Interdisciplinarity and Higher Education:
Creating Opportunities for International Collaboration in Design Research and Practice

Genell Wells Ebbini
Assistant Professor
Department of Design, Housing, and Apparel
College of Design, University of Minnesota
gebbini@umn.edu

(last revised May 31, 2019)

Abstract

Globalization has led to an increasing interest in international collaborations in higher education to help students to develop a stronger awareness of how their professions are practiced overseas. These international experiences fit well with the goals of interdisciplinarity, since they both share the same agenda of encouraging students to gain an expansive and more inclusive perspective on their disciplines. This paper discusses the creation of an educational opportunity for undergraduate and graduate students in design fields, which was intended to simultaneously encourage interdisciplinary and international awareness. The participating students, from a major U.S. university, studied the design and operation of specific building projects in Jordan, with an emphasis on sustainable design and ecological impact throughout the building’s life-cycle. This endeavor helped them to become more aware of practical and cultural design issues in the international context, while also interacting with a diverse interdisciplinary team to learn about various areas of building construction and operations. While visiting their study sites in Jordan, the students were also able to participate in immersive cultural and ecological activities to deepen their appreciation of local contextual factors in design.

Keywords: globalization, interdisciplinary, higher education, design thinking, Jordan, sustainable development, education

2962/3000 word count excluding references

1. Introduction

There is a transition underway in higher education that challenges our current approaches to design research, teaching, learning, and practice. An awareness of the effects of globalization has led to an increasing interest in collaborations that are both international and interdisciplinary in scope (Altback, 2013; Deardoff, de Wit, & Heyl, 2012; International Association of Universities, 2012; ). The need to develop a global perspective on our work as scholars and practitioners is becoming an urgent discussion in many fields, one that is particularly relevant to the ways in which we train the thinkers and problem-solvers of tomorrow.
The significance of globalization for higher education, and the unique cultural and conceptual challenges that it poses, have been discussed in great detail by scholars such as Asha Mukherjee (2016) and Thomas Friedman (2000, 2005). Many important issues arise in these conversations, such as the prospects of diversity in a world that is increasingly “flattened” by global interactions, the rampant growth of inequality that is part of globalization’s legacy, and the best ways to address ecological and social challenges that are increasingly international in scope.

Of course, solving such problems is far beyond the range of the current paper. What I would like to discuss, however, is how we as educators can best prepare our students to meet these challenges and to operate effectively in their future careers in an increasingly globalized professional environment. In design fields, global design thinking is becoming a prevalent aspect of professional practice and employer/client expectations. Designers who are global thinkers are socially and culturally responsive, aware of international issues, and competent at respectfully communicating with individuals from truly diverse backgrounds (Crawford & Kirby, 2008; Kimbell, 2011; Salmon, Gangotena & Melliou, 2018). Educators should recognize this industry need, and should take steps to provide students with the essential tools and pedagogical experiences that will allow them to thrive and contribute in a globalized world.

It is well-established in the educational research literature that courses offering immersive international experiences can have a tremendous impact in the development of student’s worldviews, values, and cultural engagement skills. Such opportunities are most effective when they expose students to global issues and to the needs of a diverse or unfamiliar population (Byrnes, 1997; De Blij, 2005; Tye & Tye, 1992; Tyres, 1995). The most important challenge for educators is to become familiar with the practical means of creating these kinds of educational opportunities in a safe and effective fashion.

This paper describes a faculty-led international study tour that the author designed and implemented, which provided advanced undergraduate and graduate design students at a major U.S. university with an immersive cultural experience in Jordan. The curriculum made use of an approach known as the “Integrated Design Process” (IDP), in which students focus on the design, construction, and long-term operation of a single building throughout its complete life-cycle. Analyzing the historical trajectory of a building in this fashion can help students better grasp the long-term economic and environmental concerns that are relevant to design (Stipo, 2015). Doing so in an international and interdisciplinary context also has the effect of broadening design students’ horizons, encouraging them to think about crucial practical issues in international design and sustainable development that their own backgrounds may not have prepared them to consider. Meanwhile, it provides crucial opportunities for the students to interact directly with local design practitioners and building users, enabling them to understand cultural diversity in a direct and immediate fashion and to develop their skills in multicultural dialogue and information-exchange.

2. Goals and Preparation

Traditionally, IDP has been regarded as a type of design practice, intended to help professionals take account of the full building life-cycle and the long-term effects of design decisions (Larsson, 2002, 2009; Zimmerman, 2002). The use of this approach is strongly linked to sustainable design, and to the integration of diverse interdisciplinary perspectives. For example, designers using IDP are likely to seek out input from their colleagues in other design and construction fields, from facility managers, and even from sociologists or building-users
themselves, to better understand the ways in which design can meet human needs and effectively support environmental and social goals (Busby, Perkin, & Will, 2007; Larsson, 2009; Stipo 2015).

IDP can also be used in an educational context as a way to encourage students to think more broadly about sustainability issues and to develop skills in interdisciplinary communication. For the current project, the author used IDP as a framework for promoting interdisciplinary education as well as international collaboration and cultural exchange. IDP is well-suited for this purpose, since it already includes an emphasis on learning about the needs of building users and the practical, life-cycle concerns of building construction and operation. The type of systemic, long-term thinking about design integrates well with the goal of promoting cultural awareness and immersive international encounters. It encourages students to think about local needs and design considerations that they may have otherwise tended to overlook.

The author integrated IDP into an systematic structure of learning so that students could analyze the life-cycle of a “green” building in Jordan, thereby gaining technical knowledge of sustainable development challenges in a non-Western context, as well as targeted intercultural competencies in interacting with a non-Western design team (Deardorff, 2006; Deardoff, de Wit, & Heyl, 2012; Odag, Özen, Wallin, & Kedzior, 2015). Jordan provides an ideal context for this type of immersive educational opportunity because it is one of the first countries to take positive steps toward implementing a sustainable development agenda in the Middle East region. Amman the capital city of Jordan, is a member of The Rockefeller Foundation’s 100 Resilient Cities (100RC). As a member of the 100RC, Jordan is confronting a wide range of ecological, economic and social issues to become more resilient through transformative sustainability and disaster risk reduction actions (Amman, n.d.). Jordan offers students an incredible place to study abroad for its historical, political, and cultural significance in the Arab region. In the context of student safety, the security situation in Jordan is considered as one of the safest Middle Easterner countries for Western students to visit and study. Jordan was ranked the 9th safest country in the world with an overall safety score of 89, in the Gallup's 2017 Global Law and Order report, for a comparison the United States came in 26th.

The course was called Collaborative Approaches to Sustainable Built Environments: Jordan, and it was conducted during the summer of 2017. A total of 7 students participated. The course was offered through the university’s Office of International Programs and Global Learning Department of which the faculty/author cooperated with the development of the Jordan Faculty-Led Itinerary Program for this study abroad opportunity. Students spent sixteen days in Jordan, the first-week students traveled throughout the country to experience the culture and heritage in addition to seeing environmental conditions. The second-week students were in Amman, Jordan conducting studies on sustainable development.

Leading up to the study-tour, the students were required to review documentation about the buildings that they would encounter in Jordan, as well as broader research about sustainability, health, and social issues in the country. Students prepared a preliminary IDP analysis of selected projects certified “sustainable/green” by the US Green Building Council’s Leadership in Energy and Environmental Design (LEED) rating system. Students analyzed buildings “sustainability” features as well as environmental, social, cultural, political, and economic challenges relevant to the design project. They also learned about the local languages and cultural practices that they
would encounter during their visit. The cultural study entailed meeting with other students and faculty from the region, prior to traveling, to learn about Jordanian custom.

In preparation for the study-tour, the author/instructor also conducted virtual meetings with the international organizations and design firms that were recruited to support the course. These organizational participants were the Jordan Green Building Council (JordanGBC); Habitat for Humanity – Jordan; Royal Academy for Nature Conservation; Senior Officers in Greater Amman Ministry Special Projects Department, and multiple architecture and design firms – all of who were key collaborators in the development of this program.

3. Immersive Education

While in Jordan, the students engaged in collaborative learning activities that connected them with government representatives, professional associations, design firms, and community leaders. In addition to offering professional networking opportunities, these activities allowed them to see how various design philosophies, ethics, and cultural values interact during the process of addressing global environmental and social challenges. The goal was to instill in the students a sense of empathy, social consciousness, and awareness of diversity, so that they could work more effectively across international and intercultural boundaries (Dong, 2004; Durrer & Miles, 2009).

To gain a more direct experience of Jordan’s cultural and ecological context, as well as the environmental challenges that the country confronts, the course’s itinerary first immersed students in a seven-day exploration of the country through field excursions that included visits to notable ecological locations. The purpose was to immerse students in the Jordanian culture as a means to prepare them for conversations around the design and development of sustainable practices in the country. It was essential that students not only read about the environmental and cultural context of the country but to have firsthand immersive experiences of the cultural, especially engage with the people in the rural areas. Students learned about the different regions throughout Jordan and the specific challenges in each region. In particular, students met with the leading nature conservation organizations during their field excursions throughout the country. This helped prepare student, in a general sense, of the landscape and culture that they and others in the country were trying to preserve through conservation and in the development of sustainability guidelines in the country.

The students visited, the Dana Nature Biosphere Reserve that encompasses four different biogeographical zones of the country (Mediterranean, Irano-Turanian, Saharo-Arabian and Sudanian); the Ajilun Natural Forest where students met with representatives of the Royal Academy for Nature Conservation, and the Dead Sea where students learned about the role of the Royal Society for the Conservation of Nature. The students also spent the night and a day exploring the Wadi Rum desert (natural and cultural desert landscape) with a Bedouin, a nomadic Arab of the desert, who described how he and his ancestors “read” the land to survive and flourish. This allowed the students to gain a better appreciation of the interconnection between cultural and ecological contexts.

To further develop their cultural awareness, the students visited several UNESCO World Cultural sites in Jordan, including parts of the Silk Road and the ancient rock-cut architecture at Petra the Rose Red City of the Nabateans (Nabataean caravan-city), and Umer-Rasas (archaeological site of ruins dating to the Roman, Byzantine, and early Muslim periods); and the
Mamluk fortress of Ajlun; Graeco-Roman city of Jerash. While in the city of Petra, students participated in food preparation and sharing of an authentic Arabic meal (local cuisine), family style, with a Jordanian host as a means to understand the significance of the hospitality in Jordanian traditions - sharing their culture and history through meal preparation and shared recipes. Student’s worked alongside Jordanian chefs in the preparation of their dinner comprising of several local dishes.

The students’ first day Amman, the JordanGBC organized an orientation day for the students. During this orientation day, students met with the JordanGBC Board of Directors and participated in lectures ranging from energy efficiency initiatives to affordable green housing projects in the country. The majority of the students’ time in Amman, was spent visiting the contemporary building sites that they were studying and engaging with local design teams, and governing agencies. Students attended presentations by members of the JordanGBC to learn more about efforts to establish green infrastructure and affordable green housing guidelines and governing policies to promote sustainable construction. A predominant issues students discussed with industry leaders - forced migration in Jordan due to the influx of refugees, over the past two decades, putting pressure on the country basic services and infrastructure and housing crisis (Amman, n.d.).

Students met with interdisciplinary teams working together to address the housing crisis in Jordan. Students participated in meetings with the director of Habitat for Humanity and the project managers of the JordanGBC’s Green Affordable Housing Program to deliberate the challenges of building social capacities through sustainable and affordable housing in Jordan – in terms of affordable housing development where sustainability, culture, and social equity converge. Students developed a better understanding of the effect of sustainable and affordable housing on social equity and social well-being in the Middle East. During the remaining days students spent in the capital city of Amman, students visited project sites; met with developers invested in sustainable planning and development in Jordan; visited with senior officers in the Greater Amman Ministry Special Projects Department; toured housing developments throughout Greater Amman Municipality, and visited a global design firm Consolidated Consultants to discuss the validity of bioregional planning and community design.

All activities were planned to assist students in the preparation of their course assignment - to evaluate if the sustainable design recommended solutions meet the needs of Jordan. In relation to the design projects students studied, students were provided with project documents, met with the project owners, interviewed project design teams, and visited project buildings. Students, having been familiar with IDP for sustainable building projects, students approached each “sustainable” or LEED-Certified project through the lens of IDP and the interdisciplinary approach of working together. Students participated in brief, collaborative meetings and brainstorming sessions with an international and interdisciplinary group of professionals, to collaborate and discuss designs to explore and share. During these meetings students engaged with an international group of professionals representing multiple disciplines from engineering, legislators, community planners, architects, and non-government organization representatives. Students interacted with other stakeholder related to each project. For instance, student conducted interviews with local facility managers, who were responsible for the operation and maintenance of the buildings, and met with building occupants to ask about their experiences as users of space.
At the end of the study-tour, students participated in a closing session with industry leaders in Jordan, sharing their experiences building on each other's expertise to achieve common, shared goals. Students reported the feasibility of the current state of sustainability design and development in Jordan in comparison to the publications by the JordanGBC, and the US Green Building Council LEED green building rating system. Students identified strengths and weaknesses in the development of sustainability in Jordan. The subsequent students’ reflections describe the impact of the study-tour activities, the experience, and student’s evaluation of sustainable design in Jordan:

After visiting several sites such as the Jordan Green Building Council to discuss green building techniques and application, as well as other green buildings and personal observation of practices, the gap analysis is still fairly accurate . . . The conclusion to be made after reading the gap analysis and visiting Jordan is that they have the opportunity to design holistically and see each design as a unique opportunity to achieve occupancy health and happiness as well as utilize site and building orientation for optimal performance and use.

The gap analysis states that mechanical systems are typically for the building and designed in a way that the users do not have control of. One method for individual comfort is for users to bring their own heaters and fans. Some windows are operable but due to climate, such as Jordan’s outside conditions are dusty, it is not recommended to open windows. However, implementation is possible if solutions are made early in the design phase. This requires the project team to participate in an integrated design process.

4. Outcomes and Conclusion

The value of immersive international study experiences such as the Jordan tour described in this paper is that they open pathways for discussion and awareness among professionals from many different backgrounds. The students were exposed to “real-world” challenges in sustainable design in the international context, encouraging them to expand their career horizons and to think more broadly about the goals and practices of their chosen profession. The following student response is an example of the study-tour’s intended effects – to create international experiences with the goals of interdisciplinarity, encouraging students to gain an expansive and more inclusive perspective on their disciplines:

The Jordan Study Tour and the Jordan Green Building Council gave us many great opportunities, one of the many included being able to talk to professionals who have worked in Jordan and understand the challenges and benefits of building and designing in Jordan as well as how the locals think and react to various situations. Many people of Jordan do not see the benefits of designing in a way that benefits the environment. That way of thinking isn’t as common among most Jordanians. Although if they see the financial benefits of sustainable design or hear positive reactions from others about their experiences they start to show interest in the subject. The biggest barrier appears to be getting people interested and understanding the benefits they would receive if they designed with the environment in mind.

The designers of tomorrow must be able to navigate the needs of local contexts while maintaining a nuanced global perspective. International and interdisciplinary educational
opportunities are an ideal way to promote this outlook. It is up to us as instructors to familiarize ourselves with the importance of international experience and to identify safe and effective ways to help students “learn by experience” (Kolb, 2015). Collaborative engagement with international and interdisciplinary teams can provide a solid framework for such educational opportunities, demonstrating to students how to effectively engage in teaching, learning, and professional practice in our current era of globalization. Design leadership at the global scale is essential and urgent in today’s world. Through immersive educational experiences, students can prepare themselves to make practical strides toward a healthier society and planet.

5. References


