

Application of a Virtual Collaborative Environment in a Teaching Case

Full Papers

Abayomi Baiyere

Turku Center for Computer Science
Department of Management and Entrepreneurship,
Turku School of Economics, University of Turku
abayomi.baiyere@utu.fi

Hongxiu Li

Department of Management and Entrepreneurship,
Turku School of Economics, University of Turku
hongxiu.li@utu.fi

Abstract

This paper demonstrates the use of technology in enabling and facilitating collaborative teaching in an IS project management teaching case in the virtual environment. The motivation and objectives of the Synergizer case (IS project management case), the adopted methodology for the case development and the underlying theory for the teaching process are presented. Based on lessons from the case, this paper provides teaching suggestions and discusses a possible delivery mode of interactive learning in IS field in the virtual environment. Furthermore, the paper presents the implementation of the teaching case in a collaborative environment as demonstration of an emergent re-calibration of a curriculum delivery to meet changing demands of the education landscape. The virtual collaborative teaching approach adopted for delivering the course/case should be suitable for teaching other IS courses – including project management, change management and other related courses.

Keywords

Technology Enhanced Collaborative Learning, Teaching Case, Project Management, IS Education, IS Curriculum.

Objectives and Motivation

The course, which motivated the design and development of this case using a virtual collaboration platform, is a university level course in Information System (IS) project management. The reason for the virtual course is due to students demand for flexible study time and to additionally deal with the declining number of students attending traditional lectures. This is a compulsory course for students in IS subject, and some students (particularly working students) have problems attending the regular classes due to their work. This course is also an optional course for students in other departments, such as IT, international business, logistics, and marketing. In addition, offering courses in the virtual environment can help to understand the role of technology in education.

The underlying objective of the course includes:

1. How to do management of Information Systems (IS) projects;
2. What factors can determine IS project success;

3. What factors can result in IS project failure;
4. What are necessary skills for an IS project manager; and
5. What are the peculiar challenges of IS project management?

In order to achieve the goal of the course, we made a course design that is aimed at helping students to engage with each other while learning the core relevant knowledge of IS projects. The students are asked to engage in discussion exercises in groups within a virtual environment. They are concurrently required to read preselected academic articles on IS project management and then to subsequently write an individual essay.

Project management by its nature, requires both soft and hard skills (Skulmoski and Hartman 2010). Hard skills like use of tools and processes can be easily acquired, while soft skills are not easily transferred. It was therefore considered of importance to creatively structure the course and the resulting teaching case such that it evokes critical thinking and reflects the knowledge gathered from the course. In addition, a teaching case is included in the course as the pedagogical approach. This paper is a result of the implementation and this teaching synopsis serves as a possible guide to adapting the lessons learnt from the case in other educational environments.

Developing the Collaborative Environment and Teaching Case

Case Development and Teaching Methodology

The Synergizer case (Baiyere and Li 2014) is an actual case involving an existing company. The project management situation in the company - MidasSource - presented a valuable opportunity to present the desired learning outcomes of the course via a teaching-case approach. The names and the identity of the individuals mentioned in the case have however been anonymized to observe confidentiality requirements for the case. The collection of data and information for the building of the case has been largely done through employee interviews and archival data that were provided. The case has nonetheless been largely adapted and written with the target of driving the intended learning outcomes of the case. All authors of the case have a background in IS project management. Furthermore, two practitioners and two researchers reviewed the case in order to bring both a balanced theoretical and practical perspectives to the case.

Hence, the development of the case went hand in hand with the design of a collaborative delivery approach that does not require traditional class attendance without sacrificing the teaching goals of the course. For this we needed a contactless teaching approach and also to decide on a potential platform that we can employ and possibly improve the utility to meet the intended objectives.

Teaching Approach

In order to facilitate the effective use of the case by other teachers, we provide a brief description of how the pilot case and the subsequent implementation was designed and effected. Based on a quick review of existing teaching approaches, we adopted a team-based learning and a virtual learning environment as the teaching approach. In developing this teaching approach, which we used in the pilot implementation of the case, we have adopted the activity theory as the driving model. In this context, activity theory has been found relevant considering its focus not only on the individual learner but also on the role of the social environment (Jones, 2006; Engeström, 1987). Activity theory can be perceived generally as a set of principles that serves as a guide and foundation in understanding the factors that can affect learning in an environment and in a team-based (community-based) setting. The components of an activity system are modelled in Figure 1.

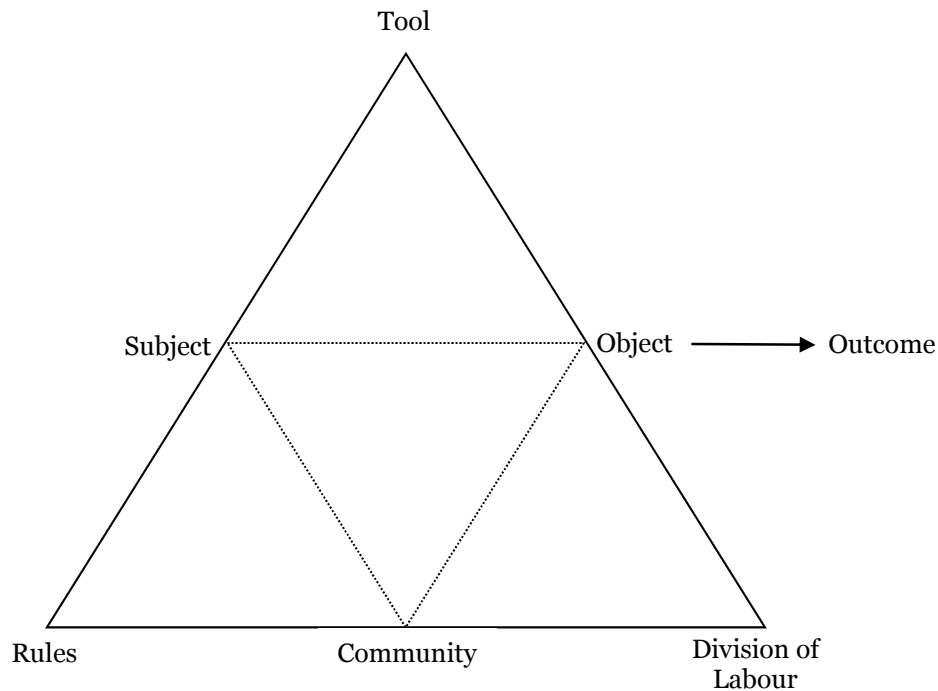


Figure 1: The elements of the Activity Theory

Firstly, it has been identified that learning in groups/teams can elicit better responses from the students in comparison to the traditional classroom individual discussion (Leidner & Fuller, 1997 and Gear & Read, 1993). We therefore divided the students into **communities/groups** of between six to eight members.

Secondly, we adopted a virtual learning environment (Moodle – Rice, 2011) as our teaching platform (**Tool**) in the case discussion because of its effectiveness in promoting communication and interaction as well as in facilitating collaborative learning activities (Piccoli, Ahmad, and Ives, 2001).

We used Moodle to release the reading material and the assignment for students. The students were asked to do group discussion at the forum in Moodle after reading the materials. Hence, the approach provided the students with materials to be read plus a facilitated platform for collaborative discussion. The students read the materials and then proceeded to the Moodle forum to discuss what they have learnt from reading the material. They then engaged in an interactive discussion explaining their views and learning the possible alternative views shared by members of their group (Wingfield and Black 2005).

Additionally, the case has been condensed with many different possible options which give flexible room for the students to engage in a dialogue to see each other's perspective. To make the students dig deep into the case, the case has been kept short with all the relevant details needed to point the students towards the learning outcome subtly highlighted (Baiyere and Li, 2014). The students have a minimum number of interactions required to pass discussion in each week. This makes the students actively engaged in the group discussion, such as some students contributed to the group discussion even a couple of times a day when then received some updated reviews from other team members. There was a group with more than 100 generated posts in one week with only 6 group members. This process involves more than a shabby quick look but a deep thinking, which evokes the cognitive aspect of the brain and adds to the learning experience of the students.

To prepare the students (**subjects**) for the case discussion, the students were provided with 4-5 IS project management articles per week for two weeks. The articles were carefully and consciously selected to reflect the learning objectives and also as preparation knowledge for the case discussion (Levina, 2005; Lai 1997; Kirsch et al., 2002; Tohidi 2011; Zhang and Xu 2008; Brill and Walker 2006; Keil, Tiwana and

Bush 2002; Thomas and Menguel 2008 and Skulmoski and Hartman 2010). During the week of the case discussion, the students are expected to reflect and draw from their experience and from the knowledge gathered from the articles and their group discussion in the previous weeks. After the case discussion the students are then required to write an individual essay which is a project proposal on how the failed Synergizer project should be approached in order to attain success.

Thirdly, we set up the rules for the group discussion in order to ensure that the interaction between the students in the group discussion will go smoothly - such as always finding a partner to discuss with and getting comments from others. In addition, we set up the evaluation criteria for the group discussion.

During each week-long discussion the students are bound by the following **rules**:

- Each week, every student is required to make at least 8 posts on a minimum of 3 different days in a week, only then can they pass the assignment for that week. The quality and quantity of each student's contribution is evaluated each week.
- Each student is required to participate in the group discussion (articles/case) assignment in each week. If they cannot do the group discussion assignment in one week, it means they cannot move to the next week without extra learning tasks/reports (only for special reasons, such as sickness).
- Each student must pass both the group discussion part and the essay part. Without passing either of the two parts, the students cannot pass the course..

Evaluation criteria for weekly group discussion:

- Adherence to the basic rules of generating posts in the group discussions
- The quality of each posted content in the group discussion
- Interaction activities with team members

For the division of **labour**, the role of the teachers (authors) in the course was to moderate the discussions and direct the discussions towards the learning **objective** of the course. 85 students registered to this virtual course. Two teachers and one teaching assistant were involved in the course. To bring a practical perspective to the discussions, we also invited two guest practitioners from the industry to join in moderating and contributing to the discussions. One of the practitioners is a consultant with project management roles and experience from one of the leading global consultancy firms. While the other invited practitioner is a certified project management team member with several experience with different IS project management activities. The two leading teachers made evaluations for both the group discussions in each week and the final essay assignment.

Discussion

The Synergizer case developed and used for group discussion in the virtual platform, illustrates a typical IS project management situation where a failed IS project is being rescued in the faces of challenges like user acceptance and the hurdles of change management. Among other things, the case demonstrates different issues, such as issues from the stakeholder perspectives and the tasks inherent in management of IT projects. The case has been structured to challenge some one-way notions held by students after reading an article or listening to a lecture. It is intended that students would pause and critically examine what they know, read or hear in light of the scenario depicted in the case. Some of the collaborative benefits brought to the surface by the case would be discussed in this section, and quotes from the student s' discussions would be used to illustrate how critical reflection, new learning took place via the dialogue facilitated by the teaching approach.

From the discussion points in the case, the students were asked to discuss with group partners on the following three subthemes:

- What went wrong with the case project at the initial stage ?
- How has the case company (MidasSource) decided to resolve the issues and why?
- What other critical issues could they have failed to consider in this new plan?

These discussion points are aimed at making the students reflect and re-evaluate their prior understanding in light of new information and the ongoing conversation.

Student A: *"In our analysis, we did not point out that the users' feeling about the task overload could be the cause of the users' rejection of the project. They felt that they were spending more time updating the software than actually doing their tasks... ..we did not mention the underestimation of the power of users... power is a key issue for internal project and must not be neglected. For internal project, the assumption that if executives ordered something, the users will do it is false.*

Secondly, they opted for a project that is partly outsourced and partly handled in-house. The goal was to counterbalance the lack of in-house skills in order to develop a unique and easy to use system. In our previous discussion, we did not mention this intermediate solution, we only proposed a total outsourced project or in-house project...."

Student B: *"...renaming the project seems not necessary in my opinion and our group discussion that's why we didn't think about this solution. It can create new atmosphere to the project as it stated but what if the details and quality of new project are not much improved from the previous one? Also, it can make confusion to users because these two name are not much different...."*

Student C: *"I'm in favour of renaming the project from Synergizer to Synergize! The new name sounds more human... Paying attention to user needs and changing the project name feels like 'Let's Synergize! together!' The risk of the new name could be that it reminds users too much of the failed project. ...again I'm sure everybody would see the connection from this project to the failed Synergize project even if the name was totally different. So I don't believe that naming is a big risk.*

Using two systems side by side might be a bit problematic for at least two reasons: 1) if there is no automatic integration between the old systems and new system is not populated by new data... 2) people are lazy to learn something new... so I believe that if users have option to use old systems or new system which has to be learned first, users will definitely use the old system... Having the old systems as a backup is still a good idea but people should be "positively forced" to use the new system"

On the second question about evaluating the plans for this new project, the case is setup such that the students can relate the articles read earlier and the knowledge gained from the first case discussion as a lens to evaluate the project.

Student A: *"...Project is in danger if outsourcing will be done. I think schedule will be exceeded if time for knowledge transferring and time for cultural challenges is not reserved."*

Student B: *"MidasSource didn't pay enough attention to risk assessment. I also think that executive's motive to steer and rush this project was fear of missing existing or new clients.*

Even though if executives and managers have [considered] users involvement, there would still be other risk factors which can cause failure like unrealistic requirements or too narrow time frame."

Student C: *"The possible risks of the new project management are...: 1)Alignment of outsourced and internal parts of the project 2) Division of labor and responsibility of different parts of the whole project. 3.) Possible conflict between experienced Alex and the new project manager who has little experience..."*

Lastly, the third question theme is aimed at consciously bringing the peculiarities and challenges of an IS project management to the awareness of the students.

Student A: *"One of challenges is foresight and estimation of needed resources and scheduling... Transitions from old system to new system could be also very challenging... This case was*

problematic also because company support was missing. So I believe next challenge is how to get this kind support, and how to wake up end-users to use this application...

Student B: *"I agree with you that it's a challenge to get end-users to use and develop this new system. In addition financial management is very challenging factor. If planning, requirements, scope, risk assessment and all needed factors have taken into account it is hard to predict how much money a new investment would cost if those pre-mentioned factors change in different phase of project. Time is also money and unrealistic time frames can be a huge expense"*

Student C: *"There are so many challenges for PM right from Initiation phase till close. ...[Based] on the article 'PM's soft competencies' Communication: important competencies... are effective communication, collaboration skills and listening skills. Leadership: has to show decisiveness and political awareness [plus] awareness of business problem. Personal attributes: problem solving and 80/20 perspective will be required... Alex has to plan for multiple options... he should have some alternative option to adopt."*

In this course, 73 students successfully completed the course. The evaluation is presented in the following table. The student performance is much better than in other traditional course as quite many students did good work in the course and received a grade of 4 or 5 (1-5 scale).

Grades	No. of Students	Percentage
1 (lowest)	0	0
2	4	5.5
3	15	20.5
4	41	56.2
5	13	17.8

Table 1. Student's grade distribution

In order to know how students thought about the course within the collaborative virtual environment, we collected feedback from students. The students' feedback on their learning **outcome** are quite positive. Some of these are highlighted below:

Student A: *"...the online posts really helped me to understand the papers in depth."*

Student B: *"The online discussion was quite an interesting concept to learn."*

Student C: *"...the online group discussion part have helped me to advance my knowledge in IS project management practices."*

Student D: *"The active part discussion helped me learn a lot. You really needed to read the articles and think about them in order to be able to join in discussions. This way you learned more about the papers than when you only read them for a lecture."*

The students were also asked to evaluate how successful the course was relative to its learning objectives with a 1-4 scale (4 means they totally agree). Most of the students think that the course has been successful.

The student performance and the course feedback from the students helped us to make decision about the teaching approach in the course. In general, we have been successful in employing the collaborative group discussion in the virtual environment based on both the student performance and course feedback. We continued the teaching approach in the course in the following academic year.

The implementation of online group discussion in our course in the collaborative virtual environment shows that not only the individual student (individual learner) themselves, but also the tool (the platform) and the social interaction (social environment in communities) affect learning outcome. The principles in the activity theory can be used as good guideline when making decision on course teaching approach and course design, such as team work, collaborative virtual teaching and so on.

Lessons and Teaching Suggestions

Following the collaborative approach that has been adopted for the pilot and subsequent implementation of the case in a virtual environment, some key lessons have been learnt. We would propose some teaching suggestions for teachers to follow in using the virtual-case approach in teaching their students.

Firstly, for an effective collaboration, using teams (or communities) proved to be valuable in making the learning process manageable for both the participating students and the instructors. The conversation became targeted and focused. The more the number of collaborators in a conversation, the higher the chances of dispersion and divergence that may stray the conversation off course. We would therefore encourage the use of team-based group work in conducting the case discussion via the collaborative platform. Essentially, this helps facilitate the collaborative element of the virtual setup. The team-based approach can also be adopted for a traditional teaching setting, a virtual learning environment or a mix of both.

Secondly, it was discovered that while the platform offers its advantages, some students tend to get stuck in the technicalities at the beginning of the course. They are mainly those students using the virtual platform for the first time in a course. In a virtual collaborative environment, time could be dedicated for the students to try the environment before the actual course commencement. A demo test-week is opened prior to the week to ensure students get an understanding of the platform. The implementation of the teaching approach has shown that this saves the time lost on a lot of repetitive and basic questions during the course. It also helps to maintain the attention of the students on the core essence of the course and to shift the focus from the platform to the content of the course. One of the advantages of setting up the collaborative platform as a virtual environment is that the students have better control of their time and they can decide when they are sufficiently prepared to make a contribution to the ongoing discussion. It gives room for the students to learn at their own pace within a defined period of time.

Additionally (and where feasible), using external practitioners to have input in the discussion can introduce a unique richness into the learning experience of the students. Having a tutor or auxiliary teacher in a supporting role can also help focus the division of labour in the course and allow for more efficient use of time. Since there are three question themes for discussion at the end of the case, each group can create three forum discussions to cover each question theme. This additionally helped to avoid clutter.

Since the course existed prior to the setup of the collaborative learning environment, most teaching and reading materials required for the course were already available. It is however important that the pre-case articles be carefully selected to reflect the learning goals expected of the course. The students are then expected to use those articles as a lens in understanding what should be done or what possibly went wrong when analyzing the case. Each post and argument submitted should be reasoned from the lens of the selected articles or externally referenced source. While the articles are valuable knowledge sources, it is important to also emphasize that the articles are not perfect formulas but guides. The students should be given the freedom to challenge conventional knowledge and taken for granted ideas. The case should spur them in this direction but it is important that they are aware of alternative solutions.

The implementation of the course in the collaborative environment was divided into three parts (article discussion phase, case discussion phase and Individual essay phase), and was carried out in that defined order. The aim of the design is such that the students first learn the principles and the foundational knowledge through the articles and the collaborative discussion of those articles within groups on the platform. Secondly, the students have the opportunity to apply all they have learnt during the case discussion phase by carrying out a critical analysis of the case and a reflection of the earlier articles and discussions. In addition, new and external resources should be encouraged. This usually adds an interesting opportunity opening to the case, particularly when the students discover new knowledge and share it in their groups.

The evaluation should be done systematically. A scale can be developed – one for quality and the second for quantity. A minimum requirement for qualifying for the following week has been noticed to be a strong motivation to get the students started and consistently engaged. However, concluding all the discussion on a specific forum into summarized bullet points works well in some groups while in other groups no one volunteered to do the summary, after they have met the minimum requirement for the week. We however notice that, for those that did, it helped consolidate the learning and they could very easily refer back to their summary in responding to the case questions. It is thus suggested that teachers adopting this virtual case approach may want to experiment with best scheme to get the students to summarize their discussion.

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