International Service-Learning Partnerships: Lessons of Successes and Challenges that Defy Simple Categorization
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Partnerships formed outside of academia can play important roles in the creating of unique experiential, service-based, and/or immersive educational experiences. Although the incidence of such partnerships is increasing significantly, their scholarly analysis has not kept pace. What scholarly work does exist frequently focuses on success stories; this renders an incomplete overall picture. The introduction of change to an established educational model affords the opportunity to present, discuss, and learn from the resulting challenges. This article discusses these challenges and the potential of these partnerships to add value in many different educational approaches and contexts. It presents an in-depth case study of a multi-semester, project-focused, team-based course that utilized outside-of-academia partnerships to realize an experiential, service-based international immersion experience. Over the course of nearly two years, the partnerships proved to be at once enabling, rewarding, and challenging, defying simple categorization. The article concludes with a presentation of lessons learned and their broader implications for like-minded endeavors in the future.

Keywords: partnerships, experiential learning, service-learning, team-based work, international immersion.

This article chronicles the successes and challenges of a partnership between faculty and students at Illinois Institute of Technology (IIT) and an organization formed under the auspices of the Ministry of Education in Haiti. The three-semester course featuring the partnership under focus was part of IIT’s Interprofessional Projects (IPRO) Program—a program in which undergraduate students work in interdisciplinary teams to address real-world challenges. In this case, students collaborated on campus during the semester and subsequently on a project site in Haiti. The project initially involved the design and deployment of a solar powering
system to enable the charging of hundreds of laptops donated to a rural primary school; project goals expanded as initial targets were realized.

The class featured such innovative pedagogical approaches as experiential service-learning, multidisciplinary collaboration, and international immersion. While each of these approaches to teaching and learning is worthy of analysis and will be discussed, this article’s principal focus is on the partnership(s) formed to realize such a class and project, albeit within the context of innovative education. In this class, partnerships were formed in order to identify the project; augment the knowledge base and expand areas of expertise beyond those of the course instructor; increase the number of experts/mentors with whom students could consult; carry out planning and organize logistics necessary for an international immersion experience; and realize project implementation. In many respects, this course and the accomplishments of the participants and partners may be considered quite successful. Yet, after approximately two years of working together, overcoming numerous obstacles and expanding project goals and the number of participants, the project underlying the partnership was abruptly dissolved as the result of a political decision beyond the control of the partners. This experience provided the author with the opportunity to reflect upon what makes for solid, long-term partnerships; how they are formed and best perpetuated.

Scholarly examination of these partnerships is highly relevant. Given universities’ increasing emphasis on offering international immersion, service-learning, and team-based, project-focused programs, the importance of engendering student experiences attainable only outside of the classroom is paramount. A better understanding of partnerships and the challenges inherent to their formation and cultivation will contribute to a better understanding of their value and of how to incorporate them into innovative teaching and learning methods (Bringle, Clayton, & Price, 2009). This article, in fact, responds to what the author considers a call to scholarly action from Bringle et al. (2009), who believe that practitioner-scholars should contribute to the literature analyzing such partnerships, not only to increase our knowledge and understanding—thereby making work undertaken within partnerships more meaningful and effective—but also to inform both within the academy and without of their importance, so as to increase support and recognition.

Adopting this spirit, the article begins by situating the concept of partnerships within the context of the various innovative educational approaches previously mentioned: international immersion, experiential service-learning, and collaborative, project-based learning. This is done to provide an overview of the educational approaches in which partnerships are frequently formed and situate the specific case study under examination here. The article subsequently documents the successes and challenges experienced during the case study at hand, reflects upon lessons learned from this experience, and discusses pragmatic approaches to forming, maintaining, and working within partnerships applicable to like-minded initiatives.
Innovative Educational Approaches

The number of partnerships between universities and non-university organizations is increasing rapidly. While they may come into being through differing sources of activity and exist at various individual or institutional levels, all are formed in order to achieve a goal that neither partner could achieve on its own (Long & Campbell, 2012). In the case of universities forming partnerships beyond the academy, such goals often include the realization of creative or innovative educational outcomes that may take place outside of the university’s campus and/or involve entities that enable new forms of knowledge and learning to be introduced. The innovative educational approaches adopted by the course highlighted herein do not constitute a complete list of those in existence; as such, this section commences with an overview of multiple types of innovative educational initiatives and approaches within which partnerships are increasingly formed before discussing partnerships themselves.

Short-Term International Immersion

Overseas experience can make students more competitive in the global economy, able to overcome barriers to intercultural understanding, and worldlier in general (Crawford & Kirby, 2008; Grunzweig & Reinhart, 2002). The Institute of International Education (IIE), reports that the number of U.S.-based students participating in study abroad programs has increased by more than 5% each year over recent decades, and that from 1985-1986 to 2005-2006, the number had more than quadrupled (IIE, 2007). In recent years, both the rate of increase and total number of students studying abroad continued to increase, with the 2012-2013 academic year witnessing an all-time high of 283,000 U.S. students studying abroad (IIE, 2013). What is more, the number of university level students going to less-traditional destinations (mainly outside of Western Europe) also continues to rise, as does the popularity of short-term travel experiences (IIE, 2013; Long, Akande, Purdy & Nakano, 2010).

Indeed, IIE acknowledges that short-term travel programs “can offer a more intensive and focused experience—and may be the only realistic alternative in terms of the demands of ... degree studies and economic resources” (IIEE, 2007, p. xxxiiii). Their popularity has grown to the point that about half of all American study abroad students participate in programs of less than three months (Long service-learning, 2010). While some have questioned the educational value and legitimacy of short-term study abroad programs (Tarrant & Lyons, 2012), Perry et al. (2012) argue that short-term study abroad experiences can provide transformative learning experiences, particularly when they take place within adequate pedagogical frameworks and offer opportunities for novel, real-world experiences, critical reflection, and engaged learning.

Universities are also increasing their emphasis on international study, in order to better prepare students for a global future. Growing numbers of cooperative agreements with foreign universities, new study abroad programs, higher levels of faculty member involvement in international projects, new international courses and degrees offered, increased international student enrollments, and even the setting up of entire campuses on foreign soil are all cited as evidence of this increased global focus (Mestenhauser, 2002).
The potential benefits of international educational experiences—particularly those relating to intercultural understanding—can be best capitalized upon through cultural immersion, or “cultural plunges” (Marshall & Weiling, 2000). Cultural immersion provides direct engagement between people from different cultures and allows students to move beyond the tourist-focused experience generally associated with short-term international travel. Self-reflection and the development of cross-cultural empathy are encouraged (Tomlinson-Clarke & Clarke, 2010).

Immersion experiences can be transformational. When students are “learning by doing virtually twenty-four hours a day,” entirely surrounded by unfamiliar situations and circumstances, they are more inclined to challenge their stereotypes and biases (Kambutu & Ngana, 2011). Confronted with “disorienting dilemmas,” or situations that do not fit into their existing paradigms, they must confront the foundation of their beliefs in order to make sense of their surroundings. In such situations they are more likely to critically reflect, confront the basis of their feelings of discomfort, and, in the process, cross cultural bridges (Kambutu & Ngana, 2011).

Experiential Service-learning
Adding to this international education zeitgeist is a call by governments, the non-profit sector, and schools worldwide to promote student civic service and engagement through experiential educational opportunities (Arenas, Bosworth & Kwandyi, 2006). The U.S.-based Corporation for National Service defines service-learning as a method by which students learn and develop through active participation in thoughtfully organized service experiences that meet actual community needs, are integrated into the students’ academic curriculum—or provide structured time for reflection—and enhance what is taught in school by extending student learning beyond the classroom and into the community (Corporation for National and Community Service, 1990).

Sigmon’s (1979) timeless definition of service-learning as an experiential educational approach based on the idea of “reciprocal learning” reminds us that both those who provide service and those who receive it benefit from the experience. Thus, successful service-learning experiences emphasize mutual respect for all parties involved. When the service-learning comprises an international or cross-cultural component, culturally distinct groups are able to learn from and build respect for one another, especially from repeated, collaborative interactions, which fosters cross-cultural sensitivity as well as cultural self-awareness (Tomlinson-Clarke & Clarke, 2010).

More specific to the actual realization of service-learning experiences within the university setting, Bringle and Hatcher (1995) define service-learning as:

...a course-based, credit bearing educational experience in which students (a) participate in an organized service activity that meets identified community needs, and (b) reflect on the service activity in such a way as to gain further understanding of course content, a
broader appreciation of the discipline, and an enhanced sense of civic responsibility. (p.112)

Two additional pedagogical approaches closely related to service-learning that are also increasingly prioritized in higher education involve group collaboration and project-focused courses. Both types positively affect students’ motivation and their development of job-related skills (Waite & Davis, 2006). Thomas and Busby (2003) report that when students partnered with industry on “real world” projects they improved communication skills, developed enhanced problem-solving and research abilities, and furthered their ability to work in teams. In addition, students experienced an increase in self-confidence and leadership skills.

The development of these personal and professional skills is precisely the goal of the Interprofessional Projects (IPRO) Program at the Illinois Institute of Technology (IIT). The course herein described was part of this program, which joins students from across academic disciplines to tackle real-world problems. This project-based experiential learning course reinforces traditional education methods to provide a rich academic experience. Each IPRO course is organized as a team of approximately 10 students from majors as diverse as architecture, engineering, psychology, humanities, and business. While all projects are designed with goals attainable in a single 15-week semester, many continue over multiple semesters. Teams within these classes focus upon complex topics that integrate both technical and non-technical issues and frequently have a non-university partner or sponsor, which can range from a local community organization to a nationally recognized for-profit corporation. There are approximately 30-35 IPRO courses offered each semester; IIT students are required to take two to meet graduation requirements.

IPRO courses foster the ability to work in team environments and develop leadership skills. Students are expected to contribute knowledge and analytical abilities from their majors while working with others from various disciplines to accomplish the semester's stated goals and further the entire project. There is also an ethical component to each class: students analyze various aspects of the project in terms of contribution to society, sustainability, etc. These courses are designed to help build professionalism skills that will be useful in the workplace and to obtain hands-on experience in contributing to a team-based effort (Emadi & Jacobius, 2004).

Partnerships
Each of the above-mentioned innovative pedagogical approaches may make use of partnerships between academic and non-academic organizations in order to realize mutually beneficial situations for students, faculty, the organizations, the university, and the community (Cashman et al., 2004). In fact, Jacoby takes a step further, asserting that “high-quality service-learning that is beneficial to all parties involved must be built on a solid foundation of carefully developed partnerships” (2003, p.1, emphasis added). Despite this, a great deal more scholarly analysis has been devoted to the subject of service-learning than to the partnerships that some would assert both form and sustain the very fabric of service-learning (Bringle & Hatcher, 2002,
Jacoby, 2003). This article’s focus on partnerships is a direct response to the contention that there is little scholarly research, to date, on the nature of campus-community partnerships (Giles & Eyler, 1998; Bringle & Hatcher, 2002).

This article adopts the definition of partnerships put forth by the Community-Campus Partnerships for Health. A partnership is “a close mutual cooperation between parties having common interests, responsibilities, privileges and power” (Community-Campus Partnerships for Health, 2001). A worthwhile elaboration on what makes for a successful partnership is as follows: “A successful collaborative process enables a group of people and organizations to combine their complementary knowledge, skills, and resources so they can accomplish more together than they can on their own” (Center for the Advancement of Collaborative Strategies in Health, 2002, p. 2). In such a venture, the partners work together to create something new and valuable: a whole that is greater than the sum of its parts (Jacoby, 2003).

Collaborative partnerships between university and non-university participants have been identified as success factors in the promotion of community-empowering projects (Long & Campbell, 2012) within which all parties involved can realize significant benefit, despite differing levels of involvement, motivations, goals, roles, etc. (Malm, Prete, Calamia, & Eberle, 2012). Realization of the potential partnerships hold has led to a growing number of university-led partnerships across the developing world, involving other universities, governments, non-governmental organizations, and communities (Hosman & Fife, 2012). This phenomenon is of particular relevance to this article, as unique challenges and opportunities can present themselves when partners experience the differing values, abilities, goals, and more, that distance and dissimilar socio-economic (and political) realities can propagate.

There is no one-size-fits-all formula for successful partnerships. This is due to the wide variety of forms and types of partnerships, the cultural differences that exist between the partners, and the complexity and multidimensionality inherent to both service-learning and university-community partnerships (Bringle & Hatcher, 2002; Holland & Gelmond, 1998; Jacoby, 2003). Nevertheless, multiple frameworks have been developed to analyze and evaluate service-learning partnerships. This article draws mainly from two frameworks: Torres’ (2000) Campus Compact Benchmarks for Campus/Community Partnerships and Bringle & Hatcher’s (2002) Campus-Community Partnerships Conceptualized as Relationships, while adding the author’s own insights as well.

Torres separates the phases of a partnership’s evolution into three distinct stages: (a) designing the partnership, (b) building collaborative relationships, and (c) sustaining partnerships over time. Bringle and Hatcher’s framework adds a crucial phase: (d) dissolution of the partnership. Table I (below) presents the partnership phases, and best practice characteristics and activities associated with each phase. The table comprises elements from Torres (2000), Bringle & Hatcher (2002), as well as the author’s own observations.
### Table I: Partnership Phases, Characteristics, and Activities

<table>
<thead>
<tr>
<th>Partnership Phase</th>
<th>Best-Practice Characteristics of this Phase</th>
<th>Best-Practice Activities at this Phase</th>
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| **Partnership Initiation & Design** | • Partnership beneficial to all parties  
  • Partnership founded on shared vision & clearly articulated values  
  • Honest communication, self-awareness, and self-disclosure                                                  | • Decide on form of partnership  
  • Enumerate goals/mission for partnership  
  • Clearly communicate abilities, resources, expectations, & responsibilities of each partner                |
| **Relationship Building and Development** | • Interpersonal relationships based on mutual trust and respect, built through demonstrated action  
  • Relationships are non-linear and multidimensional: They are complex and take work                          | • Invest time and effort into relationship-building: frequent and open communicating, working together, building trust, sharing ideas and responsibilities, establishing accountability, demonstrating dependability and commitment through actions |
| **Sustaining Partnerships Over Time** | • Partnerships grow beyond original focus to take on additional projects  
  • Scope of project increases or changes  
  • Additional partners join and/or a broader network of collaborators identified                                | • Secure support of university/institution and community  
  • Establish process for self-evaluation, decision-making, and initiating change  
  • Evaluate partnership regularly: On impact/outcomes, progress & process                                       |
<table>
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<tr>
<th>Partnership Phase</th>
<th>Best-Practice Characteristics of this Phase</th>
<th>Best-Practice Activities at this Phase</th>
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| Relationship Dissolution | • Partnerships may end by design and mutual understanding, or because of precipitating events  
• Evaluation & assessment of project and partnership more useful metric than longevity | • Recognize relationship longevity not always desirable characteristic: enduring partnerships may not be healthy  
• Evaluate and assess project and partnership for best practices and lessons-learned |

In order to sustain partnerships, incentives for each partner’s contribution must be appropriate and aligned. Commitment to the overall goals of the project must be explicit and agreed upon. Ongoing and open communication between partners is crucial to the timely sharing of information about project developments. Fortunately, information and communications technology (ICT) can help support this type of partnership, and partners need not be based in the same location.

Partnerships are dynamic relationships that must be continuously supported, (re-) evaluated, and committed to. Once original goals have been achieved, the scope of the project may change or expand, allowing the possibility for new partners to become involved with the project; at this point the partnership cycles back to the initial phase and develops accordingly. The author acknowledges that the above-listed features are best practices regarding partnerships; in reality they are more difficult to bring about and/or maintain. Incentives can shift over time as external and internal circumstances change, as can the commitment of all participants to the project itself. Communication may have seemed open at the time, but in retrospect may not have been at all. These are some of the challenges faced within the project and partnership; they will be elaborated upon below.

The partnerships described in this article proved crucial to the realization of the team-based class, project work, and international experiential education herein described. We consider the course, the learning outcomes, the experiences of the participants, and the project accomplishments to have been successful, but that success was not achieved without encountering challenges. It is also worth mentioning that partnerships, no matter how solid, successful, properly incentivized, etc., may be affected by circumstances entirely beyond their control—such as politics and earthquakes, in the case at hand. Or, despite the best of intentions, partnerships may fail to live up to their potential for any number of reasons. Deciding whether and how to move forward, when circumstances intervene, is an invaluable part of the learning process regarding partnerships that take place in the real world—and an
aspect currently missing from the literature. The present case study attempts to address this gap.

**Challenges to Innovative Teaching Approaches**

Just as there are challenges inherent to forming and developing partnerships to enable innovative learning approaches and realize project goals, there are also challenges intrinsic to taking innovative pedagogical approaches. This subsection discusses some of these challenges since they form the context within which university-community partnerships are formed. Acknowledging these relevant challenges provides additional contextual perspective on partnerships formed within a service-learning approach.

Each of the innovative methods of teaching discussed above represents a departure from traditional on-campus, classroom-based, lecture-style learning, in which the professor is considered to possess sufficient knowledge or expertise to lead the class. In most cases, professors have not received training that would allow them to conduct team-based, project- and/or international-focused classes with both technical and non-technical components; to take responsibility for bringing students to international locations and plan service-learning experiences while abroad; or to form partnerships with extra-university organizations that they are responsible for maintaining—let alone to do all of these things at once. In fact, a number of scholars who focus on just one area of methodological innovation point out the extra time and effort it takes to adapt to and carry out a single one of these innovative approaches, using words like “overwhelming,” “intensive,” and “complex” (Kambutu & Ngana, 2008; Krometis et al., 2011; Long, et al., 2010; Mestenhauser, 2002). (However, most of these authors also point out the intrinsic rewards of such experiences.)

For example, Mestenhauser (2002, pp. 165-167) asserts that institutions, while proclaiming the importance of globally-oriented and civic-minded courses and experiences to students, are not preparing educators to carry them out. Educators are ill-prepared to teach about international topics if the subject matters fall outside the range of the educator’s own specific discipline (Mestenhauser, 2002, p. 165). Disciplinary specialization, a defining feature of the modern university, is not well suited to dealing with the complex social problems encountered in service-learning or in partnerships (Enos & Morton, 2003, p. 39). Likewise, faculty are ill-prepared to lead groups to international locations if they are not substantially familiar with and knowledgeable about those locations; institutions do little or nothing to ameliorate the situation (Mestenhauser, 2002, pp. 165-166). Many universities do not reward faculty in any significant way for their involvement in, or commitment to, service-learning (O’Meara & Jaeger, 2006). Service-learning activities are often considered to be “pet projects,” not essential to the campus mission and not integral to faculty reward structures (Enos & Morton, 2003, p. 32).

Moreover, the very nature of the academic system conspires against innovative teaching, and ironically, the newest hires—who theoretically may have the most recent (perhaps innovative) pedagogical training and the greatest enthusiasm—face the greatest pressure against innovating their approaches. “Once hired in an academic position, new faculty are less likely to
engage in experimental teaching efforts, as the demands of the tenure process often pressure faculty to engage in more conventional, readily appreciated, and promotion-friendly activities” (Krometis et al., 2011, p. 74). The author of this article can attest to multiple “warnings” and “words of advice” that her own service-learning and international initiatives were potentially “harmful,” “distracting,” or otherwise “risky” vis-à-vis her future tenure case. This happened both within the author’s department and school and without, from multiple senior faculty who knew nothing about the author other than her project work.

An additional finding of relevance to the above points made regarding faculty training and preparedness stems from Starke-Meyerring et al.’s (2007) macro-level study (n=81) of global partnerships between higher education institutions and non-university organizations: the majority of such partnerships are initiated by individual faculty members. Not only does this finding point to the difficulty of providing relevant training for university faculty members vis-à-vis forming and fostering partnerships, but it also showcases the authors’ findings that partnerships are most often initiated from the bottom-up—by individual faculty with individuals in partnering organizations (Starke-Meyerring et al., 2007, p. 152). As such, a corresponding finding from this same study is perhaps less surprising: the partnership-initiating faculty often reported a lack of support from their department and/or university (p. 152).

The author of this article was fortunate to be able to attend an NSF-sponsored workshop on service-learning (focusing on engineering). However, the vast majority of fellow workshop participants reported having had no opportunities for pedagogical training for service-learning on their own campuses. This situation slowly may be changing and improving, as a handful of universities presently offer service-learning training and/or workshops on their campuses. Moreover, even though O’Meara and Jaeger (2006) acknowledge formidable barriers for both faculty and graduate students to engage in service-learning, they still find room for optimism, taking inspiration from the fact that many professional schools and extension programs offer—and even require—service-learning and community engagement of their graduates. Additionally, Bringle and Hatcher (2002) lend scholarly support to the claim that faculty work has shifted in order to include broader definitions of scholarship, including the scholarship of engagement that incorporates research, teaching, and service to the benefit of communities (p. 504).

**Methodology**

This article employs a combination of ethnography (mainly through participant observation) and analytic autoethnography to present and examine an in-depth case study. These methods are employed with an eye to gaining broader and more generalizable insight from the case at hand and thereby contribute to theory development. This section defines and discusses these complementary qualitative methods, as well as the data collection and triangulation process.
Ethnographic study is a common methodology used within the social sciences. Brewer (2000) defines ethnography as a data collection method meant to capture the social meanings of people and activities taking place in naturally occurring settings, commonly referred to as "the field." The goal is to collect data in such a way that the researcher imposes a minimal amount of his/her own bias on the data (Brewer, 2000, p. 10).

When the researcher is intimately involved in, and even shaping the process and events under analysis, as was the case in the present study—the author was both participant and observer—such activity aligns with what Anderson (2006) has proposed as analytic autoethnography. He uses the term to characterize qualitative research that satisfies five criteria, all of which apply in the case at hand. The researcher is:

1. A full member of the research group.

2. Aware of the fact that they form part of the process under investigation but are also in part formed by those processes as they co-create the reality they record and analyze.

3. A highly visible social actor within the text.

4. In dialogue with informants and participants beyond oneself.

5. Committed to gaining insight and developing theoretical understandings of broader social phenomena.

When the author is intimately engaged in the process and events under examination—and is the sole source of data, description and analysis—the possibility arises for potentially diminished criticality, neutrality, or comprehensiveness. In order to avoid and/or ameliorate this, triangulation of data took place among multiple actors. During each trip to the field, student-participants kept travelogues to assist with their own reflection as well as to report (with blogs) what they experienced. These travelogues, combined with active discussions between the students and the author, served to confirm the data and ensure its completeness—the two main purposes of triangulation (Houghton et al., 2013). The other main partners in the project further triangulated the narrative below through discussion and verification. Document analysis was also employed. Ongoing dialogue with all participants also served as a valuable source for data collection and verification.

In addition to ethnography/analytic autoethnography, the article employs the case study method. Case study research is useful for the study of a phenomenon in its natural context (Yin, 2003); one goal of its employment is to generalize from specific findings and contribute to theory development (Gerring, 2004). The greatest cause for concern with case study methodology is lack of rigor; this is addressed through the triangulation of data. In fact, the opportunity to triangulate data from different sources is a major strength of case study research (Yin, 2003). In these three features, case study research has strong synergies with ethnography/analytic autoethnography, as defined above. Further, the case study method is
preferred when examining contemporary events, particularly where the author is a direct observer (Yin, 2003). The following section presents a description of the case under analysis, utilizing an ethnographic/analytic autoethnographic approach. The subsequent section discusses some of the benefits, challenges, and lessons learned through the partnership experience.

**Project, Course, and Travel Overview**

This section focuses on the case study project, providing an overview of the course, the activities carried out each semester, and the subsequent work-trips to Haiti. It also describes the background, development, and co-evolution of the project and the partnership over time.

*Background of the Project and Main Partnerships*

In 2008, Haiti’s Ministry of Education received a donation of approximately 11,000 laptops from the One Laptop per Child Foundation (OLPC) and the Inter-American Development Bank (IDB). The Ministry set up an organization, OLPC-Haiti, to choose the regions and primary schools that would receive laptops, coordinate laptop deployment, organize and carry out teacher training, and set up the ecosystem and supply chain required to handle a project at this level of scale. Unfortunately, the donors’ pilot studies neglected to consider the lack of electricity in the vast majority of Haiti’s primary schools, and the subsequent $25 million project budget did not include provision for electricity or infrastructural improvement (IDB, 2007). This was, indeed, a gaping oversight: OLPC-Haiti estimates that over 95% of Haitian primary schools have no electricity. The few that do most often obtain it from polluting and expensive-to-power diesel generators. With no way to power or charge laptops, schools remain unable to avail themselves of the new technology.

Aware of the electricity constraints facing the primary schools and his own budgetary limitations for addressing the situation, the director of OLPC-Haiti, Guy Serge Pompilus, sought a partner to provide an affordable and replicable solar powering solution to this challenge. He believed that with a possible solution at hand he could convince the laptop project donors or the Ministry of Education to cover the costs. Pompilus met Bruce Baikie (an engineer and founder of Green WiFi, a social enterprise focused on solar powering technology for schools in the developing world) at a global OLPC conference in 2009 and described his project’s challenge. Baikie subsequently approached the author, and the three began discussing what a partnered project to address this challenge would look like.

Baikie and the author visited Haiti in November 2009 and, with Pompilus, surveyed multiple primary school sites and solidified a three-way partnership between OLPC-Haiti, IIT, and Green WiFi. During this visit, the three also met with high-level administrators at two universities in Haiti’s capital, Port-au-Prince. Memoranda of Understanding (MOUs) were drafted with both the State University of Haiti and the Ecole Superiore D’Infotronique D’Haiti (a technological university) to include them as partners in the project, intending that their students would work
with IIT students on site in Haiti and that either an internship or for-credit course opportunity would be created in the coming semester for the Haitian university students, allowing them to participate in the project.

At this time, individual responsibilities were discussed and agreed upon among the three main partners as follows: OLPC-Haiti was to provide logistical and language support for eventual immersion trips to Haiti, but no funding related to the project; Green WiFi was to provide technical and solar expertise; and the author—as an IIT faculty member—would provide leadership of a course and a team of students whose work would focus on the project, and would be responsible for project funds/fundraising.

Given the range of demands placed on the professor in a course comprising all of the above-mentioned teaching innovations, the employment of partnerships proved to be the best way to actualize the course and project. In the context of this class, a partner organization on the ground in Haiti was a necessity. In addition to identifying the need at the core of the project, the Haitian partner also identified a project goal for the IIT students (as well as students from the two Haitian universities) to focus on and contribute to, informed the team as to what was sought and where needs existed, and provided local knowledge, language assistance, and logistical support on-site. The IIT instructor is a social scientist by training, so the partnership with an engineer having expertise in solar powered projects for the developing world was seen as necessary to provide students with access to the requisite technical knowledge, as well as leadership/mentorship. Other partnerships formed as the project’s goals evolved each semester, the details of which follow in subsequent sections.

The actions taken during the initial site visit—as well as in the setting up of the course—correspond to the best-practice activities enumerated above for the Partnership Initiation and Design Phase, signaling what all parties believed was an auspicious start to the project. Further, the partners believed the project would benefit all involved; the vision and goals for the project were clearly articulated; and the capabilities and resources of each of the partners were honestly communicated—also reflecting best practice characteristics for the initial partnership phase.

Approximately two months after the initial site visit, in January 2010, Haiti experienced a devastating 7.0 magnitude earthquake. The Haitian Government estimates that 222,570 people died and 300,572 were injured as a result of the quake, while the Haitian Ministry of Education estimates that 4,992 schools—23 percent of all schools in Haiti—were affected. Of these, 3,978—80 percent—were either damaged or destroyed and were therefore closed (UN Special Envoy, undated).

Both of the Haitian universities initially committed to the project sustained considerable structural damage: many of their campus buildings were destroyed; numerous student and faculty lives were lost; and classes were canceled for an indeterminate period of time. Consequently, the proposed partnerships with these universities were postponed indefinitely.
Regardless, OLPC-Haiti’s director expressed the desire to continue work on the project, in no small part to provide inspiration and affirm the Ministry of Education’s desire to “build back better” in the face of the catastrophe. However, the primary schools that had been visited in the initial site survey had sustained considerable structural damage. Thus, the director proposed that the partnered project refocus its efforts on a different locale: the village of Lascahobas.

A number of schools in Lascahobas had recently received laptops and were in the rare and fortunate position of receiving electrical grid power from the capital city. Unfortunately, Port-au-Prince’s electrical grid was severely damaged in the earthquake and has yet to be significantly repaired. Although the schools in Lascahobas did not sustain structural damage in the earthquake, they now faced a different conundrum: they had received thousands of laptops that were now impossible to charge. The partnered team set about designing a solar powering system.

**First Semester and Trip**
The first IIT class and team formed in Fall 2010. Initial project goals were focused on designing an affordable and easily replicable solar system for charging laptops at the participating primary schools in Haiti. To meet these goals, the system was purpose-built and intended solely to charge the schools’ laptops. A principal innovation intended to maximize efficiency, reduce costs, hardware, and complexity—as well as to increase replicability—was to keep the entire system direct current (DC)-only, since solar panels natively produce, and laptops run on, direct current power.

During the first semester, the partner from Green WiFi came to IIT’s campus, met with the team twice, and held two afternoon-long workshops on solar-system design and solar powering in the developing world. This solidified the team’s impression of him as a mentor to help with technical questions beyond the expertise of the instructor. The team’s other main partner, the director of OLPC-Haiti, also visited the team on campus to share additional information about the project, the post-earthquake reality on the ground in Haiti, Haiti’s educational system, and the three potential schools chosen for the project’s pilot deployment. These multiple visits and countless more ICT-enabled interactions during the semester demonstrate best-practice partnership activities at the Relationship Building and Development stage (the investment of time and effort into relationship-building, frequent and open communicating, building trust, and so forth).

During this semester, with guidance from the technology partner, the student team designed the solar system and built a mini-prototype. However, a proper site survey of the schools had not yet been conducted in Lascahobas. Thus, the goal of the initial team trip, which took place subsequent to the first semester, was to perform a site survey at three primary schools. Four students made this trip, along with the faculty member and the technology partner. On site, the team also met with the Director of Primary Education at the Haitian Ministry of Education, who voiced strong support for the project and the partnerships that had been formed to carry...
it out. (Securing the support of the head organization—in this case the Ministry of Education—is considered a best practice activity at the Sustaining Partnerships phase.)

In addition to taking measurements, drawing and assessing structures, and speaking with the administrators at each school to determine the best location for the pilot system install, the team had the opportunity to stay in both Port-au-Prince and a rural village near the schools. Eye-opening experiences abounded. Among other things, the team needed to adjust to “Haitian time”: though told to be ready by 7:30 a.m. every morning, the team never actually left until after 9:30 a.m. Driving back and forth between the two locations on Haiti’s seemingly lawless roads, staying in hotels with tarantulas and lizards in the rooms, and experiencing new foods—goat meat, ketchup-coated club sandwiches, and spaghetti for breakfast, for example—also served to widen the students’ collective worldview, as did the opportunity to form friendships with local university students who traveled with the team around Port-au-Prince and to the site in Lascahobas. (Activities that build interpersonal relationships is a best practice characteristic of Relationship Building and Development.)

The IIT faculty member assumed responsibility for arranging travel to Haiti, while the OLPC-Haiti director took responsibility for all local logistics and language issues relevant to interviewing school administration members, as per responsibilities enumerated during the initial stages of the partnership. The initial partnerships were further solidified on this trip and the students helped lay the groundwork for proceeding with the project the following semester, as well as on the subsequent deployment trip.

Second Semester and Trip
As the design of the solar system had been nearly completed during the first semester, additional foci were added during the second. These included project fundraising, as well as the development of a relevant teacher’s curriculum (requested by the Haitian partner) to accompany the solar system deployment. The technical advisor from Green WiFi made another trip to IIT’s campus to meet new team members, hold an additional solar-power design workshop, and offer assistance and mentoring on related technical issues. He also gave advice on fundraising, presenting new avenues to pursue in order to obtain much-needed capital. (When partnership activities grow beyond initial foci and the scope of the project increases, this is seen as a best practice of Sustaining Partnerships.) Moreover, the newly identified goals corresponded to stated interests and needs of the Haitian partner and presented both appreciated and novel challenges for the team at IIT.

For help with curriculum development, the team contacted two primary-level educators in the U.S., who offered up lesson plans to be utilized as templates. One of the teachers became very interested in the project and led a French-language book drive at his school and raised funds independently to enable his travel with the team on the next trip. This teacher’s French language skills and experience instructing primary-level children proved an asset to the team on-site, and he spearheaded the setting up of a library at the school where the team carried
out the solar system deployment on the second team trip. This was an unplanned but extremely rewarding and locally appreciated addition to the project.

During the course of the second semester, the team raised more than $25,000 to pay for the equipment and travel costs of the first deployment trip, which took place in August 2011. Seven of the 11 students from the previous semester’s class traveled to Haiti for the deployment. Additional team members making the trip included the IIT faculty member, the technology advisor from Green WiFi, and the primary school teacher. The OLPC-Haiti director and one of the Haitian university students who had been involved with the site survey visit joined the team on-site. This group traveled together from Port-au-Prince to the pilot school, the EFACAP School in Lascahobas, Haiti.

Once on-site, an additional short-term, impromptu partnership was formed with a local Non-Governmental Organization (NGO), Haiti Outreach. One of the team’s IIT students had been working with this organization in Haiti during the week prior to this project’s travel dates and had negotiated a short-term partnership with mutually agreed upon goals. Haiti Outreach employees had experience installing solar systems, but wanted to learn about our team’s DC-only solar power approach. Our team provided room and board for Haiti Outreach, while they helped us install the solar system at the EFACAP School. This short-term partnership proved mutually beneficial as well as culturally enriching; while members from both IIT and Haiti Outreach were on the roof installing the solar panels, language ceased to be a barrier, and by the end of the installation, the teams were sharing music and learning songs from one another.

All team members shared rooms in the school’s on-campus dormitory-style building. Despite the fact that the “beds” were concrete slabs (the team brought air mattresses), the windows had no coverings, and water rarely ran through the pipes, the American team members realized that these accommodations still exceeded in quality much of that which they had driven past and seen on the way to the school. Meals were frequently hours behind the announced schedule, since a team of cooks using large pots over open fires prepared each meal. The students shared, however, their appreciation for the home-cooked meals and how tasty they proved to be; some students reported the food at the EFACAP School as a highlight of the trip. Frequent team meetings helped the disparate sub-groups keep each other up-to-date on the various accomplishments of—and challenges facing—the team. Each evening was filled with talking and socializing among team members.

After 10 extremely long days of work and several setbacks regarding missing equipment (which were addressed by innovative improvisations), all parts of the solar charging system came together on the final evening and the first laptop was plugged in and began to charge. Despite the fact that it was after 6 p.m. and already dark, a line of students from the primary school had formed: children waiting in line to be among the first to have their laptops charged by the new solar system. School officials had arranged a party for that evening to celebrate the team’s accomplishments and the solar charging system that their school had received. (Though
not enumerated as a best practice per se, celebrating hard work and accomplishments together is certainly a rewarding and satisfying activity for a team!)

For the second trip, the IIT faculty member once again assumed responsibility for travel arrangements to Haiti, while the OLPC-Haiti director handled logistical concerns once the team arrived, including transportation and the feeding of all the additional people staying on the school grounds. In addition, the OLPC-Haiti director served as a liaison between the EFACAP School director and the rest of the team.

The OLPC Coordinator was frequently on his mobile phone during this trip, attempting to organize a ribbon-cutting ceremony for the solar powering system—which the Haitian President, Minister of Education, or Director of Primary Education would attend—at the EFACAP School. He had already apprised our team of the difficult financial situation facing OLPC-Haiti: the original IDB funding had run out and the Haitian Ministry of Education had granted funding for a temporary six-month extension of the project. The future of the entire OLPC-Haiti project was very much in doubt, but the Director believed that our high profile solar project (and its successful implementation) would be instrumental in ensuring the Ministry’s continued support. Up until the team’s final day at the school, the OLPC Director believed that Haiti’s President Michel Martelly would visit the school. As it happened, neither the president nor any ministry officials visited the school. A few months after this deployment trip, Haiti’s president withdrew his support for the OLPC project, the temporary financial support for the program was discontinued, and OLPC-Haiti was dissolved.

**Third Semester and Trip**

In the month before the project’s third semester began, the team was awarded a grant from the Internet Society to connect the EFACAP School to the Internet. The team’s focus thus shifted to designing a solar-powered WiFi Internet connectivity system for the school. Fundraising remained of paramount importance throughout the semester, as the team still needed to raise funds to cover travel costs. Some team members who had worked on the initial deployment and opted to continue on as students in the class were not satisfied with the charging system the team had installed. A third item on the semester’s agenda was the design of a better, less-expensive racking system for stacking and charging the laptops.

In order to carry out the Internet-connectivity portion of the project, an additional partnership was formed with the San Francisco-based non-profit social enterprise, Inveneo, which was spearheading the Haiti Rural Broadband Initiative to deploy a high-speed wireless backbone across Haiti (Blantz & Baikie, 2012). This initiative’s objective was to bring affordable, reliable, and sustainable broadband access to six regions and 20 un-served population centers across Haiti. As part of the Rural Broadband Initiative, Inveneo established the BATI, a program wherein Haitian technicians from regions around the country received training and certification in Internet connectivity setup and related small-business skills. The EFACAP School’s Internet installation was used as a hands-on training session for five BATI technicians; this gave the IIT
team another opportunity for cross-cultural teamwork and socializing while on-site, as the
teams worked, ate, and lodged together.

During the semester prior to this trip, some of the IIT team members traveled to San Francisco
to attend an OLPC summit, at which they unveiled and demonstrated their charging station
and made presentations about the solar deployment carried out a few months earlier. These
activities were aimed at building professionalization skills. The team also visited Inveneo’s San
Francisco offices to solidify the partnership and learn more about Inveneo’s work in Haiti.

Meanwhile, it had become clear to students participating in the first deployment that, contrary
to the team’s understanding and expectations, the Haitian Ministry of Education would neither
be carrying out maintenance of the technology the team had installed, nor conducting teacher
training or otherwise supporting community-involvement or awareness raising to gain local
support and buy-in for the project. This was a disappointing realization: the team had been led
to believe that these would all be the responsibility of the Ministry of Education. The students
attempted to mitigate the circumstances by initiating plans for engaging the community by—
among other things—involving parents in the construction of the new charging/racking system
and involving local NGOs to ensure local capabilities would exist to maintain the solar system
and related technology.

In other words, it had become clear that the team could no longer rely on the initiating partner
to carry out its part of the project. Communication with OLPC-Haiti became increasingly
difficult as the semester progressed, and in the month before the third deployment trip the
team learned of OLPC-Haiti’s dissolution. In response, the faculty member reached out to the
EFACAP School director and made arrangements for the third trip directly with the school. This
proved to be sufficient in the short term: it allowed the successful carrying out of the team’s
third trip and the realization of the goals set forth for the project’s third semester. As the team
had already stayed at the school, the lodging and food-preparation were simple to arrange
again. The faculty member once again arranged for the team’s travel to Haiti, as well as for
local transport in Haiti. Seven of the 10 students from the semester’s class made the trip, along
with the faculty member and the technology advisor from Green WiFi.

On this third team trip, Internet connectivity was successfully established and three solar WiFi
hotspots were set up across the campus. The charging racks were also built and deployed.
With the goal of raising community awareness and support for the project, the team requested
a meeting with the parents of their schoolchildren. Some of the IIT students had hoped that, by
inviting the parents to help build charging racks, they could simultaneously generate
community support for the project and enable the parents to build additional charging racks;
in this way the project could be shown to be more than simply a “gift” and sustainable by the
local community despite the withdrawal of support by the Ministry of Education. These goals

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1This was the second such conference for the students that semester. Team members had also been
invited to a conference at Harvard University to present about the project as well.
were not attained, as only one parent showed up to help with building the racking stations, and this parent told team members that he had come because he was eager to learn how to use the circular drill one of the students had brought.

The team also requested and held multiple meetings with the EFACAP School teachers to gauge their interest in the use of the laptops in the classroom and to offer a training session for them in using both the server the team had installed and the Internet. A single afternoon of technology training proved far from sufficient, but it was, nonetheless, an eye-opening experience for all involved. Among other things, the IIT students’ experience in attempting to train adults who had never used Internet and computer-related technology led to an increased understanding of just how much those of us who use it every day take for granted.

Despite the team’s progress—the success of the Internet-related and charging-rack deployments and the intercultural experiences gained—there was a great deal of concern throughout the trip’s duration as to the future of the project, given the President’s decision to discontinue support for the OLPC program and the dissolution of the team’s partner organization in Haiti. The faculty member applied for grants in the attempt to continue the project directly with the EFACAP School, but was unsuccessful. Sporadic communication between the school and the U.S.-based team has continued, but the project itself has not progressed. There have not been additional trips to Haiti, even though the class continued the following semester, re-focusing its work on developing a Solar-Computer-Lab-in-a-Box, designed to be deployable at any school facing a lack of electricity.

Discussion

Developing partnerships between academic institutions and various types of organizations can be an effective means of enabling innovative educational approaches and experiences, particularly in the case of experiential service-learning and international immersive experiences. This article detailed how partnerships were formed, built, and sustained to realize multiple project goals arising from a real-world, international project-based approach to innovative education. The discussion section attempts to elucidate lessons learned from this particular experience and applicable to future like-minded endeavors, through use of the Partnership Phase framework previously introduced. In addition, partnership aspects that may not fit neatly into the framework will be discussed.

The Partnership Phases framework identified numerous best practice characteristics and activities relevant to each stage in the life of a partnership. In the case description section, these were enumerated upon first instance: upon repeated instance, they were left to the reader to recognize. The case may be made that numerous best practice activities and characteristics were present at the outset—the Partnership Initiation & Design phase. The three primary partners articulated a shared vision for a project that would be beneficial to all parties involved and clearly communicated each partner’s abilities, resources, expectations, and
responsibilities. This solid foundation set the stage for the successes realized at the subsequent phases of the ongoing project.

Similarly, many of the best practice characteristics and activities associated with the Relationship Building & Development and Sustaining Partnerships phases were evident: the investment of time and effort into relationship-building; frequent and open communication; working together; and allowing for the project scope and associated partnerships to grow beyond the original focus and take on additional goals. The time, effort, and dedication to relationship building within the context of a partnership must not be underestimated.

Although not enumerated as a best practice, the need for participants and partners to be flexible is paramount. The case study illustrated the importance of this quality time and again, from the post-earthquake location rearrangement to the project’s maturation and subsequent re-focusing and re-partnering to attain newly established project goals. This notion regarding the importance of flexibility may be extended to the self-evaluation best-practice activity identified at the Sustaining Partnerships Over Time phase. Recognizing that everything will not go perfectly according to even the best-laid plans during the real-world execution of the project is important. We frequently learn the most from frustrations and pain-points, and performing an honest self-assessment is part and parcel of attempting to do one’s best.

During all of these phases the best practices followed resulted in numerous positive outcomes during the life of this partnership. Project goals were achieved, expanded, and achieved again. Multiple additional partners were added on a short-term basis; this helped realize project goals, and in many cases added valuable cross-cultural interactive experiences for all involved. And yet, the relationship ultimately dissolved.

Because the partnership had been a successful, high-functioning one and there was clearly partnered work left undone, the dissolution was an unpleasant end to an otherwise fruitful partnership. Even so, Bringle and Hatcher (2002) assert that longevity is not the characteristic by which relationships should be evaluated and point out that some partnerships terminate due to external events beyond the control of the actors involved, as was the case here. Thus, identifying the lessons learned from this partnership experience, and relaying insights gleaned from the project with an eye to improving future initiatives, is a worthwhile reaction to the partnership’s dissolution.

Though much mutual benefit can be realized through partnerships, there are challenges as well. With the aid of time and hindsight it is possible to identify success factors, lessons learned, and pressure points. It is worth noting how difficult it is to be truly cognizant of these aspects of innovative teaching while they are occurring. The transition to becoming a practitioner-scholar and adopting multiple innovative teaching practices has, to date, been simultaneously the most rewarding and challenging experience of the author’s career. Faculty should be made aware of these rewards and challenges. Instances of training for faculty adopting novel approaches are not yet widespread; new skills must be developed on the fly. Learning while doing became the norm in this instance. The time commitment is enormous,
while lack of recognition and support remains a challenge (Bringle et al., 2009). On the other hand, the rewards intrinsic to realized project accomplishments and being able to offer students new and life-changing experiences, as well as the improved fodder for research and the teaching and life-skills developed from this work, far outweigh the challenges, in the author’s opinion. Conveying these intrinsic rewards was a central goal of this article.

The case at hand presented multiple areas where learning occurred as well as some with room for improvement. To begin with, it is important to address the lack of experienced, skilled labor or human capacity in developing world contexts. The temporary use of students from foreign locations at the project site cannot be considered a replacement for human skills that must develop locally if projects are to be sustainable. Cashman et al. (2004) report that projects comprising service-learning and partnerships—such as the one described in this article—can be extremely valuable to demonstrate proof-of-concept for new ideas or set up pilot projects, but should not be viewed as long-term solutions in and of themselves. They must become locally owned and operated if they are to be self-sustaining. Only when partnerships are made with organizations that develop local capacities to carry out work can projects or programs be expected to attain long-term success.

Intended as a pilot/proof of concept to demonstrate the feasibility, efficiency, usefulness, and replicability of the solar charging system, as well as the possibility for solar-powered Internet connectivity in off-grid locations, the project was initiated with the understanding that the Haitian Ministry of Education would be responsible for its scaling, as well as for technology maintenance and any community relations necessary to ensure local support. From its inception, this project had intended to build local skills and capacities—both those of local university students and Department of Education employees—yet circumstances intervened that prevented this from happening. It shall remain an open question whether the project should have gone forward without the university partnerships, but the decision was made to try to make the best of the situation at hand, to move forward with OLPC-Haiti as the main local partner and attempt to provide inspiration in the face of the horrific challenges that Haiti’s devastating 2010 earthquake presented. By the time the universities were once again able to join the project, the organization that initiated the project, OLPC-Haiti, had been dissolved.

In this case, therefore, despite project success in terms of multiple on-site deployments, local skills were not built, and local/community ownership of the project was not established. The absence of local skills development, and the toll this took vis-à-vis the long-term success of the project, were not lost on the project partners from IIT and Green WiFi. These actors have re-teamed in partnered projects since this endeavor, and have agreed to make local skills-building a core feature of all future developing-world focused projects.

The dissolution of the project and associated partnerships, though disappointing, is not terribly unusual. Partnered development projects do not always succeed, and public or governmental organizations—in any locality or nation—are at all times subject to political decisions that alter
their priorities, finances, or even existence. Similarly, for-profit, private companies do not always stay in business. Even university policies and priorities shift over time. It is worth noting that the policies of the IPRO program under which this course operated shifted during the course of the two years that the class was offered, making both fundraising and international travel more difficult. In the final semester the course was offered, the IPRO offices disallowed use of university funds for student travel outside of Chicago. This—along with previous efforts to restrict team fundraising—effectively ended the possibility of like-minded courses taking place in the future. The partners were thus constrained from various directions, both at home and abroad.

Even so, this article maintains that outcomes from this project and related educational experiences were successful and valuable for a number of reasons. By providing opportunities for team-based, project-focused learning on-campus and service-learning in the context of an international immersion experience, the project proved quite successful. In course evaluations, students unanimously expressed that they felt like part of a team while participating in the class, as well as—and even more so—during the trips to Haiti. Similarly, students who traveled to Haiti reflected positively on their immersion and travel experience, as well as on having the opportunity to contribute to a successful real-world project. Nearly all of the students also reported an increased awareness of other cultures. Some students left the class with newfound desires to continue working in the field of international development after graduation. Developments arising with each trip—and the subsequent new semester’s work—gave each class the opportunity to consider, grapple with, and address unique, challenging, and ever-changing ethical issues. This also contributed to increased cross-cultural awareness, consideration of one’s place in an increasingly globalized society, and the confronting of prior assumptions and beliefs.

The project also provided a valuable learning experience for the faculty member in terms of innovative teaching, leading team-based student groups (both on-campus and abroad), organizing and directing real-world projects, and forming partnerships to carry out innovative learning opportunities for students. We assert that the project could not have been realized without multiple partnerships, and that there is a great deal to be learned from this experience for the design and implementation of like-minded projects in the future.

Conclusion

In the present descriptive and analytic study, partnerships proved vital to the realization of an innovative educational experience that included international immersion and service-learning opportunities within the context of a project-focused class. Partnerships were added to the initial team when needs arose and project goals expanded. Partnerships were also discontinued when external forces and circumstances intervened.

The pilot project—a solar powering system and Internet connectivity at a primary school in rural Haiti—was successfully realized, albeit not without caveats involving community
engagement, scaling, and long-term viability. Given universities’ current prioritization of innovative educational experiences—short-term study abroad, service-learning, and team-based, project-focused classes, for example—the examination of approaches to successfully carrying out such courses is valuable. The article presented a multi-semester, multi-partnered project as an in-depth case study and analyzed the lessons that could be learned from the project’s various accomplishments and challenges. In order to do so, a Partnership Framework was introduced, which identifies phases in the life of partnerships, and enables best practice enumeration and evaluation. This framework was applied to the case study, so that best practices and lessons learned could be identified and discussed.

Partnerships can provide a valuable pathway to the enabling and furthering of innovative educational experiences; this article described an example of their successful implementation in a project, as well as the challenges encountered and lessons learned during the process. The project at the heart of the case study employed partnerships as one of numerous innovative educational approaches. It is also hoped that the lessons learned from the project and the partnerships provided insight from which like-minded endeavors can benefit in the future.

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