



Project-Based Learning Model as an Effort to Improve Students' Digital Literacy Skills at SDN Kleco 2 Surakarta

Jenny I S Poerwanti¹, Sri Marmoah², Doksa Safira Tarigan³

¹Teacher Training and Education Faculty, Universitas Sebelas Maret Surakarta

³AGRICULTURE FACULTY, IPB University

Jenny_isp@staff.uns.ac.id, marmuah66.uns@gmail.com,
doksasafiratarigan@apps.ipb.ac.id

Abstract. This experimental study aims to analyze the level of effectiveness of the project-based learning model, in improving the digital literacy skills of students at the elementary school level. The research location was chosen at SDN Kleco 2, Laweyan District, Surakarta. The type of approach used is a quantitative approach with an experimental method. The design in this study is a pretest-post-test control group design. The sampling technique used stratified cluster random sampling with the number of samples consisting of 2 groups of students, namely classes 5A and 5B, each of which contained 15 students in a group. Data collection techniques for students' digital literacy abilities were obtained using student performance tests and observation. Data analysis using paired T-test through SPSS 25.0 software by first testing the requirements for normality and homogeneity test analysis. The results showed that (1) there was a significant difference, between the digital literacy skills of students using the project-based learning model compared to the conventional model, and (2) the digital literacy skills using the project-based learning model were much more effective.

Keywords: Project Based Learning, Literacy Digital, Elementary School, Experiment

1 Introduction

Digital literacy is being hotly echoed to face the challenges of education in the 21st century. It should be noted that the notion of digital literacy according to Paul Gilster in his book *Rulli* [1] is the ability to understand and use various information from various sources that are accessed via computers. Digital literacy also refers to an individual's ability to find, evaluate, and write clear information through various media on digital platforms. According to Hague in a research study by [2], digital literacy refers to skills, insights, and descriptions in using the latest technology and tools to create and give meaning. Digital literacy also refers to insight into how communication technology has an impact on the meaning that follows, as well as the ability to analyze existing

© The Author(s) 2023

M. Salimi et al. (eds.), *Proceedings of the 6th International Conference on Learning Innovation and Quality Education (ICLIQE 2022)*, Advances in Social Science, Education and Humanities Research 767,

https://doi.org/10.2991/978-2-38476-114-2_44

knowledge on websites. This is also in line with the 21st-century competencies socialized by the Ministry of Education and Culture (2017) as the 4Cs, namely creative thinking skills, critical thinking and problem solving (critical thinking and problem solving), communicating (communication), and collaborating (collaboration). Based on a survey from the Ministry of Communication and Information (Kominfo) conducted in 34 provinces in Indonesia, the public's ability and insight into digital literacy are still relatively low. This is also reinforced by the results of the Program for International Student Assessment (PISA) in 2021, which shows that Indonesia is still ranked 62 out of 70 countries with an average score of 397 for its literacy level. Especially elementary school children who are currently coexisting with social media, and use the internet as their literacy in learning. It is feared that this can cause negative impacts such as addiction, lack of interaction with people around, being easily consumed by hoax information, and accessing negative content [3].

The same situation was also found at SDN Kleco 2, Surakarta. Based on the results of observations made in 2022, digital literacy has been applied at the school as a new concept to make online learning successful during the pandemic. However, dominantly there are still many students who have low digital literacy skills such as, (1) do not understand the importance of maintaining security and privacy in the online world because most students already have social media by manipulating age (2) do not understand how to use keywords that the right way to be safe when searching for information through the browser, sometimes the keywords entered are not in sync with the expected information (3) parents are still assisted when doing and uploading assignments, (4) more often use gadgets to play games, (5) often say vocabulary new ones obtained from the internet without knowing the right vocabulary placement and tend to be impolite. [4] argues that developing children's knowledge and awareness of the appropriate use of digital technology, including the responsible, ethical, and safe use of online media is important. Therefore, elementary school students should develop knowledge of safety-related issues in cyberspace and form an understanding of the consequences associated with inappropriate and unethical web-based activities. [5] conducted a similar study at Public Elementary Schools in Mergasari Village which resulted in an assessment of hypertext directional ability in the elementary school which was still very low with the lowest average score among the 4 other aspects of ability (Internet search, Content Evaluation). Information, Knowledge Compilation) is 2.48. The low value of hypertext directional ability is influenced by factors of low knowledge of hypertext and hyperlinks, low knowledge of HTML, HTTP, and low knowledge of URL. The results are also strengthened by the results of research conducted by [6], namely the level of digital literacy, one of which is influenced by respondents' knowledge of hypertext and hyperlinks, and this term is a new thing for students.

The learning model applied by the teacher has an important role in increasing students' digital literacy. The learning model is a guide in the form of a program or instructional strategy guide designed to achieve learning [7]. Dahlan in the book [8] suggests that the learning model can be interpreted as a plan or pattern used in preparing the curriculum, arranging subject matter, and providing instructions to the teacher in the classroom. [9] stated that "The development of the era of globalization, Science and Technology (IPTEK) requires quality Human Resources (HR), one of which is through

the educational process". This statement is also related to [10], namely if students do not have competence, it can result in being excluded from competition in this globalization era. Thus, improving the quality of learning is one of the challenges for teachers to be more professional and adaptive to the times. The purpose of adaptive is to be able to adapt to the demands of the development of science and technology [11]. The learning model carried out by the teacher is still conventional. This learning model is still not enough to give a deep impression to students, because the teacher only relies on the lecture method with the delivery of material more dominantly fixated on the educators than the activity of the students themselves [12]. This has an impact on the lack of student's ability to solve problems, loss of interest in collaborating and collaborating, and low communication skills. Of course, this kind of learning model does not provide hope for the achievement of 4C competencies. This statement is also reinforced by the thoughts of [13], namely the ideal learning model is a model that explores effective learning experiences, namely learning experiences that allow students to experience or act directly and actively in a learning environment.

The ideal learning model that can be applied to improve the digital literacy skills of elementary school students is the Project Based Learning learning model. Project Based Learning according to Nursalam and Efendi [14] states that in this learning model students are asked to work on tasks commonly known as projects. The project-based learning model in Abidin [15] is a learning model that directly involves students in the learning process through research activities to work on and complete a particular learning project. Project Based Learning learning model relies on the concept of constructivist learning so this model can support students to build their knowledge on their own experiences. The Project Based Learning learning model, is designed so that students can solve a problem through project activities, with this project work students will get real experience in planning a project [16]. The advantages of using the Project Based Learning learning model are that it can increase students' motivation in preparing projects, improve problem-solving skills, increase collaboration and cohesiveness, and improve resource management skills [17]. The steps of Project Based Learning Laboy-Rush are as follows: (1) Reflection, bringing students into a problem, and providing motivation to solve the problem. (2) Research, students conduct research and dig up information from various relevant sources to develop conceptually. (3) Discovery, students have found an appropriate model for the implementation of a project in designing and designing. (4) Application, students apply the model that has been designed. At this stage, students test a model that has been designed to answer a problem by connecting between disciplines. (5) Communicating, students explain and present the results they get collaboratively, receiving useful feedback for the improvement of a better project. The success of the Project Based Learning learning model in improving students' digital literacy in elementary schools is also reinforced by the results of research from [18] which state that the use of Project Based Learning learning models is very effective in improving numeracy literacy skills. and digital literacy for fifth-grade students at MI Al-Fitriyah Surabaya. This can be seen in the effect in the experimental class that the Project Based Learning learning model treatment is superior to the control class that uses conventional learning models. Therefore, this learning model can be used as the

right choice in improving students' digital literacy skills, especially at SDN Kleco 2, Surakarta.

Based on the explanation above, this research has the theme "**Project Based Learning Model (PJBL) as an Effort to Improve Students' Digital Literacy Skills at SDN Kleco 2**". The purpose of this research is to analyze the effectiveness of the Project Based Learning model in improving the digital literacy skills of students at the elementary school level. It is hoped that the level of digital literacy skills of students at SDN Kleco 2 can develop and be able to meet the basic 4C competencies which are the standard for learning achievement in the 21st century.

2 Research Methods

The type of research used is quantitative research, which uses experimental methods. The research design used was Pretest – Posttest Control Group Design. This study used one experimental class or treatment class and one control class, to see the differences in digital literacy competencies of students in the experimental class and control class. The pretest is used to determine the digital literacy competence of students before being given treatment. Posttest is used to determine digital literacy ability after being treated. The design of this study is described in table 1 as follows:

Table 1. Research Design of Control Group Pre-Test Post-Test

Class	Pretest	Treatment	Posttest
Experimental	O ₁	X	O ₂
Control	O ₃	-	O ₄

E = Experimental Class

K = Control Class

O₁ =Pretest Experimental Class

O₂ = Posttest Experimental Class

X = Treatment

O₃ = Prettiest Control Class

O₄ = Posttest Control Class

The population in this study were all fifth grades students at SDN Kleco 2, Laweyan, Surakarta, there are students of class VA and VB. The sampling technique used cluster random sampling with a total sample of two groups, one group was used as the experimental class and one group was the control class. The number of samples in each group amounted to 15 students. Data collection techniques using performance tests and observations.

Data were analyzed using descriptive and inferential statistics with dependent t-tests and independent t-tests. The statistical analysis carried out before the T-test was to perform a normality test and a homogeneity test. The data will be said to be normal if the significance value exceeds 0,05, as well as the data, is said to be homogeneous if the significance value exceeds 0,05. Analysis of test data is used to test the following hypotheses: H₀: There is no difference in the digital literacy abilities of students who are taught using the Project Based Learning model with digital literacy skills that are

taught not using the Project Based Learning model. Ha: There is a difference in the digital literacy skills of students who are taught using the Project Based Learning model and those who are taught not using the Project Based Learning model. The test used is the right-hand t statistical test, then the applicable test criteria are H_0 if $t\text{-count} > t\text{-table}$ with degrees of freedom (DK), $(n_1 + n_2 - 2)$ and a significant level of $5\% = 0.05$.

3 Results And Discussion

Table 2. Digital Literacy Ability

Class	Average Pre Test	Average Post Test	Enhancement	Percentage Increase
Control	70,45	75,80	5,35	7,59%
Experimental	69,2	80,55	11.35	16,40%

Table 2. shows that the average pre-test digital literacy ability in the control class is 70.45, and the post-test average is 75.8, there is an increase of 7.5%. While in the experimental class the average pre-test was 69.2 and the post-test average was 80.55, there was an increase of 16.40%. This shows that the treatment given in the form of using the PBL learning model in the experimental group experienced a significant increase in students' digital literacy abilities. This is in line with research [19] which states that project-based learning can improve digital literacy skills in terms of determining the media used to complete tasks; finding the right reference source; using digital technology in a socially responsible manner. Project-based learning can also improve student learning outcomes because the Project Based Learning model requires students to be active in compiling and working on projects that produce a product. The tendency of students to be more active in learning will have an impact on increasing student learning outcomes. [20].

Table 3. Normality Test

		Kolmogrov-Smirnov			Shapiro-Wilk		
	Class	Statistics	df	Sig.	Statistic	df	Sig.
Digital literacy results	Experimental class Pretest	.131	20	.200	.913	20	.073
	Experimental class posttest	.171	20	.128	.945	20	.292
	Control class pretest	.149	20	.200	.899	20	.039
	Control class posttest	.187	20	.066	.914	20	.075

Based on the results of the normality test in table 3, the results of the test, pre-test in the experimental group and the control group, it is known that the two groups are normally distributed. In the Kolmogorov Smirnov test, the significance level is $0.200 > 0.05$, this indicates that the pre-test of the experimental group is not better than the pre-test of the control group. So that the two groups can be given treatment, the experimental class is taught with a project-based learning model, and the control class is taught with a non-project model, namely the conventional model.

Table 4. Test of Homogeneity of Variance

		Levene Statistic	df ₁	df ₂	sig
Digital literacy results	Based on mean	1.830	1	38	.184
	Based on media	1.684	1	38	.202
	Based on median and with adjusted df	1.684	1	37.634	.202
	Based on trimmed mean	1.839	1	38	.183

Based on the results of the calculations in table 4, the output of the homogeneity test shows that the significant value on the average pretest and post-test data is 0.184, with the provision that the significance level or probability value is more than 0.05, it can be said that the population has the same variance. So with the results of the significance value, it can be concluded that the population in the experimental class and control class has the same or homogeneous variance. So data analysis using paired sample t-test and independent t-test can be used because the analysis requirements have been met.

Table 5. Paired Sample T Test

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of The Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pretest-Posttest experimental class	-11.35000	5.36337	1.19929	-13.86014	-8.83986	-9.464	19	.000
Pair 2	Pretest-Posttest control class	-5.35000	5.80630	1.29833	-8.06743	-2.63257	4.121	19	0.001

The paired sample t-test was used to determine the difference in students' digital literacy abilities after using the project-based learning model. Based on the 1 sample pair output in table 5. Sig. (2-tailed) of $0.000 < 0.005$, it can be concluded that there is a difference in the average digital literacy ability of students for the pre-test of the experimental class and the post-test of the experimental class. Likewise, for the control class, based on the output pair 2 tables 5, the Sig value is obtained. (2-tailed) of $0.001 < 0.005$, it can be concluded that there is a difference in the average digital literacy ability of students for the pre-test of the control class and the post-test of the control class using the conventional model. So it can be concluded that there are differences in students' digital literacy abilities after being taught using project-based learning models and conventional models.

The independent sample t-test in table 6 is used to answer the problem formulation "Are there any differences in the results of digital literacy skills between students who are taught using project-based learning models and students who use conventional

learning models?". To answer the problem formulation, the independent sample t-test was conducted on the experimental class post-test data and the control class post-test data. The results of the data difference test in the study will be shown in the following table.

Table 6. Independent T Test

		Levene's Test for Equality of Variances				T-test for Equality of Means			95% Confidence Interval of The Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Digital literacy results	Equal variances assumed	1.830	.184	2.251	38	.030	4.750	2.110	.478	9.022
	Equal variances not assumed			2.251	35.657	.031	4.750	2.110	.469	9.031

Based on the output above, the value of Sig. (2-tailed) of $0.030 < 0.05$, it can be concluded that there is a difference in the average results of students' digital literacy skills between project-based learning models and conventional models.

4 Discussion

The independent t-test showed that there was a difference in the average digital literacy skills of students who were taught using the project-based learning model compared to the conventional model. Based on table 2, the average digital ability of the experimental class is 80.55 which is higher than the average of the control class is 75.80.

Increasing the value of digital literacy skills of students in the experimental class because, in project-based learning, students construct reality in student activities [21], using a set of information and communication technologies as well as digital educational tools available, the learning model will be effective [22]. If previously educators used the lecture method during the learning process, with the Project Based Learning learning model, students tend to be more active because the project assignments given by the teacher support them to collaborate, work together, and discuss with their peers. that uses a set of technologies must be accompanied by practical activities carried out by students, to produce a product (Percy, & Silverman, 2017, p. 144) . The product in this research is the manufacture of advertisements using electronic media. Schuetz [23] says "buyer model Project-based teaching allows students to develop knowledge and skills through projects that involve challenges and problems they may face in the real world. Through the task of making digital advertisements, students determine the electronic advertising plan that is produced and look for advertising models on the internet and digital-based sources [24]. In this case, the teacher has a role as a motivator who encourages and guides students to develop their skills and knowledge in carrying out assignments [25], [26].

Based on the results of the data (table 2) obtained on the Frequency and Percentage of Pre & Post Project Based Learning (PBL) scores, it shows that at the initial observation the digital skills of students are still at the basic level. This happened because, before the pre-test, the teacher had not implemented Project Based Learning. However, after the teacher taught using PBL, the post-test results showed good results, with an average digital literacy ability of 80.55, an increase of 16.57%. The results of this study are in line with the results of the study [19]. The results of this study indicate that project-based learning can facilitate students in improving digital literacy skills, including determining the media used in completing assignments; look for appropriate reference sources in using various information to complete tasks [27]. With the tasks given by the teacher in the application of the PBL model, students are motivated and actively seek relevant learning resources through digital media [28]. Meanwhile, the results of research conducted by [29], [30] show that by applying the Project Based Learning model, students are more active, dare to ask questions, listen to the teacher carefully, take notes on things they say. important, and discuss each other with friends or between groups in completing their tasks.

Table 6. shows that $t_{count} > t_{table}$, the Null hypothesis is rejected. This means that the PBL learning model is effective in improving students' digital literacy skills, compared to conventional learning models. This is because there are significant post-test differences in the application of the PBL learning model to the post-test conventional learning model. This is in line with the results of research [31], that the project-based learning model uses the basic ideas of constructivism, namely scientific knowledge builds with the effects of experience and observation so that students are more active in the process of working on project tasks. Many experts have stated and found that Project-Based Learning is a (constructivist) knowledge-building approach [32], [33]. Furthermore, the results of this study indicate that the PJBL approach is an important element of learning and can build and improve student literacy.

5 Conclusions

From the research results that have been analyzed, it can be concluded that there is a significant difference between the digital literacy abilities of students who use the Project Based Learning model compared to the conventional model. The digital literacy ability of students who are taught using Project Based Learning is higher than conventional learning. This difference is due to the Project-Based learning model prioritizing cognitive processes to solve a student's problem with the ultimate goal of creating a product. In addition, the Project-Based Learning model affects the digital literacy abilities of elementary school students, because after using the Project-Based Learning model, digital literacy competencies increase. This difference is caused by the steps of the Project-Based Learning model that are closely related to digital literacy indicators.

References

1. Rullie Nasrullah, dkk, 2017. *Gerakan Literasi Nasional*, (Jakarta: Kementrian Pendidikan dan Kebudayaan)
2. Aristawidya, Rahma. 2022. Penerapan Media Literasi Digital Dalam Meningkatkan Kebiasaan Membaca Siswa Kelas Iv Sdn 20 Alesipitto Kecamatan Ma'rang Kabupaten Pangkep. S.Pd. Skripsi (Tidak dipublikasikan) Universitas Muhammadiyah Makassar.
3. Sugihartati, Rahma. 2018. Pengembangan Literasi Digital (Digital Literacy) dan Literasi Kritis (Critical Literacy) dalam Penggunaan Blog di Kalangan Mahasiswa. Laporan Tahun Terakhir PTUPT. Universitas Airlangga. Surabaya.
4. Hosseini, Delnaz. 2018. *Digital Literacy In Early Elementary School: Barriers And Support Systems In The Era Of The Common Core*. (Disertasi Doktorat, San José State University, 2019) Diakses dari https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=1014&context=etd_dissertations
5. Sifa, Yuli Aenu, & Winarto. Survei Literasi Digital Siswa Kelas Rendah Dan Siswa Kelas Tinggi Sekolah Dasar Negeri Di Desa Margasari. *Jurnal Dialektika Jurusan PGSD*, 12(1):881-899. ISSN: 2089- 3876.
6. Sariyani Ni Luh Ayu, dkk. 2018. Pengaruh Model Pembelajaran CTL Berorientasi Tri Karya Parisudha Terhadap Hasil Belajar Matematika Siswa Kelas III. *Journal of Education Technology*. Vol. 2 (3): 907-101.
7. Daryanto & Rahardjo, M. (2012). *Model Pembelajaran Inovatif*. Yogyakarta: Gava Media.
8. Isjoni. 2013. *Cooperative Learning: Mengembangkan Kemampuan Belajar Kelompok*. Bandung: Alfabeta.
9. Nuraini, Nita, Puguh Karyanto, & Suciati Sudarisman. 2014. Pengembangan Modul Berbasis POE (Predict, Observe, and Explain) Disertai Roundhouse Diagram untuk Memberdayakan Keterampilan Proses Sains dan Kemampuan Menjelaskan Siswa Kelas X SMA Negeri 5 Surakarta (Penelitian dan Pengembangan Materi Pencemaran Lingkungan Tahun Pelajaran 2013/2014). *Bioedukasi*, 7(1):37-43. ISSN: 1693-2654.
10. Jatmiko. 2013. Penerapan Model Pembelajaran Inkuiri Dengan Pendekatan Sets (Science, Environment, Technology And Society) Pada Pokok Bahasan Fluida Statis Untuk Meningkatkan Keterampilan Berpikir Kritis Siswa Kelas Xi Sma Negeri 1 Gedangan vol. 02 No. 03. *Jurnal Inovasi Pendidikan* (61) : 69-61.
11. Susilo, H. 2014. Peningkatan Kualitas Pembelajaran Biologi untuk Membentuk Guru Biologi yang Profesional dan Cerdas. *Florea*, 1(1), 1–9. Retrieved from <http://ejournal.unipma.ac.id/index.php/JF/article/view/364/336>.
12. Prasutri, Destha Ramadanty dkk. 2019. Penerapan Model Pembelajaran Problem Based Learning (Pbl) Untuk Meningkatkan Literasi Digital Dan Keterampilan Kolaboratif Siswa Sma Pada Pembelajaran Biologi. *Prosiding Seminar Nasional dan Workshop Biologi-IPA dan Pembelajarannya ke-4*, Malang:2019. Hal. 489-496.
13. Ismail Sukardi. *Model-Model Pembelajaran Moderen*, (Palembang: Tunas Gemilang Press, 2013), hal. 30
14. Darmawan (2018) *‘Metode Penelitian Kualitatif*. Bandung: Remaja Rosdakarya.
15. Nurzaman, Ady. (2016). Penerapan Model Project Based Learning Tipe Role Playong untuk Meningkatkan Percaya Diri dan Prestasi Belajar dalam Pelajaran IPS. Diakses dari: <http://repository.unpas.ac.id/12792/5/Bab%20II.pdf>
16. Surya, A. P., Relmasira, S. C., & Hardini, A. T. A. (2018). Penerapan Model Pembelajaran Project Based Learning (Pjbl) Untuk Meningkatkan Hasil Belajar Dan Kreatifitas Siswa Kelas Iii Sd Negeri Sidorejo Lor 01 Salatiga. *Jurnal Pesona Dasar*, 6(1), 41–54. <http://jurnal.unsyiah.ac.id/PEAR/article/view/10703>

17. Niswara, R., Fita, M., & Untari, A. (2019). Pengaruh Model Project Based Learning Terhadap High Order Thinking Skill. *Mimbar Pgsd Undiksha*, 7(2), 86.
18. Faridah, Nadia Risya, Eka Nur Afifah, dan Siti Lailiyah. 2022. Efektivitas Model Pembelajaran Project Based Learning Terhadap Kemampuan Literasi Numerasi Dan Literasi Digital Peserta Didik Madrasah Ibtidaiyah. *Jurnal Basicedu*, 6(1):709-716. ISSN 2580-3735.
19. Kustini, S., Herlinawati, H., & Indrasary, Y. 2021. Implementasi Pembelajaran Berbasis Project-Based Learning Untuk Meningkatkan Keterampilan Literasi Digital Mahasiswa Politeknik Negeri Banjarmasinimplementasi Pembelajaran Berbasis Project-Based Learning Untuk Meningkatkan Keterampilan Literasi Digital. *Jurnal Intekna : Informasi Teknik Dan Niaga*, 21(1), 30–40. <https://doi.org/10.31961/intekna.v21i1.1122>.
20. Agung Wirawan. 2021. Penerapan Pembelajaran PjBL untuk Meningkatkan Kualitas dan Hasil Belajar SBdP di Kelas VI SD. *Prosiding Seminar Nasional “: Inovasi Manajemen Pendidikan Dalam Tatanan Kenormalan Baru”*: Yogyakarta.
21. Suprijono, A. 2017. *Cooperative Learning: Teori dan aplikasi PAIKEM*. Yogyakarta: Pustaka Pelajar.
22. Jensen, K. J. 2015. A meta-analysis of the effects of a problem- and project-based learning on academic achievement in grades 6-12 populations. *Education Dissertations*, 7. Diunduh dari https://digitalcommons.spu.edu/soe_etd/7/.
23. Zhang, Z., Hansen, C. T., & Andersen, M. A. E. 2016. Teaching Power Electronics With a Design-Oriented, Project-Based Learning Method at the Technical University of Denmark. *IEEE Transactions on Education*, 59(1), 32–38. <https://doi.org/10.1109/TE.2015.2426674>.
24. Kirova, Ibrahim., Dilaysu Cinar. 2017. Digital Advertising Practices and its Impacts on Students: An Application in the Public and Private Universities in Turkey. *IGI Global*. DOI: 10.4018/978-1-4666-8125-5.ch021.
25. Hossain, Mohammed Iqram. 2015. Teaching Productive Skills to the Students: A Secondary Level Scenario [Master’s Thesis, BRAC University]. BRAC University Institutional Repository. <https://core.ac.uk/download/pdf/74352632.pdf>.
26. Matin, Zakia Noor (2011). Speaking Assessment at Secondary and Higher Secondary Levels and Students’ Deficiency in Speaking Skill: A Study to Find Interdependence.
27. Filippatou, Diamantou., Stavroula Kaldi. 2010. The Effectiveness Of Project-Based Learning On Pupils With Learning Difficulties Regarding Academic Performance, Group Work, And Motivation. *International Journal Of Special Education*, 25(1),17-26.
28. Zaic, Breeana, "A Personalized Learning Approach to Educating Students Identified with Special Education Needs" (2021). *Culminating Projects in Special Education*. 98. https://repository.stcloudstate.edu/sped_etds/98
29. Sucipto , H. 2017. Penerapan Model Project Based Learning untuk Meningkatkan Minat dan Hasil Belajar IPS. *Jurnal Pendidikan: Riset & Konseptual*.
30. Rauziani, Yusrizal, & Cut, N. 2016. Implementasi Model Project Based Learning (PjBL) dalam Meningkatkan Hasil Belajar dan Berpikir Kritis Siswa pada Materi Fluida. *Jurnal*
31. C. Hursen and A. Soykara, “Evaluation of Teachers ’ Beliefs Towards Constructivist Learning Practices,” no. April, 2015, doi: 10.1016/j.sbspro.2012.05.074.
32. Grossman P., Dean C.G.P., Kavanagh S. S., herrmann Z. 2019. Preparing Teacher for project-based teaching. *Phi Delta Kappan*, 100(7), 43-48
33. Mohammed Abdullatif Almulla, 2020. The Effectiveness of the Project-Based Learning (PBL) Approach as a Way to Engage Students in Learning, *SAGE Journal Volume 10, Issue 3, July-September 2020*. <https://doi.org/10.1177/2158244020938702>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

