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Service-Learning Through Immersive Technologies in Ecuador

Veronica Yepez-Reyes and Eric R. Williams

Abstract

Service-learning, as a form of experiential learning, allows universities to work hand-in-hand with local communities, addressing their needs and expectations and putting into practice professional skills acquired by the students. This article reports on two service-learning experiences of communication students and faculty of Ecuador and Ohio, United States working together with local communities in the countryside of the coastal province of Manabí and in the Andean páramo of Chugchilán. These activities were further enhanced via cutting-edge immersive technologies and production experience using these technologies. This article aims to answer the questions of whether and how international stakeholders and immersive technologies play a role in the community outreach roadmap. The outcomes suggest that immersive technologies in service-learning international partnerships present four types of challenges: ontological, technological, narrative, and professional. The introduction of immersive technologies in service-learning projects is an interesting possibility for further development of joint narratives.

Keywords: service-learning, communication studies, media technologies, international partnerships

Undergraduate students in Ecuador must undertake two types of community outreach projects during their academic career: workplace internships and community engagement projects. It has been possible to find internships, also known as apprenticeships, from the very dawn of creation, as knowledge passed from one generation to the other. However, as Sides and Mrvica (2017, p. 1) highlighted, "the immediate past century or so may have been an aberration—a time in which learning was inculcated more and more frequently through lectures and books than through experience." Acquiring knowledge through experience has been reinvigorated in undergraduate curricula, and community engagement is recognized as scholarship. Welch (2019) described community engagement involving activities for the benefit of society that, at the same time, have academic purposes. Community engagement both generates new knowledge through research and educates in programs of study. One of the main goals of community outreach projects is sharing knowledge between stakeholders. Other goals include critical reflection about the context of the project, the inclusion of public interests, and the opportunity for students to practice professional skills.

In 2017, the College of Communication from Pontificia Universidad Católica del Ecuador (PUCECom) began working with Ohio University's Game Research and Immersive Design (GRID) Lab to develop community outreach opportunities that involved immersive and virtual technologies. In today's digital world, these sorts of international relationships could create transformative learning experiences for communication students on both sides of the relationship. Further, service-learning projects and immersive technologies seem to work hand-in-hand to invigorate the students' nonfiction storytelling skills in the field. Over the course of 2 years, both universities developed the foundations for future projects.

Three main topics compose the framework of this article: (a) service-learning, (b) storytelling, and (c) immersive technologies—each interconnected with the international partnership to play a role in the community outreach roadmap.

The Field of Service-Learning

Community engagement projects frequently use one of many different active methodologies—problem-based learning, service-learning, learning by doing, and action research, among others—to perform their activities with the involvement of participants from outside higher education institutions. The methodology of service-learning, as a frontline practice of experiential learning, has been applied to interdisciplinary community engagement programs since 2017 at PUCE, suggested by its partner, the Center for Campus and Community Engagement from Ohio University.

Service-learning is defined as a twofold strategy that combines performing some type of (professional) service with a specific community and the academic learning outcomes of its enactment. Jacoby (2015) explained it as "a form of experiential education in which students engage in activities that address human and community needs, together with structured opportunities for reflection designed to achieve desired learning outcomes (p. 1)." Tapia (2016) argued that acquiring knowledge through experience has reinvigorated undergraduate curricula around the world. Perhaps this is because service-learning encourages critical reflection and a responsible commitment of all stakeholders to social transformation. Here the university–community relationship is woven into proximity and mutual recognition of collaborative horizons (Andrade et al., 2019). Critical reflection and reciprocity are necessary conditions for the methodology to function optimally.

Within service-learning, community-based projects have manifold benefits: for students, an excellent field experience; for students and communities, technical support and transfer of knowledge. Moreover, Fung (2017) pointed out that service-learning hinges upon the development of "assessment criteria for learning from mistakes and difficulties, as well as from obvious successes" (p. 91). At PUCE, significant learning blends together teaching, research, management, and community outreach in line with the proposal of university social responsibility instituted by AUSJAL (2014, p. 16)—the Latin American network of Jesuit Universities—based upon four criteria:

1. *Lived experiences*. University students, faculty, and staff make direct contact with communities, especially with vulnerable groups in society.
2. *Critical analysis of historical, cultural context and environmental issues*. From a local vision with a global perspective, this criterion puts special emphasis on understanding the causes of a low generation of opportunities and well-being for the great majority; it also refers to issues of exclusion, power imbalances, and governance.
3. *A high level of technical and professional skills*. Availability of such skills deepens the ability to design successful solutions in each field of knowledge, being aware that goodwill alone is not enough with goodwill for the success of projects and programs. Ethical issues are also raised within this criterion, since a techno-centric view could be inappropriate in different contexts. This applies also to moralism, which, without relevance and academic excellence, can even bring greater harms.
4. *Public interest*. This is a transformational space for professional work. Knowledgeable professionals provide vital support to advance public interests. Open access, inclusion, and awareness are key issues.

Significant higher education blends together the four substantive functions of teaching, research, community outreach, and management, all of them with a humanistic person-centered aim. In this scenario, the field of service-learning is located at the intersection of teaching and community outreach. Working on problems and needs of the communities is in the basis of a joint venture that relies on knowledge exchange among all stakeholders. Communities, students, and faculty, performing together with a shared goal and scope, could enact the development of effective responses and evolve into positive transformations in an iterative and harmonious cycle, as shown in Figure 1.

At PUCE, community engagement has been a common practice associated with the doctrine of social justice and performed

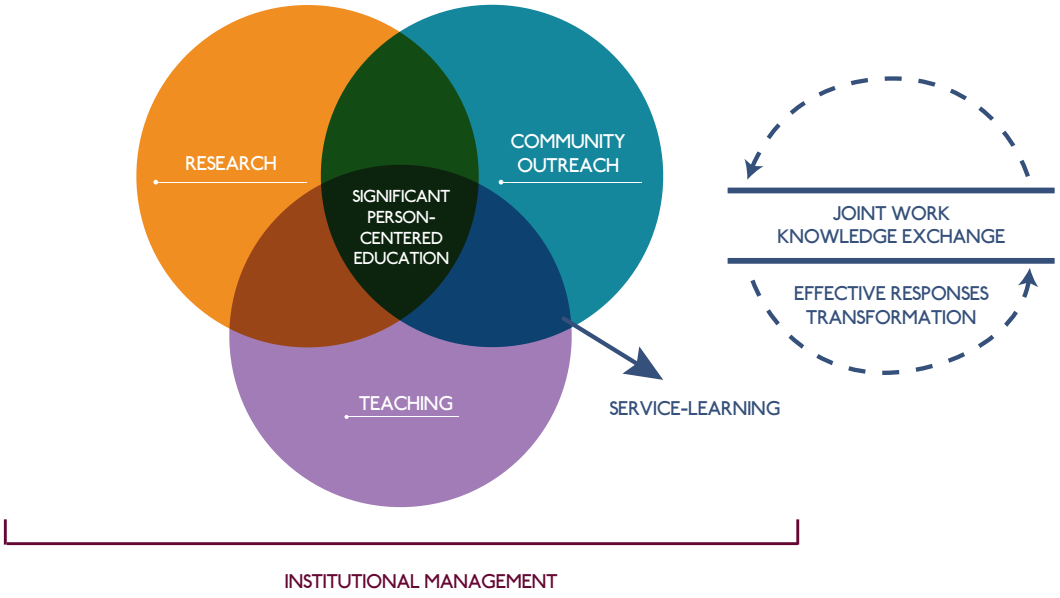

Figure 1. Service-Learning in Higher Education
Note. Adapted from González et al. (2019).

through programs of institutionalized volunteering over time.

International Partnership in Service-Learning

One of the issues raised by Jacoby (2015) is international partnerships for service-learning, as many universities, particularly from the global North, promote service-learning programs abroad. International partnership for service-learning involves greater challenges than domestic community engagement, including timing, traveling, and dealing with unfamiliar environments, cultures, and languages. It is important that the quality of the service offsets the agency time spent in organizing, planning, and supervising the project, and, most importantly, it is fundamental that service-learning turn into a meaningful experience for all stakeholders. Local and international students need to grasp the essence of what they have engaged; this includes its significance in their personal and professional lives. Faculty need to reach the learning outcomes proposed for their courses so that leaving the campus, and all its facilities, is worth the effort. Community members need to find meaning in the experience, as they will spend time and effort working on issues that are rather different from their daily life and could lead to a desired transformation.

The partnership between PUCE and Ohio University started in 2000 around a research project investigating Chagas disease. This partnership was bolstered in 2015 through a new agreement involving additional colleges from each university, including PUCE's College of Communication, Linguistics and Literature (PUCECom) and Ohio University's Game Research and Immersive Design (GRID) Lab in the Scripps College of Communication. Together, these two entities agreed to design collaborative community outreach projects.

In 2018, Ohio University applied for the Carnegie Classification for Community Engagement. In the application, they explained that community engagement is about mutually beneficial partnerships between communities and students, staff, and faculty to harness the practices of teaching, research, and engagement in a way that supports (a) sharing knowledge and resources, (b) commitment to partnership and reciprocity, and (c) transformative outcomes for the community partners and Ohio University.

Ohio University's Center for Campus and Community Engagement has a threefold motto: learn, serve, engage. It helps students, faculty, staff, and community (from local to global) to create jointly designed, mutually beneficial partnerships that foster

resilient communities and lifelong engaged citizens. PUCE shares this common commitment to community engagement.

Smith-Tolken (2019) suggested that service-learning demands the active participation of at least four different groups of stakeholders with various purposes: (1) university students intent on learning, (2) faculty and staff to facilitate the learning, (3) representatives of social organizations working with the community, and (4) members of the communities involved in the activities.

However, the PUCECom–GRID Lab coalition proposed a new paradigm, one in which there was a fifth important stakeholder: students and faculty from an international university, working in partnership with the local university. The coalition of communication partners proposed two joint service-learning projects to put the new paradigm to the test. Both projects involved community-based storytelling and cutting-edge immersive technology.

Developing Immersive Storytelling in Service-Learning

Nonny de la Peña is considered a pioneer in immersive storytelling. In 2010, together with a group of scholars and practitioners, they introduced the concept of immersive journalism as "the production of news in a form in which people can gain first-person experiences of the events or situation described in news stories" (de la Peña et al., 2010, p. 291). Wendy Suzuki, professor of neuroscience and psychology at New York University, and her colleagues (2018) posited: "The personal narrative detail that is often at the heart of a good story is one of the most powerful forms of communication that exists" (p. 9468). The service-learning international group was intrigued to see if they could use the ideas of immersive journalism—specifically to infuse a sense of first-person experience—in combination with the power of personal narrative to tell compelling stories about countryside communities in Ecuador.

Two international service-learning projects took place during the summers of 2017 and 2018. In both years, service-learning designs in the field of communication were proposed to enhance existing community outreach projects from other colleges at PUCE (Psychology, Medicine, and Nursing) with communication products. For this reason, communication designs were discussed together with faculty and students from the colleges involved, as well as the local communities interested in the products, focusing on relevant stories that could be told.

Manabí

In Manabí, a team of 25 undergraduate journalism students and four faculty members from PUCE collaborated with a smaller team of one master's student and one faculty member from Ohio. Together the 31-member team worked with rural coastal communities on the project titled "Repowering Manabí." The aim of this project was to use traditional and immersive media to celebrate the resilience of the people of Manabí, who had experienced a 7.8 earthquake (April 2016) and one of the strongest rainy seasons in years (February 2017). PUCECom provided traditional still cameras, audio recorders, and video cameras, and the GRID Lab provided audio and video cinematic virtual reality (cine-vr) equipment.

Students were divided into six teams covering different activities of the population addressed: agriculture, health services, salt making, tourism, fishing, and archaeology. The tutors were the faculty members and the graduate student from Ohio. Each team was expected to include material for traditional media (video, radio, and press) as well as an immersive cine-vr experience. Before the team traveled to Manabí, a one-day workshop was held at PUCE to familiarize each team with the cine-vr equipment. All team members agreed to speak Spanish in the field. Both Ohio members were fluent in Spanish.

Each team worked with one tutor and one community member. Keeping in mind that with service-learning projects, students and faculty do not work for the community but with them (Ríos et al., 2016), each team included at least one community member who was able to play an active role in the storytelling process. Community members joined each team in Manabí, where they contributed their extensive knowledge about the places and people.

Problems began almost immediately—starting with the technology and quickly expanding. From the beginning, the smartphone app needed to view the cine-

vr images did not work. The cameras were unable to communicate with the teams' smartphones. The app is not needed for recording, but it is a psychological safety net for the camera operator. When the app did not work, those new to the technology (the PUCE students and faculty) quickly abandoned the cine-vr cameras altogether and continued their work using their traditional media equipment. The Ohio team members continued using the cine-vr equipment, but they were unable to share their footage with anyone. This technological split seemed to divide the teams.

It is important to mention that four of the six teams were 100% PUCE students and faculty (in collaboration with Manabí community members). These teams functioned well but ignored cine-vr entirely. In the two teams where Ohio members functioned as tutors, PUCE students chose to follow the advice of the Manabí community member instead of their tutors. Although language was not an issue, the teams experienced a "local versus foreigner" rift. In the end, these teams produced both traditional and cine-vr stories but did so separately. The PUCE students neglected the cine-vr equipment; the Ohio team members embraced the technology. The Ohio and PUCE team members did not work together very much in the field. At the end of the trip, the PUCE students returned to Quito and the Ohio members returned directly to the United States.

The project concluded months later, in October—but in two very different ways. In Quito, the PUCE faculty organized an event to share the finished products with the Manabí community. The Manabí community members were invited to Quito to meet all of the PUCE students and faculty who participated in service-learning projects over the previous year (from departments including Psychology, Economics, Pastoral Care, and the Health Institute) as well as those from the summer media program. The central spotlight of the event was a display of videos, books, and audio programs from the Communication students, enhanced with posters and research results from the other fields. Representatives from the communities of Manabí attended and were invited to return to their communities with the various media. This celebration became an opportunity to discuss future collaboration between rural communities and academic groups. All the videos produced are available in a YouTube playlist: https://bit.ly/manabi_17. The radio chronicles are available in an Ivoox playlist: https://bit.ly/cronicas_manabi.

Unfortunately, cine-vr videos were not included in the exhibition at that time, nor were representatives from Ohio present, as the summer had ended. Nevertheless, the master's student completed his cine-vr work upon his return and highlighted the resilience of the people of Manabí on his website: https://www.castillo.photography/Pechichal/.

In the autumn of 2017, an assessment of the service-learning activity took place at PUCE. The Identity and Mission Department conducted an open conversation about the experience with faculty and students. The key takeaways from the conversation were that (a) a majority of the PUCE students enjoyed the project and were proud of the outcomes, and (b) a majority of the PUCE faculty felt that the production-based objectives of the project were successfully met, but at the expense of the learning objectives of getting students to work together as a team.

Guayama Grande

In Guayama Grande, a year later, a new group of 24 students and the same four faculty from PUCE worked with a new team of two faculty and one undergraduate student from Ohio. This project was designed to collaborate with community members of Guayama Grande, Chugchilán, a highland village in the Andean province of Cotopaxi. This community had worked in service-learning projects before with other colleges from PUCE, and community members were eager to receive communication students with the aim of promoting their region as a hot spot for community-centric agrotourism.

As before, PUCECom provided traditional still cameras, audio recorders, and video cameras; GRID Lab provided audio and video cine-vr equipment. However, from the outset, the project design underwent four significant changes.

1. *Group assignments*. In Guayama Grande, PUCE faculty members were the tutors for each group, and the Ohio members worked with the PUCE faculty from each group. In essence, the Ohio team floated from group to group as needed. In 2018,

there were four groups and each group was assigned one of four specific topics: tourism attractions, experience-based tourism, ecological farms, or ancestral knowledge. However, each group was able to choose the media they wanted to use to best cover their topic area. Students were not required to use cine-vr equipment, but they could if they wanted to. A key difference from the groups established the previous year was the form of community member involvement. In Manabí, community members chiefly contributed local cultural knowledge. In Chugchilán, however, community members were deeply involved and interested in media production. All of the work would eventually be presented on a website to be managed by the community of Guayama Grande so that they could broadcast information about their facilities for experiential tourism in the Andean páramo. The resulting webpage is now available at https://guayamagrande.wordpress.com.

2. *Technology investment*. After the summer of 2017, PUCE purchased a cine-vr camera which was used with communication students at PUCE. This sparked their interest in the technology and made cine-vr less daunting to the students who participated in 2018. Additionally, the GRID Lab agreed to donate four cine-vr cameras to the PUCE program. This changed the PUCE students' relationship to this equipment. This new sense of ownership encouraged the students to think about cine-vr differently. In 2018, they were learning how to use their own equipment—not equipment that would disappear at the end of the summer.

3. *Team building and logistics*. A training day in Quito took place before the project began, but the logistics differed from the past experience in three ways. First, faculty ensured that the technology (especially the smartphone apps) was working and would continue to work in remote locales. Second, Ohio faculty put the students in charge of the cine-vr equipment before they left for Guayama Grande and encouraged them to experiment with it during the daylong bus ride. Along the way, the Ohio faculty were constantly providing guidance and tips about cine-vr, which inherently created team-building connections. Third, there was an arrangement for the Ohio group to return to Quito and offer a 2-day postproduction training session. Not only did this provide 3 days of training for the PUCE team members (instead of one), it also created bookends for the teams. All the group started together in Quito and ended together in the same place. This seemed to solidify a team approach to the project—even if the website would be created after the Ohio team left.

4. *Language issues*. Although unintentional, changes to the use of a "team language" seemed to play an important role in the group dynamics. In 2018, the teams agreed to speak in English since the Ohio faculty could not speak Spanish. This actually worked out well, as the mother tongue of the locals is Kichwa—the indigenous language of the Andes—and other PUCE faculty and students were in Guayama Grande on their own service-learning project to teach English to community members in charge of hosting international tourists. With most team members communicating in their secondary language, there seemed to be a growing sense of camaraderie. It is also worth noting that many conversations were multilingual, with people excited to learn each other's language, whether Spanish, English, or Kichwa.

In the end, the 2018 project seemed to be the inverse of the 2017 project. The community was very pleased with the resulting website, and the students were pleased with their work. However, cine-vr content was not a part of the final product—but for a very different reason. In 2018, a wide variety of footage was captured, and some of it was initially processed in the postproduction workshop in Quito. Unfortunately, once the Ohio team left, the technical processes were too cumbersome for the PUCE computer labs and, with a tight deadline to complete the website, cine-vr was abandoned.

Nevertheless, the PUCE faculty felt that the 2018 project was much more successful in building teamwork experience for the students. In the end, the faculty (both PUCE and Ohio) believe that the media production is only a small part of what service-learning is all about. Learning to work as a team (with the community and with each other) is the real learning objective.

Table 1. Students' Perception of Community Engagement Project

Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The project responded to previous defined planning?	10	4	2	0	0
Work with the most disadvantaged sectors was prioritized, promoting their development and avoiding assistance-based practices or their instrumentalization?	9	6	1	0	0
Participation of other social actors and non-academic knowledge were included?	7	7	2	0	0
The project/program integrated various disciplines as a way to address complex issues?	12	4	0	0	0
The project resulted in changes or improvements in the beneficiaries' life (new solutions, increase of capacities, etc.)?	9	6	1	0	0

Note. Source: Community Outreach Department PUCE, 2018.

The project was assessed with a survey provided by the Community Outreach Department of PUCE conducted for students, faculty, and stakeholders. Unfortunately, the partners from Ohio were not included in the survey. The survey included five questions about perceptions of the activity performed, with answers on a Likert scale (see Table 1).

The survey also included a written reflection about the activity developed. The 2018 project offered a number of takeaways: (a) The experience was fruitful for nearly everyone involved, (b) international partners were perceived by students and faculty alike as peers, (c) many students "observed different realities" that helped them to develop new communication strategies, and (d) the idea of seeing "different realities" was a common refrain, with many students claiming that they experienced both professional and personal growth because the project allowed them to deal with problems outside daily university life.

It is important to highlight that none of the comments referred specifically to immersive technologies nor to the support received by the international partners. Reflections focused solely on the importance of teamwork in the field. The activities from both years were recognized as methodological innovation projects for communication studies by the university social responsibility network from AUSJAL in 2019, which is included in the 2019 compendium (https://bit.ly/ausjalrsu_ApSCom19), and the video summarizing the activities can be found at https://bit.ly/SL_puceohiou.

Further study is warranted, but one interpretation could be that the international partners were not perceived as foreigners, but rather simply as other participants in the activity in the same way as community partners—just as the immersive technologies were no longer seen as an "external technological constraint," but rather as just another communication tool to consider.

Next Steps and Best Practices

The use of immersive technologies has been shown to promote participation in a collaborative activity (Fonseca et al., 2014). However, despite increased availability of immersive technology, relatively little research has been conducted to better understand how users (and practitioners) experience (and utilize) these technologies (Suh & Prophet, 2018). The projects reported deal with immersive journalism, using 360-degree video to enhance the audience's experience of the whole picture of the stories

told in a first-person fashion: meeting the people, observing the activities, and viewing the places.

As a starting point, researchers at PUCECom have identified four types of challenges facing immersive storytellers (Cruz et al., 2018):

1. *Ontological*. When talking about immersive journalism, one might think that the object of study lies in journalism and that immersion is secondary, considering it a feature that qualifies an old process. This perspective, however, fails to recognize both the mediating capacity of immersive journalism and its affordances in building (new) creative media. The ontological challenge is about allowing the agency of immersive journalism from where new narrative forms arise.
2. *Technological*. To popularize the consumption of immersive journalistic content, it is necessary to overcome the high costs of devices and platforms. Once this obstacle is overcome, the main technological challenge for journalists is daring to take the equipment in their hands, risk experimenting with new technology and new techniques, and learn by doing so.
3. *Narrative*. When audiences—curious not only about the news itself, but about the use of novel technology—are introduced to an immersive environment, the audience becomes a participant in the news and will perceive with greater closeness the objects and subjects of the journalistic product. However, if the goal is to tell a story from virtual environments, the longer production time may be a detriment to the immediacy of news topics.
4. *Professional*. A number of questions arise from ethical, formative, and practical perspectives: How much of reality can be recreated without disturbing, and even offending, those involved in the news being told? What will weigh more, the spectacular or the subsequent end of the news? Does the journalist do it for public interest or to be more successful from using a striking technology? Are virtual environment developers also journalists?

Academics and practitioners must find the answers for the use of immersive and disruptive technologies based on the narrative needs and the demands of the audiences and media.

Introducing immersive technologies into community engagement projects creates interesting challenges for both faculty and students, in terms of both formal and informal learning objectives. In summer 2019, PUCE students were able to apply these technologies in the rural communities of Chimborazo. Unfortunately, it was not possible to replicate the previous international experiences. Nevertheless, making students aware of the public purpose of their education and enhancing technologies to go beyond the aesthetic to enhance the needs and projects of communities is the main challenge. Further evaluation into the actual scope and relevance of such immersive technologies is needed, but we believe that the outcomes of these two projects raise interesting questions for all stakeholders in the process.

About the Authors

Veronica Yepez-Reyes *is an associate professor and dean of the College of Communication, Linguistics and Literature at Pontificia Universidad Católica del Ecuador.*

Eric R. Williams *is a professor of cine-VR and new media storytelling in the J. Warren McClure School of Emerging Communication Technology at Ohio University.*

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