

Application of Project Based Learning Model to Increase Student Learning Activity

Izza Afkarina^{1(✉)}, Kholilur Rohman², Vina Rohmatul Ummah³

^{1,2,3} Institut Agama Islam Ibrahimy Genteng Banyuwangi, East Java, Indonesia

(✉)Correspondence to: afkarinaizza443@gmail.com

Received: May 2023

Accepted: June 2023

Published: July 2023

DOI: <https://doi.org/10.71392/ejip.22i2.78>

Abstract: This study aims to determine how the implementation of the Project Based Learning model can improve students' learning activities in the subject of Islamic Cultural History. The method used in this study is qualitative with a case study approach. The subjects of the study were grade X students. Data collection techniques include observation, interviews, and documentation. Data were analyzed descriptively through the stages of data reduction, data presentation, and drawing conclusions. The results of the study indicate that the implementation of the Project Based Learning model can significantly improve students' learning activities. This is indicated by the increasing involvement of students in various stages of learning, starting from project planning, group discussions, information searches, to presentations of work results. Students become more enthusiastic, actively ask questions, discuss, and are able to develop creative solutions to learning tasks. The implication of this study is the importance of the role of teachers as facilitators in creating active and meaningful learning. The implementation of the Project Based Learning model is able to create a fun learning environment and motivate students to be directly involved in the learning process. These results are expected to encourage educators to adopt a similar approach in improving the quality of learning in various other subjects.

Keywords – *Model Project Based Learning, Learning activity*

Abstract - Penelitian ini bertujuan untuk mengetahui bagaimana penerapan model Project Based Learning dapat meningkatkan aktivitas belajar siswa dalam mata pelajaran Sejarah Kebudayaan Islam. Metode yang digunakan dalam penelitian ini adalah kualitatif dengan pendekatan studi kasus. Subjek penelitian adalah siswa kelas X. Teknik pengumpulan data mencakup observasi, wawancara, dan dokumentasi. Data dianalisis secara deskriptif melalui tahapan reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa penerapan model Project Based Learning dapat secara signifikan meningkatkan aktivitas belajar siswa. Hal ini ditandai dengan meningkatnya keterlibatan siswa dalam berbagai tahapan pembelajaran, mulai dari perencanaan proyek, diskusi kelompok, pencarian informasi, hingga presentasi hasil kerja. Siswa menjadi lebih antusias, aktif bertanya, berdiskusi, serta mampu mengembangkan solusi kreatif terhadap tugas-tugas pembelajaran. Implikasi dari penelitian ini adalah pentingnya peran guru sebagai fasilitator dalam

menciptakan pembelajaran yang aktif dan bermakna. Penerapan model Project Based Learning mampu membentuk lingkungan belajar yang menyenangkan dan memotivasi siswa untuk terlibat secara langsung dalam proses belajar. Hasil ini diharapkan dapat mendorong pendidik untuk mengadopsi pendekatan serupa dalam meningkatkan kualitas pembelajaran di berbagai mata pelajaran lainnya..

Keywords – *Project-Based Learning Model, Learning Activity*

INTRODUCTION

Education is certainly needed in human life, because education is a component of everyone's life that contributes to social life. Two indicators of education quality are process quality and results (Rasa & Laherto, 2022; Pallathadka et al., 2023). Education is said to be of high quality if there is an effective and efficient implementation of learning by involving all components of education, such as including teaching objectives, teachers and students, lesson materials, teaching and learning models or methods, teaching tools and resources, and evaluation (Miranda et al., 2021; González-Pérez & Ramírez-Montoya, 2022).

As a professional teacher in his field, a teacher must have a number of skills (Haug & Mork, 2021; Haug & Mork, 2021). In the era of globalization like today, every citizen, including students, is required to have a number of skills needed in life not only as a citizen, but also as a citizen of the world so that students' lives can be more functional and more meaningful. Some of the skills needed in the era of globalization include: 1) critical thinking and problem solving, 2) collaboration across networks and leading by influence, 3) agility and adaptability, 4) initiative and entrepreneurialism, 5) effective oral and written communication, 6) accessing and analyzing information, and 7) curiosity and imagination (Lewandowski et al., 2022).

The application of the *Project Based Learning* model engages students in problem-solving exercises and gives them the opportunity to develop independence and independent learning skills. The basic ideas and principles of a discipline are the main areas of learning, engaging students in meaningful activities such as problem-solving inquiry (Frey et al., 2022), giving students the opportunity to develop their own knowledge on their own initiative, and reaching the pinnacle to produce original products (Tan et al., 2023; English, 2023). This educational model is very suitable for increasing the creativity of students' learning tasks so that interest in the subject matter increases and they are not bored. Because the implementation of project-based learning requires students to produce a product, it can foster a fun learning environment where students are motivated to learn.

One of the factors that help students succeed in the learning process is activeness and the achievement of the best learning outcomes. Ramdani et al., (2021) Explaining that the higher the level of student activity, the greater the results obtained This means that the competence achieved from the learning process can be measured by two indicators, namely student activity during learning activities (student enthusiasm) and the results obtained after the learning is completed. The description above provides an understanding that in an effort to realize student activity in learning activities, of course there are factors that affect this behavior.

Based on the results of initial observations and interviews with class X teachers of Social Studies 1 SMA NU Genteng. Most of the students of class X

Social Studies 1 SMA NU Genteng when using the lecture method find it difficult to understand the learning of Islamic Cultural History and it is not uncommon for students to feel bored while studying so that not a few students become lazy in following lessons. From these problems, an interesting learning model is needed that can help students to be more active in learning. The lack of student involvement in the learning process is a fundamental assumption that results in less than optimal achievement of student learning outcomes. Where teachers have not implemented the right learning model to increase student learning activity, students are less motivated to take part in the learning of Islamic Cultural History subjects because teachers have not been able to attract students' attention, as a result they do not understand the material presented by the teacher in front of the class. Then, the teacher only gives homework in the form of solving the problems in the package book. The learning process that is carried out does not allow students to actively and independently process their thoughts, which makes students inactive in the learning process. Students are not given the task of creating products from the results of their own thinking related to the material studied. Islamic Cultural History is one of the subjects at school or in Madrasah that often makes students unenthusiastic and uninterested (Faidah & Maarif, 2022; Sodikin, 2024). Therefore, teachers use the Project Based Learning model to help students be motivated because the subject of Islamic Cultural History has a lot of knowledge about Islamic history.

So that students can actively participate in their learning, rather than being passive learners and active teachers. A learning model known as "Project Basic Learning" involves students in the creation of projects. Project-based learning provides opportunities for children to convey and develop their ideas in the form of real works, children have the opportunity to explore, be active, critical, creative, connect and enrich knowledge and experience, create, evaluate, and get feedback and continuously make improvements (Rohm et al., 2021; Ghosheh Wahbeh et al., 2021). The Project Basic Learning model can motivate students to actively cooperate in solving problems so that the main idea of the subject can be developed from the information obtained from the completed assignment or project (Wijnia et al., 2024). Project basic learning can reduce competition in the classroom and direct students to be more collaborative than working alone (Liebech-Lien & Sjølie, 2021). Project basic learning also has great potential to make learning experiences more interesting and meaningful (Umar & Ko, 2022). The project basic learning model creates tasks based on complex problems for students to learn in groups. It also provides opportunities for students to become more active in learning, as they are encouraged to ask, investigate, explain, and interact with problems (Cho et al., 2021; Umar & Ko, 2022).

In previous research conducted by Al-Abdullatif & Gameil, (2021) it was stated that the implementation of learning using the project based learning model in the subject of Simulation and Digital Communication can increase student learning activity and motivation and there are many changes when the learning

model has not been implemented and after the implementation of the learning model. In addition, researchers conducted by Hussein, (2021) explained that almost all students agree that the project based learning model provides opportunities for students to apply their knowledge in classifying, train in solving problems, and increase learning motivation. In previous research conducted by Al-Abdullatif & Gameil, (2021) it was stated that the implementation of learning using the project based learning model in the subject of Simulation and Digital Communication can increase student learning activity and motivation and there are many changes when the learning model has not been implemented and after the implementation of the learning model. In addition, researchers conducted by Chen et al., (2022) explained that almost all students agree that the project based learning model provides opportunities for students to apply their knowledge in classifying, train in solving problems, and increase learning motivation.

However, this study is different from previous research. Because of the differences, uniqueness, and novelty in this study, namely carrying out learning activities with a play-while learning approach that is packaged in an interesting and fun way through the Project Based Learning Model. Given the description mentioned above, the researcher is interested in investigating how the Project based learning model can be used to increase learning activity in class X IPS 1 SMANU Genteng Banyuwangi.

RESEARCH METHODS

This research falls into the category of qualitative descriptive research because the data collected is more interested in the process than the results. With a thorough description, this type of research is able to record a variety of qualitative information, The information collected is expressed in words, sentences, or images with meanings that are more than just statements of quantity or numerical frequency. The data of this study is in the form of a learning process that occurs when the implementation of Project Based Learning is used to increase student activity.

The research was carried out in May 2023. The subject of this study is a student of class X IPS 1 SMA NU Genteng. The researcher collected data by talking directly to the research subject. Through direct interaction, researchers can obtain information about students' thoughts and opinions through the application of *Project Based Learning*, which is used to increase student activity.

Data collection techniques include: a) observation or observation methods. b) The use of interviews, in which a number of students are questioned to provide the researcher with the data they need. c) Documentation approach, used to collect information about the Learning Implementation Plan (RPP) made by the teacher as well as photos of the steps of PjBL activities that have been completed by the students.

Qualitative research relies on data analysis that is descriptive, prioritizes process rather than results, limits the study to focus and has a set of criteria to check the validity of the data, and the results are agreed upon by both parties, namely the researcher and the research subject. The data analysis technique used in this study is the process of seeking information and systematically compiling information and data that has been obtained from observations, interviews and documentation. Then the researcher conducts data reduction (activities that refer to the selection process, concentration, simplification, abstraction and transformation of data), exposing data (classifying data and identifying data), drawing conclusions and verifying conclusions.

RESULTS AND DISCUSSION

Researchers Model Project Based Learning is a type of teaching that encourages students to build their knowledge through hands-on activities, collaborate in groups to solve problems, and explore ideas while encouraging students' creativity in the final product they produce (Tang et al., 2022).

Project based learning can be applied by paying attention to the following: 1) the topic/material that students learn is a topical topic and is easy to design into an interesting project/work, 2) students are not led to produce only one project (one student produces one project), 3) the project does not have to be completed in one meeting (completed in 3-4 meetings), 4) the project is a form of problem solving so that from the creation of the project leading to an increase in learning outcomes, 5) the materials and media needed to make the project are made available in the surrounding environment and directed to utilize used materials/unused waste so that they become useful value. 6) authentic assessment emphasizes the ability to design, implement, discover, and convey their products to others (Zhang & Ma, 2023). Therefore, Project based learning is seen as a learning model that can stimulate students' interest in learning.

According to Joshi et al., (2021) "Good preparation is a guarantee of results in implementation." Therefore, a teacher must try his best to prepare the learning process that he will teach. Immature teacher preparation will have a significant impact on the learning process and student learning outcomes (Svanberg & Bergh, 2023). In the implementation of learning with the application of Project based learning in this study, it includes several steps, namely 1) Teacher preparation through the creation of Learning Implementation Plans and Student Worksheets; 2) the implementation of learning using PjBL to increase student involvement in Islamic cultural history subjects.

Islamic cultural history subject teacher did well to plan learning activities. This can be seen from the existence of a Learning Implementation Plan and Student Worksheets. Written lesson plans using the Project based learning model are included in the plan that has been made by the teacher. The Learning Implementation Plan is made based on the syllabus to be used as a guideline in learning activities so that students can achieve the Basic Competencies that have

been set (Prasetyono et al., 2021). The implementation of the project based learning model encourages the implementation of PAKEM (Active, Creative, Effective, and Fun Learning). Because students serve as learning centers, they will be actively involved in the learning process.

The implementation of learning with the project based learning model includes: determination, design, scheduling, monitoring, presentation and evaluation (Suradika et al., 2023). The project based learning learning design in the islamic cultural history subject focuses on increasing student learning activity. In this sense, teachers only act as facilitators, planning activities and helping the learning process. According to Morrison et al., (2021), teachers were originally a source of learning, but in project based learning, teachers become facilitators of learning activities that guide students to solve problems.

The learning procedures implemented include;

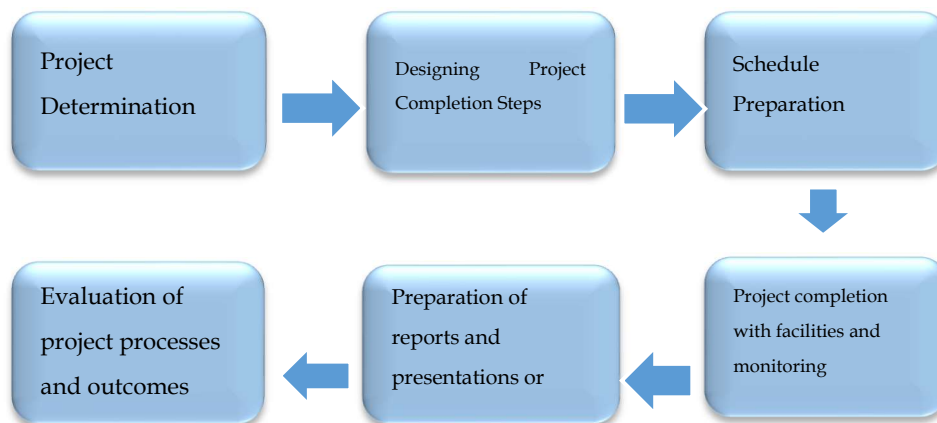


Figure 1. Steps to implement the project based learning model

Project Determination

In this early stage, the teacher gives questions to students so that students can think about solving a given problem. because the basic questions asked by teachers in the learning project arouse students' interest in finding solutions to the challenges posed by teachers (Nguyen et al., 2022; Jiang & Pang, 2023). The teacher showed a picture of a historical building during the Umayyad dynasty. The teacher showed the students pictures of historical buildings. Then students and teachers find the elements contained in the images of the available keywords. The teacher uses several fishing questions to lead students to find the elements in the picture. The questions given are related to islamic cultural history material such as; a) explain what the image is about?; b) Who were the Islamic figures at the time of the Umayyad Dynasty?; c) What is the meaning of the image displayed?. Project-based learning is a learning model that uses problems as the first step to gain experience as new knowledge and integrate it into daily life activities (Diana & Sukma, 2021; Jiang & Pang, 2023).

Designing Project Completion Steps

The teacher divides students into 4 groups with each group of 4 people at random. Then the teacher gives the student worksheet to determine the product to be made. Each group gets a sub-theme of material about the Islamic Civilization of the Umayyad Empire in Andalusia to be able to produce products. The teacher then asks the students to come up with ideas that will be developed according to their creativity and group agreement. Group learning allows students to collaborate, communicate socially, and instill respect and appreciation among peers (Silva et al., 2021). Students can actively engage in their learning topics through project-based learning (Chua & Islam, 2021). Thus, students feel they have a project when they play an active role in making activity plans to complete assignments.

Schedule Preparation

At this stage, make a time allocation and a final deadline for completing the project. Readiness for project management through the creation of comprehensive and consistent schedules and deadlines. Students can do this by developing product manufacturing activities as well as the time required to perform those activities, such as preparing tools and materials, making goods, collecting products, creating reports, compiling reports, and presenting reports. So that the project can be completed within the stipulated time frame. Thus, students in class X Social Studies 1 can be disciplined in managing their time to complete assignments.

Project completion with facilities and monitoring

Teachers monitor the activities carried out by students in working on project assignments. Each member of the group looks very excited to do their task. With monitoring, teachers can assess every student's involvement in the project process. By asking each group about the obstacles or difficulties they experienced.



Figure 2. Students are seen to be active in completing projects

Evaluation of project processes and outcomes

The results of each group's project were presented in front of the class. At this stage, the teacher gives the key words to students on how to present their project with the keywords SAPA MANTAN THANK YOU which each word means Greetings, Introduction, Purpose Intent and Thank You. Each other group was also given the opportunity to respond to the results of the presentations delivered by each group. The teacher also gave appreciation and feedback on the results of each group's presentation. Students and teachers conclude about the learning material. The teacher gives an evaluation of the knowledge test, then the students do the evaluation shared by the teacher.



Figure 3. students present their projects

Based on the results of research conducted by researchers, the implementation of project based learning can increase student activity during the implementation of project based learning learning. First, give their opinion when the teacher asks questions, by providing questions asked by teachers through pictures in islamic cultural history learning, it is very important for students of class X IPS 1, it can be seen that all students respond to it by issuing their own opinions. Second, Participate in the development of the Project, once students are given an assignment, they must find a suitable solution to the task. The solution is a project that will be worked on by students. At the project planning stage, students seem to be very active in finding and designing projects that will be made as solutions to the task.

Third, students ask other students or teachers if they do not understand the problems they are facing, students who have difficulties dare to ask teachers or other students who feel they can help. In addition, it is evident that other students pay close attention when the other students or teachers in question answer. Fourth, participate in seeking information to solve problems, after students understand the questions asked by the teacher as problems. Students and teachers collaborate to get the information needed to overcome the difficulties they face, Students reread the textbook to understand the subject matter that the teacher has explained, and students directly ask the teacher about

the material they have not yet understood. Most students review the contents of the book to answer questions or teacher assignments.

Fifth, students carry out group discussions with the teacher's instructions, when conducting discussion activities with their groups, students actively cooperate and in accordance with the rules that have been set by the teacher. Students discuss with each other to answer the group assignments given by the teacher. Although there were about two students in the group discussion who were confused by the discussion activity, they immediately asked their closest friends for an explanation. Group conversations are held so that students can communicate with their peers and take responsibility for their group. Group discussions can also reveal student involvement in their work.

Sixth, students can evaluate their abilities and the results, following the teacher's instructions, students try to complete the task to create a project design along with the tools or equipment needed. Seventh, students train themselves in working on projects, after students identify the problem they want to solve in the learning activity. Students work on project assignments directly with their group mates to overcome challenges, starting with the project design. Eighth, students focus on what they learn from doing an activity or solving a problem, once students have finished discussing the design and manufacturing procedure. Then, in project assignments, students use or apply the steps that have been discussed to complete the assigned task or difficulty.

In accordance with the description above, the use of *the Project Based Learning Model* can help students in increasing student activity. So that students are not bored with SKI (Islamic Cultural History) subjects, teachers can then carry out learning activities with a play-while learning approach that is packaged in an interesting and fun way through *the Project Based Learning Model*. This is in accordance with the opinion of Nurhidayah et al., (2021) by using *the Project Based Learning (PjBL)* model can increase student learning activity, this is seen in students being able to do their own activities and work together in groups directly, in understanding the material and solving problems in learning.

Some of the advantages of implementing *the Project Based Learning* model include increased teamwork, experience in project management, allocating time and other resources to complete tasks, and making the learning environment fun. Meanwhile, this study found a disadvantage of PjBL: learning stages that cannot be implemented in a short time. The implementation of PjBL takes a lot of time. Students who are weak in experimentation and information gathering will have a hard time (Sari et al., 2023). When the themes assigned to each group are different, it is anticipated that students will not be able to understand the problem as a whole.

This study provides an important contribution to the field of education by showing that the implementation of the Project Based Learning (PjBL) model can significantly increase student learning activities, especially in the subject of Islamic Cultural History. Through an approach that encourages collaboration,

creativity, and problem solving, students become more actively involved in the learning process. The results of this study enrich the literature on innovative learning strategies and encourage educators to implement more participatory learning models to improve the quality of learning processes and outcomes at the secondary school level.

CONCLUSION

The implementation of the Project Based Learning (PjBL) model can significantly increase student learning activities, especially in the subject of Islamic Cultural History which previously tended to be boring. This finding teaches that the project-based learning approach can arouse motivation, encourage collaboration, and foster creativity and student responsibility in learning. The implications of this study encourage teachers to be more daring in exploring innovative learning models in order to improve the quality of the learning process and outcomes. Scientifically, this study enriches the discourse of contextual pedagogy based on active student participation, and practically offers alternative learning strategies that are applicable in the classroom. The strength of this study lies in the direct application of the PjBL model in the classroom and in-depth observation of student responses, but its limitations are the scope of the subject which is limited to one class and certain subjects. Therefore, further research is recommended to test the effectiveness of this model at various levels of education and other subjects in order to strengthen the generalization of the findings.

REFERENCES

- Al-Abdullatif, A. M., & Gameil, A. A. (2021). The Effect of Digital Technology Integration on Students' Academic Performance through Project-Based Learning in an E-Learning Environment. *International Journal of Emerging Technologies in Learning*, 16(11). <https://doi.org/10.3991/ijet.v16i11.19421>
- Chen, S.-Y., Lai, C.-F., Lai, Y.-H., & Su, Y.-S. (2022). Effect of project-based learning on development of students' creative thinking. *The International Journal of Electrical Engineering & Education*, 59(3), 232–250. <https://doi.org/10.1177/0020720919846808>
- Cho, H. J., Zhao, K., Lee, C. R., Runshe, D., & Krousgrill, C. (2021). Active learning through flipped classroom in mechanical engineering: improving students' perception of learning and performance. *International Journal of STEM Education*, 8, 1–13. <https://doi.org/10.1186/s40594-021-00302-2>
- Chua, K. J., & Islam, M. R. (2021). The hybrid Project-Based Learning–Flipped Classroom: A design project module redesigned to foster learning and engagement. *International Journal of Mechanical Engineering Education*, 49(4), 289–315. <https://doi.org/10.1177/0306419019838335>
- Diana, N., & Sukma, Y. (2021). The effectiveness of implementing project-based

- learning (PjBL) model in STEM education: A literature review. *Journal of Physics: Conference Series*, 1882(1), 12146. <https://doi.org/10.1088/1742-6596/1882/1/012146>
- English, L. D. (2023). Ways of thinking in STEM-based problem solving. *ZDM-Mathematics Education*, 55(7), 1219–1230. <https://doi.org/10.1007/s11858-023-01474-7>
- Faidah, N., & Maarif, M. A. (2022). Literacy-Based Islamic Cultural History Learning at Islamic Elementary School. *Jurnal Pendidikan Islam Indonesia*, 6(2), 110–122. <https://doi.org/10.35316/jpii.v6i2.345>
- Frey, R. F., Brame, C. J., Fink, A., & Lemons, P. P. (2022). Teaching discipline-based problem solving. *CBE – Life Sciences Education*, 21(2), fe1. <https://doi.org/10.1187/cbe.22-02-0030>
- Ghosheh Wahbeh, D., Najjar, E. A., Sartawi, A. F., Abuzant, M., & Daher, W. (2021). The role of project-based language learning in developing students' life skills. *Sustainability*, 13(12), 6518. <https://doi.org/10.3390/su13126518>
- González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st century skills frameworks: systematic review. *Sustainability*, 14(3), 1493. <https://doi.org/10.3390/su14031493>
- Haug, B. S., & Mork, S. M. (2021). Taking 21st century skills from vision to classroom: What teachers highlight as supportive professional development in the light of new demands from educational reforms. *Teaching and Teacher Education*, 100, 103286. <https://doi.org/10.1016/j.tate.2021.103286>
- Hussein, B. (2021). Addressing collaboration challenges in project-based learning: The student's perspective. *Education Sciences*, 11(8), 434. <https://doi.org/10.3390/educsci11080434>
- Jiang, C., & Pang, Y. (2023). Enhancing design thinking in engineering students with project-based learning. *Computer Applications in Engineering Education*, 31(4), 814–830. <https://doi.org/10.1002/cae.22608>
- Joshi, S., Hamilton, M., Warren, R., Faucett, D., Tian, W., Wang, Y., & Ma, J. (2021). Implementing Virtual Reality technology for safety training in the precast/prestressed concrete industry. *Applied Ergonomics*, 90, 103286.
- Lewandowski, P., Park, A., Hardy, W., Du, Y., & Wu, S. (2022). Technology, skills, and globalization: Explaining international differences in routine and nonroutine work using survey data. *The World Bank Economic Review*, 36(3), 687–708. <https://doi.org/10.1093/wber/lhac005>
- Liebeck-Lien, B., & Sjølie, E. (2021). Teachers' conceptions and uses of student collaboration in the classroom. *Educational Research*, 63(2), 212–228. <https://doi.org/10.1080/00131881.2020.1839354>
- Miranda, J., Navarrete, C., Noguez, J., Molina-Espinosa, J.-M., Ramírez-Montoya, M.-S., Navarro-Tuch, S. A., Bustamante-Bello, M.-R., Rosas-Fernández, J.-B., & Molina, A. (2021). The core components of education 4.0 in higher education: Three case studies in engineering education. *Computers & Electrical Engineering*, 93, 107278.

- <https://doi.org/10.1016/j.compeleceng.2021.107278>
- Morrison, J., Frost, J., Gotch, C., McDuffie, A. R., Austin, B., & French, B. (2021). Teachers' role in students' learning at a project-based STEM high school: Implications for teacher education. *International Journal of Science and Mathematics Education*, 19, 1103–1123. <https://doi.org/10.1007/s10763-020-10108-3>
- Nguyen, L. T., Kanjug, I., Lowatcharin, G., Manakul, T., Poonpon, K., Sarakorn, W., Somabut, A., Srisawasdi, N., Traiyarach, S., & Tuamsuk, K. (2022). How teachers manage their classroom in the digital learning environment-experiences from the University Smart Learning Project. *Heliyon*, 8(10). <https://doi.org/10.1016/j.heliyon.2022.e10817>
- Nurhidayah, I. J., Wibowo, F. C., & Astra, I. M. (2021). Project Based Learning (PjBL) learning model in science learning: Literature review. *Journal of Physics: Conference Series*, 2019(1), 12043. <https://doi.org/10.1088/1742-6596/2019/1/012043>
- Pallathadka, H., Al-Hawary, S. I. S., Muda, I., Surahman, S. H., Al-Salami, A. A. A., & Nasimova, Z. (2023). The study of Islamic teachings in education: With an emphasis on behavioural gentleness. *HTS Teologiese Studies / Theological Studies*, 79(1). <https://doi.org/10.4102/hts.v79i1.8193>
- Prasetyono, H., Abdillah, A., Djuhartono, T., Ramdayana, I. P., & Desnaranti, L. (2021). Improvement of Teacher's Professional Competency in Strengthening Learning Methods to Maximize Curriculum Implementation. *International Journal of Evaluation and Research in Education*, 10(2), 720–727. <https://doi.org/10.11591/ijere.v10i2.21010>
- Ramdani, A., Jufri, A. W., Gunawan, G., Fahrurrozi, M., & Yustiqvar, M. (2021). Analysis of students' critical thinking skills in terms of gender using science teaching materials based on the 5E learning cycle integrated with local wisdom. *Jurnal Pendidikan IPA Indonesia*, 10(2), 187–199. <https://doi.org/10.15294/jpii.v10i2.29956>
- Rasa, T., & Laherto, A. (2022). Young people's technological images of the future: implications for science and technology education. *European Journal of Futures Research*, 10(1), 4. <https://doi.org/10.1186/s40309-022-00190-x>
- Rohm, A. J., Stefl, M., & Ward, N. (2021). Future proof and real-world ready: the role of live project-based learning in students' skill development. *Journal of Marketing Education*, 43(2), 204–215. <https://doi.org/10.1177/02734753211001409>
- Sari, E. D. P., Trisnawati, R. K., Agustina, M. F., Adiarti, D., & Noorashid, N. (2023). Assessment of Students' Creative Thinking Skill on the Implementation of Project-Based Learning. *International Journal of Language Education*, 7(3), 414–428. <https://doi.org/10.26858/ijole.v7i3.38462>
- Silva, R., Farias, C., & Mesquita, I. (2021). Cooperative learning contribution to student social learning and active role in the class. *Sustainability*, 13(15), 8644. <https://doi.org/10.3390/su13158644>

- Sodikin, S. (2024). Improving Understanding of Islamic Cultural History Subjects Through Discussion Methods. *Research Journal on Teacher Professional Development*, 2(2), 182–189.
- Suradika, A., Dewi, H. I., & Nasution, M. I. (2023). Project-based learning and problem-based learning models in critical and creative students. *Jurnal Pendidikan IPA Indonesia*, 12(1), 153–167. <https://doi.org/10.15294/jpii.v12i1.39713>
- Svanberg, M., & Bergh, D. (2023). Effects of gamification in a teacher education program, 2010 to 2020. *SAGE Open*, 13(1), 21582440231160996. <https://doi.org/10.1177/21582440231160995>
- Tan, A.-L., Ong, Y. S., Ng, Y. S., & Tan, J. H. J. (2023). STEM problem solving: Inquiry, concepts, and reasoning. *Science & Education*, 32(2), 381–397. <https://doi.org/10.1016/j.tsc.2022.101032>
- Tang, C., Mao, S., Naumann, S. E., & Xing, Z. (2022). Improving student creativity through digital technology products: A literature review. *Thinking Skills and Creativity*, 44, 101032. <https://doi.org/10.1016/j.tsc.2022.101032>
- Umar, M., & Ko, I. (2022). E-learning: Direct effect of student learning effectiveness and engagement through project-based learning, team cohesion, and flipped learning during the COVID-19 pandemic. *Sustainability*, 14(3), 1724. <https://doi.org/10.3390/su14031724>
- Wijnia, L., Noordzij, G., Arends, L. R., Rikers, R. M. J. P., & Loyens, S. M. M. (2024). The effects of problem-based, project-based, and case-based learning on students' motivation: A meta-analysis. *Educational Psychology Review*, 36(1), 29. <https://doi.org/10.1007/s10648-024-09864-3>
- Zhang, L., & Ma, Y. (2023). A study of the impact of project-based learning on student learning effects: A meta-analysis study. *Frontiers in Psychology*, 14, 1202728. <https://doi.org/10.3389/fpsyg.2023.1202728>.