

Enhancing digital literacy through gamification-based project learning in social studies for digital natives

Diana Noor Anggraini*, Mina Holilah, Pitria Sopianingsih, and Susi Listiawati

Universitas Pendidikan Indonesia, Indonesia

*Email: diana.anggraini@upi.edu

Abstract: This research aims to see the implementation of gamification-based project learning in social studies learning. The research method used is through research and development and data collection methods through group discussions, observation and validating questionnaires. The results of this research show that: the Gamification-based project Learning Model has a syntax that combines the main basic principles of Project learning and the principles of gamification learning, including determining learning objectives and game ideas, determining the big idea of the game, creating game scenarios, creating games through applications, produces products in the form of games that can be used in social studies learning.

Keywords: *project learning, gamification, social studies learning, digital natives*

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INTRODUCTION

Today's students are known as *digital natives*, they have a new profile in the era of the industrial revolution 4.0. In 2017, the majority of internet users in Indonesia are between 19-34 years old, namely 49.52% (APJI, 2017). It can be seen that almost all of internet users in Indonesia are digital natives or native speakers of digital technology. They were born after 1980, we call them Generation Y (1980-1995) and Generation Z (1996-2009) (APJI, 2017). The data give us the information that almost all internet users in Indonesia are digital natives or people born after 1980.

Broadly speaking, Prensky (2001) says that internet users are divided into two main groups: first is digital natives and the second is digital immigrants. Digital natives are the generation, or people who were born before the invention of technology. Digital natives are the generation or people who were born before technology was invented. They are native speakers of technology who are able to use technology as naturally as breathing (Tapscott, 2013). They grew up with digital technology and have a different learning style, a new attitude towards the learning process. Thus, the skills of using technology and absorbing information are the main characteristics of digital natives. Some educators face new challenges and have to solve important problems related to learning adaptation. Modern educational paradigms and trends in education, driven by the use of ICT, create that favor the application of new method and techniques for implementing active learning.

One of them is through the development of gamification through project learning in social studies learning is one that can be done by developing certain learning materials, then enriched and deepened by taking elements of learning from the students' environment, then packaged in learning media bundles by applying game elements. The application of

this game element is adjusted to the theme of the material, so that it is not depressed like a mere game. This game element is expected to increase digital literacy according to the characteristics of students as generation Z. This study will focus on Generation Z because they are considered the generation of the Internet. All the Z generation was born when this technology was stable, unlike Generation Y who are born when the transition of technology to the Internet.

The implementation of education that contains elements of *games* is logical because there are several typical facts that games have the aim of training users in facing all kinds of obstacles. And learning using gamification can develop students' creative minds. Developing creative thinking is important to help solve problems and find alternative solutions to problems (Damayanti, Santyasa, & Sudiatmika, 2020). Similarly in education, there are learning objectives that should be reached by doing certain activities or interacting with learning objects. Monitor player progress is an important part of gaming, just as tracking student progress is important to achieving learning goals. This is because a student's learning path is at by the level of knowledge achieved and skills acquired (Glover, 2013).

The collaboration of games in education is a core in student engagement in learning. Gamification is not directly related to knowledge and skills but through project learning, this learning is more fun because there is a student role in it. Gamification through project learning, it influences students' habits, commitment and motivation, and increases they knowledge and skills (Huang & Soman, 2013). Therefore, researchers are interested in carrying the title of gamification-based project *learning* in social studies learning for *digital natives*.

METHOD

This research uses a method research and development design or often known as *Research and Development* (Borg & Gall, 1989). This method describes of four main characteristics in R&D research. *First*, organize a introduction study to find research findings related to the product to be developed. *Second*, develop the product based on research findings. *Third*, conduct field tests in the setting or situation where the product will be used. *Fourth*, make improve to the weaknesses found in the test stages. For this research using simple *Research and Development* by adopting research procedures from Borg and Gall. This simple *Research and Development* supports the creation of a Gamification-based project *Learning* model in Ips Learning to Improve Literacy for *Digital Natives*.

The population in this study were students at the Indonesian University of Education. The sample taken from this research used purposive sampling. The sample used was students from the Social Studies Education Study Program who contracted the ICT Literacy Course and Social Studies Learning Media. The data collection techniques used were questionnaires, observations and field notes. Qualitative data analysis is carried out through the following steps: carrying out data reduction, arranging certain categories and classifications, creating data displays, conducting cross-site analysis, and presenting findings, interesting conclusions, their application and recommendations for development. Quantitative analysis was carried out for data collected through questionnaires, using correlation/regression analysis (Sugiyono, 2009).

FINDINGS AND DISCUSSION

Gamification-based project learning planning in social studies learning is supported by the learning components contained in it, including learning materials, methods, media/resources, and assessment. The ICT Literacy and Social Studies Learning Media course has sub-material that is based on the integration of learning concepts, principles and theories of education and social studies learning with the results of studies on learning practices in real settings in schools, both for groups of courses strengthening social science material and strengthening aspects social studies pedagogy.

Meanwhile, the learning approach in the model emphasizes a contextual approach, meaning learning that links the material studied with the context of everyday life, so that it is applicable and meaningful for students' lives as individuals, community members and citizens. The media and learning resources used in ICT Literacy and Social Studies learning media lectures are: interactive multimedia and games maker as digital learning resources.

Games maker functions to help students create games online. The various game makers used include: World Wall, Baambozle, Quizwhizzer and Gimkit. and at the end of the stage, there is an evaluation used in the gamification-based project learning model in the form of an authentic assessment which includes process assessment, results assessment and product assessment.

After going through many stages, finally the results achieved from social studies learning through Gamification-based project Based Learning can be obtained from several stages. *First*, planning stage Gamification-based project Learning planning in social studies learning is supported by the learning components in it including learning materials, learning methods, learning media, learning resources, and assessment. *Second*, implementation of Gamification-based project Learning model in social studies learning is done based on the stages in general including: Introduction to Lectures, Delivery of introductory material, and Making Games through Project Learning. *Third*, an overview of student understanding of ICT Literacy learning and the application of gamification learning.

Collecting data or survey process was carried out related to an overview of gamification-based project learning in social studies learning for digital natives with a population of 30 students of Social Studies Education Class 2021A. In the aspect of an overview related to

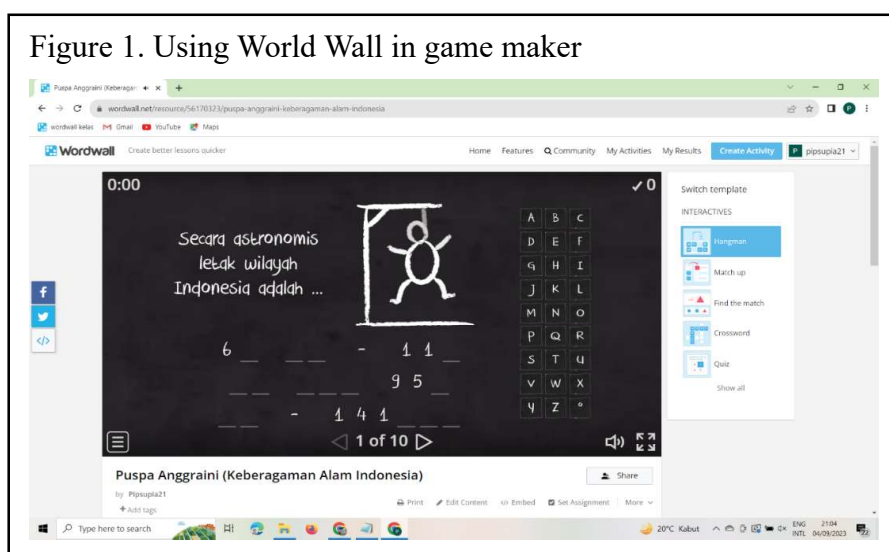


Figure 2. Using Gimkit in game maker



Figure 3. Using Baamboozle in game maker



gamification learning, there are twelve questions asked. The results of data processing based on these aspects including Statistical Description of Variable X are shown Table 1. The data was classified into several parts based on mean size into five parts, namely not affected, less affected, moderately affected, affected, and very affected (Table 2).

Table 1
Statistical description of variable X

	N	Minimum	Maximum	Median	Mean	Std. Dev	Sum
X	30	47	60	53.50	52.57	3,070	1577
Valid N (listwise)	30						

Table 2
Classification of variable X

Classification	Not Impacted	Less Impacted	Moderately Impacted	Impacted	Very Impacted
Mean	0-12	13-24	25-36	37-48	49-60

From this classification information above, we can be said that, the variable X related to students in ICT Literacy learning and the application of *gamification* learning is in the ‘Very Impacted’ category. So it can be seen that students are affected due to the *gamification* learning- based ICT Literacy learning. This study reveals that gamification learning in ICT Literacy learning affects: understanding of ICT literacy concepts, critical thinking, problem solving skills, and contextual linking.

The next data collection/survey was conducted to a number of students related to Increasing Literacy for Digital Natives with a population of 2021A PIPS students at the Indonesian University of Education, Bandung City and a sample of 30 people. In the aspect of an overview of Literacy Improvement for Digital Natives, there are eleven questions asked, these are the results of data processing based on these aspects including Statistical Description of Variable Y (Table 3). The data was classified into several parts based on mean size into five parts, namely Bad, Not Good, Quite Good, Good, and Very Good (Table 4).

Table 3
Statistical description of variable Y

	N	Minimum	Maximum	Median	Mean	Std. Dev	Sum
X	30	52	78	64.00	65.03	6.446	1951
Valid N (listwise)	30						

Table 4
Classification of variable Y

Classification	Bad	Not Good	Quite Good	Good	Very Good
Mean	0-16	17-32	33-48	49-64	65-80

From this classification above shows that variable Y related to the level of digital literacy of students is classified in the ‘Very Good’ classification. So that it can be says that students have good Digital Literacy after participating in social studies learning using the gamification-based project *Learning* model.

In the section looking for impact in a program means evaluating the program, namely Gamification Learning-based ICT Literacy learning. This learning is carried out in the ICT classroom to achieve certain goals that can have an impact on increasing digital literacy for *digital natives*, namely PIPS 2021A students. Therefore, it is necessary that the concept of effectiveness is included in the concept of evaluation, which has a broader definition. According to Tyler (1950) evaluation is a process that determines the extent to which goals can be achieved, Guba and Lincoln (1981) state that evaluation is a process for determining the extent to which goals have been realized.

The implementation of ICT Literacy learning based on gamification learning can be an effort to support the success of increasing digital literacy for digital natives. The Pearson Product Moment Correlation (that used in this study) is $r = 0.598$ and $P\text{-value (Sig.)} = 0.000$. Because the $P\text{-Value (Sig.)} = 0.000$ is smaller than $\alpha = 0.01$, it can be stated that there is a significant linear relationship of 0.598 between gamification-based project learning in Social Studies Learning with Increased Literacy for Digital Natives. If interpreted using Guilford's rule (Guilford's Empirical Rule), then the closeness of the relationship is included in the high category.

From this regression test results, the results shows that the value of R^2 (*R Square*) 35.8% ($0.358 \times 100\%$) of the variance "variable Y" can be explained by changes in the variable 'X'. Thus there is a significant positive effect of the application of gamification-based project learning in Social Studies Learning on increasing literacy for digital natives. The amount of influence is 35.8%, the remaining 64.2% is influenced by any other factors not examined in this study.

Scientifically, the results of this research inform that gamification-based project learning in Social Studies gives a positive and significant effect on improving literacy for digital natives. The application of this model contributes as much as 35.8% to the improvement of digital literacy. The remaining percentage indicates that there are other variables that are not included in this research that successfully affect the results of the application of Gamification-based project Learning in Social Studies Learning.

Referring to the research results that have been achieved previously, then there are several analyses related to the research results that can be synthesized using relevant theories.

First, conceptually the gamification-based project learning model has a syntax that includes: The main basic principle used in this model is project learning. Project-based learning is a learning model that allows teachers to organize their learning through project-based activities. The development of this project-based learning model can be increase students to increase their learning skills (Ambiyar, Syahri, Adri, Nurhaliza, & Islami, 2020). Project based learning has stages: creating ideas and basic questions, creating design projects, creating group team schedules, evaluating product results, and evaluating learning experiences. The second principle relates to the stages of gamification learning including determining learning objectives and game ideas, determining game big ideas, creating game scenarios, creating games through applications, evaluating the resulting products. Learning methods can be lectures, inquiry, discussions, practical integrated, and simulations with the help of technology in pedagogics; Integrating TPACK concepts and elements in gamification-based project learning with several criteria: Using ICT with learning objectives and creating game design ideas as a collaborative project; Incorporating and synchronizing learning materials in games and determining a work schedule with the team/group. Integrating ICT in the use of digital resources with the help of a pre-designed game maker application with scenarios, and Using ICT for game product assessment and assessing the learning experience.

In the learning process using gamification provides an option to make student's learning enjoyable, fun and also effective. This student's learning environment can also be used as a tool to increase students' motivation to participate in learning, which will increase learning outcomes during the learning process (Wardana & Sagoro, 2019). And Motivation to learn is a person's desire to do something. This means that no matter how difficult or difficult the subject presented to students, if students have a strong desire to learn then the subject becomes

simple and easy (Oktiani, 2017). Even if you are using game mechanics, implementing animation is not always about making games, but about how to motivate learning, create interaction and make students unconscious (Jusuf, 2016). The most fun thing in games is the game mechanics such as points, badges, ranks, levels, rankings and bonuses. To operating the game mechanism, effective game stages must be applied to make the game pattern more interesting (Tu, Sujo-Montes, & Yen, 2015).

Second, from the results of data processing before, variable X is related to student perceptions in ICT Literacy *learning* and the application of gamification learning in the 'Highly Impacted' category so it shows us that students are highly impacted due to gamification learning-based ICT Literacy learning. This research reveals that gamification learning in ICT Literacy learning affects: understanding of ICT literacy concepts, critical thinking, problem solving skills, and contextual linking. In line with several related studies, the application of gamification in learning provides a positive response to students where they are more involved, actively participate, and are eager to participate in learning in class and online and offline environments (Hamari & Koivisto, 2014; Barata, Gama, Jorge, & Gonçalves, 2013; Winatha & Ariningsih, 2020).

Third, from the classification of the results of data processing of variable Y related to the level of student literacy is classified in the 'Very Good' category so that it shows us that students have good Digital Literacy after participating in social studies learning using the gamification-based project learning model. Several studies reveal that educators agree with the concept of implementing gamification because it can strengthen cognitive, emotions, build social interactions, learning motivation, and improve good digital literacy, student critical thinking, problem solving, and technology practices in 21st century learning (Santosa, Harismayanti, & Putra, 2022; Kateryna *et.al.* 2020).

Fourth, the magnitude of the influence between the use of the gamification-based project Learning model shows that 35.8% has a significant positive effect on increasing literacy for digital natives. The amount of influence is 35.8%, the remaining 64.2% is influenced by the other factors not examined in this study. The relationship between gamification and the digital language from the point of view of some researchers from two perspectives, the first is the production and entertainment activities that have been used as tools to create educational strategies to approach to users to acquire digital and communication skills, especially students (Rozo, Martin, Fagua, & Avila, 2013; Agreda Montoro, Hinojo Lucena, & Sola Reche, 2016). Strong skills in the digital literacy include an understanding of digital vocabulary and mnemonic principles, digital navigation, network functions, determining communication environments and critical evaluation of content (Rodríguez, 2018).

CONCLUSION

The development of gamification through project learning in social studies learning is one that can be done by developing certain learning materials, then enriched and deepened by taking elements of learning from the learner's environment, then packaged in bundles of learning media by applying game elements. This research using simple Research and Development supports the creation of a Gamification-based project Learning model in Social Studies Learning to Improve Literacy for Digital Natives found the conclusion that the implementation of Gamification-based ICT Literacy Learning can be one of the efforts to support the success of increasing digital literacy for digital natives and empirically the

results of this research inform us that Gamification-based project Learning in Social Studies Learning has a positive effect and significant effect on improving literacy for digital natives.

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