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Project-based learning as an alternative solution for learning computer basics during the Covid-19 pandemic

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A B S T R A C T

This study aims to obtain a meaningful alternative learning in computer basics courses during the covid-19 pandemic. The Covid-19 pandemic has gradually changed the educational paradigm, namely learning that was initially carried out synchronously into asynchronous Learning. It is at this time that all elements adapt to find effective solutions in carrying out meaningful Learning. In this study, Project-Based Learning will be designed in Computer Basics learning as a solution to make meaningful asynchronous Learning. Project-Based Learning was chosen because it has characteristics that are process-centred, problem-focused, combining the concepts of several components, both knowledge, disciplines, and field experience. The study subjects were college students of class Computer Basics, with a total of 11 students. There are two projects in this study with three steps which are planning the project, implementation the project, and evaluating the project. The result of this study is that meaningful learning alternatives are obtained for prospective mathematics teacher students in the Computer Basics course so that in the future, they can hone their creativity.

INTRODUCTION

Indonesia is one of the countries with the most Covid-19 cases (Batubara, 2021). The COVID-19 pandemic has profoundly impacted many sectors of human life (Noori, 2021). One of the sectors that are hampering this pandemic is education (Arizona et al., 2020; Collier Villaume et al., 2021; Iglesias-Pradas et al., 2021; Mengistie, 2021). This pandemic has gradually changed the educational paradigm, namely learning that was originally carried out synchronously into asynchronous Learning. There are many obstacles that obstruct asynchronous Learning, such as weak signal, computer unavailability, etc. It is at this time that all elements adapt to find effective solutions in carrying out meaningful Learning. This is also supported by the observation that most students in basic computer classes do not have a computer which is the main facility in this lecture. Given this, there must be concrete and systematic steps to overcome the change in the learning paradigm. The success of remote learning depended on several integrated components, such as students, educators, learning resources, and the technology used (Mustofa et al., 2019; Venton & Pompano, 2021; Yuzulia,

2021). Nuryati et al. (2020) state that the use of the Project-Based Learning model is better than the use of conventional Learning. This model is also able to contribute to the development of students' creativity, motivation, and internal interest. This is also in line with (Shin, 2018)Shin's opinion (2018) that students who are involved in project-based Learning create concepts that have been taught and apply them in the real world. Project-based Learning also can make connections to students' experiences to prepare for the future (Mughrabi, 2021; Pinto & Reshma, 2021). Creativity also could be improved by PjBL (Al-Busaidi & Al-Seyabi, 2021; Djam'An et al., 2021; Laelasari & Sholehah, 2021; Mengembangkan Keterampilan Abad, 2021; Nuryati et al., 2020; Sakbana et al., 2021; Sumarni et al., 2019).

In this study, Project-Based Learning would be designed in Computer Basics learning as a solution to make meaningful asynchronous Learning. Project-Based Learning was chosen because it has characteristics that are process-centred, problem-focused, combining the concepts of several components, both knowledge, disciplines, and field experience. The research is designed to make Learning

meaningful to prospective students of mathematics teachers of the Computer Basics course so that in the future, they can hone their creativity. Project-Based Learning has been designed to facilitate the learning process in the Computer Basics course.

LITERATURE REVIEW

Computers

Computers are one of the most helpful learning media (Abdu et al., 2015; Iglesias-Pradas et al., 2021; Renggo & Rewa, 2021). According to)Sudiatmika et al., along with the times, computers make it easier to do tasks (Sudiatmika et al., 2020. Microsoft Office is one of the programs used to assist us in making information facilities, administration, managing numbers, and others. Microsoft Office includes Microsoft word for word processing, Microsoft Excel for number processing, and Microsoft PowerPoint to help create effective, professional, and easy presentations (Agustina et al., 2019).

This Computer Basics course is also helpful in honing basic skills in preparing reports, managing grades, and presenting attractive presentation slides. Through this course, students are expected to compile information in Microsoft Word, be skilled in using Microsoft Excel features in value management, and present attractive presentation slides using Microsoft Powerpoint. Computer-basic learning needs careful strategic planning. Computer basic can support a wide range of learning activities, engaging students in a continuous collaborative building and reshaping understanding (Mansoor, 2002).

Project Based Learning

Project-Based Learning or project-based Learning is one student-centred learning that is process-centred, problem-focused, and combines concepts from several components, both knowledge and field experience (Fatimah & Taufiq, 2021; Katawazai, 2021; Mengembangkan Keterampilan Abad, 2021; Saldo & Walag, 2021; Sudarsana et al., 2019; Weiss & Belland, 2016). Project-based learning (PjBL) is a model learning that focuses on creating products and directly involving students in the learning process (Awab et al., 2021). PjBL consists of many examples, both written and in the provided media, so exploring further for practical samples is both rewarding and enjoyable (Weiss & Belland, 2016). Students are very active and motivated in the project-based learning process (Al-idrus & Rahmawati, n.d.; Miller et al., 2021).

Project-Based Learning stages go through 3 stages, namely: 1). Project Planning Phase: Planning activities include real problems, finding alternatives, formulating problem strategies, and planning; 2). Project Implementation Phase: This includes student guidance in completing assignments, conducting product trials

(evaluation), and group presentations; 3). Project Evaluation Phase: The evaluation phase includes assessing processes and products, including learning progress, the actual process of completion, performance and individual progress, notebooks and research notes, learning contracts, computer use, and reflection. Meanwhile, product assessments include work results and presentations, non-written assignments, and project reports (Lestari & Yudhanegara, 2015). The other syntax of project-based learning includes: (1) determining basic questions, (2) preparing project plans, (3) preparing schedules, (4) monitoring, (5) testing results, (6) evaluating experiences (Sumarni et al., 2019). The ability to express ideas can increase in the planning and project creation stages (Kamza et al., 2021).

Project Based Learning in Computer Basic Course

This study has two projects: Design a Newspaper with Microsoft Word and Making Regional Tourism Presentations using Photo Albums in Microsoft Powerpoint. But this article only discusses one project. The project assignment is designing newspaper articles with the theme of regional tourism potential. The objective of this project is students are expected to come up with creative ideas and computer skills to show the tourism potential of their respective regions in the form of newspaper articles.

The things that need to be considered to make an attractive newspaper design are that students need to pay attention to the following design elements, namely:

- Divide the text into several columns with Columns.
  The purpose of dividing the text into several columns is to smaller the required space and make the reader more comfortable. In addition, this column division is also used to simplify the placement of images, to be more flexible.
- Make the letters at the beginning of sentences significant with Drop Cap.
  Drop Cap is the first letter in the first sentence that looks big and striking. The use of Drop Cap is usually intended to attract the attention of the reader.
- Pay attention to the appropriate font.
  In the media industry, font selection is the most crucial process because it can affect the mood of the reader (Ardy, 2018).

METHODS

This study uses a type of qualitative research. This qualitative research was held based on the learning background in the mathematics class (Creswell, 2012) with a case study approach to explore detailed information (Bassey, 2000; Chhetri, 2011) and explain the subject and phenomena observed in depth using the data collected for interpretation. The selected issues have criteria that can

explain the purpose of the study. The study was held on first-year college students at Wisnuwardhana University, Malang, in a Computer Basics class had once a week. The subjects were college students of class Computer Basics, with a total of 11 students. Data sources are the results of class observations in the form of student project results,

field notes, and interviews. The focus of compliance is to identify real problems, find alternatives, formulate problem-solving strategies, and plan. Data were analyzed based on the stages of Project-Based Learning and their effect on student creativity in solving problems. The stages in this research appear in **Figure 1.**
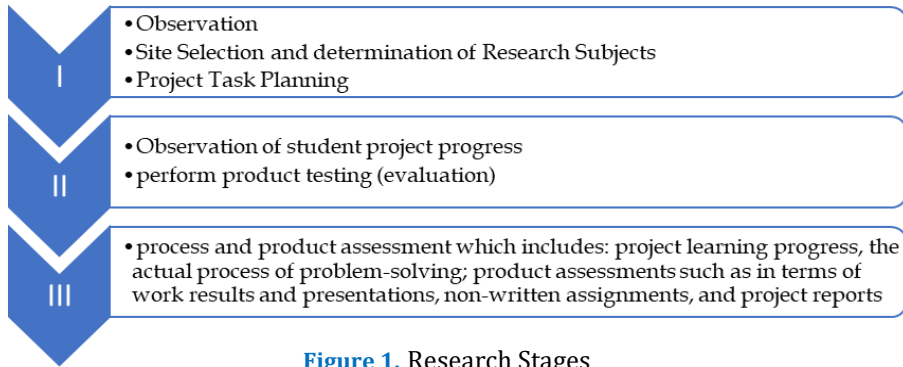
I
- Observation
- Site Selection and determination of Research Subjects
- Project Task Planning

II
- Observation of student project progress
- perform product testing (evaluation)

III
- process and product assessment which includes: project learning progress, the actual process of problem-solving; product assessments such as in terms of work results and presentations, non-written assignments, and project reports

Figure 1. Research Stages

RESULTS AND DISCUSSIONS

The following are some of the results of student projects, making a tourist village newspaper design. From that projects, various newspaper designs were found with interesting regional tours, such as

Coban Jahe Waterfall in Pandansari village, Malang; Canggu Coban Waterfall in Pacet, Mojokerto; Matayangu Waterfall in Manurara Village, Central Sumba, Cempaka Reservoir in Sumber Pasir Village, Malang.

Figure 2. The Student's Project

The stages of Project-Based Learning carried out by students are 1. Project Planning Phase, planning activities include: identifying regional tourism potential, studying newspaper design elements with Ms Word, and determining tourist areas; 2. Project Implementation Phase, the implementation phase includes mentoring students in completing assignments (design elements with MS Word such as dividing columns, using drop caps, choosing font types); 3. Project Evaluation Phase, the evaluation phase includes process and product assessments which include: project learning progress, the actual process of problem-solving, individual performance progress, product assessment and presentation of project results.

Through this project, it appears how students present newspaper designs related to the tourism potential of each region. At the project presentation stage, students can explain briefly, concisely, clearly and attractively only with their newspaper design project. They can explore their creativity through this project. From the project results, it also appears that students can divide writing into several columns with Columns, make letters at the beginning of sentences significant with Drop Caps, pay attention to the appropriate Font.

PjBL has a significant impact on learning computer basics. This is in line with Faradillah et al.'s opinion that project-based learning effectively increases student activity, enthusiasm, and confidence (Al-Busaidi & Al-Seyabi, 2021; Faradhillah & Zahara, 2021). Pjbl is also able to increase student creativity in problem-solving (Fatmawati, 2011; Sakbana et al., 2021; Saldo & Walag, 2021; Sari et al., 2021).

CONCLUSIONS

The project in this study can bring up creative ideas and computer skills to show the tourism potential of each region in the form of newspaper articles. So project-based learning is a meaningful alternative learning that lectures, teachers, or others can use in distance learning. It can also foster student creativity in solving problems. PjBL can be a solution for overcoming the change from synchronous learning to asynchronous learning in computer basics courses, such as the lack of computer facilities.

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Author's Contributions

All authors discussed the results and contributed to from the start to final manuscript.

Conflict of Interest

The authors declare that they have no competing interests.

REFERENCES

Abad, U. (2021). Pembelajaran Berbasis Proyek (Project-Based Learning). *International Journal of Educational Resources.*

Abdu, R., Schwarz, B., & Mavrikis, M. (2015). Whole-class scaffolding for learning to solve mathematics problems together in a computer-supported environment. *ZDM - Mathematics Education*, *47*(7), 1163–1178. https://doi.org/10.1007/s11858-015-0719-y

Agustina, R., Suprianto, D., & Rosalin, S. (2019). Pelatihan Internet Dan Program Microsoft Office Untuk Membantu Administrasi Di Kelurahan Merjosari Kecamatan Lowokwaru Kota Malang. *Kumawula: Jurnal Pengabdian Kepada Masyarakat*, *2*(2), 129. https://doi.org/10.24198/kumawula.v2i2.23473

Al-Busaidi, S., & Al-Seyabi, F. (2021). Project-based learning as a tool for student-teachers' professional development: A study in an Omani EFL teacher education program. *International Journal of Learning, Teaching and Educational Research*, *20*(4), 116–136. https://doi.org/10.26803/ijlter.20.4.7

Al-idrus, S. W., & Rahmawati, R. (n.d.). *Proyek Pada Mata Kuliah Kimia Lingkungan Di Masa Pandemic Covid 19*. *3*(88), 14–25.

Arizona, K., Abidin, Z., & Rumansyah, R. (2020). Pembelajaran Online Berbasis Proyek Salah Satu Solusi Kegiatan Belajar Mengajar Di Tengah Pandemi Covid-19. *Jurnal Ilmiah Profesi Pendidikan*, *5*(1), 64–70. https://doi.org/10.29303/jipp.v5i1.111

Awab, Z. Al, Kosim, N., & Putri, M. N. (2021). *Pembelajaran Berbasis Proyek Pada Pelajaran Matematika Sekolah Dasar*. *1*(80), 77–82.

Bassey, M. (2000). Case Study Research in Education Settings. http://Lst-Iiep.Iiep-Unesco.Org/Cgi-Bin/wwwi32.Exe/[In=epidoc1.in]/?T2000=012102/(100)

Batubara, B. M. (2021). The Problems of the World of Education in the Middle of the Covid-19 Pandemic. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*(1), 450–457. https://doi.org/10.33258/birci.v4i1.1626

Chhetri, A. (2011). *Case Study Research In Educational Settings Related papers*.

Collier Villaume, S., Stephens, J. E., Nwafor, E. E., Umaña-Taylor, A. J., & Adam, E. K. (2021). High Parental Education Protects Against Changes in Adolescent Stress and Mood Early in the COVID-19 Pandemic. *Journal of Adolescent Health*, *69*(4), 549–556. https://doi.org/10.1016/j.jadohealth.2021.06.012

Creswell, J. W. (2012). Educational research-planning, conducting, and evaluating quantitative and qualitative research . Boston, MA: Pearsons Education. *Inc. Doi*, *10*.

Djam'An, N., Bernard, & Sahid. (2021). Developing Students' Creativity in Building City Mathematics through Project Based Learning. *Journal of Physics: Conference Series*, *1899*(1), 0–7. https://doi.org/10.1088/1742-6596/1899/1/012147

Faradhillah, F., & Zahara, S. R. (2021). The Aplication of Learning Models of Project Based Learning to Improve Students' Learning Outcomes in Post-Legal Materials. *International Journal for Educational and Vocational Studies*, *3*(3), 186. https://doi.org/10.29103/ijevs.v3i3.4308

Fatimah, & Taufiq, M. (2021). Implementation of Learning Cycle's Model Based on SCL (Student-Centered Learning) to Improve Students' Creative Thinking Ability in Learning Evaluation Subjects at Universitas Al Muslim. *Indonesian*

Review of Physics, *4*(1), 1–7. https://doi.org/10.12928/irip.v4i1.3052

Fatmawati, M. B. (2011). Pembelajaran Berbasis Proyek Untuk Meningkatkan Keterampilan Berpikir Kreatif Mahasiswa. *Jurnal Pengajaran Matematika Dan Ilmu Pengetahuan Alam*, *16*(2), 85. https://doi.org/10.18269/jpmipa.v16i2.224

Iglesias-Pradas, S., Hernández-García, Á., Chaparro-Peláez, J., & Prieto, J. L. (2021). Emergency remote teaching and students' academic performance in higher education during the COVID-19 pandemic: A case study. *Computers in Human Behavior*, *119*, 106713. https://doi.org/10.1016/j.chb.2021.106713

Kamza, M., Husaini, & Ayu, I. L. (2021). Jurnal Basicedu. *Jurnal Basicedu*, *5*(5), 4120–4126. https://doi.org/10.31004/basicedu.v5i5.1347

Katawazai, R. (2021). Implementing outcome-based education and student-centered learning in Afghan public universities: the current practices and challenges. *Heliyon*, *7*(5). https://doi.org/10.1016/j.heliyon.2021.e07076

Laelasari, I., & Sholehah, I. (2021). The Relationship Between Student's Creativity And Cognitive Learning Outcome Through The Implementation Of Project Based Learning On Biology. *Journal Of Biology Education*, *4*(1), 61. https://doi.org/10.21043/jobe.v4i1.10178

Lestari, K. E., & Yudhanegara, M. R. (2015). Penelitian pendidikan matematika. *Bandung: PT Refika Aditama*, *2*(3).

Mansoor, I. (2002). Computer skills among medical learners: a survey at King Abdul Aziz University, Jeddah. *Journal of Ayub Medical College, Abbottabad : JAMC*, *14*(3), 13–15.

Mengistie, T. A. (2021). Higher Education Students' Learning in COVID-19 Pandemic Period: The Ethiopian Context. *Research in Globalization*, *3*, 100059. https://doi.org/10.1016/j.resglo.2021.100059

Miller, E. C., Severance, S., & Krajcik, J. (2021). Motivating Teaching, Sustaining Change in Practice: Design Principles for Teacher Learning in Project-Based Learning Contexts. *Journal of Science Teacher Education*, *32*(7), 757–779. https://doi.org/10.1080/1046560X.2020.1864099

Mughrabi, N. (2021). *Exploring Project-Based Learning Practices to Foster Students' Motivation*.

Mustofa, M. I., Chodzirin, M., Sayekti, L., & Fauzan, R. (2019). Formulasi Model Perkuliahan Daring Sebagai Upaya Menekan Disparitas Kualitas Perguruan Tinggi. *Walisongo Journal of Information Technology*, *1*(2), 151. https://doi.org/10.21580/wjit.2019.1.2.4067

Noori, A. Q. (2021). The impact of COVID-19 pandemic on students' learning in higher education in Afghanistan. *Heliyon*, *7*(10), e08113. https://doi.org/10.1016/j.heliyon.2021.e08113

Nuryati, D. W., Masitoh, S., & Arianto, F. (2020). Pengaruh Project Based Learning Terhadap Kreativitas Peserta Didik di Masa Pandemi. *Educate : Jurnal Teknologi Pendidikan*, *5*(2), 98–106. https://doi.org/10.32832/educate.v5i2.3375

Pinto, A. P., & Reshma, K. J. (2021). Impact of project-based learning on entrepreneurial and social skills development. *Journal of Engineering Education Transformations*, *34*(Special Issue), 593–598. https://doi.org/10.16920/jeet/2021/v34i0/157227

Renggo, R., & Rewa, K. A. (2021). *Pelatihan dan Penyediaan Modul Microsoft Office Secara Online untuk Peningkatan Kualitas Guru SDK Wolihi di Masa Pandemic Covid 19 Online Training and Provision of Microsoft Office Modules to Improve the Quality Of Wolihi SDK Teachers During the Covid Pandemic 19*. *6*(1), 42–50.

Sakbana, R. S., Sunarno, W., & ... (2021). The Influence of Project-Based Learning Model on Creativity and Cognitive Learning Outcomes of the Students of SMAN 1 Amarasi Timur, Indonesia. *International Journal of ...*, *3*(1), 179–186. http://ijsoc.goacademica.com/index.php/ijsoc/article/view/283

Saldo, I. J. P., & Walag, A. M. P. (2021). Improving High School Student's Conceptual Understanding and Creativity Skills through Problem-based (PrBL) and Project-based Learning (PjBL) in Physics. *Science Inte*, *33*(5), 307–311.

Sari, K., Yunita, Y., & Maknun, D. (2021). Meta-Analisis Pembelajaran Berbasis Proyek terhadap Kemampuan Berpikir Kreatif Biologi Siswa SLTP dan SLTA. *Quagga: Jurnal Pendidikan Dan ...*, *13* (Query date: 2021-09-06 17:58:20), 51–59. https://doi.org/10.25134/quagga.v13i2.3668

Shin, M.-H. (2018). Effects of project-based learning on students' motivation and self-efficacy. *English Teaching*, *73*(1), 95–115. https://doi.org/10.15858/engtea.73.1.201803.95

Sudarsana, I. K., Mulyaningsih, I., Kurniasih, N., Haimah, Wulandari, Y. O., Ramon, H., Satria, E., Saddhono, K., Nasution, F., & Abdullah, D. (2019). Integrating Technology and Media in Learning Process. *Journal of Physics: Conference Series*, *1363*(1). https://doi.org/10.1088/1742-6596/1363/1/012060

Sudiatmika, I. B. K., Fredlina, K. Q., & Astawa, N. L. P. N. S. P. (2020). Pelatihan Keterampilan Dasar Komputer dan Teknologi Informasi Di Sekolah Dasar Negeri 3 Munduk. *Jurnal Karya Abdi Masyarakat*, *4*(2), 270–275. https://doi.org/10.22437/jkam.v4i2.10535

Sumarni, W., Wijayati, N., & Supanti, S. (2019). Analysis Kemampuan Kognitif dan Berfikir Kreatif Siswa Melalui Pembelajaran Berbasis Proyek Berpendekatan STEM [The Analysis of Cognitive and Creative Thinking Skill Through The Use of STEM Project Based Learning Model]. *Jurnal Pembelajaran Kimia OJS*, *4*(1), 18–30. http://dx.doi.org/10.17977/um026v4i12019p018

Venton, B. J., & Pompano, R. R. (2021). Strategies for enhancing remote student engagement through active learning. *Analytical and Bioanalytical Chemistry*, *413*(6), 1507–1512. https://doi.org/10.1007/s00216-021-03159-0

Weiss, D. M., & Belland, B. R. (2016). Transforming Schools Using Project-Based Learning, Performance Assessment, and Common Core Standards. *Interdisciplinary Journal of Problem-Based Learning*, *10*(2). https://doi.org/10.7771/1541-5015.1663

Yuzulia, I. (2021). The Challenges of Online Learning during Pandemic: Students' Voice. *Wanastra: Jurnal Bahasa Dan Sastra*, *13*(1), 08–12. https://doi.org/10.31294/w.v13i1.9759