013; Burns, 2011). In contrast, for example, with the overarching theme of sustainability in a wider context, several interdisciplinary courses with more disparate disciplines seemed to have successfully been crafted to pair areas like agriculture and policy (Karsten & O'Connor, 2002), geography and education (Widener et al., 2016), foreign language and environmental studies (Ter Horst & Pearce, 2010) and human services and environmental sciences (Schmitz et al., 2010), to identify a brief list of studies. Consequently, the scope of future interdisciplinary courses in sustainability, such as the one presented here, ought to consider a wider breadth of pedagogical diversity.

And yet, one of the great ironies of teaching sustainability in academia is that most, if not all, of the learning outcomes for our courses are directed at the outside world and our students' interactions with society (Lélé & Norgaard, 2005), while the learning itself takes place within an artificially manipulated environment of perfect climate control. While we teach students to think critically about the complex interplay of human culture and behavior and natural environments and ecological systems, the seemingly stable and controllable physical environments of our classrooms suggest, in a background white-noise kind of way, that we can adjust the environment most satisfactorily to suit our desired comfort levels.

One obvious disconnect between humans and nature is the overwhelming social science literature that suggests a significant portion of

the population believes that they are sensitive to environmental issues but fail to act in socially responsible ways (Jensen, 2002; Kennedy et al., 2009; Kollmuss & Agyeman, 2002). A challenge for teaching sustainability related coursework in the classroom is to discover and implement modes of teaching and learning that both transcend and bridge the classroom with the far more dynamic and volatile landscapes of the world outside the classroom. Precisely because the classroom is not an ideal environment for learning how to merge knowledge with practice in sustainability—in other words, how to gain hands on practice of the concepts students learn in the classroom—it becomes imperative as educators that we build bridges between knowledge and practice into our curriculum. This is neither a new idea nor an easy one to implement. The ease of implementation depends upon the setting where one teaches (Sampson & Smith, 1957; Kehl & Morris, 2008; Rowan-Kenyon & Niehaus, 2011; Younes & Asay, 2002). Many scholars of sustainability pedagogy have called for the dissolution of the boundaries between the classroom and the world, in one form or another (Brundiers et al, 2010; Remington-Doucette et al., 2013). One known barrier is that professors and students alike often contend with a lack of space or equipment, or lack of funding to procure new resources (Klein & Newell, 1997; Summers et al., 2005). However, the main challenge, as sustainability pedagogy becomes more widespread and interdisciplinary, is in many ways a mirror image of the challenge of culture change for sustainability itself: how to adapt and implement such pedagogy across a wide range of classroom structures and educational landscapes, many of which present significant obstacles for the cultivation of hands-on learning experiences.

As an inherently interdisciplinary field, the premier difficulty is to ensure that the diversity across perspectives is adequately captured and meaningfully delivered (Johnston, 2013). As a persistent conflict in its pedagogical implementation, many instructors have genuine intentions for disseminating content, but there is no real consensus on best practices for delivery and facilitation of instruction (Feng, 2012; Vincent et al., 2016). More seemingly successful approaches seem to engage students by employing active learning strategies (Levintova & Mueller, 2015). In one example, Brundiers and Wiek (2013) have noted that one of the fundamental issues is the disconnect between problem-based and project-based learning (PPBL) activities that are meant to bridge the theoretical content and practice. Central to this notion is the inclusion of case-based examples that may encourage student innovation as they consider pragmatic solutions for problem solving (Sprain & Timpson, 2012). As such, the emphasis here is not merely to ensure that content areas are addressed, but that applied learning opportunities provide a more comprehensive and holistically

fundamental approach for engagement. Another interesting approach by Ranaswami et al. (2012) employed a novel social-ecological-infrastructural systems (SEIS) framework for an engineering curriculum. Here, the model developed two subsystems (biophysical and social) that integrated sustainability theory and legal policies with the disciplines of environmental sciences/climatology, infrastructure engineering, industrial ecology, architecture, urban planning, behavioral sciences, public health, and public affairs. The interaction of these models appeared to generate two highly successful outcomes: 1) that students overall felt the integration of these disciplines was central for understanding sustainability on a graduate level that may lead to actualized application, and 2) allowed for cross-disciplinary faculty collaboration (Wood, Cornforth, Beals, Taylor, & Tallon, 2016).

College and university campuses serve as an excellent environment in which to engage in interdisciplinary instruction for sustainability. Evans et al. (2015) suggested that the university environment serves as an opportune example of a 'living-laboratory', in which the notion of theory and practice ought to be seamlessly disseminated throughout the collegiate community. For example, Gosselin et al. (2016) examined the effectiveness of place-based learning at three distinctly different colleges in the United States that teach courses in sustainability and link geoscience concepts with societal challenges. Here, Gosselin et al. (2016) further suggested that the college campus, and surrounding geographical and environmental communities, offer immense opportunities for students to engage in real-world issues that may have a direct impact. Thus, the likelihood for engagement increases with familiarity and the perception of impacts to one's immediate locale. As with most foundational studies, the introduction of sustainability curricula is often focused on undergraduate populations, both in terms of reaching a larger number of students as well as the likely impressionability (Aktas, 2015; Coops et al., 2015). However, sustainability curricula are also becoming more commonplace in graduate programs, particularly as students seek post-graduate degrees that may focus on areas pertaining to environmental or social change (Lee et al., 2013).

As the nature of pedagogical delivery and the rapidity of the discipline evolve, so does the mode in which students can engage in courses. For example, Knowlton et al. (2014) devised a graduate course where the central focus was to develop interdisciplinary sustainability science teamwork skills. Given the personal and professional demands on graduate populations, Knowlton et al. (2014) sought to design in-person and web-based interactions that provided both a flexible and complementary experience for ensuring that students had access to the course content, but continued to engage with the course and class on a fairly regular basis.

Deviating from traditional models of instruction, curricula in sustainability are inherently interdisciplinary, which is both attractive for developing creative pedagogical tools, yet notoriously difficult to design a 'one-size-fits-all' model. Rau et al. (2018) noted the difficulty and increasing challenge for students, academics, and practitioners to solve 'real-world' issues from merely classical content and instruction alone. They advocate an embrace of the diverse perspectives in sustainability, from academic to experiential, and employ similar project-, place-, and problem-based approaches in sustainability research to assist short- and long-term goals. Thus, it seems likely that the approach for sustainability instruction is to continue to validate nontraditional 'outside-the-box' paradigms than enable instructors and students to be both creative and innovative.

Sustainability education should be a study of humans within nature, with the aim of fostering healthy, mutually sustaining ways of being. In order to foster such mutually nurturing practices, students need to feel empowered to act sustainably, experiment with sustainability practices, and implement such practices in their communities. The example of the classroom without windows on a campus without access to outdoor space demonstrates yet another important aspect of the need for integration in sustainable education; in this case, the integrative factors are the linkage of environmental concepts with cultural frameworks. Residents of large urban centers spend much of their time in controlled environments, which can create a perceptual distance between human culture and the wider natural environment (Gehl, 2011; Grahn, & Stigsdotter, 2010). It is all too easy to ignore or be unaware of the mounting problems associated with climate change and environmental degradation or simply to lack any experience with natural environments that humans have not designed. The complex interactions between humans and our ecosystems often go unnoticed. For these reasons, sustainability education must connect the perceptual gap between nature and culture. Students need to develop an understanding of how their own actions and beliefs and the actions and beliefs of their communities are engaged in a dynamic exchange with natural systems that are not immediately evident to the untrained eye. It is imperative that students see how behavior at the personal and local level connects with wider regional, national, and international systems that impact and alter the natural environment. Furthermore, they need to become aware of how human culture is not separate from nature but co-existing within nature, a part of it that is altered by as much as it alters nature.

For these reasons, we—a cultural studies professor and a biology professor—have developed a course entitled "Green Pens and Thumbs: Discovering Urban Sustainability in New York City" that combines learning

in ecology, cultural studies, and writing to teach principles of ecology, sustainability, and civic engagement to undergraduate students at our public university. In this paper, we explain how we deploy hands-on learning within and outside the classroom, share the successes and failures of our course, and consider strategies for revising and repeating this course in the future. Finally, we reflect on the relevance of interdisciplinary, experiential learning for educators in sustainability studies, broadly conceived as such, and propose some best practices which have emerged from our experiences for designing and implementing our course.

Pedagogical Model

For a theoretical framework for teaching sustainability, we draw on the pedagogical model developed by David W. Orr, a leading expert in sustainability education, professor of environmental studies and politics, and founder of the internationally renowned Oberlin Project, which envisions "full spectrum sustainability": a joint venture by the town and College of Oberlin to create a thriving, sustainable and environmentally friendly community. Orr (2004) advocates a form of environmental education that is integrative and transformative, that puts into practice the principles of sustainability in a holistic and place-based approach to learning. It is holistic in the sense that he believes that "all education is environmental education" (Chapter 1, "Rethinking Education," para. 2); this is the first principle for rethinking education that he espouses in his foundational text, *Earth in Mind: Education, Environment, and the Human Prospect*. By this, he means that it is essential for students to learn the interconnectedness of things and that sustainability is not just about science and nature but how we live. Furthermore, he argues that "The goal is not mastery of subject matter but mastery of self" (Chapter 1, "Rethinking Education," para. 3), his second principle for rethinking education. This is an inherently holistic approach for it involves the student as a citizen with responsibilities to self and others, and it considers the integrity of the whole person. He opposes a learning model that severs knowledge from its value to people and each individual's personal growth. In fact, his sixth principle for rethinking education is that delivery and content are equally important for student learning. Orr (2004) argues that we instruct our students in silent yet significant ways by the nature of the classrooms we teach in and how we structure our classrooms and curriculum. A scenario wherein the professor lectures and the students take notes is, as we know, experienced quite differently by students and engages them differently than a classroom discussion would. Considering the example above of the windowless classroom, the lack of connection to the exterior world, and the enormous amount of energy consumed in its

operation, also sends a powerful message to students that sustainability is abstract or "out there."

Instead, Orr (2004) asserts that learning that is truly liberal and fosters citizenship and sustainable growth must be interdisciplinary and include experiential learning. He advocates "that we seek out ways to situate disciplinary knowledge within more profound experiences of the natural world while making it more relevant to the great quandaries of our age" (Chapter 14, para 14). In this way, critical and creative thinking processes could be freed from disciplinary constraints to engage in transdisciplinary problem solving and far more comprehensive understandings and explorations of the issues we face on global and local scales. It could further remove boundaries between the classroom and the lived world. This kind of learning is place-based and intends to nurture student connections from the classroom to their individual communities; it is a combination of both theoretical and applied learning in action that transitions these concepts from abstractions to purpose. One example Orr sets forth is that we should dedicate a part of the curriculum to the study of natural systems in the same manner that the students experience them. To study a polluted water canal in Brooklyn, for example, students should visit the canal and conduct experiments or observations onsite. This type of learning aims to create an ethos of caring and an experience of connection. Orr calls for all introductory level courses, in all disciplines, to include extended place-based education so that students are introduced to the wonders and mysteries of the world around them as lived experiences first, before their induction into more abstract forms of learning.

Joining Interdepartmental Forces between Humanities and the Natural Sciences: A nontraditional public campus in New York City

The course development for an integrative study of sustainability set forth in this paper takes place at a large public institution, with approximately 22,000 students statewide. The institution consists of 12 regional locations with one or more affiliated, smaller units. The number of faculty and students enrolled at each location varies. We work for the Metropolitan location, situated in Manhattan, but teach at the downtown Brooklyn unit, which rents one floor of a multi-story office building, and so rental conditions disallow any opportunity of cultivating outdoor green spaces on surrounding lands, the relatively few parking lots, or the rooftop. Furthermore, the floor plan of this campus is such that faculty offices surround the classroom space, leaving the classrooms in the interior without windows or natural lighting. The atmosphere is starkly office-like, and the small student lounge is also windowless. In such an environment, the

seeming separation between humans and the natural environment could not be starker. At the same time, the need to figure out how to "let the wilderness back in" as William Cronon once asserted, or at least some greenery and sunlight, provides a most instructive challenge for faculty and student advocates of sustainability. Compounding this situation is that many of the students live in similar environments, lacking significant access to natural light or green space. Despite our institution's physical and structural constraints, we aimed to create hands-on learning experiences and a learning environment that supported sustainable thinking.

Our Course

We are scholars in the disciplines of cultural studies (literature, critical theory, and writing) and natural science (biology, ecology, and animal behavior), who are active in developing the college's learning goal of integrating sustainability concepts across the curriculum. With this in mind, we decided to team-teach a course that satisfies two State University of New York general education requirements—one in the sciences and the other in basic communication—that explains ecological concepts of sustainability and then explores the various ways that these concepts are expressed in cultural systems, in this case the urban systems of Brooklyn, NY. Social, ecological, economic, and political factors of sustainability are all critically analyzed throughout the course.

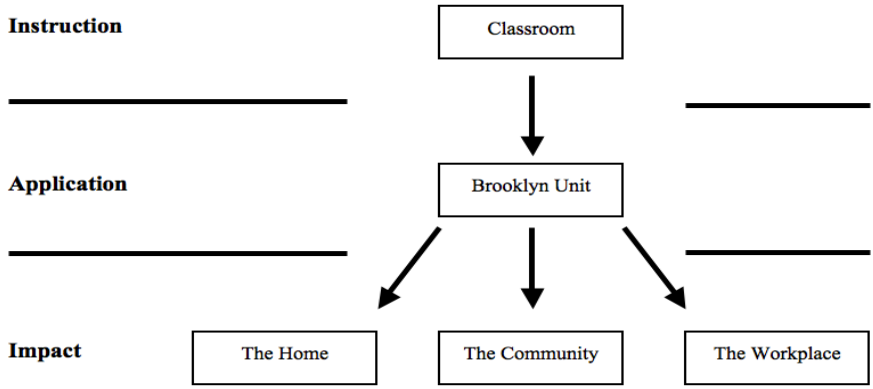
Because the course integrates learning in the ecological sciences and communications, we named the course "Green Pens and Thumbs: Discovering Urban Sustainability in New York City." We included the following description of the course purpose on the syllabus handed out to students:

> This study intends to immerse students in urban sustainability, from an ecological, cultural, and activist standpoint. Students will explore definitions of sustainability and consider the means by which a community can work together to implement sustainable practices for the good of all. Since the best way to learn about sustainability is to practice it, students will apply their reading and classroom learning to hands-on experiences in urban agriculture field trips, visits to museums, and other sites across the city. And because sustainability and democratic principles are intertwined, students will take on the role of citizen journalists, interviewing people involved in urban sustainability, researching the goings-on across the city, and reporting on them in creative essays.

Conceptually, we approached the course as a flowchart with "Instruction" leading into "Application" and then the "Impact" on "Home," "Community," and "Workplace" (Figure 1). In our model, the proposed purpose was to deliver both the theoretical instruction and applied activities in learning environments that were both indoors and in the field. In consideration of Orr's (2004) pedagogical model, and also due to the lack of green space at our campus, a primary goal of this study was to make use of the students' communities, envisioned on a walkable neighborhood scope, to immerse themselves in hands-on learning and thereby apply the instructional components of the course to its application at the level of home, campus, and community.

Figure 1

Our Conceptual Model for Engaging Students to Think and Act Sustainably



Note. We intended to deliver theoretical content that is complemented by hands-on learning experiences in the classroom. However, the 'classroom' was both our literal indoor space at the Brooklyn Unit and field trips that we experienced with organizations based in New York City. From this learning, students were then asked to create sustainable initiatives for implementation at the Brooklyn unit, which would allow their efforts to be publicized. This display and their knowledge would encourage the students to engage in sustainable actions in the home, the community, and the workplace.

Instruction

The instructional material of the course was organized into six units of study, with each unit representing a week of the 8-weeklong accelerated summer term, excluding the first meeting and the last meeting. The first unit covered a broad overview of environmental sustainability and fundamentals

of good writing; the second, general ecology principles, hydroponics and agroecology, and basic research and interviewing techniques; the third, conservation principles and writing for social media; the fourth, the development of team projects for greening the workplace (in this case, the campus) and approaches to revision; the fifth, urban sustainability practices, food security, and the economic approaches to urban sustainability; and the sixth, urban sustainability and social activism (see Table 1; see Appendix A for a copy of our syllabus). Students completed the term by presenting their team projects and their work on an on-site hydroponics system to the college community, who were invited to observe their presentations.

While the purpose of this study was to combine interdisciplinary learning in environmental sustainability and cultural studies with basic skill development in the sciences and communications, as well as to implement hands-on learning experiences to empower students to critically analyze their lifestyles and engage in activism for change, the learning objectives for the course were as follows:

1. ***General ecology principles and conservation***. The basic science behind ecological principles and the need for sustainability, with a special focus on urban sustainability, will provide foundational knowledge for their work in the course (see Appendix B for a copy of our 'Measuring Biodiversity' exercise).

2. ***Sustainability principles and the challenges practitioners face***. Students will be introduced to a range of urban sustainability practices, food and urban sustainability issues, climate change, and the impacts of environmental degradation on life systems.

3. ***The cultural significance of urban sustainability and social activism***. Students will, by comparing and connecting their learning of sustainability and ecological principles to cultural practices and beliefs, understand how and why societies may fail to implement sustainable practices, and even actively work against them.

Table 1

A course outline that identifies the theoretical and applied content covered during the term.

Week	Theme	Interdisciplinary Topics	Activities
1	Introduction	- Foundational concepts in cultural and environmental sustainability - Environmental literacy	- Start blogs and initial entries
2	General Ecology	- Biological levels of organization - Impact of population dynamics - Abiotic-biotic interactions and landscape evolution	- Research information on plant species for improving indoor environmental health - Research on different plant systems (e.g., hydroponics, aquaponics, aeroponics) for implementation during the term
3	Individual Writing Projects	- Environmental advocacy and social activism - Investigative journalism and reporting	- Field observation report on urban wildlife and plant species within student's neighborhood posted on class blog -Interviews with members of student's local community on attitudes to sustainability posted on class blog -Individual research projects on topics such as food sustainability, urban agriculture, waste disposal, and wildlife, posted on class blog
4	Conservation Team Projects	- Conservation biology and science - Climate change and global warming	- How to measure biodiversity using the Simpson's Diversity Index - Consider nonprofit environmental management
5	Sustainability	- Social attitudes towards sustainability - Anthropogenic impacts on urban environments	- Field trip to urban farm for hands-on experience in agricultural - Discuss operational missions, goals, achievements with staff
6	NYC Initiatives	- Interdisciplinary approaches in urban sustainability	- Comprehensive review of innovative operations specific to New York City and the urban environment (i.e., farms, beekeeping, aquaculture, alternative energy, advocacy groups)
7	Food Systems	- Urban agroecology	- Relate work on innovative agroecological operations to food insecurities in urban environments - Opportunity to finish design and construction of group plant systems
8	Conclusion	- Future of urban ecosystems	- Presentation of group projects - Unveil plant systems - Reflect on term content, activities, and projects

Note. Summer term courses were eight weeks.

Further, they will learn about the ways that grass-roots political action and consciousness raising have historically fostered community empowerment.

4. ***Research and writing as a form of social activism***. Students will learn about and engage in citizen journalism, including identifying a social problem that pertains to sustainability in their communities, engaging in research and interviewing local residents, and writing entries for a class blog, Urban Investigators.

Application

Through a combination of an instructor-led team project, a student-led team project, a field trip to an urban farm, and individualized research and writing assignments, students engaged in experiential learning. The syllabus included a faculty-led class project that involved the entire class researching and building an on-site hydroponics system in one of the classrooms, with the goal of the college community maintaining the system in perpetuity.

For the student-led team project, the class was asked to develop their own on-site project with two criteria: that it would remain a permanent installation and advance a sustainability principle. As a viable project with an immediate deliverable, the practicality for creating indoor spaces has several advantages. First, green indoor spaces improve general air quality (Allen et al., 2015), particularly in office-like environments regulated by air-conditioned and heating units. Secondly, select indoor flora significantly reduces the amount of common indoor pollutants and acts like a natural air purifier or biofilter (Cetin & Sevik, 2016; Wolverton & Wolverton, 1993). Thirdly, green indoor spaces have also been shown to improve workplace conditions, collegiality, and satisfaction (Nieuwenhuis et al., 2014). Lastly, green spaces have also been suggested to improve general workplace productivity (Miller et al., 2009). The class chose to advance sustainability principles through a twofold approach of greening the campus and educating the college community. With financial support from two grants, our students were able to conceive sustainable projects within a prescribed budget. The students purchased plant species whose maintenance required no outdoor light and infrequent watering to green the campus, and that was easily propagated to create seedlings for future distribution. The students created a stand for the plant and placed it in the reception area. Attached to the stand was a pair of scissors on a string and a poster that explained their goal of having faculty, staff, and students cut off branches and spread the plant throughout the campus.

To educate the college community, the students made professional posters with tips for everyday sustainability and hung them around the campus in hallways, the student lounge, and outside the restrooms. For the field trip, the students made one afternoon visit to an urban farm, Youth

Farm at the High School for Public Service (Brooklyn, NY), which operated on-site at a public charter school not far from the college. Going into its fourth year in production when we first launched the class, and now in its eighth year, the farm operates a Community Supported Agriculture program and intensive internships for interested college students and adults. Further, as part of its mission, it engages in educational workshops and provides a place for community members to gain hands-on experience in gardening. Our class worked at the farm for four hours, first tilling and weeding the garden beds and planting lettuce seedlings. As they worked, a farmhand instructed them about gardening with beneficial weeds and insects, compositing principles, and the labor intensiveness of the farm operation.

The individualized research and writing projects focused on instilling a layman's understanding of the power of communication for social activism. These projects drew on the philosophy of citizen journalism, which states that everyday people who are not professional journalists create their own news, including gathering information, reporting, analyzing, and disseminating it digitally, to democratize information within our otherwise highly concentrated and top-down media culture. The students were asked to investigate and photo-document their neighborhoods and local communities with the intent to analyze issues of food security. They researched the demographics of their local communities, interviewed residents about what sustainability means to them, and what their greatest concerns are regarding issues of sustainability, and then blogged about their findings on a class blog, 'Urban Investigators: Writing for Change' (https://urbaninvestigators.wordpress.com/). Their research, interviews, and photo documentation culminated in a critical essay by each student that considered the affordability and accessibility of healthy food for all residents in their communities, including the most vulnerable residents who may rely on charitable organizations to survive.

Potential for Impact

While it was not feasible for us to realize our goal to engage in the macrocosmic mobilization of an entire community to participate in sustainability, in a far more modest and limited way, we worked to connect the ranges of scale—from home to campus and the greater community—into scaffolded series of assignments and projects so that the impact of their learning was rooted in personal ways in their communities and personal lives. In this way, we attempted to model the concept of sustainability understood at its most basic as that which can be sustained in the design of the curriculum itself. Sustainable learning, that is, ongoing learning, needs

to cross the classroom boundaries to be integrated into the student's life, over time that endures beyond the limits of the term.

At the level of the home, students were asked to investigate by observation, interviewing, and online research, both the level of awareness about sustainability of residents in their immediate neighborhoods, which often included their family and roommates, as well as close friends and then to carefully consider the way their own lifestyles and the lifestyles of their neighbors were impacting the health of their neighborhood ecosystems. In this way, as they were studying general principles of ecology and sustainability, they began to see how their own behaviors and lifestyles were working to undermine or to impact their health and the health of the neighborhoods where they lived. Furthermore, the interviews they conducted generatednew conversations surrounding sustainability with the people with whom they lived.

At the campus level, the student projects made visible some sustainable practices by creating a hydroponics system that was left intact to be maintained by other students, staff, and faculty—a loosely campus-wide endeavor—after the term had ended. The posters offering tips for sustainability made—and continue to make—sustainability a topic at the campus. Although we helped guide the first iteration of the study with projects aimed at the food system and food security, it became rather clear that community interactions with food systems were more important to our students.

Students engaged their learning at the level of the community, interpreted for the most part as the community districts where they lived, by investigating the question of food security and the availability of healthy food for all members of their communities, including the most vulnerable. Students visited community farms, stores and marketplaces, food pantries and soup kitchens, homeless shelters, public schools, and churches, among other institutions. Some students interviewed homeless people and learned about the best prospects for "dumpster diving", meaning salvaging for food that stores throw out after it reaches its expiration date. Furthermore, students deployed their learning for the online community by publishing their investigative reports on food security on the class blog. While the readership of the blog is, by virtue of a lack of promotion, mostly limited to the college community, the students were very conscious of the public nature of their writing and the responsibility and power they thus had to instigate important public conversations about sustainability and to educate and dialogue with other interested people around the world. Finally, the field trip to a community farm allowed students to travel out of their own

communities and observe firsthand how urban spaces can become important sites of agricultural production and sustainability education.

Potential for Successes

We collected students' responses to test their understanding of the relationship between the community and the environment from their blog entries. Moreover, we were interested in the information contained within the entries that would directly connect the cultural and environmental association and whether students would feel compelled to disseminate their understanding beyond the confines of the classroom. Methodologically, these entries provided the qualitative basis for initial feedback and impressions for the likelihood that the model may have been impactful. Given that our pilot course consisted of a relatively small class size (<10 students), which is typical for our classroom courses at our institution, it, therefore, did not provide sufficient initial data for thorough qualitative or quantitative analyses. Consequently, our measure was implicit and therefore provided us with an initial baseline of data that can be used to compare to the feedback from future students. However, based on their blog entries, it seemed relatively straightforward that students could articulate favorable impressions of the course, content, and activities (see Table 2) and employ strategies of investigative journalism in their reflection of anthropogenic activity in contrast or concert with the urban environment.

In order to gauge the effectiveness of the course, we need to compare the anticipated learning outcomes with actual outcomes for student learning:

1. ***General ecology principles and conservation.*** While the students may have been aware of some principles of general ecology and sustainability before the course, by its end, they had come to see these principles manifest in their own communities. On the first day of class, we asked students to discuss what sustainability meant to them. Most of them mentioned recycling and vague concepts such as "not buying more than you need." By the course's end, their understanding of everyday sustainability practices was greatly expanded, as evidenced by their production of posters encouraging urban composting with practical tips that they posted around

Table 2.

Sample quotations from students' blog assignments, which supports positive attitudes towards sustainability and the environment.

Theme:	Quotations:
On sustainability:	"So I've learned firsthand if we can just make better use of what we have in front of us we can extend our precious resources for the next generation. In short, sustainability means life for our future by governing what we use in the present." "I like to keep it simple and I think sustainability is pretty much like it says; the ability to sustain. This is in reference to some sort of ecosystem that uses resources to keep itself going. Resources can be anything money, food, labor or even something simple like clean water. What is our ability to keep these resources from drying up? Are we using too much? I think sustainability is about identifying these factors and coming up with solutions to sustain our environment." "I am starting to realize that perhaps [sustainability is] not so much about reducing my overall footprint as it is changing the footprint all together. What I mean by that is unless we radically change how we go about living day to day, there won't be much living to go about – perhaps sooner than any of us realize."
On course projects:	"I don't know about anyone else, but for me, thinking that this area's ecosystems once rivaled today's Yellowstone Park makes me want to work so much harder to protect what we do have, and to create more green spaces. If there is anything we can learn from New York City's cultural richness, it's that our ecological richness is just as important. So start composting." "I love learning about sustainable neighborhoods. This article, especially the interviews, gave me new ways of seeing sustainability." "The garden in East New York provides vegetables for those individuals from Puerto Rico who miss home and encourage a healthy diet. For now the gardens are used as safe havens and the pride of the community. I am sure that given time, with more information being disseminated related to healthier lifestyles, the idea of sustainability will take hold. The love of growing, gardening and a positive neighborhood life already exist. It is not too much of a leap." "…even just these few simple changes could really help reduce the environmental impact dogs are having on the world. After all, I know I personally couldn't imagine a life without dogs, and I wouldn't want to. Besides, we're not just trying to save the planet for us, we're saving it for them too."
On community influence:	"Talk to your neighbors about composting, and what they think of your hood. Look around for trees on your street that need to be taken better care of. NYC's 311 call center is a great resource to use if you identify a tree that needs some love." "I believe that as long as the awareness and education continue into the long term effects of eating healthy vs. non-healthy then we are on the right track." "This dilemma [to radically overhaul the system] is something I have come up against a lot in my studies and beliefs, because I do believe that radical change is needed on many fronts in our system, in order for humans to thrive as a whole; however, I want to work for things that are actually possible." "In my report, I recall my conversation with this one man, in which I asked him whether or not he thought that people might eat healthier if the bodegas offered healthier options. To echo his point, accessibility is only part of the solution. Education plays a huge role in motivating people to choose the apple over the candy bar when the options are there right in front of them." " The change is being energized by education about the health risks and benefits of foods, local availability and local participation by organic farmers. It is essential that the organic foods are affordable and accessible." "… the largest common factor I noticed was that all of these problems required a personal investment from the members of the affected communities. When a neighborhood keeps an eye out for a senior living alone, there is support to prevent hunger, with compassion. When an assistant principal drives around to deliver food for needy students in order to protect their privacy, there is support to prevent hunger, with dignity. The stores we buy our food in don't feed us, the work of human hands and minds do. With strong communities working together, hunger can be overcome."

Note. Complete excerpts can be found at https://urbaninvestigators.wordpress.com/.

the college. The information they included covered a spectrum of issues pertaining to composting, from ecological to economic and social benefits:

"Composting decreases the amount of garbage in landfills, therefore reducing global warming emissions."

"Composting saves $$$ on garbage removal."

"Composting eliminates the use of chemicals."

"Composting turns waste into gold by yielding nutrient rich soil."

The students created Facebook, Twitter, and Instagram accounts and invited their colleagues to share their composting photos and stories. By this, they sought to involve the college community and further spread information about sustainability practices.

2. ***Sustainability principles and the challenges practitioners face.*** Students learned firsthand from their own observations and individual and team projects about the many difficulties that practitioners of sustainable food production face. They experienced the labor intensiveness of urban farming, for instance, through their own labor at the urban farm. That the weather transitioned from well over 90 degrees Fahrenheit to a drenching, hour-long downpour as they worked, drove home the significance of climate in ways that a textbook may not have. Here, students were able to appreciate the link between theoretical and applied applications in agroecology.

3. ***The cultural significance of urban sustainability and social activism.*** As the students analyzed their own communities' sources for food and demographic research on the economic status of people in their communities, they learned that sustainable practices surrounding food include far more than growing vegetables organically, but also finding means to sustain all the people in the community with organic produce, and not just the affluent. Furthermore, in their interviews with community residents, they learned that sustainability invariably means different things to different people. They also realized that economic insecurity is a sustainability issue as people struggle to achieve physical security in an unequal society. With this understanding, students realized that social activism and environmental sustainability are intertwined.

4. *Research and writing as a form of social activism*. This learning outcome is the most readily assessed, as each student produced two blog posts of some length (800-1500 words) that incorporated their research, excerpts from the interviews they conducted, their observations, and analysis. The nature of blogging implies a kind of outreach for an audience; it is a practice that is integral to social activism. It aims to engage and communicate with others and has the potential to connect with a wide international audience (a potential not yet realized in this case). Furthermore, the content of the students' blog posts was focused on their communities and the social-sustainable challenges they faced, particularly regarding economic insecurity and access to food. The transition from writing for class, or writing for the professor, was thus made to writing for the public, and in the public's interest. Comments such as these indicate the empowerment students may feel when their writing is turned outwards, for a community, rather than contained within strictly pedagogical frameworks.

We found that the design of the course curriculum and activities did accomplish, in large part, its overarching goals of cultivating awareness and cultivating skill-building for sustainable practices through experiential learning. In some ways, the course achieved its greatest success at the level of the community, for by the course's completion, the students had learned to see themselves as advocates for sustainable practices in their communities, thereby gaining a renewed sense of connectedness to their local environments. Furthermore, they learned to see some social and human ramifications of thinking and acting sustainably by exploring sustainability practitioners' fundamental challenges when attempting to promote food security in their communities. Foremost, the students realized, was the question of access: economic access to healthy food (or any food), geographical access to healthy food, access to green space, and access to education.

Limitations and Future Considerations

We can conclude that the level of student engagement in projects, assignments, attendance, and participation in the discussion was high. We also feel confident that the course achieved the following outcomes:

1. Students explored new green areas of NYC
2. Students became more familiar with 'green' terms and initiatives
3. Students actively engaged with issues and people in their communities
4. Many students went on to enroll in independent studies or similar study groups with a focus in sustainability education

Nevertheless, we experienced some setbacks while teaching the course. First, enrollment for the first iteration of the course was eight students, which is relatively low when the maximum class size for the Brooklyn unit is 25 students. This could indicate a lack of awareness about the importance of sustainability education at the college among students and their advisors. We intend to continue our efforts to increase interest in this topic across the college. One initiative we are focusing on is reaching out to new students during our pre-term orientation weeks through workshops on sustainability and integrating sustainability education into their study plans. Another plan is to advertise this study before registration, through student email systems and posters, and by contacting advisors to make sure they are aware of the study and its benefits.

Another setback occurred early in the course when the pump for the hydroponics system broke. As part of our funding, we acquired small-scale hydroponic and aquaponic kits for demonstration purposes within the Brooklyn location. It was not replaced until a week before the term ended. So, while students did engage in creative thinking about ways to get around the broken pump, ultimately, the system was not developed as well as it could have been, had all the materials been in working order. In this instance, we all learned that these kinds of systems might require consistent maintenance and ingenuity to help solve any immediate technical issues as they arise.

Finally, experiential learning provides a direct link between classroom knowledge and application and has been shown to increase learners' understanding of academic concepts in action (Kolb, 2014). As our students gathered information about sustainable food production in their communities, they learned about the complex web of attitudes, opportunities, resource distributions, and the vital role of education and how these things may transform or inhibit awareness and community action. Their own neighborhoods became a part of their curriculum, which nurtured the "ethic of caring along with a greater depth of understanding" cited in the introduction. As they read about some of the obstacles to sustainable practices in the course readings and further discussed them in class, their citizen journalism projects brought them into contact with these obstacles manifest in their own communities. Likewise, working on the urban farm as the weather shifted from extreme heat to a heavy downpour over the course of a few hours opened their eyes to the real hardships of food production within changing climates, thereby undoing the certainty they may have had that human can control the environment to satisfy our needs and whims. The interdisciplinary merging of science, cultural studies, and writing provided this fertile ground for bridging school and community, scholarship and

practice, and demonstrates the power of interdisciplinary knowledge production.

To further enhance these understandings, we would have liked to see more experiential learning take place in an ongoing manner at an urban farm or other sites of a significant urban sustainability project such as wide-scale vermicomposting or tree planting initiatives. Instead, we had to settle for one farm visit due to difficulties in communication with farm managers and scheduling constraints. And while students were enthusiastic about the experience (one student spoke with the farm manager afterward about an internship with them, and another joined a community farm in his own community the following week), they did not benefit from participating in plant production over time. This would have helped integrate ecological concepts more effectively into their learning. Furthermore, because the class lacked continuity beyond the completion of the term, the student's efforts to engage the college community in practices such as composting and blogging, tweeting, and posting to Instagram, were likewise abandoned. A truly successful form of citizen journalism and outreach would address the dilemma of perpetuating community, perhaps by forming an ongoing activity such as a club or student organization that could oversee the maintenance of social media. In future iterations of this course, we intend to allow for ongoing, structured engagement with sustainability projects in the city that commence with the start of the term and offer students participation that continues that continue after the course is concluded. In this way, we hope that at least some students will transition from sustainability learners to practitioners and builders of sustainable culture in New York City and beyond.

CONCLUSION

The impact of student learning at the home and community level was more far-reaching, and in some ways profound, than we had anticipated. Perhaps the most surprising outcome was that although the original model intended to merely instruct, the combination of theory and application genuinely encouraged students to impart their knowledge outside the classroom. However, in our third iteration of the course, we have observed that the student learning and actions feedback into the classroom. What our students have learned about being citizen journalists has informed our content for future instruction. Hence, our original model can be modified to include a positive feedback loop, which links what students could impart and learn from the home, community, and workplace back to the classroom. In this mode, students are best able to inform us, the

instructors, and future students about current trends in urban sustainability. This is particularly important as it allows us to identify salient issues in sustainability as they become focal points for the community. As issues in sustainability evolve, it is even more important that we learn about them and impart concerns pertaining to environmental, cultural, and social issues to future students. Our goal was to create opportunities for nontraditional students enrolled at an institution with an urban campus and to encourage them to learn about sustainability through their own interactions with the urban environment. Moreover, the model employed to empower students to engage in environmentally responsible ways may be replicated in other urban areas for instructors and their students.

ACKNOWLEDGEMENTS

This project was funded by Ithaca College under the college's Mini-grant program; the Empire State College Student Activities Fee Award; and discretionary spending by the Dean of the Metropolitan Center of Empire State College. We would like to specifically thank our former Dean Cynthia Ward, for her enthusiastic support. Lastly, we are grateful to the two anonymous reviewers for their comments on this paper.

REFERENCES

Aktas, C. B. (2015). Reflections on interdisciplinary sustainability research with undergraduate students. *International Journal of Sustainability in Higher Education, 16*(3), 354-366.

Allen, J. G., MacNaughton, P., Laurent, J. G. C., Flanigan, S. S., Eitland, E. S., & Spengler, J. D. (2015). Green buildings and health. *Current Environmental Health Reports, 2*(3), 250-258.

Barth, M., Godemann, J., Rieckmann, M., & Stoltenberg, U. (2007). Developing key competencies for sustainable development in higher education. *International Journal of Sustainability in Higher Education, 8,* 416-430.

Barth, M., & Michelsen, G. (2013). Learning for change: an educational contribution to sustainability science. *Sustainability Science*, *8*(1), 103-119.

Biedenweg, K., Monroe, M. C., & Oxarart, A. (2013). The importance of teaching ethics of sustainability. *International Journal of Sustainability in Higher Education, 14*(1), 6-14.

Brundiers, K., & Wiek, A. (2013). Do we teach what we preach? An international comparison of problem-and project-based learning courses in sustainability. *Sustainability*, *5*(4), 1725-1746.

Brundiers, K., Wiek, A., & Redman, C. L. (2010). Real-world learning opportunities in sustainability: From classroom into the real world.

International Journal of Sustainability in Higher Education, 11(4), 308-324.

Burns, H. (2011). Teaching for transformation:(Re) Designing sustainability courses based on ecological principles. *Journal of Sustainability Education, 2*.

Caviglia-Harris, J. L., & Hatley, J. (2004). Interdisciplinary teaching. *International Journal of Sustainability in Higher Education, 5*(4), 395-403.

Cetin, M., & Sevik, H. (2016). Measuring the impact of selected plants on indoor CO_2 concentrations. *Polish Journal of Environmental Studies, 25*(3), 973-979.

Coops, N. C., Marcus, J., Construt, I., Frank, E., Kellett, R., Mazzi, E., Munro, A., Nesbit, S., Reisman, A., Robinson, J., Schulz, A., & Sipos, Y. (2015). How an entry-level, interdisciplinary sustainability course revealed the benefits and challenges of a university-wide initiative for sustainability education. *International Journal of Sustainability in Higher Education, 16*(5), 729-747.

Evans, J., Jones, R., Karvonen, A., Millard, L., & Wendler, J. (2015). Living labs and co-production: University campuses as platforms for sustainability science. *Current Opinion in Environmental Sustainability*, *16*, 1-6.

Feng, L. (2012). Teacher and student responses to interdisciplinary aspects of sustainability education: What do we really know?. *Environmental Education Research*, *18*(1), 31-43.

Filar W. B. (2011). Embedding your green message through asynchoronous learning. *Electronic Green Journal, 1*(32). Retrieved from http://escholarship.org/uc/item/4vt250k7

Friedow, A. F., Blankenship, E. E., Green, J. L., & Stroup, W. W. (2012). Learning interdisciplinary pedagogies. *Pedagogy: Critical Approaches to Teaching Literature, Language, Composition, and Culture, 12*(3), 405-424.

Gehl, J. (2011). *Life between buildings: Using public space*. Washington DC: Island Press.

Goralnik, L., Kelly, F., Millenbah, M., Thorp, N., & Thorp, L. (2012). An environmental pedagogy of care: Emotion, relationships, and experiences in higher education ethics learning. *Journal of Experiential Education, 35*(3): 412-428.

Gosselin, D., Burian, S., Lutz, T., & Maxson, J. (2016). Integrating geoscience into undergraduate education about environment, society, and sustainability using place-based learning: Three examples. *Journal of Environmental Studies and Sciences*, *6*(3), 531-540.

Grabinger, R. S., & Dunlap, J. C. (1995). Rich environments for active learning: A definition. *Research in Learning Technology, 3,* 5-34.

Graff, E. (2012). Experiential learning: Merging art with biology. *The International Journal of Interdisciplinary Social Sciences, 6*(7): 99-105.

Grahn, P., & Stigsdotter, U. K. (2010). The relation between perceived sensory dimensions of urban green space and stress restoration. *Landscape and Urban Planning, 94*(3), 264-275.

Hoare, A., Cornell, S., Bertram, C., Gallagher, K., Heslop, S., Lieven, N., MacLeod, C., Morgan, J., Pickering, A., Wells, S., & Willmore, C. (2008). Teaching against the grain: Multi-disciplinary teamwork effectively delivers a successful undergraduate unit in sustainable development. *Environmental Education Research, 14*(4), 469-481.

Jensen, B. B. (2002). Knowledge, action and pro-environmental behaviour. *Environmental Education Research, 8*(3), 325-334.

Johnston, L. F. (Ed.). (2013). *Higher education for sustainability: Cases, challenges, and opportunities from across the curriculum*. London: Routledge.

Karsten, H. D., & O'Connor, R. E. (2002). Lessons learned from teaching an interdisciplinary undergraduate course on sustainable agriculture science and policy. *Journal of Natural Resources and Life Sciences Education*, *31*, 111-116.

Kehl, K., & Morris, J. (2008). Differences in global-mindedness between short-term and semester-long study abroad participants at selected private universities. *Frontiers: The Interdisciplinary Journal of Study Abroad, 15,* 67-79.

Kennedy, E. H., Beckley, T. M., McFarlane, B. L., & Nadeau, S. (2009). Why we don't "walk the talk": Understanding the environmental values/behaviour gap in Canada. *Human Ecology Review, 16*(2), 151.

Klein, J. T. (2009). *Creating interdisciplinary campus cultures: A model for strength and sustainability*. Hoboken, NJ: John Wiley & Sons.

Klein, J. T., & Newell, W. H. (1997). Advancing interdisciplinary studies. In J. Gaff & J. Radcliff (Eds.), *Handbook of the undergraduate curriculum: A comprehensive guide to purposes, structures, practices, and change* (pp. 393-415). San Francisco, CA: Jossey-Bass.

Knowlton, J. L., Halvorsen, K. E., Handler, R. M., & O'Rourke, M. (2014). Teaching interdisciplinary sustainability science teamwork skills to graduate students using in-person and web-based interactions. *Sustainability*, *6*(12), 9428-9440.

Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. Upper Saddle River, NJ: FT Press.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental Education Research, 8*(3), 239-260.

Krizek, K. J., Newport, D., White, J., & Townsend, A. R. (2012). Higher education's sustainability imperative: how to practically respond?. *International Journal of Sustainability in Higher Education, 13*(1), 19-33.

Kurland, N. B., Michaud, K. E., Best, M., Wohldmann, E., Cox, H., Pontikis, K., & Vasishth, A. (2010). Overcoming silos: The role of an interdisciplinary course in shaping a sustainability network. *Academy of Management Learning & Education*, *9*(3), 457-476.

Lee, K. H., Barker, M., & Mouasher, A. (2013). Is it even espoused? An exploratory study of commitment to sustainability as evidenced in vision, mission, and

graduate attribute statements in Australian universities. *Journal of Cleaner Production*, *48*, 20-28.

Lélé, S., & Norgaard, R. B. (2005). Practicing interdisciplinarity. *BioScience, 55*(11), 967-975.

Levintova, E. M., & Mueller, D. W. (2015). Sustainability: Teaching an interdisciplinary threshold concept through traditional lecture and active learning. *Canadian Journal for the Scholarship of Teaching and Learning*, *6*(1), 1-18.

Miller, N., Pogue, D., Gough, Q., & Davis, S. (2009). Green buildings and productivity. *Journal of Sustainable Real Estate, 1*(1), 65-89.

Mueller, M. (2008). Ecojustice as ecological literacy is much more than being 'Green!' *Educational Studies, 44,* 155-166.

Nieuwenhuis, M., Knight, C., Postmes, T., & Haslam, S. A. (2014). The relative benefits of green versus lean office space: Three field experiments. *Journal of Experimental Psychology: Applied, 20*(3), 199-214.

O'Byrne, D., Dripps, W., & Nicholas, K. A. (2015). Teaching and learning sustainability: An assessment of the curriculum content and structure of sustainability degree programs in higher education. *Sustainability Science*, *10*(1), 43-59.

Orr, D. W. (2004). *Earth in mind: On education, environment, and the human prospect*. Washington, DC: Island Press.

Ramaswami, A., Weible, C., Main, D., Heikkila, T., Siddiki, S., Duvall, A., Pattison, A., & Bernard, M. (2012). A social-ecological-infrastructural systems framework for interdisciplinary study of sustainable city systems: An integrative curriculum across seven major disciplines. *Journal of Industrial Ecology*, *16*(6), 801-813.

Rau, H., Goggins, G., & Fahy, F. (2018). From invisibility to impact: Recognising the scientific and societal relevance of interdisciplinary sustainability research. *Research Policy*, *47*(1), 266-276.

Redman, C. L. (2013). Transforming the silos: Arizona state university's school of sustainability. In P. F. Bartlett & G. W. chase (Eds.), *Sustainability in higher education: Stories and strategies for transformation* (pp. 229-239). Cambridge, MA: MIT Press.

Remington-Doucette, S. M., Hiller Connell, K. Y., Armstrong, C. M., & Musgrove, S. L. (2013). Assessing sustainability education in a transdisciplinary undergraduate course focused on real-world problem solving: a case for disciplinary grounding. *International Journal of Sustainability in Higher Education, 14*(4), 404-433.

Robinson, J. (2008). Being undisciplined: Transgressions and intersections in academia and beyond. *Futures, 40,* 70-86.

Rowan-Kenyon, H. T., & Niehaus, E. K. (2011). One year later: The influence of short-term study abroad experiences on students. *Journal of Student Affairs Research and Practice, 48*(2), 207-222.

Rowe, D. (2002). Environmental literacy and sustainability as core requirements: Success stories and models. In W. Leal Filho (Ed.), *Teaching sustainability at universities* (pp. 79-103). New York, NY: Peter Lang Publishing.

Sampson, D. & Smith, H.P. (1957). A scale to measure world-minded attitudes. *Journal of Social Psychology, 45,* 99–106.

Schmitz, C. L., Stinson, C. H., & James, C. D. (2010). *Community and environmental sustainability*. *Critical Social Work*, *11*(3), 83-100.

Scholz, R. W., Lang, D. J., Wiek, A., Walter, A. I., & Stauffacher, M. (2006). Transdisciplinary case studies as a means of sustainability learning: Historical framework and theory. *International Journal of Sustainability in Higher Education*, *7*(3), 226-251.

Sharpe, E., & Breunig, M. (2009). Sustaining environmental pedagogy in times of educational conservatism: A case study of integrated curriculum programs. *Environmental Education Research, 15*(3): 299-313.

Sprain, L., & Timpson, W. M. (2012). Pedagogy for sustainability science: Case-based approaches for interdisciplinary instruction. *Environmental Communication: A Journal of Nature and Culture*, *6*(4), 532-550.

Summers, M., Childs, A., & Corney, G. (2005). Education for sustainable development in initial teacher training: Issues for interdisciplinary collaboration. *Environmental Education Research*, *11*(5), 623-647.

Ter Horst, E. E., & Pearce, J. M. (2010). Foreign languages and sustainability: Addressing the connections, communities, and comparisons standards in higher education. *Foreign Language Annals*, *43*(3), 365-383.

Vincent, S., Roberts, J. T., & Mulkey, S. (2016). Interdisciplinary environmental and sustainability education: islands of progress in a sea of dysfunction. *Journal of Environmental Studies and Sciences*, *6*(2), 418-424.

Warburton, K. (2003). Deep learning and education for sustainability*International Journal of Sustainability in Higher Education*, *4*(1), 44-56.

Ward, M., Bowen, B., Burian, S., Cachelin, A., & McCool, D. (2016). Institutionalizing interdisciplinary sustainability curriculum at a large, research-intensive university: challenges and opportunities. *Journal of Environmental Studies and Sciences*, *6*(2), 425-431.

Welsh, M. A., & Murray, D. L. (2003). The ecollaborative: Teaching sustainability through critical pedagogy. *Journal of Management Education*, *27*(2), 220-235.

Widener, J. M., Gliedt, T., & Tziganuk, A. (2016). Assessing sustainability teaching and learning in geography education. *International Journal of Sustainability in Higher Education*, 17(5), 698-718.

Wood, B. E., Cornforth, S., Beals, F., Taylor, M., & Tallon, R. (2016). Sustainability champions?: Academic identities and sustainability curricula in higher education. *International Journal of Sustainability in Higher Education, 17*(3), 1-19.

Wolverton, B. C., & Wolverton, J. D. (1993). Plants and soil microorganisms: removal of formaldehyde, xylene, and ammonia from the indoor

environment. *Journal of the Mississippi Academy of Sciences, 38*(2), 11-15.
Younes, M. N., & Asay, S. M. (2002). The world as a classroom: The impact of international study experience on college students. *College Teaching, 51,* 141-147.

KARYN PILGRIM, PhD, is an Associate Professor in the division of Arts & Humanities, State University of New York Empire State College. Her major research interests lie in the areas of environmental humanities, literary theory, and creative writing. Email: karyn.pilgrim@esc.edu.

KEVIN L. WOO, PhD, is an Associate Professor in the School of Science, Mathematics, & Technology and the Department of Natural Sciences at the State University of New York Empire State College. His major research interests lie in the area of animal behavior, animal cognition, ecology, and conservation biology. Email: Kevin.Woo@esc.edu

Manuscript submitted: ***April 13, 2020***
Manuscript revised: ***January 4, 2021***
Accepted for publication: ***March 5, 2021***

Appendix A

Green Pens and Thumbs: Discovering Urban Sustainability in New York City

Instructor(s): _____

Purpose:

This study intends to immerse students in urban sustainability, from an ecological, cultural, and activist standpoint. Students will explore definitions of sustainability and consider the means by which a community can work together to implement sustainable practices for the good of all. Since the best way to learn about sustainability is to practice it, students will apply their reading and classroom learning to hands-on experiences in urban agriculture field trips, visits to museums, and other sites across the city. And because sustainability and democratic principles are intertwined, students will take on the role of citizen journalists, interviewing people involved in

urban sustainability, researching the goings-on across the city, and reporting on them in creative essays.

Learning Objectives:

Students will learn to articulate in discussion and writing:

1. A range of urban sustainability practices
2. Challenges practitioners of sustainable practices face
3. The basic science behind ecological principles, and the need for urban sustainability
4. An awareness of the impacts of climate change and environmental degradation on life systems
5. The cultural significance of urban sustainability
6. Best practices for clear writing and research
7. An understanding of social activism

Required Texts:

Callenbach, E. (2008). *Ecology: A pocket guide, revised and expanded*. Berkeley, CA:
University of California Press.

Klein, N. (2014). *This changes everything: Capitalism vs. the climate*. NY: Simon & Schuster.

Kolbert, E. (2015). *The sixth extinction: An unnatural history*. NY: Picador.

Suggested text(s):

Green, T. (2013). *The dictionary of global sustainability*. New York: McGraw-Hill.

Sage, C. (2012). *Environment and food*. New York: Routledge.

Assignments & Meetings:

Assignment Module #1:

Date Assigned: _____

1) Callenbach A-C and D-F
2) Klein, chapters 1, 2, 3; Kolbert, chapters I, II, III
3) Do Writing Assignment#1: Part A (Research)
4) Listen:

Hidden Kitchens (http://www.npr.org/series/91851784/hidden-kitchens-the-kitchen-sisters)

Assignment Module #1 is due: _____

Meeting #1: Location: *Classroom

For the first meeting, we will cover an introduction of the study, and discuss the broader topics in environmental sustainability. Here, we will discuss the intent of the study, the assignments, activities, and the term. . We will also cover some basics of good writing style, and discuss the term length individual writing projects that students will engage in.

Meeting #2:

For the second meeting, we will talk about general ecology and begin working on the plant systems.

Meeting #3

For the third meeting we will discuss what we have learned in Klein's This Changes Everything, Kolbert's The Sixth Extinction, and the individual writing projects you will be engaging in. The discussion will be led by presenters (individuals to be grouped):

Chapter 1 of Klein and Kolbert:

_____

Chapter 2 of Klein and Kolbert:_____

Chapter 3 of Klein and Kolbert:_____

Assignment Module #2:

Date Assigned: _____; Due: _____

1) Callenbach G-I, J-L, M-O
2) Klein,chapters 6, 7, 8; Kolbert, chapters VI, VII, VIII
3) Writing Assignment #1B; Due on _____

Assignment Module #2 is due: _____

Meeting #4:

For the fourth meeting, we will begin work on our team projects. Don't be absent!

In addition, we will discuss the basics of biological conservation, and how to measure biodiversity. Inclusive of our discussing a project to be paired with your writing assignments that will have you measure some aspect of biodiversity in your own community.

Meeting #5: Field Trip to Community Garden

Details for the trip will be announced in class.

Writing Assignment #1B Due (email:

Assignment Series #3:

1) Date Assigned: _____; Due: _____

2) Read Callenbach P-R, S-U, W-Z
3) Writing Assignment #2; Due on _____

Assignment Series #3 is due: _____

Meeting #6:

For the sixth meeting, we will Klein's chapters 6, 7, 8, and Kolbert's chapters VI, VII, and VIII. We will also discuss how to begin Writing Assignment #2. The discussion will be led by presenters (individuals to be grouped):

Chapter 6 in Klein and Kolbert:_____

Chapter 7 in Klein and Kolbert:_____

Chapter 8 in Klein and Kolbert:_____

Meeting #7:

For the seventh meeting, we will discuss Klein's chapters 9, 10, 13 and Kolbert's chapters IX, X, and XIII. The discussion will be led by presenters (individuals to be grouped):

Chapter 9 in Klein and Kolbert:_____

Chapter 10 in Klein and Kolbert:_____

Chapter 11 in Klein and Kolbert:_____

Meeting #8:

For the final meeting, we will showcase our final individual, group, and writing projects for the term. It is an opportunity for us to share the investment of our own work that was achieved during the term.

Writing Assignment #2 Due (email:

Measuring Biodiversity

Along with your writing assignments that will take you into the community, you will have a chance learn about biodiversity, and how to measure levels of local biodiversity. We will use a basic calculation, the Simpsons Diversity Index (D), to compare the level of diversity in your community. During our meeting, we will discuss the importance of biodiversity, and how it is integral for the success of local ecosystems. You

will have the opportunity to choose your focus. *Note: Example worksheet and actual activity sheet will be posted online.

Term Assignment and Final Meeting

As a term-long project, students will be divided into two groups to develop a sustainable project that will be housed in the Brooklyn unit. These two teams will be provided with a small budget (supported by internal and external grant funding), and they are to work collectively to research, develop, and initiate this project. Some examples include greening indoor spaces, reducing water waste, and creating information literacy on green initiatives. The groups are to assign duties among each member, and the project is to be completed and presented on the final day of class. Here, we will also host a party in which each team will showcase their project. This event will be public, and all students, staff, and faculty of the Metropolitan Center will be invited. The overall goal is to empower our students to think creatively and innovatively, and develop small models that may be implemented in the greater community.

Plant Systems

To get everyone integrated with a single issue in sustainability, we will be examining the nature of agricultural methods. To do this, each student will be provided with a growing tray. We will supply each person with any other basic materials.

You may wish to leave your tray at the Brooklyn unit. We will provide you with access to one of our offices to retrieve your tray. Hence, you can work on it while at the Brooklyn unit, but it is advised that you continue to work on the trays independent of class time.

Team Projects & Showcase

As the plant systems project aims to provide an initial idea, and innovative way to look at a problem in food systems and sustainability, you and your group will have the opportunity then to exam a specific challenge that faces the urban environment, and design a sustainable project.

This is a team project, and you will need to coordinate time and schedules with your to work on your final project. However, unlike the plant systems, there will be no kits provided to you or your group. You are to conduct extensive research on your issue, and with your team, create an innovative way to address this issue.

The project aims to empower students to develop a small-scale project, and one that may be adapted to the community. Hence, the project that your group creates will be available for the Brooklyn unit community to see/use/interact.

In addition, it is likely that you and your team may need to invest personal funds into the project. As we have severely reduced the initial cost

for acquire texts (i.e., selected relatively inexpensive material) and supplemented each group with acquired funding, there is no minimum or maximum that each team may wish to allocate to this project. However, we also understand that it may not be feasible for select individuals to contribute equal amounts of funding to the project. If any individual is currently experiencing financial hardship that does not allow them to contribute monetary funds to the project, please see Professor Pilgrim or Professor Woo privately. The exercise is not designed for individuals to spend an exorbitant amount of money, which would put you in any financial hardship, but is to manage a socially responsible project while realizing the likely investments that may be needed for projects in sustainability.

Field Trip

During the term, we will have the opportunity to visit an organization that is engaged in sustainable activities. In New York City, there are many innovative groups that are engaged in a wide range of sustainable missions from food systems, alternative energy, water, and to environmental justice. These organizations can be linked to larger corporations or non-profit. Here, we intend to pair what we learn and discuss in the classroom with the opportunity to see the concepts that we learn come into action. *Note: The date, location, and timing of the field trip will be announced during the term.

Schedule of Assignments

This schedule is designed to keep you on pace to complete all prescribed assignments for this study. You are expected to engage in excellent time management skills, and thus not fall behind on your studies.

Week	Date	Theme	Topic(s)	Klein and Kolbert Chapter(s)	Callenbach Chapter(s)	Activity(ies)
1	_____ _____	Introduction	Foundational Concepts		A-C	
2	_____ _____	General Ecology	Agroecology		D-F	Start Plant Systems
3	_____ _____	Individual Writing Projects		Kl: 1,2,3 Ko: I, II, III	G-I	

4	_____ _____	Conservation Team Projects	Biodiversity Guidelines for brainstorming		J-L	-Discuss Team: Projects/Guidelines/Get Started! -Writing Assignment #1A due
5	_____ _____ FIELD TRIP	Sustainable Actions in NYC	Urban Agriculture Alternative Energy	Kl: 6,7,8 Ko: VI, VII, VIII		Writing Assignment #1B due
6	_____ _____				M-O and P-R	
7	_____ _____	Assessing Food Sustainability		Kl: 9,10,13 Ko: IX, X, XIII	S-U	Finish Plant Systems
8	_____ _____		Showcase		W-Z	-Writing Assignment #2 due -Biodiversity Project -Finish Team Projects & Showcase!

Appendix B

Biodiversity Exercise

Discovering sustainability in New York City:
An interdisciplinary framework for teaching in urban institutions

Instructor(s): _____

Purpose:

The natural world is a complex theater. Over time, biological and physical factors have likely shaped the composition of ecological communities around the globe. However, to better understand the nature of communities, and how multiple species interact with each other, scientists have developed assays to measure the abundance of individuals and the number of species found within various ecosystems. Moreover, effective sampling techniques allow us to compare the relative diversity between multiple communities. The difference in biodiversity between comparable ecosystems helps

scientists to generate models that are potentially reflected in communities across all biomes. As scientists employ the scientific method to study ecological interactions, they may develop more questions, hypotheses, and theories about the natural world. In particular, assessing relative biodiversity may provide useful information for us to consider the health of communities.

Key Terms:
Abundance: number of individuals in a species that are found in a given area (measured by population size or density)
Richness: number of species in a community
Evenness: relative abundance of species in a community compared with one another
Diversity: a measure the combines the number of species (richness) in a community and their relative abundances compared with one another (evenness)

Activity:
Our objective is to measure and quantify the level of fauna diversity in two locations at in New York City, and to compare the relative biodiversity between the two communities. Students will be divided into one of two groups, and led on a nature walk to fauna species and record their frequency, as they are found in their respective location. Both teams will use a systematic approach. Students will record how many types of fauna (e.g., may wish to identify group/clade) they are able to identify either by their common name, scientific name, or descriptors used to identify the species from other fauna. Students will also record the frequency of occurrence. Upon completion of the field survey, students will return to the 'lab' and calculate the relative biodiversity using the Simpson's Diversity Index (D).

Location Map:

Equipment:
Writing instrument(s)
Data sheet(s)/worksheet(s)
Transects
Calculators
Photo/Video recording devices (cameras, mobile phones, tablets)
Simpson's Diversity Index (D):

$$D = \frac{\Sigma\, n(n-1)}{N(N-1)}$$

n = the total number of organisms of a particular species
N = the total number of organisms of all species
Then…
Simpson's Index of Diversity: **1-D**

→ The value of this index ranges between 0 and 1. Here, the greater the value represents the greater the sample diversity. The index represents the probability that two individuals randomly selected from a sample will belong to different species.
or…
Simpsons Reciprocal Index: **1/D**

→ The value of this index starts with 1 as the lowest possible figure, as it would represent a community containing only one species. The higher the value represents the greater the diversity. The maximum value is the number of species in the sample.

Example & Calculations:

Location #1: Lower Hudson Bay, NY

Species	Number (n)	n(n-1)
Bottlenosed dolphin (*Tursiops truncatus*)	5	20
Minke whale (*Balaenoptera acutorostrata*)	1	0
Harbor seal (*Phoca vitulina*)	22	420
Grey seal (*Halichoerus grypus*)	3	6
Hooded seal (*Cystophora cristata*)	2	2
Common dolphin (*Delphinus delphis*)	5	20
Total (N):	38	468

Calculations #1:

$$D = \frac{\sum n(n-1)}{N(N-1)}$$

$$= \frac{468}{38(37)}$$

$$= \frac{468}{1406}$$

$$= 0.33$$

1-D = **0.66**

Location #2: Ipswich Bay, MA

Species	Number (n)	n(n-1)
Common dolphin (*Delphinus delphis*)	21	420
Minke whale (*Balaenoptera acutorostrata*)	6	30
Humpback whale (*Megaptera novaeangliae*)	6	30
Harbor seal (*Phoca vitulina*)	44	1892
Grey seal (*Halichoerus grypus*)	7	42
Bottlenose dolphin (*Tursiops truncatus*)	9	72
North Atlantic right whale (*Eubalaena glacialis*)	3	6
Total (N):	96	2492

Calculations #2:

$$D = \frac{\sum n(n-1)}{N(N-1)}$$

$$= \frac{2492}{96(95)}$$

$$= \frac{2492}{9120}$$

$$= 0.27$$

1-D = **0.73**

Worksheet (Field):

Your Location: _____

Species/Descriptor **Frequency**

Calculations (Lab):

Question/Hypothesis

Observation(s):

Result(s):

Conclusion(s):

Limitation(s):

Future Question(s):

Additional Data Sheet:

Species/Descriptor **Frequency**

OJED
OPEN JOURNALS IN EDUCATION

Volume 10, Issue 1 (2021), pp. 118-138
Journal of Interdisciplinary Studies in Education
Print ISSN: 2166-2681 | Online ISSN 2690-0408
https://ojed.org/jise

Re-imagining Pedagogy for Early Childhood Education Pre-service Curriculum in the Face of the COVID 19 Pandemic

Mphahlele Ramashego Shila Shorty
University of South Africa, South Africa

Bethia T. Jikpamu
Concordia University Chicago, Illinois

ABSTRACT

COVID-19 has caused a change in the demography of the Early Childhood Education (ECE) teaching fraternity. This paper problematizes the ECE curriculum delivery gap created by the influence of COVID-19. Central to this paper is the assumption that online learning might limit the stimulation of children's holistic development. Reflecting on their experiences, the authors examine the influence of COVID-19 on pedagogy for ECE pre-service and kindergarten curriculum through the lens of design thinking theory. The reflections are based on one open and distance learning institution in South Africa and one kindergarten program in Canada. The findings reveal challenges, such as digital inequality brought on by socio-economic imbalances and opportunities. The authors suggest the digital literacy skills needed to mitigate the influence of COVID-19 in the ECE pre-service and kindergarten curriculum delivery

Keywords: Curriculum, COVID-19, early childhood, design thinking theory, kindergarten, pre-service teachers

INTRODUCTION

The coronavirus (COVID-19) pandemic hit the hardest in many institutions of learning around the globe. The global response to the pandemic by institutions of learning has changed the normal methods of service delivery and activities of different sectors, including ECE. The focus of ECE, according to Cohrssen, et al (2013,) is quality pedagogy and evidence of learning outcomes for children. Exploring this focus from the perspective of the Institute of Medicine and the National Research Council, (2015), the learning outcomes for children can be achieved through the children's emerging development, by providing experiences related to their physical, social, emotional, behavioral, language, and cognitive processes and skills.

Although ECE is a highly diverse field that continuously acquire new facets of meaning, this paper aligns with the definition by Akbari and McCuaig (2014), which referred to ECE as programmes for young children based on an explicit curriculum, delivered by qualified staff and designed to support children's development and learning. This paper focuses on pedagogy for the ECE pre-service and kindergarten curriculum. It should be noted that ECE pre-service teaching has a strong link with kindergarten teaching because kindergarten teachers go through ECE pre-service teacher training to qualify. In light of this, the ECE teachers referred to in this paper are kindergarten teachers.

In the history of ECE pre-service teachers' training, the emphasis has always been to help pre-service teachers to analyze and transform their beliefs about teaching, in order to develop a deeper understanding of young children with diverse backgrounds and needs (Jale & Ozcan, 2009). These needs include positive sustained relationships that foster attachment and emotional connections; physical, emotional, and identity safety; and a sense of belonging and purpose. However, it should be noted that before COVID-19 ECE pre-service teachers globally were taken through programmes tailored to meet the demands of the various components of the ECE curriculum, to provide them with relevant competencies and expertise prescribed for their institutions and communities. This paper problematizes the ECE curriculum delivery gap created by the influence of COVID-19, such as social distancing and working from home.

Central to this paper is the assumption that for kindergarten teachers to abide by the COVID-19 regulations, they need to be equipped with digital literacy skills and approaches for curriculum delivery during their preparation to become kindergarten teachers. In line with this assumption, we drive the argument of this paper with the following research question:

What are the approaches needed to mitigate the influence of COVID-19 in the ECE pre-service and kindergarten curriculum delivery? Drawing from the implications of digital literacy on educational equity, as presented by Kerkhoff, et al (2018a), we argue that there is still some evidence of digital naivety among ECE pre-service teachers in most institutions of higher learning.

THEORETICAL FOUNDATIONS

The theoretical base underpinning this study is Rowe's (1987) design thinking theory. As conceived by Rowe (1987), the design thinking theory is viewed as the give-and-take of problem-solving situations in the real world. When design thinking theory began receiving attention in the business sector, Razzouk and Shute (2012) defined it as an analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback, and redesign the product. Noting that design thinking theory originated with academics who researched within design disciplines, Kimbell (2011) asserted that there is a shift in terms of using it for the challenges facing organizations. In this paper, design thinking theory is employed to re-imagine pedagogy for ECE pre-service and kindergarten curriculum in the face of the COVID-19 pandemic. Kimbell (2011) described design thinking theory in three different ways: as a cognitive style, a general theory of design, and an organizational resource. For this paper, we selected the general theory of design because we viewed design thinking as an agent of change for ECE pre-service and kindergarten curriculum amid COVID-19.

There is some evidence to suggest that the ECE pre-service curriculum should equip kindergarten teachers with the instructional strategies suggested by Kankam and Abroampa (2015), which include but is not limited to role play, dramatization, and simulation. Kankam and Abroampa (2015) further posited that these instructional strategies naturally foster a network of relationships between and among agents at work: teacher-learner, learner-learner, and learner-learning resources. This paper interrogates the use of these instructional strategies during the COVID-19 pandemic. Most pre-service teachers should conduct their practice teaching through Work Integrated Learning, while kindergarten teachers should continue to offer teaching and learning services to children. This paper argues that the ECE pre-service and kindergarten curriculum should be re-imagined with the implementation of virtual instructional strategies. It should be noted, however, that for the virtual implementation of these

strategies, pre-service and kindergarten teachers should have some knowledge and skills of digital literacy.

LITERATURE REVIEW

The literature review was propelled by our research question: "*What are the approaches needed to mitigate the influence of COVID-19 in the ECE pre-service and kindergarten curriculum delivery?"* To help answer this question, we examined the literature on the following headings: ECE pre-service curriculum; teaching strategies and student learning; the effect of COVID-19 on ECE pre-service curriculum delivery and skills needed for ECE pre-service curriculum delivery during and post COVID-19. Consideration was also given to a critical look at the influence of this curricular approach and pedagogy on children's learning in play-based early learning settings.

The ECE pre-service and kindergarten curriculum

The ECE pre-service curriculum aimed at equipping kindergarten teachers is designed to cultivate a thorough understanding of the developing child by infusing theories of childhood development into coursework and practicum (Ragpot, 2017). Training outlines skill sets necessary to support children in all developmental domains, including physical, cognitive, language or communication, social and emotional. These are broad developmental areas, each playing a critical role in children's learning and overall well-being. As a requirement, ECE pre-service teachers also participate in field placement opportunities (Allen & Wright, 2014; Atiles, Jones, & Kim, 2012; Gong & Wang, 2017,) to gather experience in teaching culturally, socially, and economically diverse children in different settings (Lee & Hemer-Patnode, 2010). During these placements, pre-service teachers apply hands-on training to real-world experiences in infant-toddler, preschool, and kindergarten programs in schools and early learning centers (Garvis, Lemon, Pendergast, & Yim, 2013). Observation, an essential component of field placements, gives pre-service teachers opportunities to observe children's learning in daily experiences through play, and to use it as experienced teachers to inform their practice. Observationally driven data, when well documented, are also useful in assessing children's learning outcomes and in promoting reflective teaching practices (McKie, Manswell Butty & Green, 2012). This important aspect of observation and

documentation in ECE pre-service teachers' pedagogy and training is critical to the enrichment of children's learning and development.

The ECE pre-service and kindergarten curriculum

The ECE pre-service curriculum aimed at equipping kindergarten teachers is designed to cultivate a thorough understanding of the developing child by infusing theories of childhood development into coursework and practicum (Ragpot, 2017). Training outlines skill sets necessary to support children in all developmental domains, including physical, cognitive, language or communication, social and emotional. These are broad developmental areas, each playing a critical role in children's learning and overall well-being. As a requirement, ECE pre-service teachers also participate in field placement opportunities (Allen & Wright, 2014; Atiles, Jones, & Kim, 2012; Gong & Wang, 2017,) to gather experience in teaching culturally, socially, and economically diverse children in different settings (Lee & Hemer-Patnode, 2010). During these placements, pre-service teachers apply hands-on training to real-world experiences in infant-toddler, preschool, and kindergarten programs in schools and early learning centers (Garvis, Lemon, Pendergast, & Yim, 2013). Observation, an essential component of field placements, gives pre-service teachers opportunities to observe children's learning in daily experiences through play, and to use it as experienced teachers to inform their practice. Observationally driven data, when well documented, are also useful in assessing children's learning outcomes and in promoting reflective teaching practices (McKie, Manswell Butty & Green, 2012). This important aspect of observation and documentation in ECE pre-service teachers' pedagogy and training is critical to the enrichment of children's learning and development.

ECE teaching strategies and student learning

ECE pre-service and kindergarten teachers employ teaching practices that promote and support broad categories of children's physical, cognitive, language or communication, social and emotional development, as well as "mathematical and scientific reasoning" (Meloy, Schachner & Learning Policy Institute, 2019, p. 4). Meloy, et al. (2019, p. 4) note that "developmental trajectory in one area may be fundamentally linked to the child's progress in another". Taking note of these progressions or changes, kindergarten teachers can not only assess learning, but also provide ways to improve children's learning. The curriculum that kindergarten teachers plan for young children has specific goals to develop children's physical skills,

which in turn promotes the construction of knowledge as children engage in and interact with others in physical activities. Through positive classroom interactions and play with teachers and peers, kindergarten children show development in cognitive and executive functioning skills (Hamre, 2014; Meloy, et al. 2019). This form of learning and skill development is congruent with the kindergarten children's language and literacy abilities and their social and emotional skills, which also are supported and sustained through positive and meaningful interactions especially with teachers. Kindergarten teachers use their training and expertise in child development to enrich the learning experience, build positive relationships by asking questions, and sustaining play activities. In their research on the conceptualization of play-based curriculum by ECE pre-service teachers, Ridgway and Quinones (2012: 48) described "shared sustained thinking" as "the construction and sharing of knowledge." Sharing similar sentiments, McLachlan, Fleer, and Edwards (2018: 66) viewed it as an optimal prerequisite for play-based teaching and learning. This idea of co-constructing knowledge and building positive relationships among educators and students is important for the pedagogic ECE environment.

Notably, a review of the empirical and theoretical literature foregrounded teaching practices and training from responsive ECE pre-service teachers, who require in-depth specialized knowledge in child development and social and emotional learning or SEL (Blewitt et al., 2020). Kindergarten teachers are required to observe and document the learning of children's exuberance during play, then plan and implement lessons to support these early learning experiences. Researchers support the importance of play in the ECE curriculum (Hewes, 2006) and when it is intentional (Barblett, Knaus, & Barratt-Pugh, 2016), the play serves as a significant channel for learning. Additionally, kindergarten children build on fundamental early childhood concepts and ideas by practicing these skills through meaningful engagement in play. Although the play is a student-oriented activity, through careful and effective curriculum planning and implementation responsive kindergarten teachers capitalize on children's play in a rich social environment, by embedding moments for enrichment in play to support learning and children's creativity.

The effect of COVID-19 pandemic on ECE pre-service curriculum

The literature on COVID-19 was epidemiological in nature with a focus on the care of a given population and the containment of the pandemic. Hence, themajority of studies that focused on education concentrated on how COVID-19 affects medical students (Ahmed, Allaf, &

Elghazaly, 2020; Ferrel & Ryan, 2020; Goh & Sandars, 2020; Rose, 2020; Theoret & Ming, 2020). Nevertheless, there were broad interpretations in the literature that highlighted factors that interfere with the teaching of kindergarten students and training of students in higher education because of COVID-19 (Crawford, Butler-Henderson, Rudolp & Glowatz, 2020; Moorhouse, 2020; Toquero, 2020). One study focused on logistics in preparing to shift university teaching and learning online in twenty countries (Crawford et al., 2020). While the authors found a collective response from universities around the world to attend to students' learning needs, some poorly resourced universities could not meet this global change, and most universities that did switch engaged in a mere shift online and not particularly to strategic online teaching (Crawford et al., 2020).

Implications of the unavailability of, and inexperience, in virtual teaching and learning negatively impact lesson delivery and how students learn. This offers some insight into how the quality of teaching is contingent on the quality of the technology used to drive virtual learning. A reoccurring factor in the work of Crawford et al. (2020) was that the shift to online teaching and learning was driven by country-wide physical distancing mandates. Further expansion to the literature on university online learning resulting from physical distancing measures and its effects on students' learning was provided by Toquero (2020) and Rose (2020). Against this backdrop, it can be concluded that ECE pre-service and kindergarten teachers were also affected by the shift to online teaching and learning.

Focusing on medical education, Rose (2020) highlighted the disruption that COVID-19caused to clinical clerkship and how the clerkship curriculum of training and mentorship on patient care were moved to online teaching and learning. Although they did not note detrimental effect of this change in the clerkship curriculum, Rose (2020) warned of the necessity to critically evaluate the outcome of this new mode of learning in the medical field. Alternatively, Moorhouse (2020) looked specifically at virtual learning for pre-service teachers was a work, but they only focused on a teaching course that showed no significant outcome on how virtual learning affects the education curriculum in general.

Despite the lack of applicable literature on ECE pre-service and kindergarten curriculum, the works reviewed suggest what effect COVID-19 could have on the ECE curriculum delivery. Some of the effects will be on the learning environment, the teaching methods, policies, and national standards. Kindergarten teachers are trained to work with children in settings that capitalize on learning interactions and play activities in the physical environment. The ECE spaces are designed to facilitate positive interactions between kindergarten teachers and children and among children.

The aim is to allow for full participation in play to develop children's social skills, emotional and intellectual skills. Play-based environments promote fundamental learning skills like self-regulation, social and emotional development (Barnett, Yarosz, Thomas, & Hornbeck, 2006). Researchers firmly believe that children need to play (Hewes, 2006). A shift in focus from the importance of the physical environment, hands-on practice and inquiry activities in ECE settings, to rudimentary practices and activities will not only affect kindergarten children's learning, but also the delivery of ECE pre-service teachers' curriculum and education in institutions of higher learning.

There is some evidence to suggest that part of the delivery of the ECE pre-service curriculum at institutions of higher learning is practicum (White, Peter, Sims, Rockel, & Kumeroa, 2016). Practicum, as viewed by (White et al., 2016), provides opportunities for pre-service teachers to apply their recently acquired pedagogical knowledge to the field, and offers significant insight into the teaching and learning fraternity into which they will eventually become a member. Considering the COVID-19 pandemic, practicum may be challenging as the pandemic has forced closure of institutions of learning, including kindergarten schools. With the absence of children in kindergarten classrooms, it will become difficult to complete proper documentation of children's development and learning during play and interactions. The preventative practice of physical distancing might interfere with how children naturally play and respond to others in constructing knowledge with peers and with kindergarten teachers in the learning environment. This might, in turn, affect the curricular approach on how to elicit a response from kindergarten children, to promote language and communication development.

COVID-19 may affect the work environment of ECE pre-service and kindergarten teachers, as these settings influence kindergarten teachers' responsiveness to children's needs (Devercelli, 2020). Hence, co-construction of knowledge would be challenging, and assessment of kindergarten children's learning and growth may also be a challenge. It is important to recognise that part of the requirement of pre-service teachers' obligation and professional practice is to undertake an ongoing assessment in quality early childhood settings, to collect not only important information on kindergarten children's learning and development, but also to assess the effectiveness and quality of the spaces in which the children occupy and learn. The assessment of kindergarten children's learning is communicated to parents, and this is important to program delivery and the promotion of child development (Kolucki & Lemish, 2011). Assessment, with documentation and other forms of professional practices, captures holistic

views of kindergarten children's learning. With COVID-19, this important aspect of training could be stymied to a great extent. Nevertheless, with the move to new ways of teaching and learning comes a renewed commitment to innovative delivery of educational opportunities to counteract the effects of COVID-19.

Skills needed for ECE pre-service and kindergarten curriculum delivery during and post covid-19

Despite the lack of literature, we have gathered some ECE pre-service and kindergarten curricula adjustment and skills set needed to mitigate the influence of COVID-19. To help with logistical challenges, some studies have called for national, and even international, universities to work in tandem in providing effective digital spaces to support academic activities in unprecedented times (Crawford et al., 2020, Rose, 2020). According to Learning Policy Institute (2020: 2):

> The United Nations Educational, Scientific, and Cultural Organization has created a comprehensive list of educational applications and platforms to help parents, teachers, schools and school systems to facilitate student learning and provide social caring and interaction during periods of school closure.

Most of the skills they recommended are distance learning and digital skills. (Kerkhoff, Paul, & Spires, 2018b) described digital literacy skills as (a) locating and consuming digital content, (b) creating digital content, and (c) communicating digital content. Finding innovative ways to use technology to promote learning is also of great importance especially as the times change (Fullan, 2013). Fullan (2013) advocated for a "new pedagogy" where critical thinking skills through innovative digital tools can contribute to "deep learning" that is student-centered and based on students' own passions to solve real issues in the world. Hence, for kindergarten students, teachers can capitalise on students' interests and the use of technology to shape positive learning outcomes during COVID-19 and, at the same time, shifting pedagogy from a traditional approach to a student-centered, technology-driven approach.

RESEARCH METHOD

The research applies a qualitative narrative design based on the authors' reflective journals. We chose the narrative design because this paper is based on the study of the researcher's educational practice and experience. As Connelly and Clandinin (1990) noted, teachers, like other human beings,

are storytellers. Bashan and Holsblat (2017) affirmed that reflective journals written by researchers in practical settings constitute a source of narrative research. This paper is authored by two individuals (one from South Africa and the other one from Canada), both implementing the ECE curriculum in their institutions. The authors each documented a reflective journal on the influence of COVID-19 on pedagogy for ECE pre-service curriculum from the start of COVID 19 lockdowns in South Africa and Canada, respectively. The first author's reflections are based on experiences of implementing ECE pre-service curriculum, while the second author reflected on experiences on a play-based kindergarten curriculum. The first author is a lecturer in the Department of ECE at the Open and Distance Learning (ODL) institution in South Africa. The second author is a doctoral candidate, working on a Doctor of Philosophy (Ph.D.) in education with a focus on ECE and a kindergarten teacher in Canada.

The paper is intended, therefore, to add to conversations about observed experiences of pre-service and kindergarten teachers, to describe the thematic deconstruction of the influence of COVID-19, and to explore the potential of a qualitative reflection. The contents of this paper are not intended to be generalized as a rule-of-thumb. However, the possibilities of naturalistic generalization (Stake, 1995; Melrose, 2010) lead us to believe, at least in qualitative terms, that our observations about aspects of ECE pre-service kindergarten curriculum during COVID-19 may be of benefit to others. We employed reflective journal writing as our data collection tool. Due to lockdowns that were happening in our countries, we viewed reflective journal writing as a suitable data collection tool to expand the scope of our reflection beyond problematic situations caused by the COVID-19 pandemic. Drawing from (Annink, 2017), reflective journal writing, as a tool for reflection, has the potential to unfold the researchers' knowledge, skills, expertise, values, assumptions, and emotions evoked by the research.

To maintain the trustworthiness and the reliability of the data generated from our reflections, as recommended by Moen (2006), we made sure that we captured each research subject's voice, by relying on their written queries, and we documented the journals as early as the COVID 19 lockdowns started. Credibility, according to Elo, et al (2014) essentially asks the researcher to link the research study's findings with reality. To demonstrate the truth of the research study's findings we identified design thinking theory to present the findings with its components.

Firstly, the authors give their backgrounds to demonstrate their experiences in the ECE pre-service and kindergarten curriculum. Secondly, results from the two reflective journals are reported using design thinking as

a general theory to underpin this study. Thirdly, drawing from the implications of digital literacy, we present the discussion of findings. Lastly, conclusions were made from the findings and the limitations were highlighted.

Author's backgrounds

The first author qualified as a primary school teacher twenty-five years ago. During her experience of teaching in ECE, she learned to respect children's right to play. As a result, she began to view play as the main teaching method in ECE that stimulates the capacity and creativity of the children. Currently, she is a lecturer at the ODL institution, teaching ECE pre-service teachers. Being in an ODL institution that admits ECE pre-service teachers from different parts of the world, the author strives to contextualize the ECE teaching role to accommodate diverse curriculum goals, content, teaching techniques, and educational resources that pre-service teachers might be exposed to. Before the COVID-19 pandemic, the author used the blended model of teaching and learning. The students accessed learning materials online and by print. During the COVID-19 lockdown, the institution switched to fully online teaching and learning mode.

The second author has both ECE and primary teaching experiences. She has had the opportunity to study in a face-to-face in-class setting and online through distant education. Obtaining one of her earliest degrees 10 years ago in ECE, she recalls her entire initial ECE training where she was required to be physically present in a classroom, with the obligation to participate in the discussion, hands-on activities in ECE, and field experience through the practicum. With her current educational experience, her presence on campus, in class with a professor, and with a group of cohort doctoral students, make up for a meager component of her program. These educational experiences during the new global COVID-19 pandemic piqued her interest in our topic and research question. The curricular approaches from her experience 10 years ago focused on analysis of the influence of theoretical philosophies on practice in Montessori settings and other early childhood curricula models, such as Reggio Emilia and full-day play-based kindergarten programs. There was no technology component. Nevertheless, as a kindergarten teacher in a full-day kindergarten programme, she employs technological skills by using digital tools and in communicating with kindergarten children. She also uses observational skills acquired through training to ensure kindergarten children's safety, and

to assess their developmental skills and interests to support and implement the relevant curriculum. She draws on the corroboration of these factors to imagine what the curriculum will look, and should look, like for kindergarten teachers. Among other competencies, there is need for comprehensive training in technology to improve kindergarten teachers' digital competencies in the current changing times.

We used reflective journal writing to record incidents relating to ECE pre-service and kindergarten curriculum delivery, including observations, informal conversations (written and verbal), as well as our own experiences. Bashan and Holsblat (2017) asserted that reflective journals constitute the point of departure for the writer's experience, and a way to return to it through personal reflections. Thus, in the context of this paper, we illustrated the implementation of ECE pre-service curriculum delivery during the COVID-19 lockdown to evaluate the contribution, challenges, and/or success of the process or change.

The authors shared their reflective journals and started coding to find the common issues from their COVID 19 pre-service and kindergarten curriculum delivery experiences. The codes were classified. These classifications were informed by the contextualized proponents of design thinking theory adapted from (Kimbell, 2011), namely: Challenges facing pre-service and kindergarten teaching and learning, the socio-economic critique of online learning practices and design process that can convert problems into opportunities. The proponents were contextualized and adapted to suit this paper because design thinking theory is rarely applied to public services or social problems. (Kimbell, 2011) asserted that one should rather acknowledge design thinking in practice instead of making a distinction between "thinking" and "doing".

RESULTS

As indicated in the methodology section of this paper, the results from the two reflective journals are reported using the design thinking theory as the theoretical lens. The codes from the reflective journals were categorized according to the contextualized and adapted proponents of design thinking theory. Consequently, the results from the reflection journals are presented in accordance with the contextualized and adapted proponents.

Challenges facing pre-service and kindergarten teaching and learning

The single most striking observation to emerge from the reflective journals' comparison was that they both reported some challenges faced by pre-service and kindergarten teaching and learning spaces including the closure of learning institutions. "*It was a swift response to my government's mandate to stay home and be safe"* (second author). The identified challenges include the closing of teaching and learning institutions to reduce the spread of COVID-19 and the shift from traditional methods of teaching from face-to-face to online or virtual teaching. The second author regarded the quick shift of learning methods as emergency remote teaching (ERT), the term which was recommended by Hodges et al., (2020). Hodges et al., (2020) viewed ERT as different from online teaching because while the latter is carefully planned, the former runs the possible risks of having untrained staff in virtual learning or inadequate resources to implement online learning. On the other hand, the second author highlighted the challenge of lack of, or limited, online teaching skills, including pedagogical, technical, communication, and collaborative skills that may not match those that kindergarten teachers are familiar with. To add to this challenge, the second author raised the question: *"How do I effectively teach kindergarten children who are not used to virtual schooling?"* She further stressed that "*It is a matter of daily trial and error, and constantly thinking of the possibility of not reaching every kindergarten child".*

The first author recorded some of the challenges she experienced with her students, which affected the teaching and learning activities. This is a reflection from one of the pre-service teachers' messages that were sent to the first author: "*I have a problem. I was busy with my practical before Covid-19 started so I only attended for 18 days, and my question is how can I submit this form with empty spaces because there is a space where mentor and student need to sign to"* (query). This message presented the frustrations experienced by some of the pre-service teachers who could not access the kindergarten schools due to the COVID 19 lockdown.

Socio-economic critique of online learning practices

The COVID-19 pandemic revealed the digital inequality brought on by socio-economic imbalances in the communities where most of the pre-service teachers enrolled in the first authors' institution are from. The first author found it difficult to offer her online lessons after finding out that most of her pre-service teachers experience challenges with access to some of the digital tools, such as devices needed for effective virtual learning. Notably, the following are some of the pre-service teachers' queries that could be

related to the socio-economic challenges. "*Please help me. When will we receive our study materials? I cannot afford the cost of printing the whole portfolios of 70 pages*". Another pre-service teacher pointed out that she only depends on internet café to access online learning. "*Internet cafe and stationary shops closed for printing*".

There is some evidence to suggest that the socio-economic imbalances contribute toward lack of, or limited, digital literacy skills in most communities. The second author in her reflections noted inadequate resources to implement online learning as a possible issue resulting from implementing ERT. The first author recorded some of the pre-service teachers' experiences which reveals the limited digital literacy skills which affect the implementation of online learning. "*I struggle to download the email of my school placement form from my phone to my laptop"* (query). Some pre-service teachers feel that online learning is costly. "*It's very much expensive I tried doing it*". Some of the pre-service teachers registered in the ODL institution are employed. Those who are not employed find it difficult to get data bundles to participate in the learning activities. "*As an unemployed student how would I manage to…."*. The second author found the situation of inability to reach every kindergarten child overwhelming. "*It is a matter of daily trial and error and constantly having the fear of not reaching every student*" (Second author).

The design process that can convert problems into opportunities

Drawing from design thinking theory, the challenges brought by COVID-19 in the ECE pre-service teaching can be converted into opportunities such as the following:

- adopt appropriate pedagogical strategies
- develop interactive assessments and work collaboratively
- developing an adaptable mindset

The second author expressed that working with kindergarten children has been both a learning opportunity and a challenge. In this global digital age, many kindergarten children are already attuned to manipulating digital devices. "*However, when it comes to the effective use of digital devices to engage in teaching and learning and maintaining a classroom environment online, it becomes a challenge".* The authors view this challenge as an opportunity to explore how to present knowledge in online environments and how to support pre-service teachers and kindergarten children interact and learn in such an environment.

The first author, after receiving queries from students about challenges they experienced such as the inability to go to internet shops to

do assignments, created learning forums on the university's Learning Management System (LSM) where she guided the pre-service teachers, and encouraged peer collaboration. She advised them to view their assignment questions on their smartphones, and those without can request the smartphone from a friend or relative just for a few minutes. She told them to handwrite their assignment and scan the pages using the smartphone and submit on the LSM. Some of the students shared their experiences of how they were handling the new normal as a result their peers learned from them.

DISCUSSION

In this section, we integrate the findings into the existing literature, to explore the approaches needed to mitigate the influence of the COVID-19 in the ECE pre-service curriculum delivery. The findings are discussed within the identified gap, the assumptions central to this paper, and the design thinking theory.

The gap created by the influence of COVID-19 on ECE pre-service teachers' curriculum delivery

Crawford et al. (2020), Moorhouse (2020), and Toquero (2020) described how COVID-19 affected the teaching and training of students in higher education. Linking the views of these authors with the findings of this study, presented under the sub-heading “challenges facing pre-service and kindergarten teaching and learning”, it becomes apparent that the closing of teaching and learning institutions to reduce the spread of COVID-19 affected the delivery of pre-service and kindergarten curriculum negatively. Linking the shift to online teaching and learning with the ERT as reflected by the second author, which according to Crawford et al. (2020) was driven by COVID 19 regulations, brought the imaginations about the ECE pre-service and kindergarten curriculum delivery. Since kindergarten children develop their cognitive and executive functioning skills through personal interactions and play with teachers and peers, as argued by Hamre (2014) and Meloy, et al. (2019), the researchers conclude that COVID-19 has created challenges for ECE pre-service and kindergarten teaching and learning.

Effect of online learning on children stimulation

McLachlan, et al (2018) revealed the importance of engaging kindergarten children in play-based teaching and learning. Our own

experiences of teaching in the ECE field taught us the need and the importance of continuously observing and documenting kindergarten children's learning experiences (positive and negative) during play, and plan and implement lessons to support these early learning experiences. The findings of this study suggest a shift from traditional methods of teaching, such as face-to-face, to online or virtual teaching raised the challenge of planning online lessons that can still provide the necessary stimulation for preschool children during the COVID 19 lockdown. In the case of ECE, pre-service teachers need to learn skills that can stimulate children's physical, social, emotional, behavioral, language, and cognitive processes and skills. The reflections from the first author, which arose from queries from her kindergarten children, showed a lack of digital literacy skills, and from the second author, it was evident that her kindergarten children were not used to online learning. There is thus some evidence to suggest the need for digital literacy for pre-service teachers, so that when they become kindergarten teachers, they will be able to cope in future cases where ERT is required.

Evidence of design thinking in the ECE pre-service kindergarten curriculum delivery

An unanticipated finding was that many kindergarten children are already attuned to manipulating digital devices. This finding relates to the views of scholars about the skills needed for ECE pre-service curriculum delivery during and post COVID-19. It should be noted, however, that the ECE pre-service curriculum delivery should not exclude the quality of the spaces which the children occupy and where they learn.

CONCLUSIONS AND SUGGESTION

We identified institutional, pedagogical, and logistical challenges to pre-service teaching and learning brought on by the COVID-19 pandemic. The findings aligned with the revelations in recent literature on the effects of COVID-19 on ECE pre-service and kindergarten curriculum. These findings and the views of the scholars presented in the literature review brought the authors closer to the answers to the main research question of this paper: "*What are the approaches needed to mitigate the influence of the COVID-19 in the ECE pre-service and kindergarten curriculum delivery*?" Drawing from their reflections through the lens of design thinking theory, the authors suggest that the following digital literacy skills are needed to mitigate the

influence of COVID-19 on ECE pre-service curriculum delivery. The skills are adapted from Kerkhoff, et al (2018):

- Locating and consuming digital content – searching for information and evaluating its accuracy and relevancy for ECE pre-service and kindergarten curriculum
- Creating digital content – using digital resources to cater to kindergarten children's physical, social, emotional, behavioral, language, and cognitive processes and skills
- Communicating digital content – Using mobile devices such as cell phones and tablets for social networking; and
- Understanding how to deliver ECE pre-service and kindergarten curriculum in multiple formats.

IMPLICATIONS

The data presented in this article was collected from only two institutions, one ODL university in South Africa, and one kindergarten in Canada. Therefore, the findings cannot be generalized to other institutions of similar nature. However, we believe that the suggestions put forward based on the findings may be of benefit to others. While the authors were able to present their reflections through the lens of design thinking theory, some questions remain for future research. For example, the effect of digital content on kindergarten children's physical, social, emotional, behavioral, language, and cognitive processes and skills. Exploring the pre-service teachers' and kindergarten children's engagement in online learning was beyond the scope of this paper due to its reflective nature. Further research, therefore, should focus on collecting empirical data from the pre-service and kindergarten teachers regarding their use of online learning.

REFERENCES

Ahmed, H., Allaf, M., & Elghazaly, H. (2020). COVID-19 and medical education. *The Lancet. Infectious Diseases*. *https://*doi:10.1016/S1473-3099(20)30226-7

Akbari, E., & McCuaig, K. (2014) *Early childhood education report 2014*. Institute for Studies in Education.

Allen, J. M., & Wright, S. E. (2014). Integrating theory and practice in the pre-service teacher education practicum. *Teachers and Teaching*, *20*(2), 136–151.

Annink, A. (2017). Using the research journal during qualitative data collection in a cross-cultural context. *Entrepreneurship Research Journal, 7*(1), 1–17. https://doi:10.1515/erj-2015-0063

Atiles, J. T., Jones, J. L., & Kim, H. (2012). Field experience+ inclusive ECE classrooms= increased preservice teacher efficacy in working with students with developmental delays or disabilities. *Educational Research Quarterly*, *36*(2), 63–87.

Bashan, B., & Holsblat, R. (2006). Reflective journals as a research tool: The case of student teachers' development of teamwork. *Cogent Education,* 4(1), 1-15

Barblett, L., Knaus, M., & Barratt-Pugh, C. (2016). The pushes and pulls of pedagogy in the early years: Competing knowledge and the erosion of play-based learning. *Australasian Journal of Early Childhood*, *41*(4), 36–43.

Barnett, S., Yarosz, D., Thomas, J. & Hornbeck, A. (2006). *Educational effectiveness of a Vygotskian approach to preschool education: A randomized trial*. National Institute for Early Education Research.

Bashan, B., & Holsblat, R. (2017). Reflective journals as a research tool: The case of student teachers' development of teamwork. *Cogent Education, 4*(1). https://doi:10.1080/2331186X.2017.1374234

Blewitt, C., O'Connor, A., Morris, H., Mousa, A., Bergmeier, H., Nolan, A., Skouteris, H. (2020). Do curriculum-based social and emotional learning programs in early childhood education and care strengthen teacher outcomes? A systematic literature review. *International Journal of Environmental Research and Public Health, 17*(3), 1049.https:// doi:10.3390/ijerph17031049

Cohrssen, C., Church, A., Ishimine, K., & Tayler, C. (2013). Playing with maths: Facilitating the learning in play-based learning. *Australasian Journal of Early Childhood, 38*(1), 95–99. http://doi:10.1177/183693911303800115

Connelly, M. F., Clandinin, J. D. (1990). Stories of experience and narrative inquiry. *Educational Researcher*, 19(5), 2–14.

Crawford, J., Butler-Henderson, K., Rudolph, J., & Glowatz, M. (2020). COVID-19: 20 Countries' Higher Education Intra-Period Digital Pedagogy Responses. *Journal of Applied Teaching and Learning (JALT)*, *3*(1).

Devercelli, A. (2020, April 16). Supporting the youngest learners and their families in the COVID-19 (coronavirus) response.

Ducharme, E. R., Ducharme, M. K., & Dunkin, M. J. (2002). Teacher education. In J. W. Guthrie (Ed.), *Encyclopedia of education* (2nd ed.), Vol. 7. (pp. 2438–2448). Macmillan.

Elo, S., Kääriäinen, M., Kanste, O. (2014). Qualitative Content Analysis: A Focus on Trustworthiness. *SAGE Open,* 4(1), 1-10.

Ferrel, M. N., & Ryan, J. J. (2020). The impact of COVID-19 on medical education. *Cureus, 12*(3), e7492. https://doi:10.7759/cureus.7492

Fullan, M. (2013). *Stratosphere: Integrating technology, pedagogy, and change knowledge*. Pearson.

Garvis, S., Lemon, N., Pendergast, D., & Yim, B. (2013). A content analysis of early childhood teachers' theoretical and practical experiences with infants and toddlers in Australian teacher education programs. *Australian Journal of Teacher Education*, *38*(9), 3.

Goh, P., & Sandars, J. (2020). A vision of the use of technology in medical education after the COVID-19 pandemic. *Mededpublish, 9*(1). https://doi:10.15694/mep.2020.000049.1

Gong, X., & Wang, P. (2017). A comparative study of pre-service education for preschool teachers in china and the united states. *Current Issues in Comparative Education, 19*(2), 84–110.

Hamre, B. K. (2014). Teachers' daily interactions with children: An essential ingredient in effective early childhood programs. *Child Development Perspectives, 8*(4), 223–230. https://doi:10.1111/cdep.12090

Hatch, J. A., & Grieshaber, S. (2002). Child observation and accountability in early childhood education: Perspectives from Australia and the United States. *Early Childhood Education Journal*, *29*(4), 227. https://doi.org/10.1023/A:1015177406713

Hewes, J. (2006). *Let the children play: Nature's answer to early learning*. Early Childhood Learning Knowledge Centre.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, *27*.

Institute of Medicine and the National Research Council. (2015). *Transforming the workforce for children birth through age 8: A unifying foundation*. The National Academies Press.

Jale, A., & Ozcan, S. (2009). Early childhood education pre-service teachers' images of teacher and beliefs about teaching. *Journal of Inonu University Faculty of Education, 10*(3), 105–122. Retrieved from https://doaj.org/article/d3fd64363beb4f63a62dc0b2f697a902

Kankam, G., & Abroampa, W. K. (2015). Early childhood education pre-service teachers' pedagogical content knowledge in teaching psychosocial skills across the kindergarten curriculum in Ghana. *Asia-Pacific Journal of Research in Early Childhood Education, 10*(1), 67–86. doi:10.17206/apjrece.2016.10.1.67

Kerkhoff, S., Paul, C., & Spires, H. (2018). Digital literacy for the 21st century. In M. Khosrow-Pour (Ed.), *Encyclopedia of information science and technology: Cu-ed* (pp. 2235–2242). IGI Global.

Kimbell, L. (2011). Rethinking design thinking: Part I. *Design and Culture, 3*(3), 285-306. https://doi:10.2752/175470811X13071166525216

Kolucki, B., & Lemish, D. (2011). *Communicating with children: Principles and practices to nurture, inspire, excite, educate and heal*. United Nations Children's Fund. https://www.unicef.org/cwc/files/CwC_Final_Nov-2011(1).pdf

Lee, Y. A., & Hemer-Patnode, L. (2010). Developing teacher candidates' knowledge, skills, and dispositions to teach diverse students. *Journal of Instructional Psychology*, *37*(3), 222–235.

McKie, B., Manswell Butty, J.-A., & Green, R. (2012). Reading, reasoning, and literacy: strategies for early childhood education from the analysis of classroom observations. *Early Childhood Education Journal*, *40*(1), 55–61. https://doi.org/10.1007/s10643-011-0489-2

McLachlan, C., Fleer, M., & Edwards, S. (2018). *Early childhood curriculum: Planning, assessment and implementation*. Cambridge University Press.

Meloy, B., Schachner, A., & Learning Policy Institute. (2019). *Early childhood essentials: A framework for aligning child skills and educator competencies*. Learning Policy Institute.

Melrose, S. (2010). *Encyclopedia of case study research: Naturalistic generalization*. SAGE.

Moen, T. (2006). Reflections on the Narrative Research Approach. *International Journal of Qualitative Methods,* 5(4), 56-69.

Moorhouse, B. L. (2020). Adaptations to a face-to-face initial teacher education course 'forced' online due to the COVID-19 pandemic. *Journal of Education for Teaching*, 1–3. https://doi:10.1080/02607476.2020.1755205

National Association for the Education of Young Children. (2010). *NAEYC standards for initial and advanced early childhood professional preparation programs*. NAEYC.

Nuttall, J., & Ortlipp, M. (2012). Practicum assessment of culturally and linguistically diverse early childhood pre-service teachers. *European Early Childhood Education Research Journal, 20*(1), 47–60. https://doi:10.1080/1350293X.2012.650011

Ragpot, L. (2017). Knowledge of child development in the interface of theory and practice in foundation phase teacher education. *South African Journal of Childhood Education, 7*(1), 6–e6. https://doi:10.4102/sajce.v7i1.501

Razzouk, R., & Shute, V. (2012). What is design thinking and why is it important? *Review of Educational Research, 82*(3), 330–348. https://doi:10.3102/0034654312457429

Ridgway, A., & Quinones, G. (2012). How do early childhood students conceptualize play-based curriculum? *Australian Journal of Teacher Education*, *37*(12), n12.

Rose, S. (2020). Medical student education in the time of COVID-19. *Jama,* https://doi:10.1001/jama.2020.5227

Rowe, P. G. (1987). *Design thinking*. MIT Press.

Stake, R. (1995). *The art of case study research*. SAGE.

Theoret, C., & Ming, X. (2020). Our education, our concerns: Medical student education impact due to COVID-19. *Medical Education,* doi:10.1111/medu.14181

Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 Pandemic: The Philippine context. *Pedagogical Research*, *5*(4).

White, E. J., Peter, M., Sims, M., Rockel, J., & Kumeroa, M. (2016). First-year practicum experiences for preservice early childhood education teachers working with birth-to-3-year-olds: An Australasian experience. *Journal of Early Childhood Teacher Education: Preparing Early Childhood Teachers for Infant Care and Education, 37*(4), 282–300. https://doi:10.1080/10901027.2016.1245221

Wood, E., & Hedges, H. (2016). Curriculum in early childhood education: critical questions about content, coherence, and control. *The Curriculum Journal, 27*(3), 387–405.

RAMASHEGO SHILA SHORTY MPHAHLELE, PhD, is a Senior Lecturer in the Department of Early Childhood Education, University of South Africa. Her major research interests lie in the area of student engagement, student support, and Open Educational Resources. E-mail**:** Emphahrs@unisa.ac.za

BETHIA TANNEH JIKPAMU is a doctoral student specialising in Early Childhood Education at Concordia University Chicago, Illinois.
E-mail: bethia.tj3@gmail.com .

Manuscript submitted: ***November 5, 2020***
Manuscript revised: ***January 4, 2021***
Accepted for publication: ***June 5, 20121***

OJED
OPEN JOURNALS IN EDUCATION
Volume 10, Issue 1 (2021), pp. 139-159
Journal of Interdisciplinary Studies in Education
ISSN: 2166-2681Print 2690-0408 Online
https://ojed.org/jise

Motivation to Pursue a PhD in Computing: Black Students in Historically Black Colleges and Universities

José Cossa
Pennsylvania State University, USA

Lecia Barker
University of Colorado Boulder, USA

ABSTRACT

This study investigates the motivation of African American master's degree students in computing to pursue a PhD in Computing. Specifically, we sought to understand the motivation of those students attending Historically Black Colleges and Universities (HBCUs) in the United States. Our framework was founded on the premise that an adequate theoretical rooting of broadening participation calls for reflections on the nature and practice of justice. Motivation, nonetheless, remained the core factor, albeit addressing it within a context of justice or lack thereof. The study shows that while most students seem intrinsically motivated by a desire to learn, leading to a likelihood to pursue a PhD, extrinsic factors such as funding and employability constitute the highest hindrance to such likelihood.

Keywords: Historically Black Colleges and Universities (HBCU), African-American students, computing, theory of justice, equity, access, intrinsic motivation, extrinsic motivation

INTRODUCTION

In the past years, the National Science Foundation (NSF) invested millions of dollars into its Broadening Participation in Computing (BPC) program, which aimed at increasing the number of graduates in computing disciplines from underrepresented communities of U.S. citizens and permanent residents (NSF, 2008). BPC projects focused on efforts to improve recruitment and retention and underwent formative and summative evaluations. We conducted a nation-wide study to assess the extent of impact that BPC projects have had at the time of conducting this study. This study is concerned with the motivation of African American master's degree students in computing to pursue a PhD in computing. Specifically, we sought to understand the motivation of students attending Historically Black Colleges and Universities (HBCUs). According to the Integrated Postsecondary Education Data System (IPEDS) of the National Center for Education Statistics (NCES), the numbers of graduates in Computer Science (CS) and Computer Systems Analysis (CSA) were very low. The IPEDS (U.S. Department of Education, NCES, IPEDS, n.d.) data showed that, for HBCU master's programs, there were 206, 181, and 155 total graduates in CIS for the corresponding years 2006-2007, 2007-2008, and 2008-2009; 79 and 75 blacks/African-Americans graduated in CIS in 2007-2008 and 2008-2009; and, in 2007-2008, only 34 blacks/African-Americans graduated in CS and three (3) blacks/African-Americans graduated in CSA. According to the IPEDS data and to what we later learned from our correspondence with department chairs and faculty in HBCUs, many computing programs did not have graduate students. Thus, our initially projected sample of 500 master's students was unobtainable.

Acknowledging that gauging motivation is a complex undertake, this study engaged perceptions from students about what factors into their motivation to pursue a PhD degree in computing and perceptions from faculty about their grasp, or speculations, of what factors into students' motivation to pursue a degree in computer science. Our goal was two-fold: to understand what motivates students in HBCU environments to pursue a PhD in computer science; and, to provide insight toward developing programs, curricula, pedagogy, and the organizational culture needed to accommodate these changes. Moreover, departing from an assumption that that there is a link between issues of justice and issues pertaining to educational equity, we frame this discussion within issues of justice and equity.

THEORETICAL, HISTORICAL, AND CONCEPTUAL FRAMEWORKS

Amartya Sen (Sen, 2009) evokes a distinction between different concepts of justice in early Indian jurisprudence (i.e., *niti* and *nyaya*). He claims that "no matter how proper the established organizations might be, if a big fish could still devour a small fish at will then that must be a patent violation of human justice as *nyaya*" (p. 20-21). Sen advocates for a realization-focused perspective (i.e., nyaya), which is concerned with the actual realization of justice - the world that actually emerges, not just the institutions or rules concerned with organizational propriety and behavioral connectedness. In the light of Sen's argument, we can derive that a theory of justice ought to be founded on an idea of justice guided by an impetus to prevent manifest injustice rather than an impetus overwhelmed by perfection. Addressing manifest injustice is more urgent than awaiting a perfect justice verdict because, we argue, such is ultimately detrimental to those haunted by injustice now. For instance, the Civil Rights movement addressed manifest injustice rather than wait for adequately endowed institutions to do so in a time they thought appropriate. Even decades after such institutions were put in place, the spectrum of injustice remains almost unchanged as we continually unearth various layers of manifest injustice. However, we should not be conformed to this realization of not having to wait for perfect institutions; instead, we should continue to address the issues of justice and equity beyond the scope of modernity and its educational promise (e.g., the reliance on meritocracy and upward mobility), which continues to leave outside of its borders, those whom it considers "the other" (Cossa, 2020).

Given the colonial nature of modernity (Cossa, 2018), it is not surprising that what emerged as an institutional response to racial discrimination and the deprivation of blacks to pursue higher education, i.e., the HBCU, has become a justifiable instrument of present-day injustice as it continues to be seen as inadequate to produce quality graduates that fit the criteria of acceptable modernist knowledge. On paper, claims such as those held in some conformist circles that "HBCUs graduate more African-Americans in STEM" reflect an indulgence in the illusion of success. The recipe for minority success as prescribed by modernity and capitalism, presents a challenge in overcoming historically-rooted disparities in capabilities, economic access, freedom, and other areas. Moreover, and sadly so, it demands that minorities subscribe to assimilationism—the illusion of becoming an integral part of the white mainstream culture. Amidst the promise of inclusion into a modernity-centered system of education that is

colonial and exclusionary in its very core, we should continue to ask ourselves, "inclusion to what?"

Most studies concerned with BPC, while lacking a clear articulation of a theory of justice, approach the issue from an organizational change perspective, which best links with an assumption that the practice of justice springs from putting in place institutions and policies that promote justice. We suspect that part of this absence of a theory of justice in BPC studies may be due to an emphasis on data over conceptual and theoretical frameworks on which the data categorization and interpretation ought to be based. This unfortunate emphasis, perhaps also as a result of pressure from funders, turns those concerned with minority participation into data-driven methodologists with little, if any, considerations to theory and concepts; thus, rendering BPC efforts into a series of trial-and-error intervention-driven projects. While this may satisfy the funding community (along with advancing the agendas of modernity and capitalism), it is detrimental to the very minorities we intend to serve; even more so, if the demand is for numerical-driven accountability over quality-driven accountability.

For this study, specifically concerned with motivation to pursue a PhD, it would seem logical for us to employ only, or primarily, theories of motivation; however, to talk about broadening participation presupposes addressing equality of access, equity of participation, and ultimately the issue of justice within which equality and equity find meaning (Coleman, 1966). Motivation, nonetheless, remains a key factor in this study, but we address motivation within the aforementioned framework. Our framework is founded on the premise that an adequate theoretical rooting of BPC calls for reflections over the nature and practice of justice. This justice-founded framework ought to surpass a theory of justice that is merely based on capabilities (Sen, 2009), since such delimitation confines the pursuit of justice to a functionalist conception of justice (a modernity brainchild) as the mere provision of tools to function according to the rules of the dominant culture. Pettit (1974) argues that, "the theory of justice is the means by which we explicate and examine our sense of justice, it is not a means of providing it with metaphysical foundations." For instance, the argument advanced by Pettit (Sen, 2009) favoring a republican or neo-Roman theory of freedom, over that of freedom as capability, partly accommodates the argument about a sense of entrapment in attempting to broaden participation of minorities under a premise of assimilation into a dominant culture—recall our question, "inclusion to what?" Some of the students we interviewed manifested this sense of entrapment in that their disposition to choose (e.g., to pursue a PhD or career in computing) is "content-independently decisive, but their enjoyment of such decisive preference depends on the goodwill of those around..." (p. 305).

According to Pettit, in a republican or neo-roman theoretical conception of freedom,

> liberty is defined not just in terms of what a person is able to do in a certain sphere, but also includes the demand that others could not have eliminated that ability of this person even if they wanted to do so. In this view, a person's liberty may be compromised even in the absence of any interference, simply by the existence of the arbitrary power of another which could hinder the freedom of the person to act as they like, even if that intervening power is not actually exercised. (p. 305)

Following Pettit's logic and making a case for the difference between the capabilities-based theory and the republican theory, we concur that the ultimate state of freedom would be attained by a motivation resting on the intention to pursue a PhD regardless of capabilities (e.g., GPA, fulfilling the dominant criteria of "intelligence," or personal finances) or any form of external support (e.g., funding, mentoring, family, etc.).

Education plays a key role in shaping cognition and behavior, thus constitutes a challenge to liberty or freedom. Feinberg and Soltis (1998) argue that compulsory education assures a replacement of older, dysfunctional habits, attitudes, and loyalties by newer, more functional ones. We argue that such education is an attempt to guarantee that individuals are transformed into "functional" entities that have internalized the values, attitudes, and beliefs of the society imposing them. While access is important to functionalists, it is selective access that dominates their conceptualization, since society only functions well if there are differences in rewards (i.e., based on merit); thus, the differences in our rewarding of the work done by various groups of people (e.g., janitors, carpenters, and scientists) on the basis of the quality of contribution that such professions make to society. This is critical for our discussions of equity and access, since groups of people are slotted into different pathways of the functionalist machine in order to perpetuate the ongoing differentiation, in the name of complementarity, which is believed to bring about "progress" in a given society.

One of the problems with the functionalist assertion is that the differentiation is tied to historically established role-differentiations that are exploitative in nature - i.e., stated covertly or overtly, certain people are designed to undertake certain professions, be it on the basis of their gender, intellectual ability, race (skin color), ethnicity, religion, physical ability, or any other categorization that relegates them to a position of being perceived as distinctly inferior to the mainstream group. This is an indispensable frame

for understanding the institutional resilience of HBCUs amidst their struggles to compete with privileged white institutions of higher education and for understanding the cultural resilience of black people amidst assimilation into the mainstream white culture through imposed Western values that facilitate such assimilation and ultimate dependency on historically white institutions.

Fundamentally, equity and access should not only be evaluated by superficial means such as access to schools or access to technology but should delve deeper into the nature of the knowledge being transferred by the schools attended, their overt and covert curriculum, and the kind of technology being used. In other words, we assume that culture is one of the most significant issues to affect education at all levels and in all contexts. This assumption is critical in understanding the motivation of African-American students to pursue a PhD in computing, but it is also critical in understanding motivation in relation to the place that HBCUs occupy in the American society and academia. A deep understanding of the nuanced issues tied to cultural context is foundational to evaluate conceptualizations and theorizations of equity and access—to assume that one context fits all is erroneous and may cause more damage than good. We found that students attending HBCUs are confronted with the conflicting reality of accepting a moderate version of *separate but equal* that allows for a preservation of an African and African-American identity or succumbing to a cognitive-cultural assimilationism, which falls short of being democratic, albeit the fact that, in a context of broadening participation, it seems well intentioned.

Despite our readily identified conceptual and theoretical frameworks, we were open to emerging theories and concepts by employing Grounded Theory (Hilton & Glaser, 2012; Strauss & Corbin, 1998), thus allowing other concepts to emerge from the data and performing NSPD (Necessary, Sufficient, Property, and Dimensions) analysis as they emerge. This means that we engaged in a microanalysis of the data, unveiled other key concepts and analyzed them in the same way we analyzed the readily identified ones. Strauss and Corbin (1998) argue that "doing a line-by-line coding through which categories, their properties, and relationships emerge automatically takes us beyond description and puts us into a conceptual mode of analysis" (p. 66). In advocating for grounded theory, they claim that theory derived from the data is more likely to resemble "reality" and is likely to offer insight, enhance understanding, and provide a meaningful guide to action. They further urge keeping in mind elements of theory, i.e., parsimony, precision of prediction, and accuracy of explanation (Hage, 1972) as well as theoretical questions (i.e., those that make connections among concepts).

METHODOLOGY

We employed mixed methodology comprising three quantitative methods (i.e., power analysis, survey method, and descriptive statistics) and two qualitative methods (i.e., grounded theory and qualitative interviewing). The data comprise a survey of master's students and phone interviews; a faculty survey and interviews; and, the national HBCU master's project, i.e., pilot of the national survey (respondents not included in the national survey), national survey, and focus groups. The national HBCU project constituted the principal source of data on motivation, albeit the fact that we drew insight from the other data sources.

Power Analysis

Statistical power is the conditional probability of rejecting the null hypothesis, i.e., accepting the alternative hypothesis, when the alternative hypothesis is true (Onwuegbuzie & Leech, 2004). In this study, using G*Power, we conducted a power analysis at an α level of .05 and a power of .95. We performed a two-tailed t-test and a means difference for two independent groups in our core data, i.e., HBCU master's project, as a statistical test, with group one (n=11) comprising the pilot group and group two (n=28) comprising the survey group. We observed a d=0.8 effect size.

Grounded Theory and Sampling Issues

Based on insight from Strauss and Corbin (1998), we performed a thematic analysis of the interview data. Regarding context or setting criteria, our study comprised master's students in computing and a model of bridging HBCU students to research (R1) universities, i.e., the Fisk-Vanderbilt Bridge Program. In order to fulfill the event or time and the people criteria, we sought African-American master's students in various HBCUs nationwide (e.g., Fisk University, Alabama A&M University, University of the District of Columbia, Norfolk State University, Howard University, North Carolina A&T University, Florida A&M University, Texas Southern University, University of Maryland D.C., and Morgan State University).

Sampling issues emerged as we attempted to gather a representative sample and as we encountered difficulty in getting responses from those who were to assist us in this task. To meet, ethically, the privacy policies' requirements, our initial strategy was to get help from department chairs or directors of graduate programs. To make explicit the importance and urgency of survey completion, we offered participants a Target store gift card as an

incentive. However, despite numerous attempts and the use of adequate endorsements and incentive, there was a very low response rate to our requests. For instance, our repeat attempts to include four of the identified schools were unsuccessful. To address these sampling issues, we opted for adding an interview dimension and one of us travelled to Florida, Alabama, and Tennessee to conduct focus groups and to request students to complete the survey online, as an alternative.

Qualitative Interviewing and Coding

We audio recorded the interviews and coded the data using NVivo after grouping it into two cases: students and faculty. After screening the data many times, we created tree nodes to unearth the factors influencing students' motivation, or lack thereof, to pursue a PhD, that were identifiable in the data. The tree nodes show core thematic relationships characterized as extrinsic and intrinsic factors that motivate, or de-motivate, pursuit of PhD. We defined 'extrinsic factors' as emanating from outside the individual and upon which the individual has no power of influence (e.g., degree of preparedness for PhD level work, availability of funding, and field relevance and employability concerns); 'intrinsic factors' as emanating from within the individual and upon which the individual has power of influence (e.g., perceptions of positive or negative experience in master's degree entrepreneurial drive, intention to pursue PhD, and self-motivation). Our classifying experiences into 'positive' and 'negative' originated from our interest in gaining insight about the relationship between students' experience during their master's degree studies and motivation to pursue a PhD in computing. Our assumption was that positive experiences would contribute toward motivation, or at least would not be a de-motivating factor, and negative experiences would most likely contribute as de-motivating factors.

Data, Instrument, Validity and Reliability

We conducted interviews and administered a survey with master's students to identify their current intentions, perceptions, and possible misconceptions with respect to pursuing a doctoral degree. The survey elicited students' knowledge and beliefs with respect to their reasons for pursuing a master's degree, funding for the degree, knowledge about research and research careers, and their intentions to pursue or not to pursue a research career and the PhD. Twenty-seven first-year master's degree students in computer science responded to the survey and six students participated in individual phone interviews. In the same year, we conducted a survey and

interviews with faculty to gauge faculty perceptions regarding students' motivation to pursue a PhD in computing.

African-Americans are underrepresented, severely, at the PhD level in computing. For example, in 2007, only four percent of all computer science PhD degrees awarded to U.S. residents went to African-Americans. We conducted a national study to understand attitudes of computing master's students in HBCUs about pursuing a PhD. The study comprised three techniques: a pilot to validate the instrument, an online survey using survey monkey, and focus groups. The pilot process involved seven stages: defining the project, mapping the pilot, designing the pilot questions, designing the pilot evaluation, planning the pilot site visits, administering the pilot, and improving the survey. For our core data, 11 responded to the pilot, 28 responded to the national survey, and 35 participated in six focus groups.

The crux of the validity and reliability issues was addressed during the aforementioned stage, 'designing the pilot evaluation.' How we ascertained that the questions were asking what we intended to ask, how we gathered information that helped us determine that, and how we interpreted the information gathered were critical to addressing questions of validity and reliability. In 'designing the pilot evaluation,' the researcher must recognize various kinds of validity. While the national survey required addressing quantitative validity and reliability, our pilot process required addressing qualitative validity and reliability. Therefore, we took into consideration the following kinds of validity (Golafshani, 2003; Maxwell, 1992) when evaluating the survey: (a) descriptive validity, which is primarily concerned with the perspective of the researcher; (b) interpretive validity, primarily concerned with the perspective of the respondent; (c) theoretical validity, primarily concerned with the theory carried by the researcher into the research process; (d) generalizability, concerned with whether the research findings can be generalized beyond the context of the study; and, (e) evaluative validity, concerned with the overall evaluation of the data.

The focus group interviews were an alternative to offset the data gathering difficulties. Since privacy policies require going through the department chair or director of graduate studies in each department, we contacted these gatekeepers yet, despite numerous requests, only a few responded to our emails or phone calls. When able to get through these gatekeepers, we could not control repeat requests to respondents, which jeopardized our attempt to increase, appropriately, the urgency and importance of response. As a result, we decided to travel to HBCUs to conduct focus groups and to request that the students complete the survey online.

FINDINGS AND DISCUSSION

Extrinsic Factors

The master's survey revealed that students who did not intend to pursue a PhD were more likely to have not participated in research as undergraduates and to have not taken a class that had a research component than those intending to pursue a PhD. Students intending to pursue a PhD were more likely to have been research assistants for a professor and to have completed an undergraduate thesis based on research than those who did not intend to pursue a PhD. ANOVA results show that, in regards to intention to pursue a PhD, there was significant difference between students who did not participate in research as undergraduates and those who did, $F(2,24) = 3.7$, $p \leq .05$; there was no significant difference between students who had taken a class that had a research component and those who had not taken one, $F(2,24) = .34$, $p > .05$; there was significant difference between students who had been research assistants for professors and those who had not, $F(2,24) = 3.8$, $p \leq .05$; and, there was no significant difference between students who completed a thesis based on research than those who did not, $F(2,24) = .34$, $p > .05$. The data suggest that participation in research as undergraduate, being a research assistant to a professor, and completing undergraduate thesis based on research have a positive influence on students' intention to pursue a PhD.

Finances constituted the most influential factor to prevent potential enrolment in a PhD program; amongst all factors, lack of funding was the highest-ranking factor at 52 percent, the second highest-ranking factor was work opportunity after master's degree at 41 percent, and the time it will take to get a regular job ranked fourth at 22 percent. Most students reported being funded through teaching assistantships and research assistantships (48% respectively); these were followed by fellowships/grants (41%), loans (30%), and personal finances (18%). None of the students reported funding from employer. The fact that students rely on teaching assistantships, research assistantships, fellowships, loans, and personal finances to fund their studies confirm that lack of funding is indeed the primary preventer of potential enrolment in PhD (only 18% are able to support themselves yet, given their minority and economic disadvantaged status, this may imply a tremendous sacrifice from some within this group); thus, availability of funding through assistantships, fellowships/grants, and employer-sponsored scholarships constitutes a key incentive for students' enrollment in a PhD program. Table 1 shows that the three key extrinsic factors likely to discourage students from pursuing a PhD are funding, not having an advisor or mentor with whom to discuss options, and not having someone to provide with a recommendation.

From the results in this study, we can safely conclude that extrinsic factors such as participation in research, being a research assistant, and access to funding play a key role in students' intention to pursue a PhD.

Table 1
Factors Likely/Unlikely to DISCOURAGE Pursuing a PhD

Answer Options	Very Likely	Somewhat Likely	Likely	Unlikely	Somewhat Unlikely	Very Unlikely	Response Count
Funding for (or cost of) PhD	6	9	4	2	0	1	22
Not having an advisor or mentor with whom to discuss options	4	3	6	8	1	0	22
Not having someone to provide me with a recommendation	4	1	7	7	1	2	22

In the faculty survey, 25 percent of the faculty estimated that, in the past, at least one master's student applied to a PhD program and 25 percent estimated that at least one student was admitted to a PhD program. This low number of students applying and being admitted to a PhD program resonates with the common sentiment among faculty that "to talk about a PhD is a long shot." In interviews, faculty shared a need to address factors that trigger anxiety about pursuing a PhD; financial concerns were among the main obstacles to transition students to PhD, followed by a concern for adjusting to a new culture (e.g., that of R1 institutions) since most HBCUs do not have PhD programs.

Our research highlighted the fact that human networking facilitates integration into the research community and that peer mentoring is essential for beginning students. Students acknowledged that nurturing takes place in their relationship with an advisor or professors. They claimed that, "… they look after us and help us go through graduate school. It (the relationship) helps transition into an environment in which it feels as though you are 'thrown to the wolves,' by providing skills that are needed to survive." While the other factors did not transpire as issues in our focus, lack of funding transpired as a major contributor to their ruling out the possibility of pursuing a PhD. One student stated the following:

> I work full time now and I don't think I could do that while trying to get a doctorate; I think I could do it getting a master's and working

> full time, but getting a doctorate and working full time… for me, I think that's just pushing it.

The focus groups highlighted degree of preparedness as a factor that determined whether they felt ready to pursue a PhD, or not, and the overwhelming observation was that they did not feel prepared.

> I don't want a struggle… when going to the next level knowing that I don't know as much as everyone else knows that has a master's degree from another college or a university. I don't want to have to just deal with trying to learn everything I need to learn that I don't know.

There was a sense of redundancy, as they perceived to be learning the same things as they did during undergraduate studies, which placed them at a disadvantage in comparison to those acquiring a master's in a majority institution. Some manifested a sense of wasting their already limited funds in a program that would not guarantee them a bright future, thus ruled out the option of spending money to acquire a PhD. One student argued as follows:

> But I can have the confidence I can work for NASA or whatever, but I'm not gonna fight to go there because I'm scared I didn't learn as much as I should. But if I get it, I would try to be in the same level, but to fight to that position, it's kinda like do I really? No! Do I really? No! … It hurts when you realize how much money [you] pay when you sit there… it hurts so much! Even though you end up with a title…

On the other hand, there were students whose perception of what a PhD encompassed was the same as their perception of the master's program. In other words, the redundancy would continue through the PhD level. They argued that, "in a master's, especially, you have learned pretty much all aspects of computer science; so, I guess if you go for a PhD, you're pretty much going just for the title" and "'cause what I heard… when I was talking to… he's getting his PhD… he does the same thing… it's basically the same six core classes that we take here… so, it's basically the same thing."

Although most students were not aware of what exactly a research methods course was, as it transpired in the survey, they seemed to understand that there is something out there called 'research' that led to publication and that both these things were important in a PhD program and career, thereafter. They shared the following:

> I don't see any classes here that teach you any publication or nothing… if you don't take thesis, you graduate; I'm just like 'I don't know how to write anything! How am I gonna publish it? How am I gonna… I'm going for a PhD? C'mon, I don't even have a paper!' It's just so scary! So, for me, I'd like to go for a PhD to be called doctor so-and-so, but it's just like… If you can have that title and still don't know how to write and get the publications and stuff like that…
>
> (…)
>
> I would love to take that one [referring to taking a research course] because from what I've experienced in those seminars outside the country, you cannot move anywhere and they cannot listen to anything, unless you come up with a publication… anything! Even though you come with a PhD, they will be like, 'where's the cd… what did you publish?' Nothing!

In regards to whether students have taken a research methods course, or not, in the survey, 17 students responded that they have taken a research methods course in their master's and 10 said they have not; and, eight in the focus responded that they have not taken a research methods course nor do they know what that would look like. However, in the pilot, four students said that the question was not clear; this observation of 'lack of clarity' made us wonder if that had anything to do with them not having taken a research methods course or with the fact that such course was not offered in their program, thus an unfamiliar term. They expressed that (a) the question and its answers were slightly difficult to grasp when reading it for the first time; (b) the question needed to have an example at the end to give a better understanding of what was being asked, (c) the term 'research methods' was confusing and it needed an example; and, (d) they had to read this question twice, to get a full understanding of what it was asking.

Table 2 shows that factors likely to encourage pursuing a PhD are career choices after completing the PhD, requirement to take research methods courses, conducting research, and funding for (or cost of) PhD. This is corroborated in the focus groups as students claimed that the lack of a guaranteed job following the PhD, lack of research methods courses, and the cost of the PhD contributed to their ruling out the possibility of pursuing a PhD.

Table 2
Factors Likely/Unlikely to ENCOURAGE Pursuing a PhD

Answer Options	Very Likely	Somewhat Likely	Likely	Unlikely	Somewhat Unlikely	Very Unlikely	Rating Average	Response Count
Requirement to take research methods courses	10	7	1	2	1	1	4.91	22
Conducting (doing) Research	9	5	4	2	0	1	4.86	21
Funding for (or cost of) PhD	10	1	3	6	1	1	4.45	22
Career Choices after completing the PhD	13	4	3	3	0	0	5.17	23

Some students in our focus groups were adamant that an HBCU graduate degree in computer science would not open employment opportunities, thus were thinking of acquiring a degree in business or education after completing their master's or pursue entrepreneurial ventures. Majority institutions have recognized that one indispensable ingredient in fostering an entrepreneurial drive in students is the physical presence of a support system in the form of a business incubator, an ingredient that is still lacking in HCBUs. Ron Busby (2012), president of the U.S. Black Chamber, Inc., reporting about the White House HBCU Entrepreneurship Conference, posited the following:

> America's Historically Black Colleges and Universities (HBCUs) must commit themselves to: develop the next generation of Black business leaders; be centers of excellence and thought leaders on entrepreneurship; jumpstart innovation in the communities they serve; and encourage and foster entrepreneurial activity among students before graduation. (n.p.)

While entrepreneurship is an intrinsic factor, we include it here to emphasize the fact that it emerges as a reaction to students' perception that a degree in computer science is an inadequate preparation for the job market. The following were some of their assertions:

> It's funny to me because right now you have people that's getting certificates, that's getting jobs just off a certificate. So, for me, that's another reason I wouldn't do the PhD because if I specialize in the network, you know they have the A+. [Other: Yeah, a lot of jobs now look for you to have certification like A+ … A+ Networking, CISCO] And see, if you get this, that certificate alone can get you a good job. So, why get a PhD in computers… you know what I'm saying?! If

> you could do this in one semester or one year, you might as well do that. There are so many other options now that, to me, it just sounds like a PhD alone, even when I say it, it sounds like it's going to be long and hard work and… You know what I'm saying?!
>
> (…)
>
> If you went from bachelors to master's then get your PhD if you have no work experience it's going to be hard to find a job because most people… they're gonna tell you you're either over qualified [Other: or no experience] or this stuff… what they want you to know is outrageous! They want you to have a security claim that if you had never had a job you have no security claims… and you have nowhere to lean on.
>
> (…)
>
> … Basically I've got the mentality of working for myself. I just, I don't… I won't say I don't take directions… basically I would rather be my own boss… so to handle my own business and operate my own business is something that I would rather conquer than to do the whole computer science…

Some students claimed that they had to pursue graduate studies (including a PhD) because there was nothing else to do; in other words, they perceived graduate school as some sort of purgatory stage while awaiting employment opportunities.

> You'd be looking for a job forever instead of… you better come and waste your time here, [Other: … sometimes you put a million applications!] sometimes it sounds like it. Sometimes coming here to school is not because I want to, it's because there's nothing to do out there, I'm doing the same thing over and over… so, I'm like 'oh well, why should I not be taking classes at night and then just get on with this…?!' Sometimes we're just here at school because [Other: there's nothing else to do!] exactly!

Another perception is that money, exposure, relationships, and being in a familiar environment are important factors for HBCU students to pursue a PhD program in computing. This was evident in conversations with HBCU computer science chairs and faculty who believe that a seed needs to be

planted early enough for students to be able to make the decision to pursue a PhD or else they may find it difficult to move away from their surroundings and family without knowing what it really means to get a PhD. This concern for the impact of moving away from familiar surroundings in order to pursue a PhD is reflected in the responses to our national survey question, "how are the following factors likely/unlikely to influence your selection of prospective schools?," which revealed that more than 50% of the students considered "proximity to my home, i.e., five hours drive or less" and "similar weather conditions as those of my home state" as factors that would influence their choice. This suggests that relationships and being in a familiar environment is an important factor for most students. In the focus groups, students corroborated this fact while others claimed their parents, family members, and professors as the key inspiration:

> My father… he tell me to keep my head up and stuff like that. But really the inspiration he really gave me was how he got his education. My father he got a GED like when I was four. And then, uh, I actually went to a junior college and then he decided to go to a junior college with me and stuff. Like uh… he had to go to work all the time and same time he went to school at the same time we went to school and it was like an everyday thing. And at the same time he had time for me and my sister. So… he never complained once; so, I can't complain…
>
> (…)
>
> I would say it would be very hard because my support system is my family. I come from a big family. I would say the professors here as well because if you need help you can get it. Whether it's somebody in your class or your professor, and uh… but as far as getting help with a class, you can get help here; but as far as emotional help I have a support system as well… I would say I'm very blessed to have a big support system and without that I don't think I would have… I would've learned, of course, but it's just… it makes it so much more deserving and such... when you have a support system cause they're proud of me…

Intrinsic Factors

According to the national survey, more than 50 percent of the students were likely to enroll in a PhD program within the first three years after

completion and most unlikely to enroll beyond the three years after completion. To gauge if those intending to pursue a PhD in computing had other fields in mind, we inquired about likelihood to pursue a PhD in computing, PhD in another engineering or scientific field, and/or EdD. More than 50 percent were likely to pursue a PhD in computing, exactly 50 percent likely to pursue another engineering or scientific field, and less than 15 percent likely to pursue an EdD. Consequently, we can infer that the majority would prefer pursuing a doctorate focused on research.

From the master's survey, we learned that 59 percent were considering pursuing a PhD in computer science while 37 percent were not; and, 59 percent projected their enrollment into the PhD to be immediately after completion of their master's degree and 41 percent for after working for a few years. Eighty-nine percent of the responses revealed that students' were pursuing a master's degree primarily to gain more specific knowledge in computing, 78 percent to learn about more computer science topics, 44 percent to conduct research, and only 30 percent for a job-related reason. The data suggest that most students are motivated, intrinsically, by academics; a plausible reason to infer a high likelihood that these students will pursue a PhD. We can further support this inference by the fact that the majority are aiming at an academic faculty career.

CONCLUSION, IMPLICATIONS, AND FURTHER RESEARCH

Our research showed that, without a foundational conceptual knowledge of 'what research is' and 'what a PhD is,' HBCU students are unlikely to be motivated to pursue either a PhD or a research career. We identified several basic misperceptions that HBCUs need to address in order to enhance students' motivation to pursue a PhD. The perception that a PhD is just a little more than, if not the same as, an undergraduate or master's degree; has no value apart from getting a special certification; and, has no value apart from one being able to boast the title 'Dr.'

These aforementioned misperceptions were fueled by a sense of curricular redundancy, as students perceived to be learning the same things as they did during undergraduate studies, which placed them at a disadvantage in comparison to those acquiring a master's in a majority institution. Considering these misperceptions, it is not surprising that some students were adamant that an HBCU graduate degree in computer science would not open employment opportunities, since it was inadequate preparation for the job market, thus saw an escape elsewhere. Such students contemplated either acquiring a degree in business or education, after completing their master's, or pursuing entrepreneurial ventures. Despite the misperceptions, most

students seemed intrinsically motivated by academics *per se*, a positive influence to pursuing a PhD, preferred a doctorate focused on research, and aimed at pursuing an academic faculty career.

Since students were likely to enroll in a PhD program within the first three years after completion and most unlikely to enroll beyond the three years after completion, HBCUs need to 'catch them while they are ready.' In doing so, HBCUs must put in place, efforts toward integrating students early into the research community and for peer mentoring of beginning students. The focus groups highlighted degree of preparedness as a factor that determined whether they felt ready to pursue a PhD, or not, and the overwhelming observation was that they did not feel prepared.

Since employability influences the value that students place on their degree, HBCUs may benefit from pursuing a strategy similar to that of majority institutions, which have recognized that one indispensable ingredient in fostering an entrepreneurial drive in students is the physical presence of a support system in the form of a business incubator or similar. Of course, this will require developing strong links with the business community.

Factors likely to encourage pursuing a PhD are career choices after completing the PhD, requirement to take research methods courses, conducting research, and funding for (or cost of) PhD. This is corroborated in the focus groups as students claimed that the lack of a guaranteed job following the PhD, lack of research methods courses, and the cost of the PhD contributed to their ruling out the possibility of pursuing a PhD.

Extrinsic factors such as participation in research, being a research assistant, and access to funding play a key role in students' intention to pursue a PhD. Moreover, participation in research as undergraduate, being a research assistant, and completing undergraduate thesis based on research have a positive influence on students' intention to pursue a PhD. Reliance on teaching assistantships, research assistantships, fellowships, loans, and personal finances to fund graduate studies confirm that lack of funding is indeed the primary preventer of potential enrolment in a PhD (only 18% are able to support themselves, but with a lot of personal sacrifice). Therefore, availability of funding through assistantships, fellowships or grants, and employer-sponsored scholarships constitutes a key incentive.

From a justice standpoint, low-income students (i.e., the population that is most likely to attend under-resourced HBCUs offering a terminal master's degree), are likely prone to lower educational quality and inadequate preparedness for employment. Students in HBCUs do not seem to be getting the right kind of education since money, access, and equity are all interrelated; consequently, albeit the fact that majority institutions would require minority students to succumb to a major cultural adjustment, many black students

aspire to attend majority institutions as an escape from the socioeconomic *status quo*. For instance, such students tend to agree that majority institutions provide access to the necessary knowledge and resources. The Fisk-Vanderbilt Bridge Program and the Advancement of African-American Researchers in Computing (A4RC) are examples of attempts to facilitate students' access to the kinds of knowledge and resources available in majority schools, albeit the cultural discrepancies.

Faculty shared a need to address factors that trigger anxiety about pursuing a PhD. Financial concerns constituted the main factor, followed by adjustment into the new culture of R1 institutions since most HBCUs do not have PhD programs; thus, HBCU faculty involved with BPC hope to increase the number of African-Americans who would go to R1s and return to HBCUs as faculty or researchers. Ultimately, HBCU faculty hope to build research partnerships with R1 faculty and leverage the perception that research of R1 faculty is more valuable than that of HBCU faculty and level the field.

This brings us back to our point regarding the need for grounding BPC initiatives on a theory of justice. For as long as there are disparities in resource allocation and capabilities between HBCUs and predominantly white institutions, HBCUs will continue to lag behind and their success will remain contingent on whether, or not, predominantly white institutions are willing to take them under their tutelage. In order for justice to prevail amidst these efforts, there is a need to level the playing field by shifting from an organizational change perspective, assuming that the practice of justice springs from putting in place institutions and policies to promote justice, toward a pursuit of equity of access and participation grounded on a theory of justice. Because "no matter how proper the established organizations might be, if a big fish could still devour a small fish at will then that must be a patent violation of human justice as *nyaya*" (p. 20-21).

This study focused on the experience of black students as a whole (population). Nonetheless, we recommend that future studies disaggregate the data by gender; socioeconomic status; and, immigration, citizenship, and residency status (e.g., citizen or permanent resident, DACA, international student, etc.) to gain further insight about how these factors might influence students' motivation. Moreover, we acknowledge that although significant improvements in equity take a long time, we recommend that future research looks at trends in the last decade.

REFERENCES

Busby, R. (2012, May 15). Black Colleges must develop next business leaders. *The Philadelphia Tribune. https://www.phillytrib.com/commentary/black-colleges-must-develop-next-business-leaders/article_79eee129-8f2a-5da8-b468-60e5a17bc75f.html*

Coleman, J. S., United States., & National Center for Education Statistics. (1966). *Equality of educational opportunity.* Washington: U.S. Dept. of Health, Education, and Welfare, Office of Education.

Cossa, J. (2018). Addressing the challenge of coloniality in the promise of modernity and cosmopolitanism to higher education: De-bordering, de-centering/de-peripherizing, and de-colonializing. In N. T.-L. Amoako (Ed.), *Re-visioning Education in Africa: Ubuntu-Inspired Education for Humanity.* Palgrave Macmillan.

Cossa, J. (2020). Cosmo-uBuntu: Toward a new theorizing for justice in education and beyond. In A. A. Abdi (Ed.), *Critical Theorizations of Education.* Brill|Sense.

Epstein, E. H. (1992). Social paradoxes of American Education. *Oxford Review of Education, 19*(3), 201-212. Retrieved February 1, 2021, from https://www.jstor.org/stable/1050486

Feinberg, W., & Soltis, J. F. (1998). *School and society.* Teachers College.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report, 8*(4), 597-607. Retrieved February 1, 2021, from https://nsuworks.nova.edu/tqr/vol8/iss4/6

Hage, J. (1972). *Techniques and problems of theory construction in sociology.* John Wiley.

Hilton, J. A., & Glaser, B. G. (Eds.). (2012). *The Grounded Theory review methodology reader: Selected papers 2004-2011.* Sociology Press.

Maxwell, J. A. (1992). Understanding and validity in qualitative research. *Harvard Educational Review, 62*(3), 279-300. https://doi.org/10.17763/haer.62.3.8323320856251826

NSF. (2008, August). *Broadening participation at the National Science Foundation: A framework for action.* National Science Foundation.

Onwuegbuzie, A. J., & Leech, N. L. (2004). Post hoc power: A concept whose time has come. *Understanding Statistics*, 201-230. https://doi.org/10.1207/s15328031us0304_1

Pettit, P. (1974). A theory of justice? *Theory and Decision, 4*, 311-324. https://doi.org/10.1007/BF00136652

Sen, A. (2009). *The idea of justice.* Harvard University.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research.* SAGE.

U.S. Department of Education, NCES, IPEDS. (n.d.). *IPEDS.* National Center for Education Statistics.

Wilson, J. (1963). *Thinking with concepts.* Cambridge University.

JOSÉ COSSA, PhD, is an Associate Professor of Lifelong Learning and Adult Education, Comparative and International Education (CIE), & African Studies in the College of Education, Pennsylvania State University.
Email: mozambicanscholar@gmail.com.

LECIA BARKER, PhD, is Associate Professor of Information Science in the College of Media, Communication and Information, University of Colorado Boulder.
Email: lecia.barker@colorado.edu

Manuscript submitted: ***July 30, 2020***
Manuscript revised: ***December 4, 2020***
Accepted for publication: ***January 18, 2021***

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

Volume 10, Issue 1 (2021), pp. 160-181
Journal of Interdisciplinary Studies in Education
ISSN: 2166-2681 Print/ ISSN: 2690-0408 Online
https://ojed.org/jise

Creating Intentionally Inviting School Cultures

Corinne Brion
University of Dayton, USA

ABSTRACT

This qualitative study used Purkey and Novack's (1988) Invitational Education as a conceptual framework to understand how 30 educational leaders created intentionally inviting school cultures during the COVID-19 pandemic. The sample consisted of 30 school leaders in Ohio's urban and suburban districts. Findings indicated that leaders altered their leadership styles to focus on people rather than programs and policies in order to be more inviting. Challenges pertained to insufficient funding to provide professional development for teachers and parents and the need for more mobile devices and connectivity. This study is significant because it expands the invitational education framework to show how leaders are intentionally inviting in times of crisis.

Keywords: Crisis, intentionally inviting, invitational leadership, leadership, PK-12, school culture

INTRODUCTION

The culture of an organization determines the way people are treated, how places are maintained, and how programs and policies are elaborated and implemented. School culture dictates the way things are done. An intentionally inviting school culture is created when leaders purposefully

create an environment in which students are comfortable and feel safe to learn, parents are invited to participate and be engaged in the school's life, and teachers feel supported. In educational organizations, the culture influences student learning as well as teacher retention and well-being (Bryk & Schneider, 2003; Fullan & Quinn, 2016; Gruenert & Whitaker, 2019; Purkey & Novack, 1988; Tschannen-Moran & Gareis, 2015). This qualitative study used Purkey and Novack's (1988) Invitational Education as a conceptual framework to understand how 30 educational leaders created intentionally inviting school cultures during the COVID-19 pandemic.

This study is significant because if educational leaders understand how to create and maintain positive and inviting school cultures during times of crisis, then learning, teaching, and well-being could be less negatively impacted. This study expands the invitational education framework by showing how leaders were intentionally inviting in times of crisis. The first section of this paper presents the literature review. Subsequent sections focus on the conceptual framework, the methods, and the findings. The last two parts provide a discussion and recommendations.

LITERATURE REVIEW

This literature review is organized by themes. The first theme addresses school culture while the second presents typologies that help categorize the broad types of crisis. The third theme presents a succinct literature review on leadership in schools during crises.

School Culture

"You cannot not have a culture" (Lindsey et al., 2018, p.119). Culture defines our humanity and identity. Our cultures explain and express our worldview and our worldview is an expression of our beliefs and core values. Educators and students bring their cultures to school, and these diverse cultures, worldviews and core values affect their learning and relationships with peers (Khalifa et al., 2016; Lindsey et al., 2018). These individual cultures also influence the school culture positively or negatively. In turn, the school culture determines the ways people communicate and treat each other, how places are maintained, and how programs and policies are elaborated and implemented.

The culture of a school is what distinguished one school from another. When someone walks into a school for the first time, the person can sense whether it is a healthy place for children, and whether the leader cares about students and his/her teachers. Because culture is a predominant force, the culture of a school influences teacher and student retention, performance, and well-being (Bryk & Schneider, 2003; Fullan & Quinn, 2016; Gruenert & Whitaker, 2019; Lindsey et al., 2018; Purkey & Novack, 1988; Tschannen-Moran & Gareis, 2015).

Types of Crisis

Several scholars wrote about the various types of crisis (Pepper et al., 2010; Smith & Riley, 2012). Smith and Riley (2012) contended that there are five types of crisis. They are: 1) short term crises that are sudden in arrival and swift in conclusion; 2) cathartic crises that are slow in the build-up, reach a critical point, and then can be swiftly resolved; 3) long term crises that develop slowly and then bubble along for a very long time without any clear resolution; 4) one-off crises that are unique and would not be expected to reoccur; and 5) infectious crises that occur and are seemingly resolved quickly, but leave behind significant other issues to be addressed, some of which may subsequently develop into their own crises. Based on this taxonomy, the COVID-19 pandemic would be considered infectious and long term because of the deleterious economic, social, psychological, emotional, and global impact of the virus. Pepper et al. (2010) employed a different typology to categorize types of crisis. According to these authors, the four groupings of crisis include: External-Unpredictable; Internal-Unpredictable; Internal-Predictable; and External-Predictable. Under this classification, COVID-19 would be external and unpredictable because it was external to schools and not anticipated by school leaders.

The unpredictability of the virus combined with the shortage of robust information, and the lack of preparedness for such a virus has impacted millions of individuals globally. COVID-19 has, however, disproportionally affected communities of color and those living in poverty (Gutiérrez & Grossman, 2020). In schools, these inequities were seen when institutions were not able to equitably serve students who did not have access to a mobile device or a computer, or had trouble securing a stable wi-fi connection. In addition, schools found it challenging to fully serve students with different abilities and English language learners.

In educational organizations, any situation that disrupts the education and training process and makes it inoperable is defined as a crisis (Mutch, 2015). What makes a crisis in the education sector different from other crises, and also makes it important, is that the crisis at school includes children the society is responsible for protecting. Crises in schools most often involve alcohol, drugs, weapons and violence, student discipline issues, student or staff deaths off campus, or inclement weather (Mutch, 2015). Often districts are challenged to be crisis-ready because they lack training, personnel, time, and financial resources to provide adequate crisis management trainings (Smith & Riley, 2012). As a long-term, unpredictable, and infectious crisis, the COVID-19 pandemic has been particularly challenging for school districts because remote learning became the mandated mode of instruction with very little notice. School leaders had to adapt and pivot their leadership styles in order to create inviting school cultures within the sudden remote learning environment.

Crisis Leadership in Schools

In times of crisis, leaders "frame the meaning of a crisis event, expressing appropriate concern and support, overseeing mitigation, coordinating support and facilitating timely, open communication" (Seeger et al., 2003, p. 241). During crisis, educational leaders need to ensure that students feel safe and have a clear sense of belonging so that they can learn (Boudreau, 2020). In other words, leaders need to address Maslow (1943) before Bloom (1956). Maslow (1943) introduced his Hierarchy of Needs, which explains that besides our basic physiological needs such as food, water, and shelter, human beings need to feel safe to be happy, learn, and succeed. The third tier of Maslow's pyramid has to do with the need to be included and connected; our human need to be social. These first three needs are crucial to learning. This study examined how principals created inviting school cultures within the first three needs of Maslow's Hierarchy of Needs.

Bloom's Taxonomy (1956) provides a systematic way of describing how a learner's performance grows in complexity when mastering academic tasks. Bloom's taxonomy includes six levels: 1) knowledge; 2) comprehension; 3) application; 4) analysis; 5) synthesis, and 6) evaluation. Bloom (1956) defined each level as follows:

- **Knowledge** involves the recall of specifics and universals, of methods and processes, or of a pattern, structure, or setting.
- **Comprehension** refers to a type of understanding or apprehension such that the individual knows what is being communicated and can make use of the material or idea being communicated without necessarily relating it to other material or seeing its fullest implications.
- **Application** refers to the use of abstractions and concrete situations.
- **Analysis** represents the breakdown of a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between ideas expressed are made explicit.
- **Synthesis** involves the putting together of elements and parts so as to form a whole.
- **Evaluation** engenders judgments about the value of material and methods for given purposes.

Although in non-crisis times, instructional leaders often encourage teachers to use Bloom's taxonomy, in conversation with leaders in this study, they explained being concerned with Maslow rather than Bloom because they realized that families were often challenged to provide the essentials to their children in the context of COVID-19 and remote learning. Leaders also

understood that they had to adapt, change, or pivot their leadership style in order to respond to the needs of their students, teachers, and families.

Smith and Riley (2012) affirmed that responding to a crisis involves five steps: 1) getting quality and reliable facts; 2) implementing the relevant contingency plan, or quickly adapting one to meet the crisis situation. The implementation of a rigorously pre-considered contingency plan means that key staff and other stakeholders immediately know what has to be done, and who has to do it; 3) making decisions swiftly before the level of damage escalates; 4) showing genuine concern for the welfare of others; 5) communicating clearly, openly and regularly to limit confusion, rumors, and misinformation. Additionally, Smith and Riley (2012) encouraged leaders to reflect post-crisis and ask questions such as: Could we have responded better? How? What contingency plans can we put in place to be better prepared?

Leadership in times of crisis is about dealing with events and emotions in ways that minimize personal and organizational harm. Smith and Riley (2012) identified key attributes that effective educational leaders possess during crisis. These dispositions include having excellent communication skills, being able to make quick decisions, thinking creatively, showing empathy, and being flexible, being intuitive, optimistic, and tenacious. Additional traits relate to the ability to synthesize information and adequately use known information gained from previous crises.

Effective leaders use the aforementioned dispositions to create positive and inviting school cultures. Using Purkey and Novack's (1988) invitational education as a conceptual framework, this study sought to understand how school leaders created intentionally inviting school cultures in a mandated remote learning environment during the COVID-19 pandemic.

Conceptual Framework: Invitational Education

According to Purkey and Novack (1988), creating an invitational education is key to student learning. An invitational education means that the school is intentionally inviting as opposed to being unintentionally inviting, inviting by chance, or disinviting (Table 1).

An intentionally inviting school culture is created when leaders purposefully create an environment in which students are comfortable and safe to learn, parents are invited to participate and be engaged in the school's life, and teachers feel supported. Purkey and Novack (1988) theorized that four main areas need to be intentionally inviting in a school. The four Ps describe the four areas as People, Places, Programs and Policies. During crises, it is crucial that school leaders focus on creating inviting school cultures in all four dimensions of the quadrant. However, Purkey and Novack (1988) posit that people should always be the priority because they affect all other dimensions.

Table 1: Invitational Education: The Four Quadrants

Intentionally Inviting School	**Unintentionally Inviting** School
You are purposefully—on purpose-- welcoming to children, families, etc.	You aren't purposefully welcoming to families and students—you are unaware. You are, *just by accident,* inviting.
Intentionally *Disinviting* School	**Unintentionally Disinviting** School
You are purposefully disinviting to others.	You are unaware that you/the school is disinviting. You are, *just by accident*, disinviting. (Perhaps you have just not thought about it before, you have habits that are disinviting to others—your blind side).

People. People-oriented schools are easy to identify. They are the schools where principals and teachers welcome students and each other, call students by name, know about their talents, likes and dislikes. They are the schools where there is a general atmosphere of warmth and respect. In a remote learning environment, principals played a pivotal role in creating positive relationships with their teachers, students, and families (Purkey & Novack, 1988).

Places. Places are visible, and as such can easily be made intentionally inviting. Purkey and Novack (1988) noted, "If hallways are littered, paint is peeling, restrooms are smelly, classrooms dusty, offices cluttered, and cafeteria grimy, one can assume that the school's policies, programs, and people are the same" (p. 21). Places are the most obvious element in any school and the easiest to change. They provide an opportunity for immediate improvement. For example, one can paint lockers or clean classrooms. In this study, the places were remote places.

Programs. Sometimes well-intentioned programs are harmful to individuals or groups because they focus on narrow goals and neglect the wider scope of

human needs. For example, some school programs group youngsters and give them a label, and the label becomes a stigma, which negates the positive purposes for which these programs were originally created. The invitational model requires educators to monitor programs that could detract from the goals for which they were designed. Leaders need to ask themselves whether programs welcome everyone or just some students; who is included and who is not? Many school programs can use parents or other volunteers as resources. Volunteers can tutor, type, file, or chaperone. Most communities have volunteers available; they only need to be invited.

Policies. Schools operate based on many policies. Such policies include discipline, dress code, personnel selection, bus routes, snow days, attendance, and visitation procedures. These formal or informal policies communicate a strong message to people in the school and the community about how things are to be done and where each person fits in. They also communicate values such as equity, diversity, and inclusion.

Although all 4Ps are critical to creating intentionally inviting school cultures, in times of crises the people dimension is paramount (Purkey & Novack, 1988). People develop best in inviting environments. As a result, this study focused on the first 2Ps of Purkey and Novack's (1988) Invitational Education framework: people and places. Specifically, this study examines how Ohio public-school principals created intentionally inviting school cultures during the 2020 COVID-19 pandemic. In Ohio, the quarantine started mid-March and schools were instructed to switch to online instruction on March 17, 2020.

RESEARCH METHOD

In the present qualitative study, the researcher sought to understand how 30 American school leaders created intentionally inviting school cultures while also leading emergency remote learning during the 2020 COVID-19 pandemic. As such, the objective of this study was to answer the following research questions: (1) What did leaders do to create and maintain an inviting school culture in a remote learning environment during the COVID-19 crisis? (2) What challenges did they encounter?

Sample and Data Collection

The researcher used convenience and snowball sampling for the present study (Bryman, 2012). The study participants were 30 educational leaders that she met at workshops, conferences, or meetings over a period of two years. The leaders the researcher initially contacted referred her later to some of their colleagues. These educational leaders worked in five school districts in Ohio. Two districts were in urban areas and three were suburban

districts. In 2018-2019, two of the districts had been affected by a tornado and a mass shooting. As Table 2 indicates, the sample, 18 women and 12 men, aging from mid-thirties to mid-sixties, included two preschool principals, 14 elementary principals, five middle school principals, six high school principals, and three superintendents.

Table 2: Sample

Name	Gender	Role	Level	District	Age
Chloe	F	Principal	Preschool	Urban	38
Martha	F	Principal	Preschool	Suburban	61
Elizabeth	F	Principal	Elementary	Urban	45
Bethany	F	Principal	Elementary	Urban	56
Karen	F	Principal	Elementary	Urban	35
Dorothy	F	Principal	Elementary	Urban	52
Caryn	F	Principal	Elementary	Urban	40
Elena	F	Principal	Elementary	Suburban	45
Caitlin	F	Principal	Elementary	Suburban	39
Katherine	F	Principal	Elementary	Suburban	38
Samantha	F	Principal	Elementary	Suburban	49
Carol	F	Principal	Elementary	Suburban	52
Alice	F	Principal	Elementary	Suburban	59
Mary	F	Principal	Elementary	Suburban	62
Susan	F	Principal	Middle	Suburban	54
Catherine	F	Principal	Middle	Urban	55
Dani	F	Principal	High	Urban	48
Michelle	F	Superintendent		Suburban	48
Marc	M	Principal	Elementary	Suburban	39
David	M	Principal	Elementary	Suburban	43
Paul	M	Principal	Middle	Suburban	55
Andrew	M	Principal	Middle	Suburban	35
Timothy	M	Principal	Middle	Urban	36
Jack	M	Principal	High	Urban	45
Bruce	M	Principal	High	Urban	39
Ken	M	Principal	High	Urban	49
Barry	M	Principal	High	Suburban	53
Jim	M	Principal	High	Suburban	60
Larry	M	Superintendent		Suburban	63
Elton	M	Superintendent		Urban	57

* Pseudonyms were used to protect the anonymity of the participants

The researcher conducted 30 in-depth interviews to collect rich data. To maintain social distancing, the interviews took place in April and May 2020 using Zoom or Google Hangout. The interview protocol consisted of questions such as, “Can you tell me how you led in times of crisis and how you create and maintain an inviting school culture?” or “Tell me about the challenges you faced related to building an inviting school culture.” The

interviews lasted approximately 60 minutes each for a total of over 30 hours of interview data. The interviews were recorded and transcribed verbatim. The in-depth interview of each participant allowed the investigator to understand whether the leaders were able to create or maintain inviting school cultures in remote learning environments and to comprehend the extent to which they were able to sustain these new practices over the spring semester.

Data Analysis

To preserve the confidentiality of the present study, schools, and participants, the researcher used pseudonyms during the transcription and coding process. Coding served as the base of the analysis since it is the interpretation of the data (Saldaña, 2009). Coding began immediately after interviewing and after writing preliminary field notes and journal notes. The researcher first listened to each of the recordings twice and pre-coded the data by highlighting memorable passages and quotes (Saldaña, 2009). Then, she read through the journals, field notes, and transcripts to make notes on them as if she were "conversing with the data" (Merriam, 1988, p. 179). The investigator then used thematic coding. Thematic coding is a method of analysing qualitative data. It is applied to a set of texts, such as interview transcripts, and involves recording or identifying passages of text or images that are linked by a common theme or idea (Gibbs, 2007). This allows the coder to index the text into categories and establish thematic ideas (Gibbs, 2007). Initially, the themes were two dimensions of Purkey and Novack's (1988) 4Ps, namely people and place. The researcher closely examined the data to identify common codes, topics, ideas, and patterns of meaning that came up repeatedly and would fit under those themes (Bryman, 2012). Examples of codes were as follows: work-life balance, leadership styles, communication, and dispositions. Finally, this researcher used Purkey and Novack's (1988) people and place dimensions to extract quotes for each theme to describe how leaders made their school culture inviting.

Trustworthiness

To enhance the present study's internal validity, the researcher included four strategies into the design of the present study. First, the sample of 30 leaders in urban and suburban districts allowed her to gain a wide array of perspectives and understand the various strategies used by leaders (Patton, 2002). Second, she applied member checking (Mero-Jaffe, 2011). Following data analysis, she contacted the participants to share the results section of the present study with them. The participants confirmed that the findings reflected their own perspectives. Third, she created a data trail (Rodgers, 2008). This is a qualitative research practice where she copied the participants' quotes from the present study's transcript data and pasted them under each theme that emerged from the data analysis. Using qualitative software facilitated this task because the quotes were extracted during the data

analysis phase. This strategy helped ensure that sufficient transcript data supported the results that she reported in the present study. Following this process also ensured that she, as the researcher, was not sharing her viewpoint but, rather, the perspectives of the participants. Fourth, she used low-inference descriptors (Chenail, 2012). In this qualitative protocol, she used participants' quotes from various transcripts to ensure that their perspectives are reported accurately. The researcher believes that she employed a rigorous study design along with robust qualitative strategies in order to enhance the internal validity and trustworthiness of the present study's findings.

FINDINGS

The findings are organized by research question. As a reminder, the first research question sought to understand what the school leaders did to create and maintain an inviting school culture in a remote learning environment during COVID-19. Findings indicated that leaders adapted and pivoted their leadership styles and found new ways to support their teachers.

Adapting and Pivoting Leadership Styles

Principals set the tone for the culture at their schools. During the 2020 COVID-19 pandemic, leaders shared that they altered their leadership style in the following ways: 1) They communicated more; 2) they learned to be more visible; 3) they managed stress expressed by all stakeholders; 4) they led with grace while also advocating for equity and being reflective.

Communication

All thirty leaders stated using a direct communication style because of the urgency to promptly react to the crisis. They communicated often and with transparency. They used various venues, including social media, website, newsletter, emails, calls, texts, and their districts' automatic calling systems. All leaders emphasized the need to constantly update stakeholders and making intentional efforts to check in with teachers, students, and parents daily. In her messages, Mary emphasized the need for "productivity" while Carol, Ken, Jack, and Caryn communicated the importance of care, patience, safety, and giving up perfection. Caitlin said: "Community is bigger than test scores and I want to be one of these leaders who model good listening, care, and grace because we must think of Maslow before Bloom." These principals also translated communications whenever possible for their English Learners population. Marc, Samantha, and David commented that they made sure they were reassuring and encouraging in their messages and in their online presence. In addition to communicating often, all leaders agreed that they purposefully listened more. Part of their communication strategy was to spend time listening to teachers, students, and parents to better support them. Carol

shared: “I listened more during COVID-19 than ever before because that is what was needed of me.” As a result of all the listening, leaders saw a need to survey parents regularly and made surveying an integral part of their communication plan. In addition to communication, leaders increased their efforts to be more visible.

Visibility

Leaders made themselves visible using several strategies. Paul, Timothy, Barry, and Susan visited classrooms every day, conducted virtual classroom observations and evaluations, responded to calls and emails promptly, kept their schedules updated and conducted weekly mental checks on Zoom with teachers and stakeholders. At the preschool and elementary levels, Elena, Chloe and Martha read aloud to students, conducted online assemblies, or were secret guests in classes. These principals also purposefully taught classes to remain visible and accessible to students and teachers. In addition to focusing on communication and remaining visible, these leaders learned to manage their stress and the stress of others. They became what Andrew called “stress managers.”

Becoming “Stress managers”

All leaders spoke about having to manage their own stress and the stress of teachers, parents, and students. They stated that they researched and attended workshops to learn more about social-emotional learning (SEL) tools for adults because teachers were feeling anxious and stressed about COVID-19 and the new and sudden online environment. Bruce summarized his action steps for learning:

> We quickly realized that our teachers needed a different kind of support because they were juggling their own children and their work, and they were very stressed. As a result, I researched SEL for adults and implemented some activities on Zoom to help teachers voice their stress. Such activities included venting sessions, yoga classes, and happy hours.

Mary, Susan, Marc, and Timothy had their school guidance counselors open their own google classroom to hold meetings with parents and families. After reflection, Timothy shared: “I would have liked the counselor to also focus more on teachers because they were also juggling their own children and their classroom.” Another way Superintendent Michelle altered her leadership was by “leading with grace.”

“Leading with grace”

Half of the leaders indicated that they led with grace. When asked what they meant by that, Catherine shared: “We cannot control the virus, but

we can control how we respond, and I chose to respond with grace. By that I mean being patient, compassionate, and humble." Understandings of leading with grace varied among participants. Katherine and Barry stated that, "leading with grace meant that they encouraged creativity rather than typical classroom assignments." Jim, Marc, and Samantha were among the few leaders who expressed the need to become more flexible with teachers because they also had family obligations at home and understood what teachers were going through. In her journal, the researcher wrote:

In half of the interviews, the leaders, both men and women were feeding their children or playing with them while we were talking. They mentioned that school meetings were held with children around because everyone was juggling schedules and responsibilities. Those leaders who were parents were challenged by the lack of time, freedom, and quiet. The leaders who did not have a family living with them - Karen, Catherine, and Elton reported enjoying the online learning because there were very few discipline issues and could then focus on supporting teaching and learning instead of discipline. In both cases, leaders recognized the need for grace and adjusted their leadership style to be more equitable with teachers and students during these unprecedented times.

Leading with an equity lens and planning for the future

Urban and suburban leaders who served underprivileged students were aware of the need to advocate for equity because COVID-19 affected a lot more those who lived in poverty. These leaders indicated that beyond instructional materials, families needed additional food, clothing, and medical items. To meet this need, Chloe formed a partnership with a company and received half a million dollars in food items that her community distributed weekly to families. Bruce, Paul, and Alice organized barbecues with donated items, drove food to homes, or arranged for district buses to drop off food, clothes, and medication. The principals' mantra became Maslow comes before Bloom because as Mary explained "instruction is important but staying healthy takes precedence." Leaders also realized that they needed to be more equitable in their communications, so they enlisted the help of interpreters and translating systems to make sure families stayed informed.

Finally, all leaders stated the "need to plan for the future." Michelle affirmed "everything is an emergency now, but we need to reflect and plan now in case there is a next time." Overall, leaders altered their leadership styles by communicating more frequently. They became more visible, managed stress of all stakeholders and led with grace while also being equity advocates and being reflective. Leaders also played a key role in supporting teachers' ability to be intentionally inviting during COVID-19.

Leaders Supporting Teachers

All leaders stated that they were able to best support their teachers because they had either gained their trust during the seven months preceding COVID-19 or had robust relationships with their teachers because they had been in their positions and had known each other for long periods of time. Susan expressed: "I wonder if supporting my teachers would be so easy if I had had new teachers and the crisis had happened in September." School leaders always support their teachers, however in the pandemic, leaders reported having to become awesomizers, model work-life balance, and foster collaboration and learning.

"**Being an "awesomizer."**

Leaders emphasized the importance of intentionally keeping morale high, particularly in the first few weeks of the crisis. David explained: "I cannot control COVID-19 but I can be an awesomizer." When prompted to speak about what an awesomizer was, David continued:

> I have a positive mindset and I repeatedly tell them that I am there to support them. I also encourage them, praise them often, share videoclips of students during our various meetings and sometimes dress in costumes just to make them laugh. Because there are less discipline issues, I can be an awesomizer.

Carol, Bethany, and Elena shared that they celebrated small wins with teachers by holding "Zoom happy hours, coffees, or lunches to talk about their day, their students, and whatever was on their minds. We used to go to happy hour on Fridays, so we are keeping the tradition alive just being more flexible and meeting virtually." Other strategies used by leaders included writing letters to teachers and checking in about the teachers' emotional health regularly. Being an awesomizer also meant understanding the need to find a balance between work and family responsibilities.

Work-life balance

Awesomizer leaders supported their teachers by purposefully modeling a sense of balance and calm. Jack with his two children on his lap said:

> Now that my home office is the main office of the school, I usually have my children during my staff meeting. Teachers see that I juggle family and work too. My wife is also a principal and we divide childcare. My teachers do the same or have full care of their children.

Jim, Susan, and Martha indicated that they told their teachers to stop working and "unplug because they were on the phone from 8am to 9pm." All leaders spoke about the importance of modeling physical and mental health. Karen

sent reminders via text message to her? teachers asking, "What are you grateful for today? Who are you connecting with today or checking in on? and How are you moving your body today?" In addition to being awesomzers and promoting work-life balance, leaders shared the need and urge to collaborate.

Fostering learning and collaboration

School leaders are chief learners. During COVID-19, they rapidly had to learn how to lead virtually and from home. They had to learn from other districts and leaders. Many of them joined Facebook groups and learned how to post reading aloud clips on YouTube, for example. All leaders spoke about conducting classroom virtual tours and giving regular feedback, as well as providing professional development on how to foster engagement in a remote learning environment. Leaders also learned to delegate, be a resource for their teachers, and to foster collaboration. Katherine illustrated this feeling when she said:

> The teachers know that I am a resource for them. They know to ask me for help and if I do not have the answer for them, I will do my best to find it. I also encouraged them to be in touch with each other. As a result, I saw more collaboration in the virtual model than when we were brick and mortar. They collaborated more on lesson planning during remote learning than ever before.

Paul reported: "I saw teachers spontaneously meet daily on Google Hangout to check in on their classes, students and share ideas." These findings revealed that leaders pivoted their leadership styles to communicate more, be more visible, manage stress expressed of all stakeholders, and led with grace while also advocate for equity. Findings also indicated that these leaders supported their teachers by being awesomizers, promoting work-life balance, and fostering learning and collaboration.

The second research question concerned the challenges these 30 leaders faced while leading during remote instruction and COVID-19. Findings indicated that the challenges were related to funding, technology, and logistics.

Challenges

The first challenge pertained to the lack of funding. Due to the lack of funding and despite the growing need for professional development for teachers who did not know how to use an online platform, leaders found creative ways to offer learning opportunities for their teachers. Bruce shared that he joined forces with other principals and offered joint online Zoom workshops on technology, for example. Leaders also had to manage parents'

frustrations with having to be teachers, pick up food at designated locations, while also working and maintaining a household. Chloe expressed: "Parents were frustrated because they did not have enough devices for all their children or did not know how to support their children and how the platform worked."

Similar to face-to-face teaching, online learning is an infrastructure that demands routines and procedures. Online learning has its own culture because principals and teachers do not see students daily. As a result, clear expectations are needed. At the outset of COVID-19, participants reported being overwhelmed with directives, information, and orders that would change hour by hour. Barry spoke about the confusion and chaos and shared: "To add to an already confusing and overwhelming time, all schools in our district did things differently, so none of our buildings had a uniform and consistent approach to follow, which delayed us in our ability to provide effective remote learning." Susan, Dani, and Jack shared that they needed an adaptation period during which they were able to "filter the information from the Ohio Department of Education and their districts." Alice shared the feeling of the group when she said: "This adaptation period lasted approximately three weeks. After that, we started to have a rhythm and we worked out some of the kinks."

In the first three weeks of remote instruction, leaders faced several challenges related to places. First, they had to ensure that everyone had access to a mobile device or a computer and could connect to WIFI. This proved to be difficult for schools that did not have one-to-one devices. While Mary, Jack, and Bruce stated that they had plenty of devices on hand and even extra ones in case of loss or repair. Carol, Samantha, and Caitlin contended with not being able to locate some students who did not log in and did not do their work. Realizing that mobile devices were not going to be delivered to all students and that some students were not being tracked, Alice shared that she "expected participation to be down during COVID-19." Although leaders tried to reach everyone, some students were not accounted for, as Larry explained: "Even when schools printed some packets for students without a device or WIFI, parents would not always pick up the packets at school because they worked, they may have been worried to come to school, or may not have had transportation."

Another difficulty involved families. Even when the family had computer(s) or a mobile device and WIFI, caregivers did not necessarily know how to use the devices, as exemplified by Dani: "I received many calls daily of parents who were asking for guidance and tutoring on how to operate and navigate the device so that they could assist their child(ren)."

Other difficulties included the lack of bandwidth in households with several children and parents having to use WIFI. Special education and English Learner instruction were also challenging. Leaders constantly spoke about challenges related to bringing the students with individual educational plans online and giving them the services they needed. In particular, Andrew

stated that "it was hard to motivate 8th graders on IEPs because they thought they were on holidays since the testing was suspended and they were easily disengaged." Lastly, leaders spoke about the importance of having uniform guidelines with Google classroom, so that all teachers could organize their materials a certain way on the platform to make it more user friendly and consistent for parents with multiple children. Specifically, David shared: "I have two children in my own school. One teacher organized his Google classroom by date and the other by assignment. It took me weeks to understand what was needed for whom and to get into a rhythm. As the principal, I saw that we needed to do better and have a consistent way of organizing our online classrooms."

Despite those challenges, leaders made their new environments intentionally inviting. First, they delivered packets and meals themselves to households that needed them. They also made curbside visits to greet the students and families. Mary, Chloe, Martha, and Marc spoke about going to houses once a week while modeling social distancing, but making sure students had what they needed to participate in the instruction. Second, leaders made sure that families who needed WIFI were aware of some of the complimentary options. Marc, Elena, Caryn, and Katherine made a list of possible places to get free WIFI such as McDonald's restaurants and invited parents to come to the school parking lot to access the internet. Samantha, Carol, and Paul organized study group dates when families would be invited to drive their students to the school parking lot to have group study sessions. Another way school leaders made the online environment inviting was by decorating their school buildings, making posters, and taking pictures of teachers. They then posted those pictures on their website, social media, newsletter, and ClassDojo. Susan shared:

> We were not prepared to switch so rapidly to remote learning and it is taking a toll on everyone. We can all do our part to make this new environment inviting so here, we chose to make videos of ourselves at school while also practicing social distancing. We then post all these videos in multiple languages on the website, on social media, in the newsletter, paper, and emails. We noticed that students really enjoyed seeing familiar places and faces, so we continued doing it, making an unfortunate situation fun for them.

Dani and her teachers created music recitals and posted them on their websites. One school even organized a talent show at the end of the year in which students displayed their talents in self-made videos that were shared in a virtual all-school meeting. Moreover, leaders also created what Timothy called "warm, loving videos" with positive messages, or welcome back messages after spring break for students and families. Finally, leaders made their online places inviting by encouraging teachers to be creative and make

online learning attractive with games and fun activities. Bruce explained: "Once I told the teachers to be creative and have fun, I saw teachers producing amazing activities and games, such as STEM Fun Fridays, where students attended an experiment the science teacher was doing, or art teachers sending videos of projects students could do for fun." Findings indicated that leaders faced challenges related to finances, logistics, and the adaptation to remote learning. Next the author discusses the findings in relation to Purkey and Novack's (1988) invitational education framework.

DISCUSSION

Culture eats strategy for breakfast (Drucker, 2011). In educational organizations, culture influences student learning as well as teacher retention and well-being because culture determines the way people are treated, how places are maintained, and how programs, and policies are elaborated and implemented (Bryk & Schneider, 2003; Fullan & Quinn, 2016; Gruenert & Whitaker, 2019; Purkey & Novack, 1988; Tschannen-Moran & Gareis, 2015). Findings indicated that during the 2020 COVID-19 global pandemic, creating an intentionally inviting school culture became a priority for leaders because of the level of stress, anxiety, and distress the pandemic brought to all stakeholders. Using Purkey and Novack's (1988) Invitational Education framework, findings showed that leaders chose to focus on people and place rather than policies and programs. These findings showed that leaders created intentionally inviting school cultures by focusing on communication, showing concerns for others, and providing mental health support to both their teachers and students. These findings align with some of the literature on crisis leadership (Cowen & Rossen, 2013; Smith & Riley, 2012). Examples of crisis leadership included when Paul, Timothy, Barry, and Susan set up virtual meetings with teachers regularly, attended classes or taught classes, and made efforts to be visible and transparent.

In this study, only Mary mentioned her crisis or contingency plan. This is because the leaders' crisis plans were made for crises such as chemical spills, tornadoes, or intruders. With COVID-19 being infectious and long-term (Smith & Riley, 2012), schools did not have a crisis plan ready for a pandemic. This finding confirms that leadership transcends crisis plans (Brock et al., 2001). Participants in this study altered their leadership styles due to COVID-19 and the sudden remote learning mandate. All leaders purposefully focused their efforts on the people they served and with whom they worked. This finding is in line with Purkey and Novack's (1988) invitational education framework. These leaders focused on people because doing so made the remote places, programs, and policies intentionally inviting and fostered student engagement and learning.

Invitational education is about being *intentionally* inviting in specific aspects of the schools: people, programs, places, and policies with a focus on people first. In times of crisis, invitational education is embodied by leaders who are communicative and visible. Leaders also manage stress of all stakeholders, they lead with grace while also being equity advocates, and being reflective. Additionally, they are awesomizers, promote collaboration and learning, and they model work-life balance. While educational institutions should always be intentionally, this study demonstrated that invitational education is particularly needed during crisis of any kind because crisis creates uncertainty and stress, as well as economic and emotional distress. COVID-19 has impacted the world and our schools in ways no one could have imagined. This study provides practical ways in which leaders created and maintained intentionally inviting cultures while suddenly switching their learning environments to remote learning.

The findings from the current study add to Purkey and Novack's (1988) 4Ps in that they provide a roadmap on how to create intentionally inviting school cultures during crisis regardless of whether districts are located in urban or suburban areas and who the leaders are. Specifically, this study provides ideas on how to create intentionally inviting school cultures by focusing on people and places, even remote places, and reminds all leaders of the importance of thinking and leading with Maslow in mind before focusing on Bloom's taxonomy. In other words, in times of crisis, leaders ought to remain flexible and pivot their leadership styles to remain or become people-focused first. For some leaders, this may not require an intentional effort because they always are people-driven and oriented. For others, they may have to reorganize, re-strategize, and learn how to become better people-minded persons. The 4Ps is a tool that can help frame the work of leaders. The model can remind leaders of the importance of intentional and inviting leadership in the midst of uninvited times. Purkey and Novack's (1988) framework can be used as a tool to reflect on the self and on the school as a system. Leaders could ask themselves daily: "In what ways was I intentionally inviting today in the areas of people, places, programs, and policies?" Similarly, leaders can provide professional development for teachers to help them use this tool to reflect on their practices and themselves. Lastly, the framework can be used to assess how the school as a system is intentionally inviting and determine areas of strengths and weaknesses. Next the researcher provides recommendations for practitioners, policy makers, and scholars.

Study Limitations

As with any empirical study, there are limitations to this research project. This study took place in one county in Ohio. The leaders were from five districts and none were located in rural areas. Despite these limitations, the researcher believes that the present study contributes to the body of

literature on leading in times of crisis. Within this context, the present study has the potential for setting the stage for further studies.

RECOMMENDATIONS

The following seven recommendations are derived from the study findings and are directed at educational leaders who lead in times of crisis in an online or blended environment. First, leaders should focus on people in order to create inviting school cultures in times of crisis. Second, to be equitable and intentionally inviting in an online learning environment, leadership teams should ensure that every student has access to the desired learning materials. Leaders can provide and deliver academic packets while also planning ahead and purchasing additional devices to have on hand in case of damage or loss. Leaders should also purchase hotspots for WIFI or assist with data usage to families in need, along with information on bandwidth use.

Third, leaders need to provide individualized support for their teachers. Not all teachers are technology savvy and even when they are, engaging students in online environments requires a different skill set. Leaders should provide training on how to use online platforms and provide guidelines on how to organize online classrooms so that there is consistency with how information is presented across classrooms. This could be done through virtual forums, for example. Districts could also create within the Learning Management System (LMS) a virtual "sandbox" for teachers to play with the technology before using it with students. Leaders also need to train teachers on how to foster student engagement in a blended or strictly online environment. The following instructional tools are recommended: Seesaw, FlipGrid, and EdPuzzle. Additionally, for professional development on remote learning, MobileMind offers a plethora of training options. Leaders could hire virtual coaches or mentors to support teachers during their teaching. Moreover, to foster collaboration and peer learning, leaders could create virtual professional communities in which teachers discuss their student data and strategies and assess their efficacy. Lastly, for leaders who work with English learners and families, purchasing translating systems and services could be helpful.

Fourth, to be intentionally inviting to families, leaders could organize optional virtual forums and training sessions to teach parents how to use a mobile device and the chosen platform so that they can assist their child(ren). Technology teams could open a google classroom or set up video meetings throughout the day for parents. These teams could also have on-going trainings available, so parents can access them whenever and wherever they like. Finally, because social emotional learning should always be a focus in school and is particularly needed in times of crisis and in an online

environment, it is recommended that leaders work collaboratively with counselors to offer virtual workshops for teachers and parents and provide coping strategies for adults and students alike. The counselor could set up his/her google classroom or Zoom room so that parents and teachers could attend trainings and get one-on-one support. Trainings could cover topics such as how to motivate a child or how to promote perseverance and grit.

Fifth, policies and crisis plans should be adapted to be culturally responsive and equitable. For example, these policies and plans should address how educators will serve marginalized groups of students such as English learners and students with mild to severe disabilities in all environments: brick and mortar, remote learning, and blended learning. Policies should also address how students, parents, leaders, and teachers can receive social emotional help during times of crisis.

Sixth, for scholars, this study paves the way for many others. Qualitative studies could address similar questions in rural contexts, and in different states or countries. In addition, further studies could focus on other aspects of Purkey and Novack's (1988) 4Ps, such as programs and policies. Seventh, serving students on Individualized Educational Plans (IEPs) and English Learners was a challenge for all leaders in this study. As a result, crisis plan should include alternate ways to provide services to these students, assess them, and ensure their progress. For example, students could create videos to explain their thoughts and ideas instead of having to write a paper. Students could also teach one another in an online meeting so that teachers check for their understanding.

CONCLUSIONS

Using Purkey and Novack's (1988) 4Ps as a conceptual framework, this study sought to understand how 30 Ohio school leaders created and maintained inviting school cultures in the midst of the 2020 COVID-19 global pandemic. Findings indicated that leaders were able to create intentionally inviting school cultures by focusing on people first rather than concentrating on programs or policies. Specifically, these leaders purposefully altered their leadership styles to create intentionally inviting remote environments. Challenges pertained to insufficient funding to provide professional development for teachers and parents, the need for more mobile devices and connectivity, serving English learners and students on IEPs, as well as the lack of training for all stakeholders on social emotional learning. Based on the findings, the author proposes that invitational education is an effective framework to adopt in times of crisis. This study is significant because it expands the invitational education framework to show how leaders created invitational schools in time of crisis. If the educational leadership field understood how leaders create and maintain positive and inviting school cultures during times of crisis, learning, teaching, and well-being would be

less negatively impacted. The implications also invite educational stakeholders to reimagine how to make schools intentionally inviting in an increasingly technological world. This study is relevant for PK-12 leaders, but findings and recommendations could also be useful for leaders in higher education.

REFERENCES

Bloom, B. S. (1956). Taxonomy of educational objectives. Vol. 1: Cognitive domain. *McKay*, *20*, 24.

Boudreau, E. (2020, March 10). *Providing stability in a time of crisis*. Harvard Graduate School of Education.
https://www.gse.harvard.edu/news/uk/20/03/providing-stability-time-crisis

Brock, S. E. (2002). Crisis theory: A foundation for the comprehensive crisis prevention and intervention team. In S. E. Brock, P. J. Lazarus, & S. R. Jimerson (Eds.), *Best Practices in School Crisis Prevention and Intervention* (pp. 5-17). NASP Publications.

Brock, S.E., Sandoval, J., & Lewis, S. (2001). *Preparing for crises in the schools: A manual for building crisis response teams* (2nd ed.). Wiley.

Bryk, A., & Schneider, B. (2003). Trust in schools: A core resource for school reform. *Educational Leadership*, *60*(6), 40–45.

Chenail, R. J. (2012). Conducting qualitative data analysis: Managing dynamic tensions within, part one. *The Qualitative Report*, *17*(2), 500-505.

Fullan, M., & Quinn, J. (2016). *Coherence: Putting the right drivers in action*. Corwin Press.

Fullan, M. (2002). The change. *Educational leadership*, *59*(8), 16-20.

Gibbs, G. (2007). *The Sage qualitative research kit: Analyzing qualitative data.* Sage Publications Ltd.

Gruenert, S., & Whitaker, T. (2019). *Committing to the culture: How leaders can create and sustain positive schools*. ASCD.

Gutiérrez, N. B., & Grossman, J. (2020, April 14). *Leading school systems through the aftershocks of COVID-19*. NYC Leadership Academy.https://www.nycleadershipacademy.org/blog/leading-school-systems-through-the-aftershocks-of-covid-19/

Khalifa, M. A., Gooden, M. A., & Davis, J. E. (2016). Culturally responsive school leadership: A synthesis of the literature. *Review of Educational Research, 86*(4), 1272-1311.

Lindsey, Randall B., Nuri Robins, K., Terrell, R.D., & Lindsey, D.B. (2018). *Cultural Proficiency: A Manual for School Leaders,* 4th Ed. Corwin.

Marzano, R. J., Waters, T., & McNulty, B. A. (2005). *School leadership that works: From research to results*. ASCD.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, *50*(4), 370.

Mero-Jaffe, I. (2011). "Is that what I said?' Interview transcript approval by participants: An
aspect of ethics in qualitative research. *International Journal of Qualitative Methods*, *10*(3), 231-247.

Merriam, S. B. (1988). *Case study research in education: A qualitative approach*. Jossey-Bass Publishers.

Mutch, C. (2015). Leadership in times of crisis: Dispositional, relational and contextual factors influencing school principals' actions. *International Journal of Disaster Risk Reduction,* (*14)*2, 186–194.

Patton, M. Q. (2002). Qualitative interviewing. *Qualitative Research and Evaluation Methods*, *3*, 344-347.

Pepper, M. J., London, T. D., Dishman, M. L., & Lewis, J. L. (2010). *Leading schools during crisis: What school administrators must know*. R&L Education.

Purkey, W. W., & Novak, J. M. (1988). *Education: By Invitation Only. Fastback No. 268.* Phi Delta Kappa Educational Foundation.

Rodgers, B. (2008). Audit trail. In L. Given (Ed.), *The Sage encyclopedia of qualitative research*
methods (Vol. 1, pp. 43- 44). Sage.

Saldaña, J. (2009). *The coding manual for qualitative researchers*. Sage.

Seeger, N.W., Sellnow, T. L., & Ulmer, R.R (2003). Communication and organizational crises. Praeger Publishers.

Smith, L. & Riley, D. (2012). School leadership in times of crisis. *School Leadership & Management, 32*(1), 57-71.

Tschannen-Moran, M., & Gareis, C. R. (2015). Principals, trust, and cultivating vibrant schools. *Societies, (5)2,* 256–276.https://doi:10.3390/soc5020256

CORINNE BRION, PhD, is an Assistant Professor in the School of Education and Health Sciences: Department of Educational Administration, University of Dayton. Dr. Brion seeks to understand how educational leaders support adult and student learning and development. Email: cbrion1@udayton.edu

Manuscript submitted: ***July 2, 2020***
Manuscript revised: ***August 19, 2020***
Accepted for publication: ***December 3, 2020***