

COLLABORATIVE PROJECT BASED LEARNING IMPLEMENTATION DURING COVID-19 OUTBREAK

by sinau bareng

Submission date: 16-May-2021 02:02PM (UTC+0900)

Submission ID: 1468595232

File name: Full-paper-template_ICE2021.docx (104.49K)

Word count: 2928

Character count: 17472

COLLABORATIVE PROJECT BASED LEARNING IMPLEMENTATION DURING COVID-19 OUTBREAK

Soetam Rizky Wicaksono¹, Rudy Setiawan²

¹Universitas Ma Chung, soetam.rizky@machung.ac.id

²Universitas Ma Chung, rudy.setiawan@machung.ac.id

Abstract: Covid-19 outbreak has already created such big changes in education all over the world. However, rapid response improvement is needed to overcome the reality. One of the improvements is using Project Based Learning (PBL) which ensured that students can still become active and enthusiastic during remote learning. PBL implementation can be done using collaborative technique, which empirically proven to have better result. This research took place in Information System Study Program at Universitas Ma Chung Malang, in course which includes laboratory activity (in this case is Programming Language course). This implementation then being measured using focus group discussion (FGD), which gather and interviewing random sampling to evaluate its effectiveness and being held twice in one semester, thus it can review and repair the implementation during half semester. This research should give generic prescription as its result for other lecturers who has difficulties in improving remote learning process during Covid-19 outbreak or post outbreak. After evaluating the implementation with three main topics (development of students, collaboration aspect, and professional development) from random sampling students, there are some improvement to made, which are: (1) lecturer become more active involved, (2) invite professional to give guest lecturer, (3) encourage about the importance of teamwork, and (4) giving reward and penalty. Afterward, the result from this research give general prescription for implementing collaborative PBL during outbreak and post outbreak, which are: (1) lecturer's active involvement should be more intense, (2) lecturer's role as facilitator should be increased to moderator, (3) the professional development from real life sample can increase students' motivation.

Keywords: Collaborative, Project Based Learning, Covid-19 Outbreak, Remote Learning

Introduction

Covid-19 outbreak has already created such big changes in education all over the world. At the same time, most schools and universities turn themselves into learning from the home condition, many teachers, lecturers, and students having mental breakdown facing this situation (Czerniewicz et al. 2020; Wargadinata et al. 2020). However, rapid response from this era is needed to overcome the reality.

Many teachers tried to improvise learning process due to quick changes from classical class into remote learning during outbreak. However, there are some options in improving learning process in this remote learning situation. One of the improvements is using Project Based Learning (PBL) which ensured that students can still become active and enthusiastic during remote learning (Lasauskiene and Rauduvaite

2015; Syakur and Musyarofah 2019). Especially in the outbreak era, where lecturers should protect students' mental health and create a better learning process, in order to prevent further weakening in their learning motivation (Sahu 2020).

While implementing PBL during Covid-19 outbreak, there are some consideration to be made for higher university students. One of them is maintaining students' relationships with each other since that most of them are coming from the outer city. Thus, there should be group features in PBL implementation to overcome students' lonely feelings during remote learning. This group feature can be done using collaborative technique, which empirically proven to have better result for PBL (Baser, Ozden, and Karaarslan 2017; Donnelly and Fitzmaurice 2005).

Collaborative PBL allows student having clearer meaning in the discussion process and force them to interact each other (Donnelly and Fitzmaurice 2005). Collaborative is also considered in giving high impact for students, especially in higher education (Jeong, Hmelo-Silver, and Jo 2019; Jones 2019). This impact can be achieved if it complies with some elements, which are: (1) sustained inquiry, (2) authenticity, (3) reflection, and (4) public project. Thus, the lecturer should include them in Collaborative PBL implementation.

Based upon these theories, this research which took place in Information System Study Program at Universitas Ma Chung Malang, implement Collaborative PBL in the rapid response to Covid-19 outbreak situation. While learning process becomes remote learning, some courses are really hard to adapt, especially in course which includes laboratory activity (in this case is Programming Language course). Thus, the Collaborative PBL is being implemented with some adjustments to adapt remote learning situations. This implementation then being measured using *focus group discussion* (FGD), which gather and interviewing random sampling to evaluate its effectiveness (Flick 2018).

FGD itself being held twice in one semester, thus it can review and repair the implementation during half semester. It also need to prepare next step for the rest of semester, so it can enhance students' (also lecturer) satisfaction during learning process. Especially during Covid-19 outbreak, which already gives such anomaly for over than a year. On the other hand, this research should give generic prescription as its result for other lecturers who has difficulties in improving remote learning process during Covid-19 outbreak or post outbreak. Mainly for remote learning process, either for blended learning which its course containing laboratory activity.

Method

This action research began with giving the students' project's option to be chosen for their activity for whole semester. While these options have become their boundary in creating a project according to material course limitation, it also gives them freedom to be creative by optimizing its unmentioned feature in the project's description. The freedom to choose should increase their engagement during remote learning process, because of their own choice will become their own responsibility.

On the other hand, the shock process after outbreak has given students (also lecturer) some impacts (Patricia Aguilera-Hermida 2020; Sadikin and Hamidah 2020). From the big changes of technology during Covid-19 outbreak usage until its usability among students to communicate with their own colleague and with lecturer. Thus, after project's option already announced, lecturer should review students' choice and giving feedback which part of their improvisation should be reviewed and repaired.

This step become one of important stage before project implementation because it should help students to limit their project based upon course material and syllabus.

The next step is reviewing the project's progress during half semester while lecturer still doing remote learning process with time reduction. This time reduction is for giving students more time to deal with their project, also enlighten students' burden in connecting remotely. Instead, lecturer also giving a chance to students for collaborating and open their own discussion forums based upon their project similarity. This forum then split into small groups and turning lecturer as their facilitator. This lecturer's role creates collaborative PBL become more interesting for students because it creates students centred learning conditions (Chen and Yu 2019).

At half-semester, the lecturer was also doing the first evaluation using FGD with some core questions which has already been prepared. The questions themselves contain some essential topics, which are: (1) development of students, (2) collaboration aspect, and (3) professional development (Lasauskiene and Rauduvaite 2015). These topics emphasized how students can overcome the barrier during the outbreak, and the lecturer can improvise for rapid response in this situation. Thus, it can ensure that the rest of semester can be better in its implementation.

Last part of semester is about doing project review and prepare the project becoming public project. This last step includes controlling students' projects' quality before become public consumption and automatically become their portfolio. Afterward, final step is doing another evaluation using FGD with the same questions previously. Then the result will become consideration for lecturer and also become generic prescription in facing remote learning condition. In brief, whole steps in this research can be seen in this diagram.

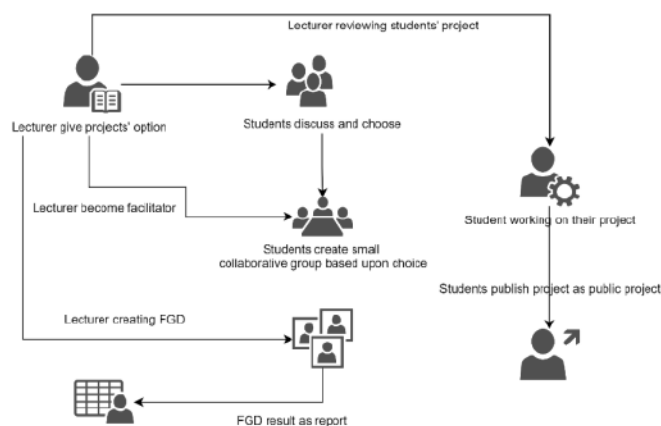


Figure 1. Diagram Flow

Result and Discussion

This research took place in Information System study program, at Universitas Ma Chung which located in Malang, East Java, Indonesia. There are two classes included in *Bahasa Pemrograman* course which

contain at least 20 students in each class. Therefore, this population should give enough sample for implementing this method.

In this Collaborative PBL implementation, first barrier is about psychological condition of students during Covid-19 outbreak. While many students came from outer city in rural area, they have difficulties with their internet connection. This condition creates lag during online meeting, whether with online class also with collaborative discussion among them. Thus, using Microsoft Teams (the main reason using this software merely because of university already purchase the license for whole staffs and students), lecturer then created separate channels for collaborative purpose.

These separated channels can be used as mixed channel in collaboration process, whether for forum discussion and live conference. It means that students can use forum discussion if they have bad internet connection, and then they can switch into live conference if they already have good connection afterwards. This blended mode should give students more confidence and comfortable feeling in doing collaboration, because of the risk in getting failure of communication can be reduce. Comformance of students in overcoing internet connection problem is one of main point in getting success during Covid-19 outbreak, because many failures in remote learning during outbreak happen because of it (Dube 2020; Wargadinata et al. 2020).

Next, PBL is being done by students in gradual process which is reviewed and controlled by lecturer. Whole steps in this process is taken partially, thus students can revise their project in small portion at a time. This partial step also can be seen by their own group, so other students in the same group can see the revision which also includes solution in it. While a student presenting the revision, other member can give suggestion or other meaningful critics that can help the project. Lecturer then can give credit and score for this suggestion which become collaboration between students while they did not even realize this seamless collaboration.

After half-semester, lecturer then conducting first FGD with random sampling from students. There are 20 students which pick randomly and being interviewed as a group and also in private to implement first FGD. First evaluation result from half-semester FGD can be seen in following table.

Table 1. First FGD Evaluation Result

Questions Topic	Result summary
Development of student's project	<ul style="list-style-type: none"> • Most students still having difficulties in their first step of doing project. Some of them still think that their group's mate can not fully participate in the group actively • Some students felt that the group's communication in the forum was not successful because of a lack of enthusiasm in live conference between them. Thus, it affects their project's progress in finding solutions.
Collaborative aspect	<ul style="list-style-type: none"> • Most students felt that the collaborative aspect did not execute as expected because lack of communication between them • Students tend in serious mode while there was lecturer involved in the live conference and moderating forum
Professional development	<ul style="list-style-type: none"> • Most students can convince themselves that in the future, they can be a professional software developer • Students also are ensured that they really can do a better project for their final term also for their future thesis

After the first FGD is being held, there are some evaluation and revision in next half-semester, which are: (1) lecturer become more actively involved whether in forum discussion or live conference for each collaborative group, (2) lecturer invite some of alumni who already become professional software developer to give guest lecturer. Thus students can relate their projects with real application as their professional development, (3) encourage them about the importance of teamwork in their project development, and (4) giving reward and penalty for their project progress development.

Then, there was some improvement after the revision of implementation being held. After lecturer becoming more active, whether in forum discussion and live conference, students become more involved in collaboration session. The presence of lecturer can be a boost for their spirit or also a "guardian", since that new reward and penalty system being executed. However, the collaboration session in doing PBL was clearly done better than previous session.

Another improvement shown was after guest lecturer from alumni being held, students' confidence becomes increased and they become more active in asking questions as well as finding new solution using internet (Van Rooij and Zirkle 2016). However, there is some worriedness that they can lack creativity while finding those solutions. This could happen because many internet resources already offering complete solutions which can be similar to their project. Thus, to prevent that phenomenon, lecturer should be really careful on how monitoring each progress and project development steps from students, so it really showed how the project is done, not just being finished.

Afterwards, when the course almost over, lecturer held second FGD with another random sampling from classes. In this stage, students' projects were in final stage and they already prepared for publish their project as public project in Github. Thus, they were assumed have already through whole collaborative PBL process and could give their opinion better than first FGD. The result of second FGD can be seen in the following table.

Table 2. First FGD Evaluation Result

Questions Topic	Result summary
Development of student's project	<ul style="list-style-type: none"> • The difficulties seem reduced because of lecturer's active involvement in project's progress • Collaborative communication has already become better because of lecturer's presence and students can do the project in better ways • Some students still can not finish the project in perfect result, but they still felt satisfied with their progress
Collaborative aspect	<ul style="list-style-type: none"> • While lecturer become active moderator in forum discussion and live conference, most students felt they can have better communication in collaborating with their group's member • Some students felt that there should be collaboration between groups or between classes, because of need for new perspective for their problem's solution
Professional development	<ul style="list-style-type: none"> • After guest lecturer session, most students can see clearly about what it will be done with their knowledge in the future, especially for their career.

Conclusion

The result from both FGD clearly stated that in remote learning collaborative PBL, there are some important factors that should be considered as generic prescription, which are: (1) lecturer's active involvement should be more intense because of remote learning condition is giving difficulties in monitoring project's progress, (2) lecturer's role as facilitator should be increased to moderator because of most students still can not trust their own group's member for finding problem's solution (Srivastava 2020), (3) the professional development can be taken from real-life sample (in this case by inviting alumni as guest lecturer), thus it can increase students' motivation.

However, there are some important things to avoid in this collaborative PBL implementation, which are: (1) forming of collaborative group should not be handled by students themselves, because of lecturer must be included actively in order to avoid miscommunication between them, (2) lecturer should not let students in group start communication independently, because of they should be facilitated at first to grow trust between them, and (3) students can not present their work just in final term, because they must be monitored their progress step by step to avoid plagiarism or instant sample from internet.

References

- 8
Baser, Derya, M. Yasar Ozden, and Hasan Karaarslan. 2017. "Collaborative Project-Based Learning: An Integrative Science and Technological Education Project." *Research in Science and Technological Education* 35(2):131–48. doi: 10.1080/02635143.2016.1274723.
- Chen, Wenting, and Shulin Yu. 2019. "A Longitudinal Case Study of Changes in Students' Attitudes, Participation, and Learning in Collaborative Writing." *System* 82:83–96. doi: 10.1016/j.system.2019.03.005.
- Czemiewicz, Laura, Najma Agherdien, Johan Badenhorst, Dina Belluigi, Tracey Chambers, Muntuwenkosi Chili, Magriet de Villiers, Alan Felix, Daniela Gachago, Craig Gokhale, Eunice Ivala, Neil Kramm, Matete Madiba, Gitanjali Mistri, Emmanuel Mgqwashu, Nicola Pallitt, Paul Prinsloo, Kelly Solomon, Sonja Strydom, Mike Swanepoel, Faiq Waghid, and Gerrit Wissing. 2020. "A Wake-Up Call: Equity, Inequality and Covid-19 Emergency Remote Teaching and Learning." *Postdigital Science and Education* 2(3):946–67. doi: 10.1007/s42438-020-00187-4.
- Donnelly, Roisin, and Marian Fitzmaurice. 2005. "Collaborative Project-Based Learning and Problem-Based Learning in Higher Education: A Consideration of Tutor and Student Role in Learner-Focused Strategies." Pp. 87–98 in *Emerging Issues in the Practice of University Learning and Teaching*, edited by G. O'Neill, S. Moore, and B. McMullin. Dublin: AISHE/HEA.
- 5
Dube, Bekithemba. 2020. "Rural Online Learning in the Context of COVID-19 in South Africa: Evoking an Inclusive Education Approach." *Multidisciplinary Journal of Educational Research* 10(2):135–57. doi: 10.4471/remie.2020.5607.
- 17
Flick, Uwe. 2018. *The SAGE Handbook of Qualitative Data Collection*. London: Sage Publications.
- 1
Jeong, Heisawn, Cindy E. Hmelo-Silver, and Kihyun Jo. 2019. "Ten Years of Computer-Supported Collaborative Learning: A Meta-Analysis of CSCL in STEM Education during 2005–2014." *Educational Research Review* 28(February):100284. doi: 10.1016/j.edurev.2019.100284.
- 12
Jones, Beata. 2019. "Good Practice: Scaffolded, Collaborative Project-Based Learning." *Journal of the European Honors Council* 3(1):1–16. doi: 10.31378/jehc.85.
- 15
Lasauskiene, Jolanta, and Asta Rauduvaite. 2015. "Project-Based Learning at University: Teaching Experiences of Lecturers." Pp. 788–92 in *Procedia - Social and Behavioral Sciences*. Vol. 197. Elsevier B.V.

- 4 Patricia Aguilera-Hermida, A. 2020. "College Students' Use and Acceptance of Emergency Online Learning Due to COVID-19." *International Journal of Educational Research Open* 1:100011. doi: 10.1016/j.ijedro.2020.100011.
- 7 Van Rooij, Shahron Williams, and Kara Zirkle. 2016. "Balancing Pedagogy, Student Readiness and Accessibility: A Case Study in Collaborative Online Course Development." *Internet and Higher Education* 28:1–7. doi: 10.1016/j.iheduc.2015.08.001.
- 13 Sadikin, Ali, and Afreni Hamidah. 2020. "Pembelajaran Daring Di Tengah Wabah Covid-19." *Biodik* 6(2):109–19. doi: 10.22437/bio.v6i2.9759.
- 6 Sahu, Pradeep. 2020. "Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff Challenges." *Cureus* 2019(4):4–9. doi: 10.7759/cureus.7541.
- 11 Srivastava, Pooja Raj. 2020. "Communication, Collaboration & Trust: Interpersonal Challenges in Virtual Collaboration Team." *International Journal of English Literature and Social Sciences* 5(4):1273–78. doi: 10.22161/ijels.54.66.
- 14 Syakur, Abdul, and Lailatul Musyarofah. 2019. "The Effect of Project Based Learning (PjBL) Continuing Learning Innovation on Learning Outcomes of English in Higher Education." *BirLE-Journal*. doi: 10.33258/birle.v3i1.860.625.
- 10 Wargadinata, Wildana, Iffat Maimunah, Eva Dewi, and Zainur Rofiq. 2020. "Student's Responses on Learning in the Early COVID-19 Pandemic." *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah* 5(1):141–53. doi: 10.24042/tadris.v5i1.6153.

COLLABORATIVE PROJECT BASED LEARNING IMPLEMENTATION DURING COVID-19 OUTBREAK

ORIGINALITY REPORT

17%

SIMILARITY INDEX

15%

INTERNET SOURCES

13%

PUBLICATIONS

14%

STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Queensland Student Paper	2%
2	John E. Mitchell, Lynne Rogers. "Staff perceptions of implementing project-based learning in engineering education", European Journal of Engineering Education, 2019 Publication	2%
3	daten-quadrat.de Internet Source	1%
4	Submitted to University of Melbourne Student Paper	1%
5	Submitted to University of South Florida Student Paper	1%
6	Wesley O'Brien, Manolis Adamakis, Niamh O'Brien, Marcos Onofre et al. "Implications for European Physical Education Teacher Education during the COVID-19 pandemic: a cross-institutional SWOT analysis", European Journal of Teacher Education, 2020 Publication	1%

7	Anabel Moriña. "Faculty members who engage in inclusive pedagogy: methodological and affective strategies for teaching", Teaching in Higher Education, 2020 Publication	1 %
8	Submitted to The Chicago School of Professional Psychology Student Paper	1 %
9	Submitted to University of Bristol Student Paper	1 %
10	ijisrt.com Internet Source	1 %
11	Submitted to University of Auckland Student Paper	1 %
12	Submitted to University of Louisiana at Monroe Student Paper	1 %
13	obsesi.or.id Internet Source	1 %
14	Submitted to State Islamic University of Alauddin Makassar Student Paper	1 %
15	Submitted to Bridgepoint Education Student Paper	<1 %

16

Soetam Rizky Wicaksono, Didit Prasetyo Nugroho. "Pelatihan Videografi Balai Latihan Kerja Al Ittihad dengan Model Project Based Learning", *Journal of Community Development*, 2021

Publication

<1 %

17

www.tandfonline.com

Internet Source

<1 %

18

Joni Lämsä, Raija Hämäläinen, Pekka Koskinen, Jouni Viiri, Emilia Lampi. "What do we do when we analyse the temporal aspects of computer-supported collaborative learning? A systematic literature review", *Educational Research Review*, 2021

Publication

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off