Open Estudio: Mapping Intercultural Dialogues through Art and Technology

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Abstract

This paper presents the continuation of our interdisciplinary work connecting art and technology at Purdue University (USA) and Universidad de Antioquia (Colombia). In particular, this presentation will analyze retrospectively the research, methodology and outcomes of the course experience "Open Studio / Estudio abierto: Interactive art and 3D animation", during 2014 and 2015. We will also evaluate the course in order to provide improvements for the upcoming 2017 course. The academic exchange reflects on the topic of cartography in the digital era, introducing the concept of the journey as the starting point for reflection and artistic creation. Our methodology encourages cooperative work between students and professors, establishing a dialogical relationship without the traditional teaching hierarchies. The participants of the experience (students and professors of Purdue University and U.de A) create a bridge for an interdisciplinary, geographic and cultural exchange. The social and cultural projection of this pedagogical research experience is expressed in the resulting art projects, as well as in exhibitions of the results and reflections of participants.

Keywords

Art and Technology, Dialogic Pedagogy, Problem-based Learning (PBL), Intercultural Exchange, Teamwork, Programming, 3D Modeling, Journey and Cartography

Introduction

Open Estudio is an academic and intercultural research experience between Purdue University (USA) and Universidad de Antioquia (Colombia), created to facilitate reflection and creation towards art and technology. "Open Estudio", is our hybrid English-Spanish word to frame this exchange experience, departing from the idea of an Open Studio. Open Studio experiences were gatherings of artists and academics to share ideas during the art salons of the 17th century. Embracing the openness of these meetings we incorporate this approach in the 21st century by including methodologies of cooperation and teamwork as a strategy for cultural exchange, interdisciplinary work and creativity. The physical exchange of faculty and students during the intensive course is possible by a prior intensive planning organized through virtual interactions between the coordinators at Purdue University and Universidad de Antioquia. These managing activities must be carefully planned and are crucial steps for the success and improvement of the program, facilitating a dynamic intercultural collaboration that makes the exchange evolve each version. In particular, this course operates as a Maymester Study Abroad program from Purdue and an elective course at Facultad de Artes of Universidad de Antioquia. Professors, instructors, researchers and students from both universities participated at the 2014 and 2015 studio experiences that encompassed two modules. The first module took place during the first week, focusing on the development of technical competency in the areas of animation and programming interactivity. For this content, we used the open source platforms Processing and Blender. The second module, during the second week, focused on intercultural group work through the development of multimedia and interactive projects. These projects were presented as a public art exhibition at the end of the experience. For both modules the instructors emphasized on the concept of "Journey" and invited students to document their experiences through journaling and cartography. For this matter, the course had a third modality that included daylong trips to the city of Medellín and its mountainous and exuberant surroundings.

Figure 1. Purdue University's student analyzing a map of Santa Fe de Antioquia in the 2015 course

Conceptual Frame
Journeys and Cartography in the Digital Age

The topic of the course is inspired on the practice of travel logs, documented through literature, arts and cartography. For centuries, travelers have documented their experiences through guidebooks, sketches, maps and memoirs. However, we asked ourselves about its equivalency in the contemporary world, and in our particular digital age. We encourage participants to find spaces and objects during a series of field trips, to engage with the creative process and encourage critical reflection. Piccolo Careri describes in his book *Walkscapes: Walking as an Aesthetic Practice*, the idea of moving and walking the landscape as primary form of mapping the individual experience symbolically and aesthetically (Careri et al., 2004). Specifically, we encouraged students to document their experiences during the field trips with a perspective that integrated psychological and geographical impressions, in a similar manner that the artist André Breton proposed in 1924 to document emotions and behaviors of the urban landscape (Sánchez, 2015). Thus, we invite students to document their trip by combining traditional media (such as drawing and writing), and including new media tools, such as digital photography, video and sound. These artifacts will not only be used as documentation, but also as materials for creation. This aligns with the scope of reflection that Christiane Paul developed in her book *Digital Art* (2003), in which she proposes the understanding of digital art from two perspectives: as a tool and as a medium. The reflections that emerged after being exposed to new cultural contexts became raw material for the creative projects that were developed during the studio.

In this manner, the studio can be seen as a vital practice that goes beyond the classroom, in a sense that it includes the lived experiences and emotions of the travelers. During the course activities that were conducted in 2014 and 2015, the group went on different field trips within and around the city of Medellín with the goal of locating students in diverse surroundings including both rural and urban perspectives. Some of these trips included visiting places like Cerro Nutibara, Parque Arví and Metrocable. Additionally, the group did two other field trips to the patrimonial small towns of Santa Fe de Antioquia and El Carmen de Viboral. The active character of these outings was reinforced with hikes that provided the opportunity to document the journey and

to reflect on the construction of a personal map, one that combines cognitive, emotional and geographical perspectives. This aspect of documentation and creative reflection is the backbone of the course, and is intended to integrate students in an immersive experience with the visited locations that includes body and mind. Students created analog and digital journals compiled in the form of photos, videos, sounds, drawings and notes. These artifacts constituted the basic materials for the creation of multimedia projects. In some cases, students articulated their own reflections of the trip within the concept of digital cartography by creating interactive maps that departed from their journeys and documentations. Examples of this are two cartographies created in 2014 and 2015: Diario Cartográfico (2014) (Cartographic Diary) by Diana Marcela Zuluaga and Sara Echeverri (Colombia), and Untitled (2015), by Betzie Yasmin Ajsivinac (Guatemala), Mary Luz Ochoa (Colombia) and Cameron Tyson (USA). Both projects invite the viewer to interact and immerse themselves in a map that creatively recreates their emotional and critical reflections of these trips (see Figure 2).
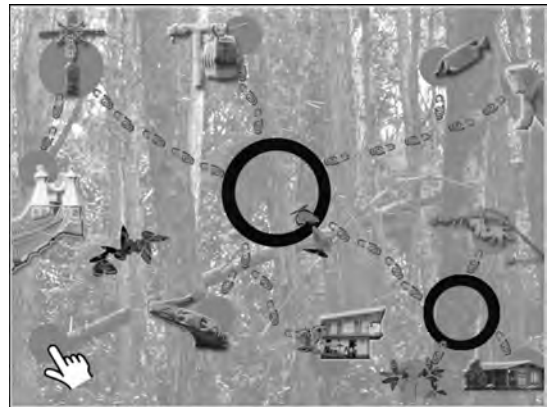

Figure 2. Untitled, 2015. An interactive map project created by Betzie Yasmin Ajsivinac, Mary Luz Ochoa and Cameron Tyson

In addition to offering sociocultural experiences for the students to create their projects, the field trips became a space for group bonding. Specifically, the hikes established teamwork and cooperation among intercultural groups and created a sense of friendship. One example of a "bonding moment" was the support that one of the Purdue students in 2015 gave to one of the Colombian students to overcome her fear of heights

by holding her hand until they both crossed the long bridge in Santa Fe de Antioquia. A second example was the karaoke activity that emerged naturally in the bus when returning from the same field trip. In this case, music was the media that integrated professors and students from different cultures to help them have a more horizontal relationship.

These dialogical and horizontal interactions were a complement to the academic objectives that motivated this course. Paulo Freire (1995) explains the nature of a radical, pedagogical experiment in the practice of dialogical theory. In dialogical pedagogy, "dialogue presents itself as an indispensable component of the process of both learning and knowing" (p 379). In the Open Estudio experience, teachers and students embrace dialogue in the liberating acts noticing and learning from one another, disrupting the hierarchies of traditional pedagogy. Another important pedagogical framework was the idea of facilitating learning by focusing on concrete problems as proposed in Problem-based learning (PBL), a teaching-learning methodology that departs from the socio-constructivist perspective of learning (Casals, García, Noguera, Payà & Tey, 2010). In the Open Estudio course, students are actively engaged in:

(a) Identification of personal and common interest, (b) Design of methodologies for team work (establishing role and activities), (c) Selecting materials, means and programs to develop their projects, and (d) Installing and socializing their project with the audience.

Cooperation for Creative Learning
Bridging Purdue and Universidad de Antioquia

The beginning of this exchange experienced between Purdue University and Universidad de Antioquia (UdeA) departed from identifying common interests in the relation between art and technology. Specifically, Open Estudio started from the participation of Esteban Garcia Bravo (Purdue University) and Isabel Restrepo (Universidad de Antioquia) in the Latin American Forum at the International Symposium on Electronic Arts, ISEA 2013, in Australia. From that moment, both professors started a leadership process to establish interpersonal and institutional relationships. This process eventually expanded to other professors in both institutions until they created the conditions to perform the courses in 2014 and 2015. The perspective of the required exchange implied the socializations of ideas, the search for financial support, the construction of the methodology and the content of the class, and a series of physical and online meetings. In the ISEA 2014, we presented the results of our first experience with Open Estudio reflecting on the details of creating a bridge between two educational institutions (Garcia Bravo & Restrepo, 2015). In general, the exchange process can be seen as an organic, interactive and iterative dynamic that includes three components: academic management, realization of the course, and evaluation.

In the Classroom

The course is composed of classroom sessions at the UdeA Cultural Center with scattered field trips in between. The space is also used as one of the university's off-campus museums and auditoriums. In the classroom, students and faculty get to meet one another and to learn the tools for their work. The first week's goal is to learn the fundamentals of programming and the fundamentals of 3D modeling. By combining instructor explanations and students creative hands-on work, participants solve problems and applied technical and theoretical concepts for the development of creative projects. We chose open source software tools because of its accessibility. Open source tools facilitate learning and the continuity of the work across diverse spaces and platforms. For the programming module, we used Processing and, for 3D animation, we used Blender. Each learning module had a final assignment that allowed students to demonstrate their learning through the design of digital artifacts (prints, interactive animations, and 3D models). In the case of the programming module students approached the understanding of basic functions of programming and applied them to various multimedia elements such as images, sound and video. For example, in one of the class exercises, students had to create an interactive "Metrocable" (iconic cable car transportation in Medellín) from scratch. They used code to control the graphics and the interactive components of their project. It is important to highlight that the project's aesthetic departed from participants' documentation during the fieldtrip to the Metrocable. An example of the cable car designs can be seen in Figure 3.

Figure 3. A cable car interactive application by Rachel Louthan

In a similar way, in the 3D module students learned how to model elements of the city to the virtual space of the screen. Specifically, from the experience of the city, students are invited to adopt an object from their journey as the origin for a visualization process in Blender. Students are also invited to create a narrative associated to it. Using basic tools for modeling and texturing, students recreate and resignify their inspirational objects in an activity named "Archive of Urban Objects". One of the works that was done under this premise expresses the experience of one of the participants, the student Betzie Ajsivinac, who selected a chair (Figure 4) for modeling in Blender and wrote the following narrative: "Every morning on our short road trip to the classroom to Centro Cultural, I always walk past this chair that always catches my eye.

Figure 4. Example of a 3D model made by Betzie Ajsivinac

The design is simple yet interesting and with an antique look. In this image I wanted to capture the attributes of this interesting chair o that I can look back to it as a memory of my everyday morning walk to the classroom where the real fun began for the day. Thus, the chair becomes an important significance in my stay in Medellín, Colombia". Another example of the Archive of Urban Objects exercise emerged after one of our visit to the Piloto Public Library in Medellín, where students and instructors were inspired by an exhibit of old photographs and artifacts from the city. The designs were printed on paper and displayed at the exhibit. Figure 5 shows the work of Katlen Vergara, who reflected on how trashcans may be overlooked as "dirty" objects, undermining the importance of they role in every city.
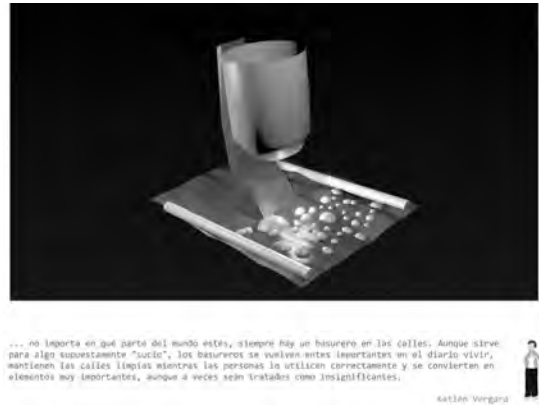

Figure 5. Example of a 3D model made by Katlen Vergara

For the modeling of the objects, instructors started with a tour of Blender's interface to teach the elements that are needed to build a 3D scene. Among the basic elements that are taught in these sessions are: cube, camera, lights, and positioning in the virtual space. Students learned how to position, move and manipulate the basic geometrical figure of a prism in order to model it in a new form. Methodologically, students start transforming the cube into simple forms, such as chairs, crosses and tables. Eventually they are able to create complex designs like cars, buildings, plants or animals. In parallel to the modeling, students are guided into the program to better use light options, textures and camera positions to improve their compositions.

Both of these assignments (interactive cables and the objects for the Archive of Urban Objects) were a methodological invitation to activate a creative and technical learning process of the programs, in a way that opened possibilities for acquiring a common background for later teamwork.

The second module of the course occurred during the second week; when students are invited to put into practice what they have learned to creative teamwork. The methodology of this second module started with an invitation to share individual ideas with the rest of the group, with the intention of integrating their experiences in the search of common interests. The instructors moderated these experiences and aided in the formation of groups. In particular, instructors motivated participants to find common topics and diverse collaborators from a different culture and area of expertise. This intercultural prompt became more intentional in 2015 and students did in fact form groups with members from both universities. In 2014 there was only one intercultural group, while in 2015 there were three of them. During the project development, students collectively planned the audiovisual and conceptual components of their idea. They determined the tasks and assigned them to different group members. All instructors were available to provide feedback during the ideation process and guidance and support during the development of their projects, solving technical questions. There was no formal lecture and only hands-on work individually and collectively. The questions and difficulties that the students encountered ignited a dialogue with the instructors. The members of the different groups were also able to help one another, figuring out solutions to their problems. This way of teaching and learning allowed a constant feedback among students themselves and instructors, providing multiple views and opinions. Simultaneously, there was dialogue between the instructors to curate a final exhibit of the resulting works.

Figure 6. Project development phase in teamwork

The group dynamics were not limited to academic aspects. For example, the field trips became a space that strengthened interpersonal relations that benefited the development of the group projects. Students recognized that through collaboration, they could achieve a greater quality of work compared to what they could have achieved on their own. One of the greater struggles for both students and instructors was the language barrier because most participants were not bilingual. To minimize the impact of this barrier, the course was taught in both English and Spanish. The instructors also invited the students to not be timid about trying to speak the other language and to find creative strategies to understand their classmates. Students used mobile technologies to facilitate their communication, translating in real time or using gestures and images to make themselves understood. The importance of learning a second language became more apparent to the students, as they identified it as a form of self-improvement that opens doors to new experiences and opportunities.

To facilitate the learning experience of students and the culmination of the projects, all the activities of the course required the collaborative work of additional people who focused on activities relating to administration, logistics and communications. It is important to mention the participation of other personnel that took on tasks that facilitated the experience. More explicitly, these tasks were: Production, administration, companion, graphic design and documentation. For example, student groups had access to a limited materials budget that allowed them to cover the costs of production and installation of the pieces. The production team made possible the implementation of the materials.

The resulting projects were exhibited publicly at the Cultural Center. The double of this space nature (classroom and exhibition) was positive because it allowed participants to get familiar with it and to visualize their projects in relation to that setting. It is important to highlight that the space strengthens the concept of the "Open Studio" referenced before, because the place of the learning experience is opened to the public. The items displayed at the exhibit included images created during the learning process, such as interactive images of the Metro Cable and the Archive of Urban Objects. Foremost, the exhibit displayed the interactive artworks that resulted from the group projects realized during the 0 second week of the experience. The day of the opening seemed more of a happening than a regular class critique.

A retrospective analysis of the final results of individual and team projects allowed us to group the projects into some categories that speak about the aesthetic qualities of works that merge art and technology. In particular, they exemplified some of the principles of New Media proposed by Lev Manovich (2002). For example, the vast majority of projects were the result of numerical representations, either for directly creating the piece by algorithmic operations or by digitizing analogue documentation; secondly, the modularity and variability principles appeared as key elements for the understanding and creation of code for aesthetic purposes. The resulting projects can be grouped in the following categories: printed digital imagery, animation, video, interactive installation, and video games. This experience also allowed some students to use the programming skills to make an approximation to data visualization, an area of study that invites artists to take advantage of the plasticity of the data (Waltz, 2011). This was the case of the application "Vida Nocturna" by Guillermo Blanco and Alex Stamm (2014).

The results from the Processing module in 2015 were displayed in Android tablets to allow the public to observe the interactive graphics that the students designed inspired on their own experience of the "Metrocable" travelling through the mountain. The resulting group projects were also documents of lived experience. For example, the video game "El Paso de Occidente" by Daniel Blandón Cañas and Sebastián Zea Quintero, takes place in a virtual representation of the centennial bridge of Occidente in Santa Fe de Antioquia. In the game, the user must overcome vertigo while crossing the epochal suspension bridge. This project was the reflection of an actual sensation that the students had when visited the place during one of the field trips. In "Evolución Constante", by María Camila Arenas, Shubham Gulati and Juan Felipe Orozco Posada, reflected on the indiscriminate growth of the city towards the mountains. This generative piece adds repetitive building designs to a mountainous landscape, questioning the idea of progress and commenting on the formulaic International architectural style. These projects exemplify lived experiences and reflections of the city turned into interactive artworks that surpassed the expectations of the instructors. Our initial plan of documenting emotions as a form of reflection became the catalyst for engaging interactive art works.

Figure 7. Video game titled "Paso de Occidente", by Daniel Blandón Cañas and Sebastián Zea Quintero in 2015

For some participants, the experience of showing their works in a public venue was totally new. Most of them had never shown their work outside an academic setting and this brought an additional sense of value to them. The interaction among work, creator and audience gave a new dimension to the experience. Students were eager to establish a dialogue with the audience about their process creating their final project and to receive feedback. These reflections allowed students to get motivated beyond a grade and transcend to their individual development.

Evaluation

At the end of the course experience, and after the public exhibition, the whole group (instructors and students) ventured to a retreat to the country to facilitate a state of group reflection. We went to the Oriente regional Campus of Universidad de Antioquia near the township

of El Carmen de Viboral. In a classroom, the instructors also assessed the experience through a questionnaire to be filled individually by students. The written evaluation was followed by a group round table. About the evaluation of 2015 one of the participants said: "This is in reality an experience that is built day by day. Maybe, the most emotional moment for me was the closing session, when we shared our opinions about the experience. It is at this moment that you face yourself and other participants and realize what was the experience about. It is like the moment of a confession, or at least, that was for me because at that moment I was disappointed of humanity and with this exchange, in particular, realized that I should not generalize, and that there was a space for me in this world".

From analyzing the evaluations, students reassured their disposition to learn, investigate and create outside the motivation of a grade, something that was also observed during the entire experience. They identified that learning based on relating to others, was a potent tool for project development. We also learned that although students felt at times tired or overwhelmed with the daily activities, the overall experience was of great value for them. They were thankful to have participated: "I met a friend and we are so alike" one student emphasized. They felt satisfied that they were able to communicate and work in groups despite the language and cultural barriers.

The evaluation of the experience corroborated aspects of our methodology of teaching and learning inspired on Luis Camnitzer pedagogy: "Information is not limited to be a transmittable object, but becomes a group of conclusions resulting from an investigation made in the commons" and "Pedagogical authority is shared and assumed predominantly by the one in the team that can contribute with the best performance" (Camnitzer, 2009, p82).

From these ideas, it is important to say that dialogical model of teaching and learning was an important element for the experience. The non- hierarchical approach diffuses the traditional concepts of teacher and student: the teacher as the source of knowledge and the student as a passive receptor. Open Estudio challenges the traditional proposition of the instructor as a container of all knowledge and the students are passive vessels, and it empowers participants to actively engage in pursuing a common goal through project-based learning. Our pedagogy aligns with a contemporary approach where the teacher is a guide who departs from sharing experiences and basic content, and moves towards mentoring research and creative processes.

Additionally, to the documentation that each student did during the classes, the entire experience was also documented on photographs and video, in order to develop print catalogues and video clips. In this way, the exchange is transferred via social media to new audiences and help recruit future interested students of both universities. In general, the analysis of the evaluation and the construction of the documentation of each course provided the necessary elements to improve new versions of the exchange in coming years.

Conclusions and Future Work

From this study, we analyzed the Open Estudio experience retrospectively from 2014 and 2015 as a dialogical tool for learning, researching and creating digital artifacts. The methodology proposes a non-hierarchical relationship between instructors and students while immersing in a new cultural context. The Open Estudio course showed its potential as an innovative pedagogical experience to integrate art and technology through real experiences, located in particular geographical and symbolic contexts. First, for its interdisciplinary efforts connecting art and technology, and second, for facilitating vital points of learning: where exchange, cooperation and research evolve into personal growth for all stakeholders. Since the experience is based on continuing more intercultural dialogue, each time we face new information, skills and material to conceptualize and improve future versions of the exchange among universities, programmed to be done every two years. Our next version will be in May 2017.

Acknowledgements

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Authors' Biographies

Isabel Cristina Restrepo

Isabel C. Restrepo holds a PhD from Universidad de Antioquia and a MFA in Art with emphasis in Multimedia from San Diego State University. In 2008, Restrepo founded the interdisciplinary group Hipertrópico to study relationships between art, technology and society. She directed key research within that group, including the project on Augmented Reality and Imaging and Artistic Education: A Pedagogical Model. In her exploration, Restrepo has utilized Open Source as a tool for production, experimentation and teaching digital media in art. Such work has led to the creation of the pedagogical multimedia Líneas Digitales, based on the use of GIMP. In addition, she has worked as a curator and an educator.

Esteban García Bravo

Esteban García Bravo explores computational arts as a researcher, a practitioner and as an educator. He earned his MFA from Purdue University in 2008, and a PhD in Technology, also from Purdue, in 2013. His research on computer art history and digital media art practices has been featured in the annual meetings of international organizations such as SIGGRAPH, ISEA and Media Art Histories-MAH. His artwork has been displayed internationally in media art festivals, gallery exhibits, museums and artist-in-residence programs. Esteban is an Assistant Professor in the department of Computer Graphics Technology at Purdue University, where he teaches digital imaging, visualization and computational aesthetics.

Carlos Mario Sánchez

Carlos Mario Sánchez Giraldo holds a Master of Arts from Universidad de Antioquia and an undergraduate degree in Arts from the same university. He is a member of the research interdisciplinary group Hipertrópico, convergence between art and technology. He is the coordinator of the research schools (semilleros). He has been co-investigator in the following research projects: Imaging and Artistic Education: A Pedagogical Model (2009) and is actively part of the researchers of The Animation in Colombia (1990 -2010), Medellín, chapter. He participated in the Chataee project with the component FotoVoz for communities Tikuna and Cocamas in Leticia, Amazonas (2011). As a creator he has participated in multiple spaces and artistic local events. He is also a professor at the School of Art at Universidad de Antioquia.

Pablo Andrés Pulgarín

Pablo Andrés Pulgarín holds a BA in communications with an emphasis on multimedia from Universidad de Antioquia. In 2008 Pulgarín became part of Hipertrópico research group, and he participated in several research projects with this group. He is currently a professor in the departments of Art and Communication of the same university.