TECHNIUM
SOCIAL SCIENCES JOURNAL

Vol. 8, 2020

A new decade for social changes

ISSN 2668-7798

www.techniumscience.com

Technium Social Sciences Journal
Vol. 8, 132-140, June 2020
ISSN: 2668-7798
www.techniumscience.com

The effect of project based learning model combined with snake and ladder media to fifth graders' learning activity and outcomes in social studies

Catur Agustina Candra Dewi[1], Yatim Riyanto[2], Suhanadji[3]
[1 2 3]Primary Education, Postgraduate. State University of Surabaya, Indonesia
agustina.candradewi@gmail.com[1], jatimriyanto@gmail.com[2],
suhanadji@gmail.com[3]

Abstract. The present study aims to determine the effect of the project based learning model with snake and ladder media to fifth graders' learning activity and outcome in social studies. The material covered was the Proclamation of Indonesian Independence. The research method used was a quasi-experimental with non-equivalent (pretest and posttest) control group design. The research respondents consisted of 36 students. Data were collected through observation and tests. The research instrument used was observation sheet containing students' learning activities and a test of learning outcomes that had been validated by experts. Independent samples t-test was used for hypothesis testing. The students' activity and learning outcomes improvement were determined by the results of the N-gain test. The results showed an increase in activity and learning outcomes in both classes. The experimental class performed higher activity and learning outcomes than the control class. This shows that project based learning model with snake ladder media had a positive effect primary 5 students' activities and learning outcomes in social studies learning.

Keywords. project based learning, ladder snake media, student activities, students' learning outcomes

Introduction

The change of civilization towards knowledge society in the 21st century requires people to be skillful and globally competitive. Life skills needed by 21st century society must be able to be accommodated through education. Education in the 21st century aims to build student intelligence in order to be able to solve the social problems that surround them. This shows that social studies education is highly important to learn in schools because the main goal, especially in primary schools is to equip students in developing attitudes, knowledge, and skills to become responsible and active citizens as part of a global society and to be sensitive to issues surrounding social issues (Ilter, 2014: 488; Susanto, 2013: 138).

It is important for teachers to help students succeed in learning. In most of the previous researches, students were more successful in learning when they were actively involved in the classroom and able to connect learning in class with everyday life (Baran, Maskan, & Yasar, 2018: 221). One of the student-centered model that also allows students to learn by doing is project based learning (Ilter, 2014: 488; Wahida, F., et al., 2015: 36; Baran, Maskan, & Yasar, 2018: 221) . Project based learning is a learning model that can involve students directly in the classroom they enables them to be actively involved in learning (Daulay, 2017: 75).

Project based learning can guide students in investigating a project in groups that they gain new knowledge and can solve problems with their new knowledge (Bell, 2010: 39). The

effectiveness of project based learning was proposed by Duke, et al (2017) stating that there was a significant difference in the content of social studies subjects and the literacy ability of 2nd grade students studying with project based learning. This is supported by Gültekin (2005) who came to the conclusion that students in the project based learning class showed greater academic value acquisition in social studies learning than classes learning with conventional learning.

Project based learning enables effective ways for teachers and students to develop knowledge and make the learning environment conducive. In social studies, this allows students to get ideas related to social problems, social skills, life values by doing small projects with their friends. During project work, students will gather information, conduct investigations, think critically and creatively, make decisions, communicate and present the results of their thoughts by working in a group that allows for collaboration.

These activities support students in improving their skills in the real world. In other words, project based learning can be seen as an important learning model to equip students with the necessary knowledge, citizenship values, and 21st century skills (Bell, 2010: 39; Ilter, 2014: 488). In the end, Solomon, as quoted by Mahasneh, A.M. & Alwan A.F., (2018: 512) concluded that project based learning provides the same learning opportunities for each student, thus providing a positive impact on student learning outcomes.

This research was conducted by combining snakes and ladder and project based learning model. This media is integrated into the steps of project based learning when students collaborate to gather information, investigate, and complete their project. The media played by students contained social studies to be studied- proclamation of Indonesian independence. The reason for combinating this media and project based learning is the characteristics of elementary school students who think concretely and simple. This is stated by Jean Piaget's theory of cognitive development (in Suyono & Hariyanto, 2011: 84) that elementary school children aged 7-11 years are in the concrete operational phase. This means that children are able to reason logically as long as reasoning is applied to concrete examples.

Project activities combined with snakes and ladders media are assumed to be able to overcome boredom and increase students' activity and make it easier for them to understand the material. Through the game, students unconsciously learn to build concepts that they must understand because students do it voluntarily without being instructed by the teacher. Bottino et al (in Baran, Maskan, & Yaşar, 2018: 223) stated game in learning activities facilitates students involvement in learning and increase students' success. Through a combination of Project Based Learning with snake and ladder media, students are able to effectively follow all stages of learning so that their activity and the impact of student learning outcomes increase.

Students' activities in learning are all learning activities carried out by students to gain knowledge, build skills and improve interaction between existing learning resources and with others. Siskandar (2009: 180) asserted that learning activities are related to activities to obtain information, build skills, improve attitudes or behavior and even strengthen one's personality. In the present study the observed aspects of activities are adjusted to the steps of the Project Based Learning model. Based on the background of the problem, this article discusses the effect of the project based learning model with snakes and ladders media on the activities and learning outcomes of 5th grade students in social studies learning.

Method

This is a quasi-experimental with non-equivalent (pretest and posttest) control group design research. The research location was SDN Lakarsantri I/472 Surabaya in 2019/2020 academic year. The subjects of this study were 36 students divided into two groups- experimental and control class with a total of 18 students each.

Technium Social Sciences Journal
Vol. 8, 132-140, June 2020
ISSN: 2668-7798
www.techniumscience.com

The two research instruments used are (1) student observation sheet activity to obtain data on student learning activities; (2) learning achievement test sheets. The next research instrument is experts opinion. After revision, the research instrument sheet was prepared for validity and reliability test.

To calculate the validity of the trial results of the Pearson formula / product moment (Arikunto, 2010: 231; Sundayana, 2014: 60) was used.

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\{N\sum X^2 - (\sum X^2)\}\ \{N\sum Y^2 - (\sum Y^2)\}}}$$

Based on the analysis of student activity observation sheets, a total of 10 observation items showed a correlation coefficient above 0.444, thus, all items could be used to collect research data. The learning outcomes test shows that out of the 20 items, there were four items that had a low correlation coefficient, thus they were omitted.

The Cronbach's Alpha formula was used in calculating the reliability of student activity observation sheets while the learning outcomes test sheet used split-half technique with the Spearman-Brown formula. The reliability criteria used a limit of 0.6 where > 0.6 means reliable (Sundayana, 2014: 70; Sujarweni, 2014: 199).

The increase of students' activity and learning outcomes were gained from the results of the pretest score and posttest score results using the normalized gain (N-gain) formula. To obtain an N-gain score, the following formula is used (Cheng et al in Gunawan, Harjono, & Suranti, 2017: 170).

$$N - gain = \frac{S_{post} - S_{pre}}{S_{max} - S_{pre}} \times 100\%$$

Where: N-gain> 70% (high); 30% ≤N-gain≤70% (average); and N-gain <30% (low)

Results and discussion

Results

This study aims to determine the effect of the project based learning model with snakes and ladders media on the activities and learning outcomes of 5th graders in social studies. The observed student activities are the activities of students while learning in the syntax of project based learning with snake and ladder media. The learning outcomes measured were limited to material on national events surrounding the Proclamation of Indonesian Independence. In the experimental class, project based learning model was used with ladder snake media while the control class used direct learning. Both classes were given a pretest to identify the initial conditions of the activity and student learning outcomes before being given treatment. After being given treatment, both classes received a post-test to determine the effect of treatment on student learning activities and outcomes. Figure 1 shows the pretest mean value, posttest mean value and N-gain of student learning activities for both classes. Figure 2 shows the pretest mean value, posttest mean value and N-gain student learning outcomes for both classes.

Technium Social Sciences Journal
Vol. 8, 132-140, June 2020
ISSN: 2668-7798
www.techniumscience.com

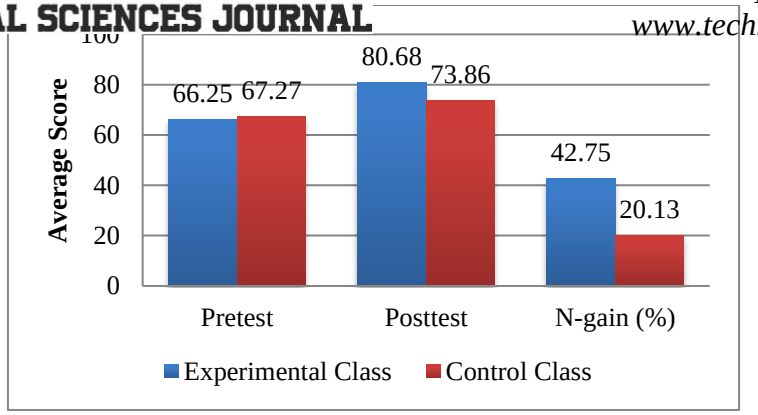

Figure 1. Comparison of Students' Activity between Experiment and Control Class

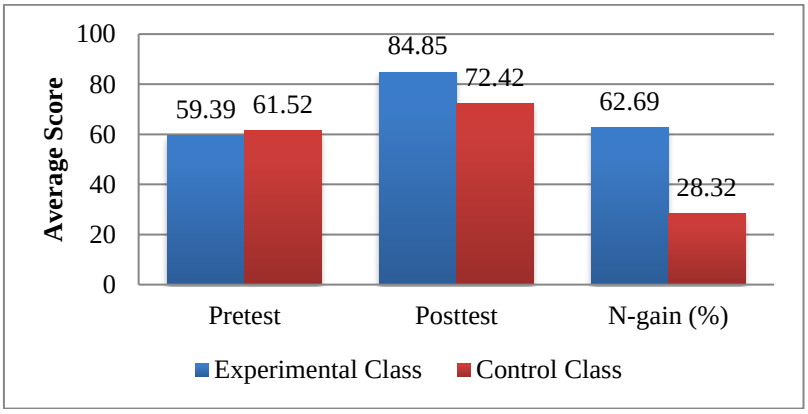

Figure 2. Comparison of Student Learning Outcomes between Experiment and Control Classes

Pretest data shows that the initial conditions of the activities and learning outcomes of students in the two classes are relatively the same or at the same level, both of which show low average scores. This similarity is also strengthened by the homogeneity test results from the two classes which show that the variants of the two classes come from groups that have the same initial ability.

The posttest results showed that the treatment given to both classes had a significant effect. This is visible from the posttest average score which is higher than that of pretest value. The data also shows that the experimental class obtained higher average values than the control class in both activity and learning outcomes. Increased activity and learning outcomes are obtained from N-gain value. Both activity and learning outcomes are in the average category.

Based on the normality test using SPSS 23.00 for Windows software, activity data and learning outcomes of the two classes are normally distributed. The results of normality calculation on students' learning activity are shown in table 1, while the results of calculating the normality of student learning outcomes are shown in table 2.

Technium Social Sciences Journal
Vol. 8, 132-140, June 2020
ISSN: 2668-7798
www.techniumscience.com

Table 1. Normality Test Results of Students' Activity

Class	Test	Significance	Data Distribution
Experiment	Pretest	0,425	Normal
	Posttest	0,468	Normal
Control	Pretest	0,277	Normal
	Posttest	0,196	Normal

Table 2. Normality Test Results Students' Learning Outcomes

Class	Test	Significance	Data Distribution
Experiment	Pretest	0,111	Normal
	Posttest	0,086	Normal
Control	Pretest	0,195	Normal
	Posttest	0,118	Normal

Data distribution is normal if the significance results are more than 0.05 (Sundayana, 2014: 88). The results of calculating the normal test of activities and learning outcomes indicate that the significance value was more than 0.05. Therefore, the two data are normally distributed.

Hypothesis testing is performed by using Independent Sample T-Test aided by SPSS 23.00 for Windows software with a significance level of 5% or 0.05. Hypothesis testing was performed on pretest and posttest of the experimental class and the control class. Based on research data processed with the help of SPSS 23.00 for Windows software, the pretest of student learning activities is t-count = 0.397 and the value of the table at (df.34) significance (α = 0.05) of 1.691 when compared then the t-count< t-table (0.397< 1,691) with the result of sig. 2-tailed of 0.694> 0.05. Based on the hypothesis criteria, Ho is accepted. In conclusion, there is no significant difference in students' activity before treatment.

Student learning activities at the end of the treatment (posttest) is t-count = 2.795 with a value of t-table at (df.34) significance of 0.05 of 1.691. T-count> t-table (2.795> 1.691) with the results of Sig. 2-tailed at 0.008 <0.05. Based on the hypothesis criteria, Ho is rejected. In conclusion, there is significant difference in student activity in the experimental and the control class after treatment.

Early student social studies learning outcomes (pretest) is a t-count = -1,317 and a t-table value at (df.34) significance (α = 0.05) of 1.691. Then t-count < t-table (-1.317 < 1.691) with the result sig. 2-tailed of 0.197> 0.05. Based on the hypothesis criteria, Ho is accepted. That is, there is no significant difference between student learning outcomes before treatment. Social studies learning outcomes of students at the end of the treatment (posttest) is t-count = 3.372. This shows that the value of t-count > t-table (3.372> 1.691) with the results of Sig. 2-tailed at 0.002 <0.05. In conclusion, there is a significant difference between student learning outcomes in the experimental class and the control class after treatment. Based on the results of the analysis, the combination of Project Based Learning models and snake ladder media significantly influence the activities and learning outcomes of fifth grade elementary school students.

Technium Social Sciences Journal
Vol. 8, 132-140, June 2020
ISSN: 2668-7798
www.techniumscience.com

Discussion

This section explains some details related to the findings and analysis of research results. The initial activity and learning outcomes of the two classes are relatively at the same level and categorized as low. This is understandable as the students had not received explanations of the material that they did not understand the concept of the material when conducting the initial test. They only relied on the initial knowledge. The next chapter describes in more detail the effect of project based learning and snake ladder media on student learning activities and outcomes.

The Effect of Project Based Learning and Snakes and Ladders Media on Student Learning Activities

After receiving treatment, students in both the experimental class and the control class showed a significant increase in learning activities. This appears from the average post-test scores in both classes. The average value of observation of student activity in the experimental class that used project based learning with snake ladder media is higher than the control class that uses direct learning. This shows the influence of the treatment given to student learning activities. In project based learning, students tend to be more active and enthusiastic about their projects.

The syntax in project based learning combined with the snakes and ladders game helps students be actively involved in all learning activities. This shows the advantages of project based learning as stated by Moursund (in Gültekin, 2005: 549) that project based learning focuses on "doing something" not "learning about something". Students are required to do and determine their learning activities that are triggered by their curiosity so as to gain meaningful knowledge.

Table 3. Results of Recapitulation of Learning Activities Data for Experimental Class Students

No.	Indicators of Learning Activities	Score
1	Asking	77,27
2	Listening to opinions	78,41
3	Designing activities	86,36
4	Arranging schedule	79,55
5	Playing snakes and ladders	89,77
6	Being responsible	85,23
7	Making a presentation	81,82
8	Appreciating differences	77,27
9	Dare to argue	73,86
10	Concluding material	77,27
	Total	806,82
	Mean	80,68

Technium Social Sciences Journal
Vol. 8, 132-140, June 2020
ISSN: 2668-7798
www.techniumscience.com

The results of the analysis of student learning activities showed an average value of 80.68 included in the very active category. Based on data from each indicator of student learning activities, the highest student learning activities are playing ladder snakes and designing activities. In the stage of playing snakes and ladders, students do snakes and ladders as part of the activities of gathering information, exploring, collaborating to complete a predetermined project. In addition, Zuhdi (in Arindah, 2017: 34) believed that snake and ladder game can train students' collaborative abilities and sportsmanship. Meanwhile, at the stage of designing activities, students discuss and work together with their groups to determine the form of projects they will work on.

The overall score of the indicator of learning activities of students taugh by using project based learning with snake and ladder media fell into active and very active criteria. Students' activities while working on projects support them to improve their skills in the real world such as investigation, critical and creative thinking, decision making, communication skills and presentations by working in groups. Project based learning is seen as very appropriate to be the main model of 21st century learning (Bell, 2010: 39).

These results are consistent with research conducted by Gunawan, Harjono, & Suranti. (2017: 168) that increasing student activity with project based learning helps them actively construct knowledge that is meaningful to themselves especially when they are dealing with problems that are appropriate to the real situation in the real world. Through the learning process that provides independent learning opportunities to students with attractive learning packages (snake ladder media games), supported by effective and efficient use of time, optimal student activity can be achieved. Students are no longer bored and excited about learning. This result is also supported by the results of a study conducted by Kristanti, Y.D., Subiki, & Handayani, R.D. (2016) that the experimental class taught by the project based learning model experienced an increase in student learning activities with a score of 85.84% and included in the high criteria. This is reinforced by the results of a study conducted by Yahya, N. (2014) which shows a significant increase in student activity by applying Project Based Learning model. This is because in their learning activities, students actively solved a problem and are encouraged to be more active, innovate, and increase their creativity so that their learning experiences vary.

The Effect of Project Based Learning and Snakes and Ladders Media on Students Learning Outcomes

The average value of student learning outcomes increased after the use of project based learning with snake ladder media. In the experimental class the average value was 84.85 and the control class was 72.42. After statistical tests of the differences in the two average classes was conducted, the value of t-count = 3.372 which means the value of t-count > t-table (3.372> 1.691) with the value of Sig. 2-tailed 0.002 < 0.05. Therefore, there are differences in learning outcomes in the two classes. In other words, there is an effect of project based learning models and snakes and ladders media on student learning outcomes.

Higher mean scores in students in the experimental class compared to that of control class showed that project based learning combined with the snake ladder game supported the proposed alternative hypothesis (Ha). Thus, the merging of project based learning with snake ladder media does not simply place students as learning subjects that enable students to "learn while doing", it enables them to have the opportunity to have fun while learning through games that are part of their lives.

The improved student learning outcomes in the experimental class is due to constructivist views on project based learning that greatly assist students in gaining a deeper understanding

of the concepts they are learning. Students actively build their understanding through project completion using their own ideas (Krajcik & Blumenfeld in Gunawan, Harjono, & Suranti, 2017, p. 173).

The results of this study are in accordance with the results of a study conducted by Kartika, Y. K., Pujiastuti, E., & Soedjoko, E (2019) that students who study with the PjBL model with creative mind map assignments achieve classical completeness in mathematical connection abilities. In his research, Ilter (2014) applied project based learning to grade 4 students on social studies subjects. The result is a significant increase in motivation and academic results of the experimental class students. Wahida, F., et al. (2015) in his research also came to the conclusion that project based learning significantly influenced student learning outcomes. Likewise, quasi-experimental research by Baran, Maskan, & Yaşar. (2018) which combines project based learning the game technique shows a positive effect on students' cognitive competence in learning physics. Thus, Project based learning can create meaningful learning by combining it with other methods or techniques.

Conclusion

There is a significant influence of the use of project based learning and snake ladder media on student learning activities and outcomes. These results are then supported by the acquisition of N-Gain scores that fell in the moderate category.

Acknowledgments

Praise is to Allah SWT for His grace and gift that the author is able to finish the article well. The author would like to thank Prof. Dr. Yatim Riyanto, M.Pd. and Dr. Suhanadji M.Sc. for the guidance in the completion of this article.

References

[1.] ARIKUNTO, SUHARSIMI: *Prosedur Penelitian: Suatu Pendekatan Praktik (Edisi Revisi 2010)*. Jakarta: Rineka Cipta. (2010).

[2.] ARINDAH, AGUSTIN: Pengaruh Penerapan Model Discovery Learning dengan Media Ular Tangga pada Subtema Keindahan Alam Negeriku terhadap Kemampuan Berpikir Kritis dan Keterampilan Sosial Siswa Kelas IV Sekolah Dasar. *Thesis*. State University of Surabaya. (2017).

[3.] BARAN, MASKAN, & YAŞAR: Learning Physics through Project-Based Learning Game Techniques: *International Journal of Instruction*, 11(2), 221-234. (2018).

[4.] BELL, STEPHANIE: Project-Based Learning for the 21st Century: Skills for the Future. *The Clearing House. Taylor and Francis Group.* 83: 39-43. (2010).

[5.] DAULAY, RIZQI WARDANI: The Influence of Teaching Models to Provide Concept Change (M3PK) and Project Based Learning (PjBL) Assisted Mind Mapping Media with Creative Thingking about Student Learning Result in Koloid System Material of Class XI MAN. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 7 (4), 74–80. (2017).

[6.] DUKE, et al.: *The Impact of Project-based Learning on Second-grade Students' Social Studies and Literacy Learning and Motivation*. https://www.pblworks.org. (2017).

[7.] GÜLTEKIN, MEHMET: The Effect of Project Based Learning on Learning Outcomes in the 5th Grade Social Studies Course in Primar Education. *Educational Sciences: Theory & Practice*. 5 (2). 548-556. (2005).

[8.] GUNAWAN, HARJONO, & SURANTI: The Effect of Project Based Learning with Virtual Media Assistance on Student's Creativity in Physics. *Jurnal Cakrawala Pendidikan*. Vol. XXXVI (2), 167-179. (2017).
[9.] ILTER, ILHAN. A Study On The Efficacy of Project-Based Learning Approach on Social Studies Education: Conceptual Achievement and Academic Motivation. *Academic Journals*. Vol. 9 (15), 487- 497. (2014).
[10.] KARTIKA, Y. K., PUJIASTUTI, E., & SOEDJOKO, E.: The effectiveness of project based learning with creative mind-map tasks for improving mathematical connection ability and student curiosity. *Unnes Journal of Mathematics Education*, 8(2), 145-151. doi: 10.15294/ujme.v8i2.31937. (2019).
[11.] KRISTANTI, Y.D., SUBIKI, & HANDAYANI, R.D.: Model Pembelajaran Berbasis Proyek (Project Based Learning Model) pada Pembelajaran Fisika di SMA. *Jurnal Pembelajaran Fisika*, Vol. 5 (2), 122-128. (2016).
[12.] MAHASNEH, A. M. & ALWAN, A. F.: The Effect of Project-Based Learning on Student Teacher Self-efficacy and Achievement. *International Journal of Instruction*, 11 (3), 511-524. (2018).
[13.] SISKANDAR: Keefektifan Pendekatan Cooperative Learning dalam Meningkatkan Aktivitas dan Hasil Belajar Mahasiswa. *Jurnal Ilmu Pendidikan*. Vol. 16 (3), 178-185. (2009).
[14.] SUNDAYANA, ROSTINA: *Statistika Penelitian Pendidikan*. Bandung: Alfabeta. (2014).
[15.] SUJARWENI, WIRATNA: *SPSS untuk Penelitian*. Yogyakarta: Pustaka Baru Press. (2014).
[16.] SUSANTO, AHMAD: *Teori Belajar & Pembelajaran di Sekolah Dasar*. Jakarta: Prenadamedia Group. (2013).
[17.] SUYONO & HARIYANTO: *Belajar dan Pembelajaran: Teori dan Konsep Dasar*. Bandung: PT Remaja Rosdakarya. (2011).
[18.] WAHIDA, F., dkk.: Pengaruh Model Pembelajaran Berbasis Proyek terhadap Keterampilan Berpikir Kreatif dan Hasil Belajar Siswa Kelas X SMA Negeri 1 Parigi. *Jurnal Sains dan Teknologi Tadulako*, Vol. 4 (3), 36-43. (2015).
[19.] YAHYA, N.:. Model Pembelajaran Berbasis Proyek Berbantuan Media Kultur Jaringan untuk Meningkatkan Aktivitas dan Kreativitas Siswa Kelas XII IPA2 SMA Negeri 1 Bangsri. *Jurnal Pendidikan IPA Indonesia*. Vol. 3 (2), 154-159. (2014)