Journal of Problem Based Learning in Higher Education

VOL. 6, NO. 2, 2018 – Page 1-31
10.5278/ojs.jpblhe.v6i2.1928

Lessons Learned Implementing Project-based Learning in a Multi-campus Blended Learning Environment

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ABSTRACT

In this article, we describe a project management course developed in a multi-campus, blended learning environment, with the participation of 14 NGOs. There were 70 undergraduate students involved, from three campuses of the Federal University of São Paulo, Brazil. We discuss how the course was conceptualized, provide an outline of its curriculum and online components, and analyze its successes and failures. To gather data, we used a convergent parallel mixed method approach, and we analyzed this data by means of a systemic analysis.

We found that working with real clients on real projects, in a multi-campus blended learning environment, increases the students' motivation to learn, develop skills, and complete projects. However, the occurrence of students dropping out of the course is demotivating and stressful to the remaining students and to the community partners.
We also found that the distances involved (between campuses and between campuses and NGO facilities), along with course schedule conflicts, make it difficult to establish rhythms between face-to-face activities and online activities. However, we also found that the intensive use of information technology can help overcome problems caused by distance and course schedule conflicts.

Keywords: Project-based learning, multi-campus, blended learning environment, community partners, project management.

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INTRODUCTION

The Federal University of Sao Paulo (Unifesp) was created in 1994 with only one campus, in Sao Paulo City. In 2004, a new campus was created in the city of Santos; in 2007 three new campuses followed, in the cities of Diadema, Guarulhos and São José dos Campos. In 2011 a sixth campus was created in the city of Osasco. Unifesp is now a large university, with approximately 10,000 students distributed across six campuses in six different cities (Appendix 1).

One of Unifesp's goals is to provide multi-campus courses in order to give their students the opportunity to study subjects from a variety of fields and promote integration among campuses. However, until 2015 there had been no multi-campus course offered. Then, on December 1, 2015, we received an email from the Undergraduate Dean asking if we were interested in participating in a pioneer project that would offer a web-based learning course to all the university campuses of Unifesp.

We proposed a project-based learning course to be called *Elaboration and Management of Projects.* We suggested that the course be not only web-based, but developed with blended learning characteristics. The students would learn project management theory by making use of the material on the course website: book chapters, video-lectures, and class notes. The students would be challenged, week-by-week, to put theory into practice and reflect on the learning process. They would do this by accomplishing a real-world project on behalf of a university community partner, under the guidance of the professors.

However, we had one important question: Would the course be offered as credit bearing, or as what we term an "optional" course?

After consultations with academic departments on the various campuses, we were told that that the course would have to be offered as non-credit, since the process of seeking approval for a new credit-bearing course on each campus would take a great deal of time. Although we saw the non-credit status as a possible barrier to student enrollment, we decided to go ahead with the project. First, we were excited about offering the opportunity to teach project management concepts to students from diverse fields. More importantly, we wanted to provide students with an opportunity to work on real projects, on behalf of NGOs that help people in need. We felt this would develop their interest not only in project management theory, but also in its application to the solution of social problems. We also wanted our course to foster a sense of citizenship.

At that point we were quite confident that we would be able to do this: we had had years of previous experience in conducting similar courses following the PBL approach (Arantes do Amaral & Gonçalves, 2015), and we had developed a reliable network of community partners (Arantes do Amaral, Gonçalves, & Hess, 2015). Throughout this time we had developed a sound methodology for conducting face-to-face PBL-centered project-management courses, with well-defined learning objectives for each class, clearly defined deliverables and milestones, and well-established discussion forums involving students, professors and community partners (Arantes do Amaral & Matsusaki, 2016). We knew exactly what the pitfalls were that could jeopardize a face-to-face PBL course (Arantes do Amaral & Okazaki, 2016), and we knew what to do and what to avoid (Arantes do Amaral & Frazão, 2016 ; Arantes do Amaral, 2017). However, we had no experience teaching such a course in a multi-campus, blended learning environment. We saw this as challenge and also as a research opportunity.

Our research questions thus became:

1. To what extent would working with real clients (community partners), performing real projects in a multi-campus blended learning environment, contribute to the learning of project management theory and development of project management skills?
2. What were the logistics and organizational challenges of providing such a course?

In this article, we present our findings related to these questions.

LITERATURE REVIEW

The design of our course supported our pedagogical philosophy of constructivism (Goodyear, 2005; Ryberg, Koottatep, Pengchai, & Dirckinck-Holmfeld, 2006), Constructivism can be understood as a theory, paradigm, or worldview that advocates learners' building their knowledge by constantly reflecting on the experiences accomplished (Clements & Batista, 1990; Perkins, 1991). These experiences can be very diverse, such as solving real-world problems or developing experiments. More than that, constructivism preaches that the learning should be student-centered rather than teacher-centered.

We decided to follow a project-based learning approach (PBL) as our high-level pedagogy. Project-based learning derives from constructivism (Hendry, Frommer, & Walker, 1999 Jonassen, 1999; Savery & Duffy, 1995) since it provides a methodology for teachers to empower the students, guiding the students to become active participants in their own learning process (Gijselaers, 1996; Tassinari, 1996). Project-based learning helps the learners to combine the theory studied in courses with practice (Lee, Blackwell, Drake, & Moran, 2014; Savery, 2006). Usually the students work cooperatively in small groups (Allen, Duch, & Groh,

1996), developing projects. *Projects* can be understood as temporary efforts undertaken to produce goods or services (Kerzner, 2013).

Researchers (Arantes do Amaral & Gonçalves, 2015; Larmer & Mergendoller, 2010) agree that academic projects should have a clearly defined scope, milestones, and deliverables, and that students should be required to follow a sequence of steps in order to create the product or service. In project-based learning, the students should be challenged to develop realistic and meaningful real-world projects (Bell, 2010). Researchers (Barron et al., 1998) point out that project-based learning can bring several educational benefits, such as the development of students' critical thinking and problem-solving abilities. Project-based learning has been used in science, technology, engineering and mathematics (thereafter STEM) education (Capraro & Slough, 2013). Some scholars (Tseng, Chang, Lou, & Chen, 2013; Verma, Dickerson, & McKinney, 2011) indicate that the combination of STEM and PBL (thereafter STEM PBL) may enhance the students' learning and motivation. In this regard, scholars (Capraro, Capraro, & Morgan, 2013; Markham, 2003) point out that professors have an important role, giving guidance to the teams of the students during the project, facilitating their learning, promoting reflection sessions and keeping the students focused on the creation of the product or service.

One way of giving students the opportunity to develop projects is by creating partnerships between universities and communities (Bouillion & Gomez, 2001). Although this may be challenging (Strier, 2011), scholars (Arantes do Amaral & Matsusaki, 2016; Arantes do Amaral & Frazão, 2016) report that PBL courses developed with the support of community partners may lead to the accomplishment of successful projects, bringing educational benefits to the students, research opportunities to the scholars and to the students (Arantes do Amaral & Lino dos Santos, 2018), and material benefits to the communities.

In this article, we describe a PBL course that involved the participation of community partners developed in a multi-campus, blended learning environment. Blended learning can be understood as an educational method that combines the traditional face-to-face instruction with computer-based instruction (Bonk & Graham, 2012; Garrison & Vaughan, 2008), making the best use of the benefits of each one (Osguthorpe & Graham, 2003; Vaughan, 2007). Blended learning can be accomplished in a variety of ways (Graham, 2006; Osguthorpe & Graham, 2003); the weight of the face-to-face and on-line activities in course design may vary, depending on the educational context and the information technology tools available for the course.

Blended learning can be facilitated by the use of different learning platforms (Steinø & Khalid 2017), including Moodle, Google+, Udemy, Rcampus, and Learnopia. Nowadays, the learning platforms can be accessed from computers, tablets or mobile devices (Smith, Lewi, Saniga, Stickells, & Constantinidis, 2017).

Blended learning may allow the use of different learning tools, such as pre-recorded video lectures, collaboration software, electronic forums, mixed reality, video games and simulations

(Singh, 2003; Kirkley & Kirkley 2005; Thorsteinsson, 2013). More than that, it can be accomplished in synchronous or asynchronous ways, or in a combination of both (Valiathan, 2002; Yamagata-Lynch, 2014).

Researchers (Donnelly, 2006; Giani & Martone, 1998) suggest that the use of PBL in blended learning environments may improve learning, since the on-line environment may make it easier for students to socialize, share ideas and knowledge, reflect together on the issues raised in face-to-face meetings, and contact the tutors/professors, receiving guidance and orientation.

Others researchers have investigated the use of PBL in multi-campus environments (Steedman, Smith, Keleher, & Martin, 2006; Mandal, 2008), indicating that it could be very challenging, requiring coordination of work across campuses and development of standard procedures to assure the quality of the courses offered.

However, there is still a lack of information about the challenges of using of PBL in a multi-campus, blended learning environment, involving the participation of community partners. This article aims to address this gap.

THE RESEARCH METHOD

We followed a convergent parallel mixed method approach (Creswell, 2013), collecting and analyzing quantitative and qualitative data in order to to have a better understanding of the problem we were studying. After that, we performed a systemic analysis, connecting the findings in a coherent way.

We gathered quantitative and qualitative data from questionnaires distributed at the end of the course, and from project documents: initial plans, team blogs, team reports, and emails. We gathered responses to the yes/no questions on the questionnaires, and to questions that asked students to respond to statements using the Likert scale.

We then analyzed this data statistically. We analyzed the qualitative data generated by the open-ended questions by selecting repeated words, phrases and statements and categorizing them as *recurrent themes* (RT). We discussed our analysis in detail in the Discussion section of this paper.

We analyzed the qualitative data following the five-phase analytic process proposed by Yin (2015): 1) compile the database, 2) disassemble the data, 3) reassemble the data, 4) interpret the result and 5) conclude. First, we compiled the qualitative database by gathering the data from questionnaires. Then, we disassembled the data, breaking it into single phrase fragments. After that we reassembled the data, grouping the correlated phrases into groups (recurrent themes).

In order to perform the fourth phase of the process (interpret the result) we made use of the results from our quantitative analysis and the recurrent themes from our qualitative analysis. We merged the two by means of a systemic analysis, combining the information we gathered from both analyses with the information we obtained from project documents. Based on this interpretation we came to our conclusions. Figure 1 presents an overview of the research method we followed in our case study.

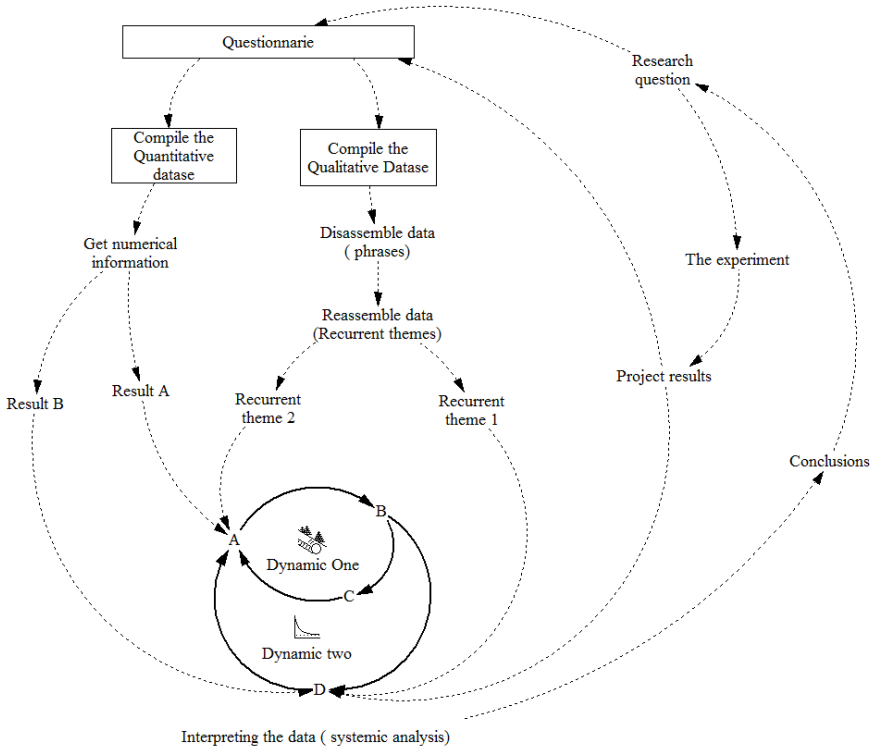

Figure 1. The research method used in our case study (adapted from Yin (2015, p. 186))

Participants

There were 70 undergraduate students involved, from three campuses -- Guarulhos, Baixada Santista, and Diadema. The students were from all semesters of the undergraduate courses, in the fields of Social Work, Environmental Sciences, Languages, Sciences, Chemistry, Industrial Chemistry, Chemical Engineering, Petroleum Engineering, Environmental Engineering, Ocean Sciences, Nutrition, Physiotherapy, Philosophy, History of Art, Social Sciences, and Pedagogy. There were two professors involved and one research assistant. The first professor designed the course and research model and taught the course. He also was the responsible for creating this article. The second professor and the research assistant helped to analyze the data, and made comments and suggestions for the research article.

Instruments and procedures

We collected data from questionnaires sent to the student teams at the end of the project, and from the project documents: plans the teams created, notes they made regarding the project development, and the products and services they created.

We also collected data from the project blogs: each team developed a blog, where they described the work they had accomplished each week.

The questionnaires had two classes of questions: nine closed-ended questions (used to collect the numerical data) and fifteen open-ended questions (used to collect the qualitative data).
The first 6 questions were about the learning environment. The remaining 3 were about the project.

Questions about the learning environment

The first two structured questions were:

1. Did you read the suggested articles?
2. Did you watch the video-lectures?

We allowed the students to choose one of the following options:

() Yes, we read/watched all. () No, we did not read/watch any. () Yes, we read/watched some.

We designed these questions because we wanted to know if the students were making use of the material we created specifically for this course.

In the next four questions, we used the Likert scale, asking students to agree or disagree with the following statements:

1. The readings were useful to your learning.
2. The video-lectures were useful to your learning.
3. The face-to-face meetings were useful to your learning.
4. The on-line quizzes were useful to your learning.

( ) Strongly agree ( )Agree ( ) Neutral ( ) Disagree ( ) Strongly disagree

We designed these questions because we wanted to ascertain the usefulness of the material we created for the course (the video-lectures, readings and on-line quizzes). We also wanted to know if the face-to-face meetings contributed to the students' learning.

Questions about the projects

The final three statements were about the projects themselves:

1. Working on a real project on behalf of real clients was motivating.
2. Working in groups facilitated learning.
3. The project blogs were a useful source of information.

We again used the Likert scale, asking the students choose one of the following options:

( ) Strongly agree ( )Agree ( ) Neutral ( ) Disagree ( ) Strongly disagree

We designed these questions because we wanted to know the students' perceptions in regard to the motivation of working on a real project. We also wanted to know if working in teams facilitated their learning and if the project blogs were a useful way of promoting knowledge sharing.

The sixteen open-ended questions were the following:

1. What was the NGO your team chose? What motivated that choice?
2. What was the project´s scope?
3. What were the team members' roles and responsibilities?
4. Did your project involve fundraising activities? If so, what strategy did your team use to raise them?
5. What were the main problems your team faced during the project? How did you solve these problems?
6. What were the lessons your team learned by working on a project?
7. How did you manage conflicts?
8. What would you do differently, if you did the same project again?
9. Tell me what have you learned by working on a real project, with real clients. Tell me how you applied the project management techniques you learned in our theoretical classes.
10. What advice would you give to the students taking the course next semester?
11. How many hours did your team spend on average during each week of the project?
12. Describe your relationship with your project client (the NGO).
13. Did you deliver the product (or service created) on time? If not, what caused the delays?
14. What else would your team like to report?
15. Please attach the NGO´s evaluation of your project.
16. Insert pictures of your team, of the team meetings with the NGO´s representatives, and the product or the service created.

We designed these questions to obtain an overall picture of the project: what motivated students, what problems they faced and how they resolved them, whether the project was successful in delivering its service or product, and how the community partner NGOs felt about the experience.

Concept and design of the course

We created an educational setting in order to take the advantage of our high-level pedagogy in a practical way (Goodyear, 2005; Ryberg, Koottatep, Pengchai, & Dirckinck-Holmfeld, 2006). It would allow the students to actively learn by doing, guided by us and with support of community partners, making the best use of on-line and face-to-face learning opportunities (Osguthorpe & Graham, 2003; Vaughan, 2007).

We proposed a course that would follow a project-based learning (thereafter PBL) approach. The students would work in teams of five, developing real-world projects. The goal of the course was to teach project management concepts, and challenge the students to apply these concepts in practice in a real-world project, working with a real client (the community partners). The students would be free to form their teams. The teams could be formed by the students of same campus (single campus team) or by students from different campuses (multi-campus team). The teams should develop a project on behalf of one NGO, chosen by them from a list of 14 NGOs (Appendix 2).

In our course, the NGOs would play the role of the clients. They would offer the students a set of project themes based on their needs. For example, the NGOs might ask the students to acquire food, clothes, medicines, school materials, and so on.

The NGOs would send the professor a list of project themes. The professor then would analyze each theme proposed by the NGOs, paying attention in its feasibility and adequacy for the course and then revising the list. After that, the professor would put the reviewed list onto the course website and would request the students to choose one theme.

After choosing the theme, the students would contact the NGO to schedule a visit during which they would interview an NGO representative. Once they understood the NGO's needs, they would be able to define the project´s scope. After that, the students would define their roles and responsibilities. For example, one student would be the project manager, another would be the fundraising manager, and another would be the communications manager and so on so.

Each team would develop a project blog. This blog would assemble all information about the project: the theme chosen, the team members' names, roles and responsibilities, the fundraising strategies followed, the project´s plans, the problems the students faced and the solutions developed to deal with them, the project development week-by-week, and the lessons learned. The project blog had three main purposes: first, to foster students' critical thinking and

reflection; second, to allow the professor to follow the development of each project week-by-week; and third, to allow the students to follow the other projects. The blog was conceived as a discussion forum, allowing the professor to discuss the assignments with each team, clarify issues, and give guidance. The blog also promoted knowledge sharing, since all students could follow all the projects, week by week.

We also planned to have four face-to-face meetings, each three hours long. The first meeting, held the first week, would involve the professors, the students and the community partners. The second and third meetings (at five and ten weeks, respectively) would involve only the students and professors. The final meeting, in the fifteenth week, would involve the professors again, the students, and the community partners. The first meeting had the objective of giving the students information about the course, the clients (the NGOs) and the project themes. It also had the objective of giving the opportunity to the students get to know each other and form teams. The second meeting had the purpose of letting the students show the professor how the groups were organized and how the initial tasks were developed. It also had the purpose of informing the students about each team's project and provided the students the opportunity to interact with the professors. The third meeting had the purpose of giving the professor feedback about each project's development, about the problems the students were facing and the solutions they were working on. It also had the purpose of promoting reflection about the learning process and knowledge sharing. The fourth meeting had the purpose of closing the project; the students would present the results and the lessons they learned. It also had the objective of promoting a reflection about the entire experience, letting the student receive feedback about the projects from the professors and from the community partners. This final meeting had the purpose of promoting reflection not only on the project achievements, but also on the learning process itself.

Throughout the course, we planned to give guidance and feedback to the students in two different ways. The first was by weekly emails. The emails would have the objective of providing general guidance and information about how the projects were developing. We planned to use these emails to remind the students about their weekly assignments, to give feedback about the status of all the projects, to answer questions raised by individuals that would be of interest of all, and to give information about the learning material added. In this email, we planned to ask the students to remember to update their blogs, posting problems they were facing and any questions they might have. We also planned to use this email to let the students know about the updates of the FAQ (Frequently Asked Questions) section of the course website, where we planned to answer questions raised by the students.

The second means of communication was through project blogs. We planned to access each blog daily, reading the blog content and writing comments whenever necessary.

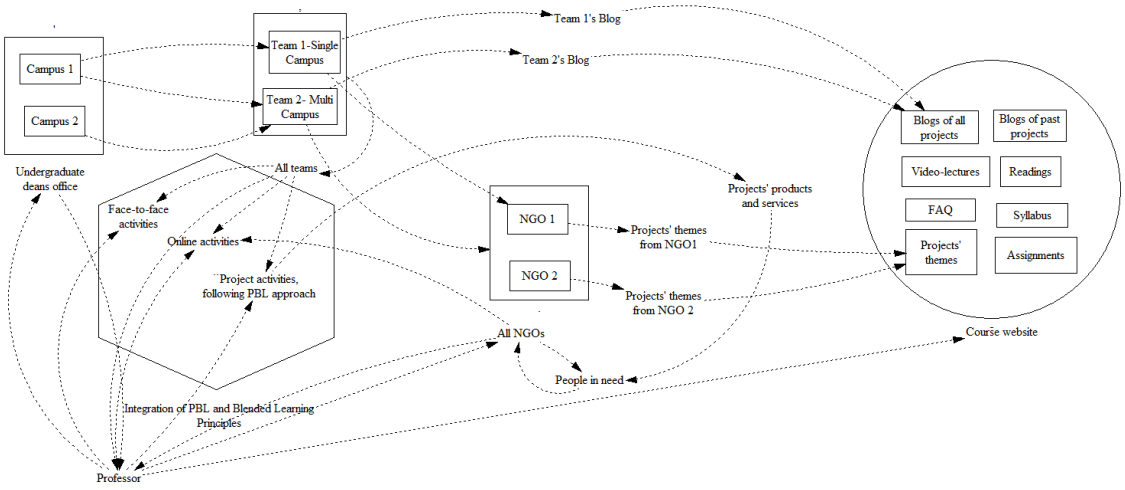

Figure 2. An overview of the course conception (In the interests of brevity, we represent only 2 campuses in this figure).

The development of the on-line learning environment

In January 2016 we spent one week analyzing, testing and comparing different virtual learning environments and course management systems such as Blackboard Learn©, Moodle©, Google for Education© and Google Sites©. After the evaluation of each of these tools we decided to create our website using Google Sites©.

We used Google Sites© for two reasons: first, this tool was very easy to use and very powerful. We could create the course website rapidly, and we knew we would be able to create pages for videos, articles, discussion forums and many other resources. Second, the tool was free.
In the beginning, we were not sure how much information to post on the course website. In search of inspiration, we studied the MIT Open Courseware environment, seeing how the courses were organized and how their websites were structured. Based on this analysis, we decided that our course website would contain the following information:

1. The course overview.
2. The syllabus (general information, the course objectives and scope, the course materials, the grading rules, the course calendar).
3. The week-by-week plan (each week had a specific page that included learning objectives, course readings, video lectures, project activities and assignments).
4. The project themes.
5. The links to the blogs of the students' projects.
6. Information about the NGOs.
7. Information about past academic projects.
8. Frequently asked questions.

Our idea was to create a very detailed website that would contain information about the course, the projects, and the NGOs, and would make clear to all teams what they were supposed to do in each week of the project. The main page of our course website had the structure presented in Figure 3.

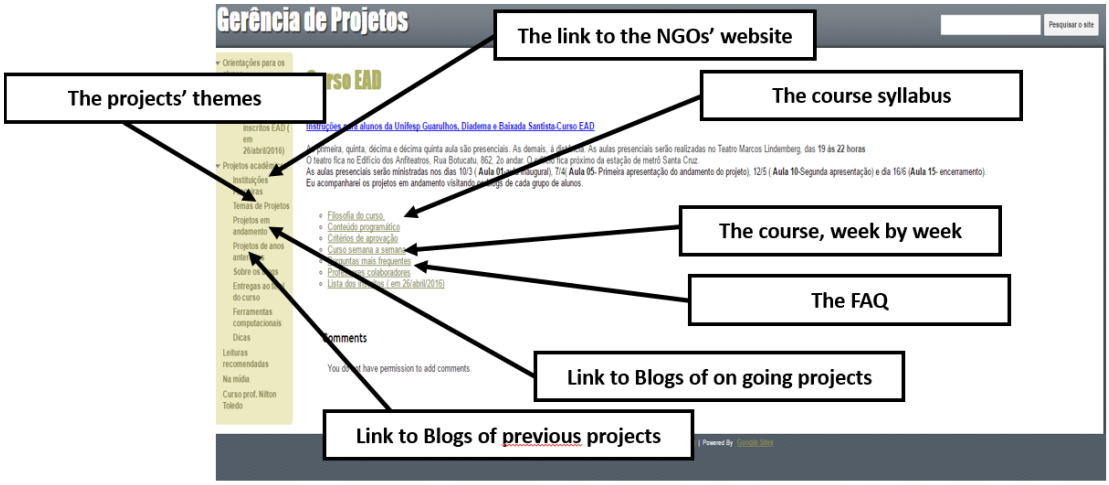

Figure 3. The main page of the course website.

In January, while planning the course, we sent email to the NGOs, informing them about this new course, explaining the difference between this course and traditional face-to-face courses, and asking them for their support to the students. We also asked them to send us possible project themes. We received 102 replies.

During the beginning of February, we developed the week-by-week course plan (Appendix 3). Each week had a learning objective, project activities and assignments. Based on the planning we created 15 webpages, one page for each week of the project (Figure 4).

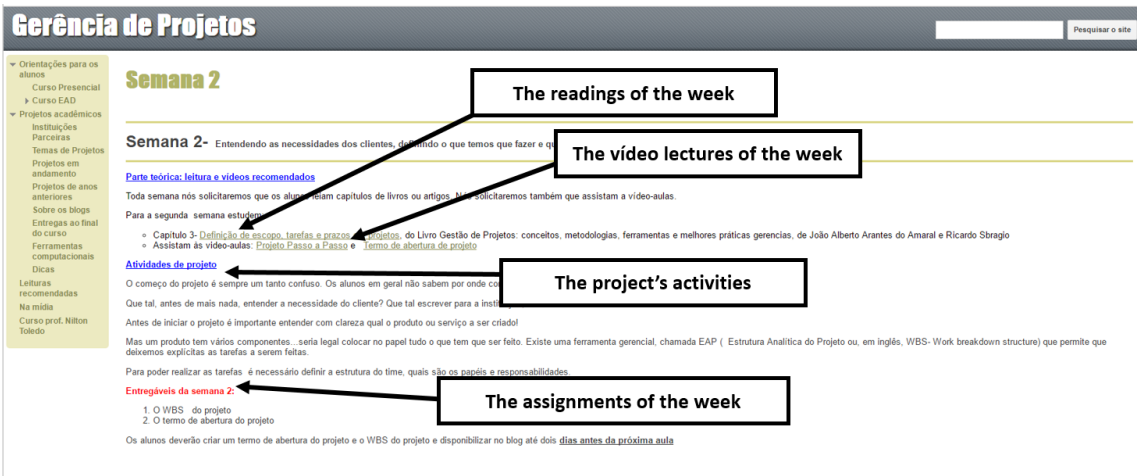

Figure 4. An example a page created for each project´s week.

The course development

The course was planned to begin on March 10. Out of the six campuses, three (Diadema, Guarulhos and Baixada Santista) offered our course to their students.

Two weeks before the course began, on February 23, we sent an email to all enrolled students, welcoming them and providing information about the course schedule and website.

We told the students that the course would follow a project-based learning approach and that they would work in teams on real projects. We informed them that the course would be very challenging: they would learn project management theories and apply them to real-life projects. The projects would be on behalf of 14 organizations working with people in vulnerable conditions. We let the students know that during the course we would have four face-to-face meetings, the first one scheduled on the first day of the course, March 10. Students were informed that this meeting would take place in the auditorium of the campus in São Paulo. We also asked the students to watch 3 short videos describing the course philosophy and reporting on previous projects.

We let the students know that this first face-to-face meeting was very important: it was an ideal opportunity to form project teams and to ask us questions about the course.

The first meeting occurred on the date planned: however, only 50 out of the 70 enrolled students attended. At that time, we thought that the main reason for the low turnout was the heavy rain that fell that day: there was a good deal of flooding, and Sao Paulo city was paralyzed. Some students let us know by email that they would not be able to attend this meeting due to the fact that they lived in other cities and didn't have resources to afford the travelling costs.

Nevertheless, we went ahead and talked to those who were able to attend about the challenges involved in real-life projects. The NGO representatives presented their institutions and their needs. During this first meeting, we encouraged the students to talk to each other in order to form the project teams. Almost all groups were formed during this meeting.

After the meeting, we sent an email to all 70 students who had enrolled in the course, with their contact information (email), letting them know what had occurred in the first meeting. We wanted the students who had not attended the first meeting to use the list in order to get in touch with others to join project teams.

In the following week, the Guarulhos campus went on strike: this event created several problems. Several students sent us emails, asking if we were going to delay our course. We let them know that we were going to follow the course as planned. Some of students from Guarulhos then decided to drop the course.

In each of the following weeks we sent an email to all students, reminding them about the weekly assignments and giving them feedback on the status of their projects. This worked very well: the students acknowledged that this kind of action was very helpful, since they were often so busy doing assignments for other face-to-face courses that they sometimes forgot about our course assignments.

Every day, we followed the students' blogs, paying attention to the problems they reported and contacting each team whenever it was necessary, giving guidance and suggestions. We also answered the questions the students had by email and updated the FAQ section of the course website. The students let us know that they appreciated receiving this kind of attention. Some stated that they did not have this kind of consideration in many of the regular face-to-face courses they attended.

We began the course with 70 students, divided in 14 teams of five students. During the course, 33 students dropped out (dropout rate of 47%). Each time a student dropped out, the students of the affected group sent us an email, asking for our assistance in finding some other student to replace the one who had dropped out. We spent a substantial amount of time (approximately three hours per week) answering the students' questions and solving problems related to the dropout issue. This was stressful and demotivating for both professors and students.

Furthermore, we were able to hold only three of the four planned face-to-face meetings. Attendance was good only at the first meeting (50 students attending), since the regular courses hadn't begun as yet. As the week passed, the teams sent us emails, warning us that many of the team members would not be able to attend our following meetings because of schedule conflicts with regular credit-bearing courses held at their campuses. However, they let us know that they would make efforts to send at least one team member to attend the meetings in order to receive guidance and orientation. The attendance dropped in meetings two (6 students attending) and three (2 students attending), and as the course approached to the end, the problem grew larger. We had to cancel the final meeting because students let us know that they had to attend exams in their regular courses on their campuses; thus, they were not able to send any team member to our final meeting.

Only 37 students finished the course, delivering 9 projects. We considered the project a success if it met two criteria:

1. The project reports and documents showed clear evidence that the students were able to create the product or service that they had chosen to create and the NGO representative's evaluation confirmed the evidence presented in the students' reports.
2. The plans and managerial documents created (such as the Project Charter, the Project's Work Breakdown Structure (WBS), Project network of activities, Risk

Management Plan, Communication Plan, Fundraising Strategies) were carefully completed, demonstrating that the students had understood the concepts presented in the video-lectures and readings.

We considered the project a partial success if it met only the second criteria. We considered the project a failure if the students failed to address both criteria. From nine projects, six were classified as successful, two as partial successes and one as a failure (Appendix four).

THE RESULTS

In this section, we will present the students' answers to the structured questions, the results of each project, and the recurrent themes that emerged from the analysis of the open-ended questions.

Results of Quantitative Data: The answers to the structured questions

Questions	Yes, we read/watch all	No, we did not read/watch any	Yes, we did some
Did you do the suggested readings?	33%	0	67%
Did you watch the video-lectures?	44%	0	56%

Table 1. The students' answers about their efforts to do the readings and watch the videos.

Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The readings were useful to your learning	44%	44%	0	0	12%
The video-lectures were useful to your learning	44%	44%	0	0	12%
The face-to-face meetings were useful to your learning	11%	11%	78%	0	0
The on-line quizzes were useful to your learning	11%	56%	11%	0	22%

Table 2. The students' answers about the usefulness of the course readings, the video-lectures, the on-line quizzes and the face-to-face meetings.

The quantitative data revealed that the majority of the students made use of and learned from the readings (Table 1, line 1 and Table 2, line 1), from the video-lectures (Table 1, line 2 and Table 2, line 2) and from on-line quizzes (Table 2, line 4).

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Working on a real project on behalf of real clients was motivating	78%	11%	0	0	11%
Working in groups facilitated the learning	56%	44%	0	0	0
The project blogs were a useful source of information	56%	44%	0	0	0

Table 3. The team's answers about the project

The data also revealed that the majority of the students acknowledged that working on a real problem was motivating (Table 3, line 1) and that the team´s activity fostered their learning (Table 3, line 2). The data also revealed that the project blogs allowed knowledge sharing (Table 3, line 3). Therefore, we may conclude that the on-line learning environment was indeed effective.

Results of Qualitative Data: The recurrent themes that emerged from the open-ended questions, after applying the five-phase analytic process

Eight recurrent themes (RT) emerged.

RT 1: Developing a project for a real client that helps people in need was motivating
Reading the team reports, it was clear the students valued the fact that they were developing a project on behalf of a real client. One group pointed out:

> "Helping the IFH (Institute Future´s Heirs) was an enlightening experience: with our project, we were able not only to learn project management theory but also help people in need."

The students also let us know that working with a real client encouraged the team to work in a more responsible manner. One group explained:

> "Having a real client brought us an additional sense of responsibility, made us take the course more seriously. We did not expect that this course would bring such a real-life experience. The course was very impressive to us."

Having a real client motivated them to work harder and better, as one group described:

> "Working with a real client improved our motivation; we worked very hard in order to fulfill the client´s expectations, delivering a high-quality product. We knew that the people that we were helping had expectations about our work."

RT 2: Developing a real project fostered learning

Analyzing the teams' answers, we saw that working on a real-life project improved the students' learning. One group remarked that the course proposal surprised them:

> "At the beginning we felt intimidated by the course proposal, which stated we would be learning the concepts and putting them into practice right away. However, it was an excellent experience, and we will use what we have learned in our lives and in our future projects."

Another group stressed the challenges of working in groups, in a distributive and collaborative environment:

> "We learned several lessons. One lesson was how to work collaboratively, by distance, with colleagues from other campuses and cities. It was very challenging. The learning of project management techniques helped us to manage the project effectively."

Finally, a third group pointed to the benefits of learning by putting theory into practice:

> "In theoretical courses sometimes we are not able to see the complexity of the processes that are present in real life. In this real-life project, we realized how much effort is needed to carry on fundraising strategies, for example. In addition to that, we can say that in real projects sometimes the strategies do not work the way the theory describes that they should."

RT 3: Dropouts caused problems for the projects

Almost all teams faced problems due to the number of dropouts. One group explained the problems they faced:

> "One team member left the course in the middle of the semester. We had to split his activities among the other team members. This student was the person responsible for our project´s blog. When he left, we faced difficulties in dealing with the unfinished work he left to us."

RT 4: The students made intensive use of software communication tools and social networks websites to manage the project

The students let us know that they relied on technology in order to promote virtual meetings and to share project documents. One group said:

> "We created two groups, one on Facebook and other on WhatsApp. Doing so we were able to inform each other about the status of the project's activities and to talk about the project´s deliverables."

RT 5: The students faced problems meeting with the clients because of the distances involved

One important aspect of project-based learning courses is to promote meetings between the project teams and their clients. However, in this course many of the students did not live in the same city where their clients worked. This proved a problem. One group made this point clear:

> "It was not possible to have a face-to-face meeting with our client, due to the fact that we live in a different city and we did not have resources to pay for the travelling expenses."

RT 6: The students had difficulties scheduling face-to-face meetings with team members

In addition to the difficulties the students had in meeting with clients, they also had trouble scheduling meetings with each other – even when all students were studying at the same campus. One team explained:

> "It was difficult to have time to meet: some students attend classes during the day, others at night."

RT 7: The students' commitment to the project is key to the project´s success

Almost all teams that succeeded in their projects pointed to the fact that the commitment of the members was one of the reasons for their success. One group stated:

> "The project will be successful only if the team members are 100% committed to the project."

RT 8: The student dropouts demotivated the community partners (the NGOs)

The NGO´s emails evaluating the projects pointed to that the fact that students' dropping out was very demotivating to the community partners. One NGO representative told us:

> "One student's group had a meeting with us. We became very excited about the project; we had hopes and expectations. However, the group never came again, we do not know what happened to them. It was very frustrating…"

DISCUSSION

So, what did we learn from this experience?

Coming back to our first research question, we will discuss now whether the challenge of making the students work with real clients (community partners) and performing real projects in multi-campus distance learning environment, contributed to their learning of project management theory and development of project management skills.

The data revealed (Appendix four) that the majority of the teams (six out of the nine teams) were able to put the project management theory in practice, developing the project plans and executing them, creating the products or services. The data also revealed that two teams had partial success; they were able to create the project plans but failed to put the plans into practice, therefore failing to create the products or services they had aimed to create. Only one team failed in creating and executing the plans.

The recurrent themes RT1 ('Developing a project for a real client that helps people in need was motivating'), RT2 (´Developing a real project foster the learning´) and RT 7 ('The students' commitment to the project is key to the project´s success') that emerged from the qualitative data reinforce the previous quantitative data.

However, the dropout rate was fairly high (47%), and the qualitative data suggests (RT3 'Dropouts caused problems for the projects' and RT8 'The student dropouts demotivated the community partners') that the dropout issue increased student stress and demotivated the community partners.

Therefore, this analysis led us to our first finding:

Finding #1: Working with real clients on real projects, in a multi-campus blended learning environment, increases the students' motivation to learn, develop their skills, and complete the projects. However, the dropout issue may bring stress to students and demotivation to the community partners.

This finding is aligned with the similar findings of researchers who studied PBL courses in context involving students and NGOs (Arantes do Amaral & Gonçalves, 2015; Arantes do Amaral & Matsusaki, 2016; Arantes do Amaral, 2017).

Coming back now to our second research question, we will discuss our findings about the logistics and organizational challenges of providing multi-campuses course PBL course, in a blended learning environment involving community partners.

The distances between the campus from where the students attended the courses and the campus where the face-to-face meetings were held posed a problem for some students (Distance from Sao Paulo campus: Guarulhos 22 Km, Baixada Santista 80 Km, Diadema 22 Km). The number of students who attended the face-to-face meetings with the professors dropped as the course went on (Meeting 1: 56 students, Meeting 2: 6 students, Meeting 3: 2 students).

The data also revealed (Appendix four, column 2) that in three of the nine projects, the teams of students were from different campuses and different undergraduate majors. The data also revealed (Appendix four, column 2) that even when the students belonged to the same campus (that was the case in three of the six remaining projects) the students were from different undergraduate majors. We may consider that being enrolled in different major courses may have made it difficult for students to meet each other. The qualitative data (RT6 'The students had difficulties scheduling face-to-face meetings with the team members') reinforces this.

Therefore, we may conclude that distances involved and the schedule conflicts made difficult for the students to perform face-to-face activities with their peers and with the professors.
What about the face-to-face meetings with the clients?

The qualitative data (RT5 'The students faced problems meeting with the clients because of the distances involved') revealed that distance from the cities where the students studied and the city where the NGOs were located (São Paulo) also posed communication problems between the students and the NGOs.

The previous analysis led us to our second finding:

Finding #2: The distances involved (between campuses and between campuses and NGO facilities), along with course schedule conflicts, bring difficulties in establishing rhythms between face-to-face activities and online activities.

This finding is aligned with the findings of researchers (Steedman, Smith, Keleher, & Martin, 2006; Mandal, 2008) that have studied multi-campus, PBL-centered courses.
However, the qualitative data also revealed (RT 4 'The students made intensive use of software communication tools and social networks websites to manage the project') that the students used information technology tools in order to overcome the problems caused by the distances and to reconcile the different agendas. This led us to our third finding:

Finding #3: Intensive use of information of technology can help overcome the problems caused by distance and course schedule conflicts.

Connecting all our findings in a systemic perspective (Figure 5), we may say that providing PBL course, in a multi-campus blended learning environment, with support of community partners can be very challenging.

On the one hand, having the students work in real-life projects stimulates them to be proactive, to find solutions to the problems they face. In so doing, they learn more and develop their project management skills (Figure 5, feedback loop 'Developing project management skills'). More than that, the students feel good about their projects' achievements, which in turn raises their motivation and commitment to the course. The more motivated the students become, the more they use the online course´s materials (Figure 5, feedback loop 'Utilization of the course materials'), which in turn increase the development of their project management skills. Besides the educational benefits the projects bring to the students, the projects also bring benefits to the community partners and the larger community (Figure 5, feedback loop 'Bringing benefits to the communities').

On the other hand, we saw that the distance between the campuses and the scheduling conflicts may jeopardize the attendance at face-to-face course meetings, which may impact negatively on the students' learning (Figure 5, feedback loop 'Face-to-face guidance'). More than that, the absence of face-to-face meetings between the students and the community partners may bring problems in the students' understanding of the scope of the projects, which can harm the development of the projects. In addition to that, students' dropping out of the course also brings problems not only to the students who remain (Figure 5, feedback loop 'Dropouts problems') but demotivates the community partners (Figure 5, feedback loop 'Impacting the partnership'). However, the intensive use of information technologies tools may help the students to overcome these problems (Figure 5, feedback loop 'Virtual meetings').

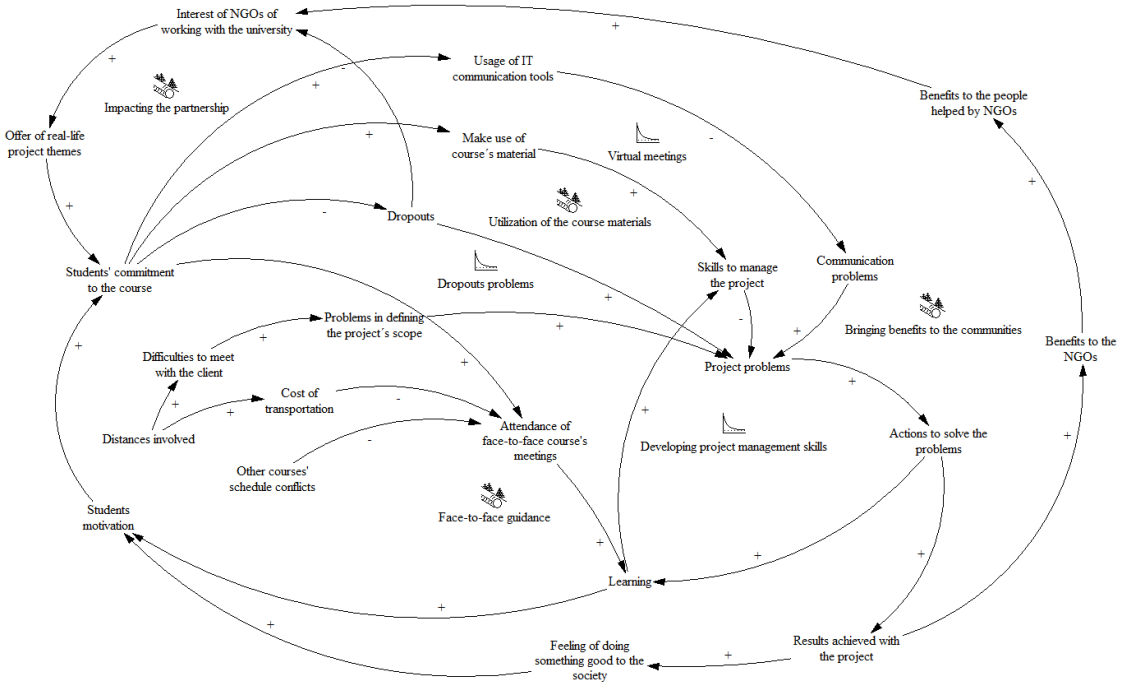

Figure 5. The course dynamics

Concluding, we may say that our course design didn´t work exactly the way we thought it would. The on-line material was regularly accessed; however, the face-to-face activities didn´t work the way we planned. Nonetheless, the intense use of information technologies tools helped to ameliorate this problem.

What could we have done differently? What could we do in the next course to address some of the problems described in this paper?

- Offer the course as credit bearing so as to limit the number of dropouts. We conjecture that if the course was credit bearing, the students' commitment to it would be greater and the number of students dropping out would be smaller. The high number of dropouts was problematic in a course such as ours, where team consistency was vital to the success of each project.
- Improve coordination among campuses. Coordinate the course schedule so that there are a minimum number of conflicts. Since the course is designed as blended, -- and thus not fully online,-- we speculate that an overall multi-campus course schedule would allow professors to reserve dates for face-to-face meetings that would not conflict with dates for other courses. The overall multi-campus schedule would also help avoid problems arising from unexpected changes in the schedules on individual campuses.
- Ask the university to provide better transportation options for students. If the university could provide a shuttle bus, for example, face-to-face meetings could be planned at times when students would be able to attend them. This could be done

in the context of a wider effort to schedule the courses at times when there would be fewer conflicts (see above).

- Obtain technical support from the university. We speculate that if the university had designated a member of its IT staff to work with us, the communication and collaboration between all parties would have been easier.

However, despite all the problems we faced, based on the evidence here presented, we argue that this experience brought benefits to all participants: to the students, who were able to learn project management concepts by means of real-life projects; to the NGOs, who received products and services that helped them to perform their work; to the professors and Unifesp, who learned important lessons that can be applied in future multi-campus courses; and finally to the broader community, who received help from the NGOs. We hope that the lessons learned from our experience can be helpful to scholars who wish to undertake similar educational projects.

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Appendix 1-The six Unifesp campuses and the undergraduate courses offered.

Campus	Courses offered
Unifesp São Paulo	Medicine, Nursery, Biology, Speech Therapy, Health Technologies
Unifesp Osasco	Economy, Accounting Sciences, Actuarial Sciences, International Relations and Administration
Unifesp São José dos Campos	Computer Science, Mathematics and Engineering
Unifesp Guarulhos	Social Sciences, Language Studies, History, Philosophy, Pedagogy
Unifesp Baixada Santista	Physical Education, Environmental Engineering, Ocean Science and Technology, Social Service, Occupational Therapy, Nutrition
Unifesp Diadema	Pharmaceutics, Chemistry and Chemistry Engineering

Appendix 2-The NGOs

Institution name	**Institution field of work**
Casa Assistencial Amor e Esperança - **CAAE** (Assistencial House Love and Hope)	Gives support to children with cancer and non-contagious diseases.
Instituto Herdeiro do Futuro-**IHF** (Institute Future´s Heirs)	Gives psychological assistance to children who have been victims of sexual abuse.
Instituto Fazendo História-**IFH** (Institute Making History)	Gives assistance to orphanages.
Comunidade de Impacto-**CI** (Impact Community)	Provides free educational opportunities to children from poor families.
Grupo Luz-**GL** (Light group)	Gives support to elders from poor families.
Assistência Vila Mascote- **AVM** (Care Group Mascote´ Village)	Gives support to elders with mental problems.
Casa do Pequeno Cidadão-**CPC** (Home of the little citizens)	Gives support to children who are victims of parents' negligence or abandonment.
Associação Grupo Ação de Assistência, Promoção e Integração Social-**GAAPIS** (Social Assistance, Development and Social Integration Association)	Provides free educational opportunities to teenagers from poor families.
Associação Solidariedade e Esperança Claretinos-**ASES** (Hope and Solidarity Claretianos)	Provides free educational opportunities to children and teenagers from poor families.
Lar São José-**LSJ** (Saint Joseph Home)	Nursery home that provides educational opportunities to children from poor families.
Toca do Estudante- **TE** (Students' Den)	Provides assistance and shelter to students from poor families.
Associação Nipo-Brasileira- **ANP** (Japanese-Brazilian Association)	Provides free educational opportunities to children and teenagers from poor families.
Associação Cristã Caminhos da Verdade-**ACCV** (Christian Association Paths to the Truth)	Provides free educational opportunities to children and teenagers and elders from poor families.
Unidade de Reabilitação de Deficientes Visuais-**URDV** (Vision rehabilitation unit)	Provides assistance to people with blindness and severe sight problems.

Appendix 3- The week-by-week course planning

Week	Week objective
1	General objective: Give the students information about the course, the clients (the NGOs) and the projects themes. Give the opportunity to the students get to know each other and form teams. Learning objectives - the students should learn: The concepts of project and project management The life cycle of a project The phases of a project Project activities - the students should perform the following activities: Assemble a project team Choose the client and theme Create a project blog Watch the videos lectures and readings for the week Answer the questions on the evaluation form Assignments: The students should email the professor the names of the client and the project, the names of the team members, and a link to the project blog.
2	Learning objectives -- the students should learn: How to define the scope of a project How to create a project charter How to structure the work breakdown on a project Project activities - the students should perform the following activities: Contact the client and schedule a visit Plan the visit Watch the videos lectures and readings for the week Assignments- the students should post on the project blog: The project charter The project's work breakdown structure (WBS)
3	Learning objectives - the students should learn: How to develop fundraising strategies for the project How to create a project network of activities (using the critical path method) Project activities - the students should perform the following activities: Visit the client Update the blog to include the project charter and the work breakdown structure (WBS) Watch the videos lectures and readings for the week Assignments - the students should create: The fundraising strategy for the project The network of activities for the project
4	The students should prepare the first project status report. Learning objectives - the students should learn: How to create a status report Project activities - the students should perform the following activities: Create a status report Watch the videos lectures and readings for the week The project manager of each team must post the project status report on the project blog

5	Learning objectives - the students should learn: To identify project risks How to create a risk analysis Project activities- the students should perform the following activities: Create risk management plan Watch the videos lectures and readings for the week The project manager of each team must post the risk management plan on the project blog. Special task The students should present the status report to the professor during a face-to-face meeting
6	Learning objectives - the students should learn: To set up a plan for how and how often team members would communicate with each other and with the client Project´s activities- the students should perform the following activities: Create a project communication plan Watch the videos lectures and readings for the week The project manager of each team must post the project´s communication plan on the project blog
7	Learning objectives - the students should learn: The systemic aspects of the projects: the interconnections and interdependencies between the activities. The systemic impacts of the project manager's decisions How to catalog the lessons learned in a project Project´s activities- the students should perform the following activities: Creation of project *lessons learned* catalog Watch the videos lectures and readings for the week The project manager of each team must post the lessons learned catalog on the project blog:
8	Learning objectives- the students should learn: How to measure the quality of a project Quality planning, quality control and quality assurance Project activities- the students should perform the following activities: Create a project quality management plan Watch the videos lectures and readings for the week The project manager of each team must post the quality management plan on the project blog.
9	The students should prepare the second status report on the project. Learning objectives- the students should learn: How to make a better project status report Project activities- the students should perform the following activities: Improve the project status report Watch the videos lectures and readings for the week Post on the project´s blog the second status report on the project
10	Learning objectives- the students should learn: How to create a final project report Project activities- the students should perform the following activities: Create a draft of the final project report Watch the videos lectures and readings for the week

	Post the draft of the final project report on the project blog. Special task The students should present the second status report to the professor during a face-to-face meeting
11	Learning objectives- the students should learn: The earned value analysis (EVA) technique To become familiar with the EVA's indexes Project activities- the students should perform the following activities: Apply EVA to the project Watch the videos lectures and readings for the week Post the project´s EVA indexes on the project blog.
12	Learning objectives- the students should learn: The concept of conflict as it applies to project management Conflict development and conflict mitigation strategies Project activities- the students should perform the following activities: Reflect on the conflicts they have faced during the project. Watch the videos lectures and readings for the week Post a description of the conflicts they have faced and how they have managed them on the project blog.
13 and 14	During these two weeks the students should review the blog and finalize the project activities. The students should also work on the final project report and review the project documents.
15	Course wrap-up. The students should send the final reports and present the final status report to the professor during a face-to-face meeting.

Appendix Four-The projects accomplished and the results

Group number	Students' background	NGO	Project´s scope	Project's Documents	Creation of Product or service	Success or failure
1	Five students in the field of Social Work from Baixada Santista Campus	**IFH**	Acquire school supplies	Well documented	Created	Success
2	Five students from 4 different fields (Environmental Sciences, Languages, Sciences and Chemistry) from 3 Campuses (Baixada Santista, Diadema and Guarulhos)	**IFH**	Create Portuguese subtitles to a documentary	Well documented	Created	Success
3	Four students from Industrial Chemistry and Chemical Engineering	**IFH**	Acquire 200 books for children	Well documented	Created	Success

	fields from Diadema Campus					
4	Four students from Petroleum Engineering, Environmental Engineering and Ocean Science from Baixada Santista Campus	**URDV**	Repair the water supply systems at the NGO's location	Well documented	Created	Success
5	Four students from 3 different fields (Nutrition, Physiotherapy and Philosophy) from 2 Campuses (Baixada Santista and Guarulhos)	**CI**	Obtain clothing donations for the NGO´s bazaar	Well documented	Created	Success
6	Three students of History of Art, Social Sciences and Pedagogy fields from Guarulhos Campus	**ASES**	Develop five educational workshops for the children helped by the NGO	Well documented	Created	Success
7	Four students in the field of Social Work from Baixada Santista Campus	**ASES**	Obtain resources to print NGO material	Not well documented	Not created	Failure
8	Three students in the field of Philosophy from Diadema Campus	**ACCV**	Recruit volunteers to work with the NGO	Well documented	Not created	Partial success
9	Five students from Environmental Sciences, Philosophy and Sciences from Diadema and Guarulhos Campus	**ACCV**	Acquire food and hygiene supplies for a leprosarium	Well documented	Not created	Partial success