# Implementation of Project-Based- Learning Through MOOC in Developing Communication Skills

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**Abstract:** *This paper aims to identify the communication skills development between pre and post-test by implementing Project-Based Learning (PBL) through Massive Open Online Courses (MOOC). Two-way interaction between educators and students aim to enhance communication skills. On the other hand, the learning process has to be more efficient and should involve the students' participation and encourage communication among students. A sample of 152 participants in Kolej Poly-Tech MARA Kuantan will enroll in the Study Skills MOOC module in this study. The quantitative data analysis method was used and analyzed through a Paired sample T-test. The test scores were analyzed using Paired Sample T-Test, and the result indicated that the t value is -18.915. The output of the Paired sample T-Test showed that there is a significant difference in respondents' skills achievement in pre and post-test. The result indicated that the respondent had achieved better skills, which is communication skills, after implementing PBL through MOOC in learning.*

**Keywords:** Project-based learning, communication skills, Massive Open Online Course
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## 1. Introduction

In the 21st century, Malaysia faces new challenges in acquiring the highest degree in skills development among students as a preparation for the new generation with excellent soft skills for leading the society. Student nowadays continues the study to pass the exam only yet not to increase the social skill or soft skill. According to (Soh, Arsad, & Osman, 2010), the employer needs creative thinking, problem-solving and analytical skills to be a more flexible workforce and engage in the challenges faced by lines. It is shown by the Edu Advisor (2016) that over 200 thousand graduated students failed to get jobs because of the lack of soft skills such as problem-solving skills, communication skills, and creative skills. The learning process has to be more efficient and involve two-way interaction between educators and students to enhance them.

It is also supported by the Department of Statistics Malaysia (2020); the number of unemployed graduates is crucial. This number is increasing by up to 5.3% in the year 2020. The main factor driven to this problem is the adaptations of the soft skills among the graduates. The student nowadays only continues the study to pass the exam and not to improve social knowledge or soft skills.

Besides, with high youth unemployment, employers struggle to find and retain talent that meets their human capital needs, creating resource shortages in increasingly complex and competitive landscapes. Graduates must be equipped with the skills necessary to centralize knowledge workers to succeed in society. The skills involved equipped the graduates to supply for the quality graduates. The quality graduates are categorized as having the body of knowledge, the capacity to apply expert thoughts, and general academic ability (such as analysis, reflection, and the ability to see the limits of one's discipline).

## 2. Literature Review

### Project-Based Learning (PjBL)
The research scope involves identifying project-based- learning through the use of Piaget and Vygotsky's theory and implementation of PBL through MOOC. The researcher identifies the 21st- century skills adapted from the Partnership of 21st Century Learning and Innovation skills. Project-based learning was first inserted in the conformation of a theoretical construct forwarded by John Dewey, and the experiential learning in the mid-1920s and '30s. Dewey's idea was that students got to train to do things and be where they had the chance to receive guided experiences, which fostered their capacity to bit into society. Thus students should be called for in real-life tasks and challenges.

According to Caturangga (2014), PjBL is focused on the students and provides students with an opportunity to investigate the given project or topics. PBL should be conducted based on the stages starting with developing the design question, planning for the project, arranging a schedule, checking or testing the project's progress, and assessing the outcome.

PjBL is a learning activity that shifts away from the traditional teaching technique, which focuses on teacher-centered learning toward more student-centered learning and concentrates on real-world issues and practices. It is a teaching strategy that fosters the summarization of theory, completing the responsibilities, and discover the multifaceted issue in which students show their understanding of gaining new knowledge.

### Massive Open Online Courses (MOOC)
MOOC is defined as an open and online platform for learning. According to (Chai & Yang 2014), MOOC is the research object to explore the organizational form, teaching method, the function of the platform for teaching, teaching assessment, characteristics, and problems in learning while (Lombardi & Oblinger, 2007; McAuley, Stewart, Siemens, Cormier, & Commons, 2010). Besides (McAuley et al., 2010) stated that MOOC integrates the connectivity of social networking, the facilitation of an acknowledged expert in a field of study, and a collection of freely accessible online resources.

MOOC is a relatively new model for the delivery of online learning to students because this new teaching method and learning is intended to be accessible to many more learners than would be possible through conventional teaching (Onah & Sinclair, 2014). Nevertheless, MOOCs develop to become a favored approach to learning and studying, which has been rolled on to universities worldwide where learners can engage and get the benefit from the teaching (Dewar, Uhomoibhi, Ross & Hutty, 2014).

### Communication skills
According to the 21st- century Framework, communication skills involve the student who can communicate clearly and articulate ideas and ideas effectively using oral, written, and

nonverbal communication skills in diverse shapes and settings. Other than that, students can listen effectively to understand the meaning, including knowledge, values, attitudes, and intentions, and use communication for a range of purposes for an instant to inform, teach, motivate and persuade others. Communication skills are recognized as essential for effective employee performance, career development, and corporate success. The ability to present to many audiences is a core management competence. However, most people are afraid of speaking in public. Students have to master communication skills in preparing for their future careers or working environment.

Besides, communication skills also can be promoted by implementing PjBL in learning. The statement was supported by Fadly (2017), where the research aims to promote communication skills in the production model of PjBL. The effectiveness of communications activities shows that the production model of learning can promote scientific communication skills that significantly include reading, writing, representing, presenting, and observing.

Communication is the ability to speak and write properly. A person who speaks properly while keeping an eye on the audience is generally called an effective speaker, using a diverse vocabulary and speaking to meet the needs of the audience. Likewise, an effective writer should be able to transmit his/her message and ideas to readers using written words in various styles and techniques. You should be able to listen and write carefully in all situations and speak clearly. Good reading, writing, speaking, and listening skills are therefore essential for efficient communication.

According to Wambui (2015), effective communication relies on selecting an appropriate communication channel for your message. Selecting the wrong communication channel can cause communication obstacles including information overload and inadequate feedback. The effectiveness of communication channels can be evaluated based on richness and opportunity for feedback. Richness refers to the depth of your message.

## 3. Methodology

The quasi-experimental research will be conducted in 13 weeks in July 2018 with seven MOOC module sets. The pretest method to the focus group will start in week one of the semester by giving the pretest questionnaire to gauge their skills level before implementing the PjBL. In this study, a set of questionnaires was created to analyze the pre- and post-test results to determine the level of skills that the student gains as a result of using PjBL. The questionnaire is divided into seven sections, each with an ordinal scale in which the respondent must select one of five options on a 1 to 5 point Likert scale. All of the items are graded on a five-point Likert scale that ranges from "strongly disagree" to "strongly agree."

**Table 1: Paired sample T-test Result on communication skills**

| Items | Mean | SD | t Value | df | Sig (*p*) |
|---|---|---|---|---|---|
| **Pretest communication skill** | 14.21 | 1.39 | -18.915 | 149 | 0.000 |
| **Post-test communication skill** | 27.95 | 3.30 | | | |

Table 1 provided the discrepancy between the pre-and post-test scores for the implementation of PjBL via MOOC. There was a substantial difference in pretest communication skills scores (M=14.21, SD=1.39) and post-test communication skills scores (M=27.95, SD=3.30).

Repeated measurements t-test found this difference to be significant, t (149) = -18.915, p < 0.000. Test scores were evaluated using Paired Sample T-Test, and the result suggested that the t value was-18.915. The Paired T-Test sample's performance showed a substantial difference in the respondents' pre-and post-test skills. The outcome suggested that the respondent had developed improved communication skills before introducing the PBL through the MOOC.

**Table 2: Frequency tables for Responses of a questionnaire on the communication skills**

|  | *Frequency* | *Percentage (%)* |
|---|---|---|
| Disagree | 30 | 20.1% |
| Agree | 119 | 79.9% |
| Total | *149* | *100* |

Table 2, showing the result from the respondent's point of view, indicated that PjBL through MOOC affected communication skills. Responses were rated using a five-choice Likert scale to evaluate the comparative magnitude of PjBL through MOOC effect on respondents when learning the subject of study skills. Table 2 indicated that 79.9 percent of the respondents agree, and 20.1 percent did not agree that PBL through MOOC helps them communicate effectively in class.

## 4. Conclusion

Paired sample T-Test was used in this study to investigate the different skills develop in the pre and post-test in implementing PjBL through MOOC. This analysis was done to provide statistical evidence for the findings. The findings support several studies on communication through PBL increased student's communication skills.

The findings have shown that students greatly benefit from developing their communication skills, and language skills can be delivered in learning (Lawton & France, 2009). Students must communicate effectively to fulfill the needs of the 21st-century job market. This result supports the study by (Miri, Watted Abeer, and Barak, 2014), who found that MOOCs may increase communication skills, which enable students to share knowledge, ask questions and receive help when necessary. The result does not show any significant correlation, which contradicts the study by Murray (2014). The student indicated their perception of the overall MOOC experience as very high, and less participation in interaction happens in completing the MOOC module.

The result also supports the findings of Li, Yuan, Xiu Wang, Xuan-Rui Zhu, Yan-Xin Zhu, and Jiao Sun (2019) found that PBL developed communication skills among nursing students as compared to traditional teaching and learning methods. The result shows that PjBL can improve learning communication skills. Saenab et al. (2018). Their research with the Science Education Program students at Universitas Negeri by Makassar, al. (2018) found that the inferential statistics result in improving the students' communication skills after implementing the Project-Based Learning. Furthermore, research data on the pretest, post-test scores, and observer results for communication skills were collected from Muqarmah & Wusqo (2020) and concluded that the PjBL model with the STEM approach affected the creative thinking and communication abilities of the students.

Other than that, according to Sagala, Simanjuntak, Bukit & Motlan (2020), research on six classes and a sample of two classes of project-based learning experiments and a conventional control class. The results indicate a positive direction in the relationship between collaboration and communication skills, which means that the more collaboration increases, the better its communication skills

Based on the research mentioned above on Project Based Learning towards enhancing communication skills, the research supports the researchers' finding through MOOC on the student communication skills. Communication skills are essential skills that should increase each student's soft skills in learning and real-life environments.

The same research data on the pretest, post-test scores, and observer results for 21st-century communication skills were collected from Muqarmah & Wusqo (2020) and concluded that the PjBL model with the STEM approach affected the creative thinking and communication abilities of the students. The finding also supports Saenab et al.(2018) on PjBL increasing communication skills using the rubric descriptive-analytical. The results demonstrate that students are becoming more capable of communication with the PjBL Model. The growth occurs significantly enough to obtain, given how the PjBL learning model takes place and the average rubric of communication skills. The teaching method may result in communication skills that may increase through the students' capability in PjBL learning.

Other than that, according to Sagala, Simanjuntak, Bukit & Motlan (2020), research on six classes and a sample of two classes of project-based learning experiments and a conventional control class. The results indicate a positive direction in the relationship between collaboration and communication skills, which means that the more collaboration increases, the better its communication skills. The findings of the previous research stated that PjBL had increased the student's 21st-century skills.

Furthermore, Sultan & Javaid (2018) study research on student perceptions of project-based learning in English language teaching remains an under-researched area in Pakistan, making this study useful and essential. The main academic advantage was that the project approach allowed students to gain a deeper and more meaningful understanding of the subject. Simultaneously, the non-academic benefits included enhanced communication and negotiating skills, time management, creative, and critical thinking skills.

In conclusion, the PjBL teaching and learning method benefits the students in increasing their communication skills and other skills needed in the 21st-century workplace. In mastering the communication skills, it may help the students face workplace challenges after they graduated.

## References

Caturangga, F. K. and Si, M. (2014) Integrated Science Learning Through Project-Based Learning In Sekolah Indonesia Singapura. Conference on Science Education and Teacher Professional Development SEAMEO QITEP in Science 25-28 September 2014

Chai, Y., & Yang, L. (2014). A Literature Review of MOOC. *Proceedings of the 3rd International Conference on Science and Social Research*, (Icssr), 98–101. https://doi.org/10.2991/icssr-14.2014.24

Department of statistic malaysia. (2020). *Key Statistics of Labour Force in Malaysia, October 2020*. Https://Www.Dosm.Gov.My/v1/Index.Php.

https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=124&bul_id=WVJTenlQKzdzUDRYNFJqUE1BWWVIZz09&menu_id=Tm8zcnRjdVRNWWlpWjRlbmtlaDk1UT09

Dewar, E., Uhomoibhi, J., Ross, M. & Hutty, D. (2014). MOOCs Development and Implementation: The Challenges and Prospects for Higher Education in Emerging Countries. Manuscript submitted for publication

Edu advisor (2016). What You Didn't Know About Fresh Graduate Unemployment in Malaysia (Infographic). Retrieved on 8th June 2016 from https://eduadvisor.my/articles/what-didnt-know-fresh-graduate-unemployment-malaysia-infographic/Chai, Y., & Yang, L. (2014). A Literature Review of MOOC. *Proceedings of the 3rd International Conference on Science and Social Research*, (Icssr), 98–101. https://doi.org/10.2991/icssr-14.2014.24

Fadly, W. (2017). Fostering Students' Scientific Communication through PjBL- based Communication Activities. IOSR Journal of Research & Method in Education, 3(3), 21–26. Retrieved from https://www.iosrjournals.org/iosr-jrme/papers/Vol-7 Issue-3/Version-2/D0703022126.pdf

Li, Yuan, Xiu Wang, Xuan-Rui Zhu, Yan-Xin Zhu, and Jiao Sun (2019). "Effectiveness of Problem-Based Learning on the Professional Communication Competencies of Nursing Students and Nurses: A Systematic Review." *Nurse Education in Practice* 37 (May): 45–55

Lombardi, B. M. M., & Oblinger, D. G. (2007). Authentic Learning for the 21st Century : An Overview. *Learning*, *1*, 1–7. Retrieved from http://alicechristie.org/classes/530/EduCause.pdf

McAuley, a, Stewart, B., Siemens, G., Cormier, D., & Commons, C. (2010). The MOOC model for digital practice. *Massive Open Online Courses: Digital Ways of Knowing and Learning*, 1–64. https://doi.org/10.1016/j.im.2011.09.007

Mukaromah, S. H., & Wusqo, I. U. (2020). The influence of PjBL model with stem approach on global warming topic to students' creative thinking and communication skills. In Journal of Physics: Conference Series (Vol. 1521). Institute of Physics Publishing. https://doi.org/10.1088/1742-6596/1521/4/042052

Soh, T. M. T., Arsad, N. M., & Osman, K. (2010). The Relationship of 21st Century Skills on Students' Attitude and Perception towards Physics. *Procedia - Social and Behavioral Sciences*, *7*, 546–554. https://doi.org/10.1016/j.sbspro.2010.10.073

Sultan, S., & Javaid, S. T. (2018). Pakistani undergraduate students' perceptions of project-based learning in the English composition course. Journal of Applied Research in Higher Education, 10(3), 217–229. https://doi.org/10.1108/JARHE-11-2017-0135

Watson, S. L., Watson, W. R., Yu, J. H., Alamri, H., & Mueller, C. (2017). Learner profiles of attitudinal learning in a MOOC: An explanatory sequential mixed methods study. *Computers and Education*. https://doi.org/10.1016/j.compedu.2017.07.005

Wambui. T. W. (2015). Communication Skills, Students Coursebook. https://www.researchgate.net/publication/303893422