

# Effectiveness of Project-Based Learning Models on Communication Skills in Schools

Ariyani Muljo<sup>1\*</sup>, I Nyoman Sudana Degeng<sup>1</sup>, Cholis Sa'dijah<sup>1</sup>, Sulton<sup>1</sup>

<sup>1</sup>Universitas Negeri Malang, Indonesia

\*ariyani.muljo21@gmail.com

## ABSTRACT

The purpose of this study was to test whether there was a significant relationship between the project geometry learning model and students' communication skills. This study was designed using a quasi-experimental design. This research design has two groups, namely the experimental group and the control group. The instruments used in data collection were 1). Test questions to measure students' initial abilities and 2). Observation sheet to observe learning activities. The results showed a significant relationship using the project geometry learning model to students' communication skills. This is evidenced by the results obtained, namely the sign value of  $0.000 < 0.05$ , so  $H_0$  is rejected and accepts  $H_a$ , which means there is an interaction of project-based learning models on student communication skills. This is evidenced by the results of a questionnaire that researchers have conducted on students.

## Keywords

Project-Based Learning Model, Communication Skills

## Introduction

Learning models that can influence students' communication skills are one of the project-based learning models as stated by Thomas that project work that is in the syntax of the project-based learning model contains complex tasks based on very challenging questions and problems, and requires students to design, solve problems, make decisions, carry out investigative activities, and provide opportunities for students to work independently (Gülbahar & Tinmaz, 2006; Kırkgöz, 2014). The learning model applied in this research is project-based. The project-based learning model is one that uses a constructivist approach. Meanwhile, the learning outcomes referred to in this study are students' communication skills. One of the learning models that can affect the ability to be achieved in solving problems and reasoning. In this case, the learning model that can influence problem-solving and reasoning abilities is project-based; as stated by Thomas, project work in the project-based learning model's syntax contains complex tasks based on questions and problems. It is very challenging and requires students to design, solve problems, make decisions, carry out investigative activities, and provide opportunities for students to work independently (Nation, 2008). The

learning model applied in this research is project-based. The project-based learning model is one that uses a constructivist approach. Meanwhile, the learning outcomes referred to in this research are problem-solving and reasoning abilities (Beale & Bost, 1979; McDonald & Molony, 2004).

Problem-solving is a type of intellectual skill that, according to Gagné (1992), is higher in degree and more complex than other intellectual skills (ChanLin, 2008). Besides, problem-solving is a strange problem; and contains an understanding as a higher thinking process and is essential in learning mathematics. Problem-solving is a fundamental skill that must be mastered by students (Powell, 2014). Some indicators of problem-solving abilities according to NCTM (2000) indicators to measure students' mathematical problem-solving abilities include: 1) Students can identify elements that are known, which are asked, and the adequacy of the elements needed, 2) Students can formulate mathematical problems or compile Mathematical models, 3) Students can apply strategies to solve various problems (types and new problems) in or outside mathematics, 4) Students can explain the results according to the original problem, and 5) Students can use mathematics meaningfully (Ada & Kurtulus, 2012; Danford, 2008).

The ability to solve mathematical problems in this study is students' ability to solve math problems based on Polya's steps. Based on the results of observations at SMP Nurul Huda Mulyorejo class VIII B of 30 students consisting of 20 male students and ten female students, there is an illustration that learning mathematics has not been expected so far. Students who can understand problems are 11 students (35%), students who can design completion plans, eight students (25%), students who can carry out the complete plan of 6 students (20%), and students who can look back at the completion steps five students (15%). The factors that cause students to experience difficulties in solving math problems can come from students and teachers. Factors originating from students, namely students are accustomed to learning by memorizing and lack of interest and motivation of students to learn. Most teachers practice conventional learning, assignments and problems are less challenging and unable to explore students' conceptual understanding, and teachers only provide few opportunities for students to convey the solution ideas that students have. Based on the causal factors that have been described, the most dominant cause is the learning model used. The alternative strategy offered is through a project-based learning model (Genc, 2015).

Furthermore, reasoning explained is a thought process that seeks to link known facts to a conclusion. While the indicators that exist in mathematical reasoning ability are indicators of mathematical reasoning measured in this study are: 1) checking the validity of the argument; 2) making analogies and generalizations; 3) draw logical conclusions; 4) follow the inference rules. It can be seen that the existing mathematical indicators can be developed and influenced by the learning model used, especially what this study means is a project-based learning model, where each step/phase of this project-based learning model starts from determining the necessary questions. which can accumulate existing indicators of reasoning to move in a better direction. Furthermore, it comes to the next and final stage/phase, reflecting the thoughts that already exist in students (Chaeruman, 2019; Urbig, Bürger, Patzelt, & Schweizer, 2013).

In this case, the researcher tries to combine a project-based learning model, and this can be seen in the existing criteria in communication skills that require the development of interdisciplinary subjects in the form of reading and writing that can describe students' skills communicating. To realize mathematics learning in geometry material that can improve problem-solving abilities, students' mathematical reasoning, and student communication skills, of course, an appropriate learning model is also needed. One of the appropriate learning models to use is Project-Based Learning (project-based learning). In this project-based learning, students go through a broader inquiry process to respond to complex questions, problems, or challenges. Based on the explanation above, for this research, what is meant by project-based learning is a learning method that uses problems as a first step in collecting and integrating new knowledge based on experiences through research carried out in real activities (Li, 2015).

In this case, the researcher tries to combine a project-based learning model, and this can be seen in the existing criteria for communication skills that require the development of interdisciplinary subjects in the form of reading and writing that can describe student skills when communicating. The criteria for skills according to P21 are (a) Good at issuing ideas and thoughts effectively both orally, in writing, and nonverbally in various forms and contexts. (b) Listening effectively to describe meanings, knowledge, values, attitudes, and interests. (c) Use communication for various purposes (such as to inform, instruct, motivate, and persuade). (d) Use multiple levels of media and technology and know-how to measure their impact and effectiveness. (e) Effective communication in various environments (including multilingual and multicultural) (Pinho-Lopes & Macedo, 2016). An appropriate learning model is also needed to realize mathematics learning in school materials that can improve student communication skills. One of the appropriate learning models to use is Project-Based Learning (project-based learning). In this project-based learning, students go through a broader inquiry process to respond to complex questions, problems, or challenges. Based on the explanation above, for this research, what is meant

by project-based learning is a learning method that uses problems as a first step in collecting and integrating new knowledge based on experiences through research carried out in real activities.

## Literature Review

### Project-Based Learning

To encourage students to produce contextual work both individually and in groups, it is highly recommended to use a learning approach that produces project-based work (Project Based Learning). In this connection, it is necessary to understand the concept or definition of a project-based learning model, the characteristics or characteristics of a project-based learning model, project-based learning steps, and the advantages and application of a project-based model (Pinho-Lopes & Macedo, 2016).

Project-based learning provides opportunities for teachers to manage classroom learning by involving project work (Scott, Thoma, Puglia, Temple, & D'Aguilar, 2017; Young & Legister, 2018). Characteristics of Project-Based Learning is an innovative learning model and emphasizes contextual learning through complex activities. Project-based learning has great potential to

provide students with a more engaging and meaningful learning experience. Guidelines for Project-Based Learning Guidance in guiding students in project-based learning several things need to be considered and used as a stepping stone for action. The guidance guidelines include: (1) Authenticity; (2) Adherence to academic values; (3) Learning in the real world; (4) Active research; (5) Relationship with experts; (6) Assessment

Project-based learning characteristics are a project-based learning, which is an innovative learning model and emphasizes contextual learning through complex activities. Project-based learning has great potential to provide students with a more engaging and meaningful learning experience.

The Nature of Project-Based Learning, a project-based learning model in (Siregar, Syihabuddin, Hakam, & Komalasari, 2020; Thomas, Cicmil, & George, 2012; Young & Legister, 2018) (project-based learning), explains that the learning model directly involves students in the learning process through research activities to work on and complete a particular learning project. The concrete steps of the project-based learning model in this study are shown in table 1:

**Table 1.** Steps of project-based learning

<i>Steps</i>	<i>Description</i>
Step -1 Project determination	The teacher, together with the students, determines the theme/topic of the project
Step -2 Designing project completion steps	The teacher facilitates students to design steps for project completion activities and their management
Step-3 Preparation of project implementation schedule	The teacher assists students in scheduling all activities that they have designed
Step -4 Completion of projects with facilitation and teacher monitoring	The teacher facilitates and monitors students in carrying out the project designs that have been made
Step -5 Preparation of reports and presentation/publication of project results	The teacher facilitates students to present and publish their work
Step -6 Evaluation of project processes and results	Teachers and students at the end of the learning process reflect on the activities and results of project assignments

In the project-based learning, stage students are given essential questions, namely questions that can assign students to carry out an activity. These questions are in the form of realistic/real problems

to determine the theme/topic of the project by first understanding the problem, exploring curiosity, and remembering the knowledge they have previously. This is following the results of

research that the contribution of project-based learning not only increases the enthusiasm, intensity, and skills of students in participating in mathematics learning activities but also helps students improve their understanding of the subject matter given (Çakiroğlu & Erdemir, 2019; Cox & Meaney, 2018).

When given a problem, students are directly involved and play an active role in solving the selected problem. Besides, students are also required to design project plans that are carried out collaboratively between teachers and students. Planning contains the rules of the game, selecting activities that can support answering essential questions, integrating various possible subjects, and knowing tools and materials that can be accessed to help complete the project. During that process, students discuss collaboratively with each other and gather appropriate information from various sources to complete the project. Furthermore, collaboratively, students, guided by the teacher, compile activities to complete the project. Activities at this stage consist of students making a timeline and deadlines for completing the project, planning new ways to complete the project, and making explanations (reasons) about choosing this method. The teacher's role in project-based learning is to be responsible for monitoring the activities of students while completing the project. Monitoring is done by facilitating students in each process. In order to simplify the monitoring process, a rubric is created that can record all important activities. In completing the project with the facilities and teacher monitoring, students carry out collaborative learning activities with their group friends. These activities consist of reading, researching, observing, interviewing, recording, visiting project objects, or accessing the internet (Kim, 2020; Sedarmayanti, 2007; Surahman et al., 2019; Uğur, Akkoyunlu, & Kurbanoğlu, 2011).

In this case, students design a mathematical model in the form of a meaningful product (paper or work). Furthermore, students compile reports and presentations/ publications of project results. At this stage, students use their thinking skills and communication skills by connecting the ideas and concepts they have to find solutions. These skills are used to develop and solve problems to compile reports in the form of work. The work is then

presented to other groups to evaluate their thinking processes and the skills they use in solving problems. Students can interpret the solution by concluding appropriately (Lac, 2017; Singh & Sharma, 2020).

Based on the description above, it can be concluded that Project Based Learning (PBP) is a learning activity that uses a project/activity as a learning process to achieve attitudes, knowledge, and skills competencies. The emphasis of learning lies in students' activities to produce products by applying skills to research, analyze, create, and present learning products based on real experiences. The product in question results from a project in the form of designs, schemes, written works, works of art, works of technology/ crafts, and others. This approach allows students to work independently or in groups to produce real products (Adams, 2014; Hanline, Hatoum, & Riggie, 2012).

### Communication Skills

Partnership for 21<sup>st</sup> Century Skills (P21) (2009) identifies 21st-century skills into several aspects, namely life and career skills, learning and innovation skills-4Cs, information, media, and technology skills. Among the three aspects, learning and innovation skills are essential aspects for students to master. This aspect includes critical thinking (critical thinking), communication (communication), collaboration (collaboration), and creativity (creativity), which is then abbreviated and known as 4Cs (Kindell, Keady, Sage, & Wilkinson, 2017; Vining, 2011; Wilkinson, Perry, Blanchard, & Linsell, 2008). Communication skills refer to identifying, accessing, utilizing, and optimizing communication tools and techniques to receive and convey information to other parties. Based on experts' opinions about communication skills, in this study, understanding the meaning of communication skills in 4C Skill is to fulfill several things (1) Good at issuing ideas and thoughts effectively both orally, in writing nonverbally in various forms and context. (2) Listening effectively to describe the meaning, knowledge, values, attitudes, and interests. Use communication for various purposes (such as to inform, instruct, motivate, and persuade). (3) Uses multiple levels of media and technology and



knows how to measure their impact and effectiveness. (4) Communication effectively in various environments (including multilingual and multicultural) (Chen, 2011; Gray, 2010).

To master these 21st-century skills, the components of these skills must be integrated into learning. Beers (Jones, 2011; Kupritz & Hillsman, 2011) suggests a fundamental principle in integrating 21st century skills in learning as an effort; (a) Connecting material into applications and real-world problem situations so that students realize that what they are learning is related to everyday life, (b) Emphasis on deep understanding in learning by focusing on projects and problems that ask students to use material that has been learned in new ways and disseminates understanding to other students through collaboration, (c) Help students understand and monitor the thought processes they use by including metacognitive activities that ask students to reflect on the structure of thinking and the effectiveness of the thinking strategies used, (d) The use of technology to help students access, analyze, organize, and share what they learn and allow students to put tools according to the task independently, (d) Provide opportunities for students to become "creators as well as consumers of information g published "Apple in Beers (2012) by providing the opportunity to create and verify input in appropriate collaboration and evaluate other contributions, (e) Linking students in solving complex problems that require high order thinking (HOT) and the application of materials and the results in New perspectives and solutions to problems, (f) Providing opportunities for students to work collaboratively as long as they collect information, solve problems, share ideas, and generalize new ideas, (g) Development of life and work skills by creating opportunities for students to become learners independent who are responsible for their learning and who learn how to work effectively with others and (h) Help students make connections between subjects, concepts and ideas and others, including what is outside the classroom. So the keys to integrating 21st-century skills into the classroom are application, connection, and participation (Ditton-Phare et al., 2015; Hamilton et al., 2014).

Communication skills refer to identifying, accessing, utilizing, and optimizing communication tools and techniques to receive and convey information to other parties. Based on experts' opinions about communication skills, in this study, understanding the meaning of communication skills in 4C Skill is to fulfill several things (1) Good at issuing ideas and thoughts effectively both orally, in writing, and nonverbally in various forms and context. (2) Listening effectively to describe the meaning, knowledge, values, attitudes, and interests. Use communication for various purposes (such as to inform, instruct, motivate, and persuade). (3) Uses multiple levels of media and technology and knows how to measure their impact and effectiveness. (4) Communication effectively in various environments (including multilingual and multicultural) (Faucett et al., 2018; Patell, Gutierrez, Lee, & Neuendorf, 2018; Tu, Togher, & Power, 2011).

### Methods

This study was designed using a quasi-experimental design. This research design has two groups, namely the experimental group and the control group. The subjects in this study were students of SMP Nurul Huda class VIII. The instruments used in data collection were 1). Test questions to measure students' initial abilities and 2). Observation sheet to observe learning activities (Creswell & Creswell, 2018; Sugiyono, 2015; Wahyuni, Wiyono, Atmoko, & Hambali, 2019).

### Result

The distribution normality test was analyzed using the Kolmogorov-Smirnov Test formula. Based on this analysis, it is known that the pretest data for the control and experimental classes, the post-test data for the control and experimental classes, as well as the questionnaire data spread according to the normal distribution, which is distributed according to the Ebbing Gauss standard curve principle. After the prerequisite test was carried out, the test was carried out on class VIII students. Hypothesis testing used in this study is to determine whether there is a significant relationship between the project geometry

learning model and students' communication skills (Creswel, 2009).

The results of the study indicate that there is a significant relationship between the project-based learning model and students' communication skills. This is evidenced by the results obtained, namely the sign value of  $0.000 < 0.05$ , so  $H_0$  is rejected and accepts  $H_a$ , which means there is an interaction of project-based learning models on student communication skills. This is evidenced by the results of a questionnaire that researchers have conducted on students.

Based on the preceding, it is found that the Project-based learning model is a model that uses projects/activities as a means of learning by presenting real problems that can train students' communication skills so that in the end, students can solve problems by producing a product (paper or work) on the learning process. Evidence in the field shows that student learning outcomes have improved, mostly seen in student communication skills. Difficulties with learning materials can be minimized in the learning material and other related material sections because many mathematics subjects are interrelated. Understanding the concepts and properties of learning materials has also begun to be well received. The previous understanding of learning material is starting to be suitable for acceptance, increased skills when using learning ideas in finding mathematical solutions related to mathematics, and class conditions conducive to learning.

### Discussions

Sceidel (Lee et al., 2018) argues that we communicate primarily to state and support self-identity, build social contact with those around us, and influence others to feel, think, or behave the way we want. However, the essential purpose we communicate is to control our physical and psychological environment. Meanwhile, communication has two functions; the first is a social function, namely for pleasure, to show bonds with others, build and maintain relationships. Second, the decision-making function decides whether or not to do something at a particular time (Benassi et al., 2018; Murtono, Utaminingsih, & Zamroni, 2020; Zamroni, Muslihati, Lasan, & Hidayah, 2020).

Today, some teachers are still concerned about content coverage, which can be distinguished by their efforts to tell students everything they need to know. However, as a consequence of the implementation of the 2013 curriculum, which is better known as 'K-13' in Indonesia, there are teachers who may already believe that students can understand critical thinking, communication, and collaboration skills, which are referred to as the 'Four C's' (Coffelt, Grauman, & Smith, 2019). To focus on providing 4C skills, learning should outline critical thinking and problem solving, communication and collaboration, and creativity and innovation (Partnership for 21st Century Skills, 2011). The communication and collaboration aspect means that students know how to effectively articulate thoughts and ideas through oral, written, or nonverbal communication. Students must also listen effectively to translate or describe the meaning of knowledge, values, attitudes, and goals. They also have to communicate in various groups and different environments (Bastomi, 2018).

Partnership for 21<sup>st</sup> Century Skills (P21) (2009) identifies 21st-century skills into several aspects, namely life and career skills, learning and innovation skills-4Cs, information, media, and technology skills. Among these three aspects, learning and innovation skills are essential aspects to be mastered by students. This aspect includes critical thinking (critical thinking), communication (communication), collaboration (collaboration), and creativity (creativity), which is then abbreviated and known as 4Cs. Specifically, communication skills refer to identifying, accessing, utilizing, and optimizing communication tools and techniques to receive and convey information to other parties. In line with P21, NEA (2002) strengthens that in order to achieve success and be able to compete in a global society, students must be experts and have skills as communicators, creators, critical thinkers, and collaborators (Coffelt et al., 2019; Coffelt & Smith, 2020).

Communication (communication) Communication can be defined in various ways, but P21 defines communication skills as communicating clearly, including the following criteria: (a) Clever in issuing ideas and thoughts effectively both orally, in writing, and nonverbally in various forms and

contexts. (b) Listening effectively to describe meanings, knowledge, values, attitudes, and interests. (c) Use communication for various purposes (such as to inform, instruct, motivate, and persuade). (d) Use multiple levels of media and technology and know-how to measure their impact and effectiveness. (e) Effective communication in various environments (including multilingual and multicultural) (Miller, Nash, & Fetty, 2014; Wazis, 2018). Degeng, (1998) states that learning is an effort to teach students. Learning is also stated as a process of environmental regulation to learn (Santrock, 2017). It can be concluded that learning is the teacher's effort to regulate the environment to learn quickly. There are three learning variables: learning conditions, learning methods, and learning outcomes (Lee et al., 2018; Zimmerman & Kulikowich, 2016). With the students' communication, they could influence learning outcomes, one of which was problem-solving abilities.

## Reference

- Ada, T., & Kurtulus, A. (2012). Project-Based Learning to Explore Taxicab Geometry. *Primus*, 22(2), 108–133. <https://doi.org/10.1080/10511970.2010.493926>
- Adams, C. M. (2014). Collective Student Trust: A Social Resource for Urban Elementary Students. *Educational Administration Quarterly*, 50(1), 135–159. <https://doi.org/10.1177/0013161X13488596>
- Bastomi, H. (2018). Keteladanan Sebagai Dakwah Kontemporer dalam Menyongsong Masyarakat Modern. *KOMUNIKA: Jurnal Dakwah Dan Komunikasi*, 11(1), 1–19. <https://doi.org/10.24090/kom.v11i1.1275>
- Beale, A. V., & Bost, W. A. (1979). Improving Communication Skills of Administrators. *NASSP Bulletin*, 63(426), 31–39. <https://doi.org/10.1177/019263657906342605>
- Benassi, E., Guarini, A., Savini, S., Iverson, J. M., Caselli, M. C., Alessandrini, R., ... Sansavini, A. (2018). Maternal responses and development of communication skills in extremely preterm infants. *First Language*, 38(2), 175–197. <https://doi.org/10.1177/0142723717736449>
- Çakiroğlu, Ü., & Erdemir, T. (2019). Online project based learning via cloud computing: exploring

## Conclusion

There is a significant relationship between the project-based learning model and students' communication skills. Student communication skills taught using project-based learning models are better than those taught using conventional learning models. Based on the findings of the research that has been done and the above conclusions, it is recommended that (1) The project-based learning model can be used as an alternative learning model to improve students' communication skills, (2) The project-based learning model is very appropriate for students who have skills. Student communication is high, (3) For students who have poor communication skills, the teacher must pay more attention to monitoring and directing these students to continue to improve their communication skills and (4) For further research it is suggested to be able to develop existing variables so that this study more perfect.

roles of instructor and students. *Interactive Learning Environments*, 27(4), 547–566. <https://doi.org/10.1080/10494820.2018.1489855>

- Chaeruman, U. A. (2019). Merancang Model Blended Learning Designing Blended Learning Model. *Jurnal Teknodik*, 17(4), 053. <https://doi.org/10.32550/teknodik.v17i4.577>
- ChanLin, L. J. (2008). Technology integration applied to project-based learning in science. *Innovations in Education and Teaching International*, 45(1), 55–65. <https://doi.org/10.1080/14703290701757450>
- Chen, R. P. (2011). Moral imagination in simulation-based communication skills training. *Nursing Ethics*, 18(1), 102–111. <https://doi.org/10.1177/0969733010386163>
- Coffelt, T. A., Grauman, D., & Smith, F. L. M. (2019). Employers' Perspectives on Workplace Communication Skills: The Meaning of Communication Skills. *Business and Professional Communication Quarterly*, 82(4), 418–439. <https://doi.org/10.1177/2329490619851119>
- Coffelt, T. A., & Smith, F. L. M. (2020). Exemplary and Unacceptable Workplace Communication Skills. *Business and Professional Communication Quarterly*, 83(4), 365–384. <https://doi.org/10.1177/2329490620946425>

- Cox, D. G., & Meaney, K. S. (2018). Lights, Camera, Project-Based Learning! *Strategies*, 31(1), 23–29. <https://doi.org/10.1080/08924562.2017.1394240>
- Creswel, J. W. (2009). Research design: Qualitative, quantitative, and mixed methods approaches. Los Angeles: University of Nebraska–Lincoln.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches*.
- Danford, G. L. (2008). *Journal of Teaching in Project-based Learning and International Business Education*. (June 2012), 37–41. <https://doi.org/10.1300/J066v18n01>
- Degeng, N. S. (1998). *Interactive Effects of Instructional Strategy and Learner Characteristics on Learning Effectiveness and Appeal*. Jakarta: Urge Batch II.
- Ditton-Phare, P., Halpin, S., Hunter, H. S., Kelly, B., Vamos, M., Outram, S., ... Loughland, C. (2015). Communication skills in psychiatry training. *Australasian Psychiatry*, 23(4), 429–431. <https://doi.org/10.1177/1039856215590026>
- Faucett, E. A., McCrary, H. C., Barry, J. Y., Saleh, A. A., Erman, A. B., & Ishman, S. L. (2018). High-Quality Feedback Regarding Professionalism and Communication Skills in Otolaryngology Resident Education. *Otolaryngology - Head and Neck Surgery (United States)*, 158(1), 36–42. <https://doi.org/10.1177/0194599817737758>
- Genc, M. (2015). The project-based learning approach in environmental education. *International Research in Geographical and Environmental Education*, 24(2), 105–117. <https://doi.org/10.1080/10382046.2014.993169>
- Gray, F. E. (2010). Specific oral communication skills desired in new accountancy graduates. *Business Communication Quarterly*, 73(1), 40–67. <https://doi.org/10.1177/1080569909356350>
- Gülbahar, Y., & Tinmaz, H. (2006). Implementing project-based learning and E-portfolio assessment in an undergraduate course. *Journal of Research on Technology in Education*, 38(3), 309–327. <https://doi.org/10.1080/15391523.2006.10782462>
- Hamilton, G., Ortega, R., Hochstetler, V., Pierson, K., Lin, P., & Lowes, S. (2014). Teaching communication skills to hospice teams: Comparing the effectiveness of a communication skills laboratory with in-person, second life, and phone role-playing. *American Journal of Hospice and Palliative Medicine*, 31(6), 611–618. <https://doi.org/10.1177/1049909113504481>
- Hanline, M. F., Hatoum, R. J., & Riggie, J. (2012). Impact of online coursework for teachers of students with severe disabilities: Utilization of knowledge and its relationship to teacher perception of competence. *Research and Practice for Persons with Severe Disabilities*, 37(4), 247–262. <https://doi.org/10.2511/027494813805327269>
- Jones, C. G. (2011). Written and computer-mediated accounting communication skills: An employer perspective. *Business Communication Quarterly*, 74(3), 247–271. <https://doi.org/10.1177/1080569911413808>
- Kim, K. J. (2020). Project-based learning approach to increase medical student empathy. *Medical Education Online*, 25(1). <https://doi.org/10.1080/10872981.2020.1742965>
- Kindell, J., Keady, J., Sage, K., & Wilkinson, R. (2017). Everyday conversation in dementia: a review of the literature to inform research and practice. *International Journal of Language and Communication Disorders*, 52(4), 392–406. <https://doi.org/10.1111/1460-6984.12298>
- Kırkgöz, Y. (2014). Exploring Poems to Promote Language Learners' Creative Writing. *Procedia - Social and Behavioral Sciences*, 158, 394–401. <https://doi.org/10.1016/j.sbspro.2014.12.106>
- Kupritz, V. W., & Hillsman, T. (2011). The impact of the physical environment on supervisory communication skills transfer. *Journal of Business Communication*, 48(2), 148–185. <https://doi.org/10.1177/0021943610397269>
- Lac, V. (2017). Amy's Story: An Existential-Integrative Equine-Facilitated Psychotherapy Approach to Anorexia Nervosa. *Journal of Humanistic Psychology*, 57(3), 301–312. <https://doi.org/10.1177/0022167815627900>
- Lee, L. T., Cheng, S. H., Lin, C. J., Chi, M. H., Lee, I. H., & Yang, Y. K. (2018). Communication skills scores of medical students and interview performance 3 years later. *Health Education Journal*, 77(7), 849–854. <https://doi.org/10.1177/0017896918770228>
- Li, L. (2015). Project-based learning in electronic technology: a case study. *European Journal of Engineering Education*, 40(5), 499–505. <https://doi.org/10.1080/03043797.2014.987650>
- McDonald, D. D., & Molony, S. L. (2004).



- Postoperative pain communication skills for older adults. *Western Journal of Nursing Research*, 26(8), 836–852. <https://doi.org/10.1177/0193945904269292>
- Miller, A. D., Nash, T., & Fetty, D. G. (2014). Fostering community: Explicating commonalities between counseling psychology and humanistic psychology. *Journal of Humanistic Psychology*, 54(4), 476–493. <https://doi.org/10.1177/0022167813516795>
- Murtono, Utaminingsih, S., & Zamroni, E. (2020). Problem based Learning-Based E-Learning to Improve Decision Making Skills of Students. *Test Engineering and Management*, 83(10776).
- Nation, M. L. (2008). Project-based learning for sustainable development. *Journal of Geography*, 107(3), 102–111. <https://doi.org/10.1080/00221340802470685>
- Patell, R., Gutierrez, A., Lee, N., & Neuendorf, K. (2018). Practicing Communication Skills For Responding to Emotionally Charged Questions. *Journal of Palliative Care*, XX(X), 1–7. <https://doi.org/10.1177/0825859718777319>
- Pinho-Lopes, M., & Macedo, J. (2016). Project-based learning in Geotechnics: cooperative versus collaborative teamwork. *European Journal of Engineering Education*, 41(1), 70–90. <https://doi.org/10.1080/03043797.2015.1056099>
- Powell, T. C. (2014). Strategic management and the person. *Strategic Organization*, 12(3), 200–207. <https://doi.org/10.1177/1476127014544093>
- Santrock, J. W. (2017). Educational Psychology. In *BMC Public Health* (Vol. 15). Retrieved from <https://ejournal.poltektegal.ac.id/index.php/siklus/article/view/298%0Ahttp://repositorio.unan.edu.ni/2986/1/5624.pdf%0Ahttp://dx.doi.org/10.1016/j.jana.2015.10.005%0Ahttp://www.biomedcentral.com/1471-2458/12/58%0Ahttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&P>
- Scott, L. A., Thoma, C. A., Puglia, L., Temple, P., & D'Aguilar, A. (2017). Implementing a UDL framework: A study of current personnel preparation practices. *Intellectual and Developmental Disabilities*, 55(1), 25–36. <https://doi.org/10.1352/1934-9556-55.1.25>
- Sedarmayanti. (2007). *Manajemen Sumber Daya Manusia*. Bandung: Refika Aditama.
- Singh, C., & Sharma, A. (2020). Online Learning Using Multiple Times Weight Updating. *Applied Artificial Intelligence*, 00(00), 1–22. <https://doi.org/10.1080/08839514.2020.1730623>
- Siregar, H. L., Syihabuddin, Hakam, K. A., & Komalasari, K. (2020). Application of project based learning (PJBL) inislamic religious education courses (an alternative solution to the problem of learning PAI at PTU). *Journal of Critical Reviews*, 7(1), 21–28. <https://doi.org/10.22159/jcr.07.01.05>
- Sugiyono. (2015). *Metode Penelitian Pendidikan*. Bandung: Alfabeta.
- Surahman, E., Kuswandi, D., Wedi, A., Degeng, I. N. S., Setyanti, D. A., & Thaariq, Z. Z. A. (2019). Adaptive learning analytics management system (Alams): An innovative online learning approach. *International Journal of Innovation, Creativity and Change*, 5(4), 413–430.
- Thomas, J. L., Cicmil, S., & George, S. (2012). Learning From Project Management Implementation by Applying a Management Innovation Lens. *Project Management Journal*, 43(6), 70–87. <https://doi.org/10.1002/pmj>
- Tu, L. V., Togher, L., & Power, E. (2011). The impact of communication partner and discourse task on a person with traumatic brain injury: The use of multiple perspectives. *Brain Injury*, 25(6), 560–580. <https://doi.org/10.3109/02699052.2011.571655>
- Uğur, B., Akkoyunlu, B., & Kurbanoglu, S. (2011). Students' opinions on blended learning and its implementation in terms of their learning styles. *Education and Information Technologies*, 16(1), 5–23. <https://doi.org/10.1007/s10639-009-9109-9>
- Urbig, D., Bürger, R., Patzelt, H., & Schweizer, L. (2013). Investor Reactions to New Product Development Failures: The Moderating Role of Product Development Stage. *Journal of Management*, 39(4), 985–1015. <https://doi.org/10.1177/0149206311416120>
- Vining, D. R. (2011). Sociobiology's relevance to modern society: Commentary on two articles published here. *Evolution and Human Behavior*, 32(5), 364–367. <https://doi.org/10.1016/j.evolhumbehav.2011.04.003>
- Wahyuni, F., Wiyono, B. B., Atmoko, A., & Hambali, I. M. (2019). Assessing relationships between emotional intelligence, school climate and school counselors burnout: A structural equation model. *Journal for the Education of Gifted Young*

- Scientists, 7(4), 1361–1374.  
<https://doi.org/10.17478/jegys.639397>
- Wazis, K. (2018). Komunikasi Transbudaya Pondok Pesantren: Kajian Teoretis Dalam Paradigma Konstruktivis. *LUGAS Jurnal Komunikasi*, 1(1), 84–96. <https://doi.org/10.31334/jl.v1i1.106>
- Wilkinson, S., Perry, R., Blanchard, K., & Linsell, L. (2008). Effectiveness of a three-day communication skills course in changing nurses' communication skills with cancer/palliative care patients: A randomised controlled trial. *Palliative Medicine*, 22(4), 365–375. <https://doi.org/10.1177/0269216308090770>
- Young, J. H., & Legister, A. P. (2018). Project-Based Learning in International Financial Management. *Journal of Teaching in International Business*, 29(1), 76–87. <https://doi.org/10.1080/08975930.2018.1455943>
- Zamroni, E., Muslihati, Lasan, B. B., & Hidayah, N. (2020). Blended Learning based on Problem Based Learning to Improve Critical Thinking Ability of Prospective Counselors. *Journal of Physics: Conference Series*, 1539(1). <https://doi.org/10.1088/1742-6596/1539/1/012039>
- Zimmerman, W. A., & Kulikowich, J. M. (2016). Online Learning Self-Efficacy in Students With and Without Online Learning Experience. *American Journal of Distance Education*, 30(3), 180–191. <https://doi.org/10.1080/08923647.2016.1193801>