# Game-based Instructional Effectiveness of Pancasila and Citizenship Education to Increase Student Engagement in Learning

Otib Satibi Hidayat[1*], Fahri Husein[2], Vita Widyaningsih[3], Juniar[4], Dudung Amir Soleh[5]

[1,2,3,4,5]Elementary School Teacher Education, Universitas Negeri Jakarta, Indonesia; E-mail: otibsatibi@unj.ac.id

**Abstracts:** This research is development research using a gamification model that combines games, aesthetics and thinking skills to attract attention, engage, motivate, promote an instruction, and solve problems. This shows that learning media facilitates the interaction of teachers and students in the learning process and is one of the factors supporting the success of learning objectives. Data collection techniques were obtained through literature and field studies by gathering relevant theories and research, observation, interviews, and questionnaires. The research method that will be used in this study is the ADDIE model research and development method and will be planned for one year. This research will be conducted in public elementary schools. At this stage the aim of this research is (1) display suitability (2) media effectiveness (3) language suitability (4) suitability. The results of the study show that students are involved in fun games so that instruction is very fun and increases engagement in learning.

**Keywords:** Game-Based Learning, Engagement, Pancasila, and Citizenship Education.

## 1. INTRODUCTION

Learning in the 21st century, there have been many paradigms shifts in the world of education. The current learning system can work if the capabilities of knowledge, skills, and attitudes, as well as information and communication technology can collaborate well[1]–[6] (Rahayu et al., 2022). Education is one of the lines of life that is affected by technological developments, therefore educators must have strong teaching principles. According to Satibi [7] says that we must be balanced between knowing and being, meaning that in the learning process we must not impart knowledge and technology without cultivating feelings, cultivating intention, cultivating ethics, and cultivating mindsets.

In connection with the characteristics of elementary school students who like to learn while playing and concurrently with increasingly advanced technological developments, digital learning media using the concept of gamification can be utilized by teachers [8]– [13]. Gamification is the application of a method from a game to a non-game context with the aim of finding solutions so that they can solve problems. The application of the concept of gamification in digital learning media is in line with education 4.0 because it integrates the education sector with technology [14]– [17].

Civics learning will be easier for students to understand if it is supported by learning media. Gamification learning media is an innovation that can be developed in the learning process so that it can be used by students independently via cellphones owned by students or parents of students [18]. Citizenship education is a learning content that students must understand to be able to become good and quality citizens. However, in practice in the field, in its application learning Pancasila and Citizenship Education (PPKn) is less desirable and studied in the world of education and schools, many educational institutions prioritize cognitive and psychomotor material and place less emphasis on affective aspects. According to research Benamnia [19], well-designed games can provide thinking exercises for children on something. In addition, revealed in the research by Setiawan et al. (2019) that the use of educational games has a fun effect, raises motivation to increase creativity in the learning environment. This means that by playing digital educational games students get various benefits.

The developments of digital educational games add to the variety of technology-friendly learning media at the elementary school level. However, there is still a need for other digital educational game innovations in the education era that integrates with technology as it is today [20]. Therefore, researchers want to develop a learning

media in the form of digital educational games to create digital learning variations in Civics learning about my obligations and rights at school for elementary school students.

In addition, digital educational games are also interactive because students take part in playing while learning. Digital educational games make it easier for teachers to teach Civics learning because they are in accordance with the preferences of students. Another advantage of digital educational games is that they are practical because they save students' learning time and can be accessed anywhere and anytime using personal devices[21]. A set of digital educational games also provides an entertaining learning experience and motivates students because of its attractive appearance. Therefore, the use of digital educational games as learning media can be utilized in learning activities.

The purpose of this research is to develop digital educational games that can be an option to broaden students' insights in understanding the material obligations and rights at school. In addition, it can also be used as study material for further research in the field of education. Judging from the research theme, the direction of the research roadmap for education researchers focuses on educational technology.

## 2. MATERIEL AND METHODS

This study used the Research and Development (R&D) method. According to Borg & Gall[22], development research is a process used to develop and validate educational products. As for research and development of digital educational games in PPKn learning about Obligations and Rights in Class III Elementary Schools using the ADDIE development model (Analyze, Design, Development, Implementation, Evaluation).

According to Branch [23], the ADDIE development model is used to describe a systematic approach to development in education. The ADDIE development model is an instructional process that includes five phases, namely dynamic analysis, design, development, implementation, and evaluation[24]. The ADDIE development model is still relevant and effective today.

The stages of the ADDIE development model in this research and development are the stages of Cennamo, Abell and Chung (1996) which were adapted by[25]. The ADDIE development model consists of five stages that are interrelated and systematically arranged. The instrument grids were prepared based on data collection techniques, namely questionnaire instruments and interviews for needs analysis, expert review questionnaire instruments as well as group and field trials can be seen in table 1.

**Table. 1 Data collection instrument**

| No. | Stage | Respondent | Total | Type of instrument |
|-----|-------|------------|-------|--------------------|
| 1. | Need analysis | Teacher | 1 | Interview |
| | | Students | 20 | Questioner |
| 2. | Experts | Contents | 1 | Questioner |
| | | Media | 1 | Questioner |
| | | Language | 1 | Questioner |
| 3. | Small groups | Students | 10 | Questioner |
| 4. | Field trail | Students | 25 | Questioner |

Expert questionnaire assessment uses a rating scale (rating scale). compilation with a rating scale must be able to interpret each number given in the alternative answers for each instrument item. The rating scale used for the material, media, and language expert validation questionnaire is a 4-1 scale as shown in table 2.

**Table 2 Description of the rating scale**

| No. | Score | Description |
|-----|-------|-------------|
| 1. | 4 | Excellent |
| 2. | 3 | Good |
| 3. | 2 | Enough |
| 4. | 1 | Poorly |

The questionnaire used for students is the Guttman scale. The Guttman scale uses two intervals such as never,

never; agree, disagree; yes, no, the aim is to ask for a definite answer from the respondent (pranatawijaya et al., 2019). The calculation of the value of the results of expert validation tests and student trials was carried out to determine the quality and feasibility of digital educational game products using simple statistical formulas. The formula used to calculate the percentage of eligibility at each stage of the assessment is as in formula 1.

$$X=(\sum X \times 100\%)/n \tag{1}$$

## 3. RESULTS AND DISCUSSIONS

Research and development of digital educational games uses the ADDIE development model which consists of five stages: analysis, design (development), implementation, evaluation. The developed product has gone through a series of assessments starting from expert validation tests to user trials. Based on the results of trials conducted, it is known that digital educational games are considered very good so that they are suitable for use in the learning process.

In developing this paper pinball media, researchers involved several experts such as media experts, material experts and language experts to assess the feasibility of the learning media being developed. The scores obtained by experts related to media development that researchers developed were 94.6 percent which were given by media experts in the very good category, then 87.5% which were given by material experts in the good category, and 95.8% which were given by linguists in very good category. Then, in trials conducted on students, the development of smart learning board game media based on the team games tournament model found 84.3% results in one-to-one trials with good eligibility categories, 88.5% in small group trials with good feasibility category, and 89.5% in the field test trials with good category.

In the development of media websites based on Google sites, namely obtaining validation results carried out by media experts of 92.2%, linguists' validation scores of 71.1%, material expert validation scores of 90%. Then the results of the trials conducted by class IV students at SDN Jatinegara Kaum 03 at the one-to-one stage were 90.6%, the small group stage was 90.8%, and the field test stage was 91%. Based on these results, an interactive learning media based on Google sites called My Pancasila is suitable for use in learning Pancasila education in grade IV SD on Pancasila as the basis of the state.

The digital educational game product developed by researchers is called "Action of Hakwa in Schools" which means the implementation of rights and obligations that exist in schools, for example in classrooms, library rooms, toilets, or in the school area in general. This product is published in the form of an application so that it is practical to use on students' cellphones or tablets. Gamification elements are utilized in game features and mechanics. The gamification elements that exist in this digital educational game feature such as points, time, feedback and prizes. Gamification is used so that digital educational games are developed into interactive learning media so that it attracts students' learning motivation.

Based on the stages of the research development model, the following results were obtained: digital educational games on Civics learning on obligations and rights in grade III elementary schools. Based on the validation of material experts, media experts, and linguists, user trials stated that the developed digital educational game was feasible to use. The results of the content expert test can be seen in table 3.

**Table 3, The results of the content expert**

| No. | Aspect | Score percentage (%) |
|-----|--------|----------------------|
| 1. | Content suitability | 90 |
| 2. | Objectivity | 100 |
| 3. | Feedback | 83.33 |
| 4. | Average | 91.1 |

Based on table 3, educational games get an average score of 91.1 by content experts. This rating is included in

the excellent category. The validation test from media experts can be seen in table 4.

**Table 4, The results of the media expert**

| No. | Aspect | Score percentage (%) |
|-----|--------|----------------------|
| 1. | Accessibility | 83.33 |
| 2. | accuracy | 91.66 |
| 3. | Relevant | 100 |
| 4. | Average | 90.6 |

Based on table 4, educational games get an average score of 90.6 by media experts. This rating is included in the excellent category. The validation test from language experts can be seen in table 5.

**Table 5, The results of the language expert**

| No. | Aspect | Score percentage (%) |
|-----|--------|----------------------|
| 2. | accuracy | 87.5 |
| 3. | Relevant | 90 |
| 4. | Average | 88.75 |

Based on table 5, it is known that digital educational games get an average score of 88.75 by linguists. This assessment means that in the opinion of linguists, digital educational games are considered good. This good assessment is based on the appropriateness and accuracy of the language used in digital educational games for third grade elementary school students.

After an expert validation test was carried out and declared feasible to be used as a learning medium, digital educational games were tested on users, namely third grade elementary school students. The user test went through two stages, namely group trials and field trials. Group trials were carried out by 10 students and field trials were carried out by 20 students. In group trials, it was found that the digital educational games that the researchers developed received an average percentage of 93.5%. This rating is up compared to the assessment in the previous group trial. This means that the revisions made have made digital educational games even better. The percentage of 93.5% is categorized as excellent according to students in field trials.

Civics learning is learning that focuses on learning values, morals, and attitudes that must be formed as early as possible through interactive, effective but also fun learning. By creating an interactive, effective, and entertaining learning atmosphere, it can facilitate the process of understanding students in learning Civics in Elementary Schools. The use of digital educational games in the learning process can be considered a fun activity for third grade elementary school students.

**CONCLUSIONS**

The research and development carried out produces digital educational game products for Civics learning. This game utilizes gamification elements in it so that the learning media becomes interactive, entertaining and attracts students' learning motivation. To be practical in digital devices, this game is published in the form of an application that students can install independently.

This research and development adopt the ADDIE model for its development process. The ADDIE development model consists of five stages consisting of analyze design, development, implementation, and evaluation. In the analysis phase, the researcher identified the learning process, the use of instructional media, the characteristics of the students, and the scope of the material used for the research so that they knew the analysis of the needs of class III SD. Information was obtained from the results of teacher interviews and the results of student questionnaires. In the design stage, the researchers made sketches of digital educational games in the form of flowcharts and storyboards. In addition, researchers also compiled curriculum competencies in digital educational games. In the development stage, the researcher begins to develop a digital educational game design which is still

limited to flowcharts and storyboards into a ready-to-use product. In the implementation phase, the product that has been designed and produced will be tested and validated by three experts (linguists, media experts, and linguists). Then, the products that have been validated and declared feasible are tested on students through group trials and field trials. The evaluation stage, giving value to the feasibility quality of the product being developed. In addition, researchers can also make product improvements based on feedback and suggestions during the implementation stage.

Based on the expert tests and trials that have been carried out, it is concluded that digital educational game products in Civics learning subject to obligations and rights for class III SD are products that are suitable for use as learning media because they make it easier for students to understand.

## REFERENCES

[1] J. R. Star et al., "Motivational Strategies in the Teaching of Primary School," An. Psicol., vol. 2, no. 2, pp. 369–376, 2013, [Online]. Available: http://docs.google.com/Doc?docid=0Abxax2m5vHmkZGN3ejZ3ZG5fNDI1YzNmaDhwY2I&hl=fr%5Cnfile:///C:/Users/Nikki Mark - Worrell/Downloads/1885-5666-1-PB (1).pdf%5Cnhttps://is.muni.cz/th/86952/ff_m_b1/MgrDiplomkaBoumova.pdf%5Cnhttps://www.acs.org/content/dam/acsor.

[2] A. Pérez et al., "Instructional Media," BMC Public Health, vol. 5, no. 1, pp. 1–8, 2017, [Online]. Available: 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.

[3] S. Srivastava, "ICT implementation for Education and Learning," IOSR J. Res. Method Educ., vol. 6, no. 4, pp. 40–44, 2016, doi: 10.9790/7388-0604044044.

[4] S. Mishra and R. C. Sharma, Interactive Multimedia in Education and Traning. London: Idea Group, 2005.

[5] T. T. Lee, "Effectiveness of interactive multimedia module with pedagogical agent (IMMPA ) in the learning of electrochemistry : A preliminary investigation," Asia-Pacific Forum os Sci. Learn. Teach., vol. 12, no. 2, pp. 1–25, 2011, doi: 10.1080/02640419108729880.

[6] G. Woodill, The Mobile Learning Edge: Tools and Technologies for Developing Your Teams (Google eBook). 2011.

[7] S. O. Hidayat, "Pendidikan Karakter Anak Sesuai Pembelajaran Abad ke-21." Edura-UNJ, Jakarta, p. 152, 2020.

[8] Haq, I. U., Ramay, M. I., Rehman, M. A. U., & Jam, F. A. (2010). Big five personality and perceived customer relationship management. Research Journal of International Studies, 15, 37-45.

[9] Jam, F.A., Khan, T.I., Zaidi, B., & Muzaffar, S.M. (2011). Political Skills Moderates the Relationship between Perception of Organizational Politics and Job Outcomes.

[10] Iswinarti and D. R. Suminar, "Improving children's problem-solving skills through javanese traditional games," Cakrawala Pendidik., vol. 38, no. 3, pp. 578–589, 2019, doi: 10.21831/cp.v38i3.25331.

[11] K. S. Ivers and A. E. Barron, Multimedia projects in education: designing, producing, and assessing. 2002.

[12] M. Dezuanni, "Minecraft and children ' s digital making : implications for media literacy education literacy education," Learn. Media Technol., vol. 0, no. 0, pp. 1–14, 2018, doi: 10.1080/17439884.2018.1472607.

[13] A. H. Fansury, R. Januarty, A. W. Rahman, and Syawal, "Digital Content for Millennial Generations: Teaching the English Foreign Language Learner on Covid-19 Pandemic," J. Southwest Jiaotong Univ., vol. 55, no. 3, pp. 1–13, 2020, doi: 10.35741/issn.0258-2724.55.3.40.

[14] D. Buckingham, "Media education goes digital: An introduction," Learn. Media Technol., vol. 32, no. 2, pp. 111–119, 2007, doi: 10.1080/17439880701343006.

[15] R. Sartika, "Increasing the effectiveness of digital educational games: The effects of a learning instruction on students' learning, motivation and cognitive load," Comput. Human Behav., vol. 72, pp. 79–86, 2017, doi: 10.1016/j.chb.2017.01.040.

[16] Khan, T. I., Akbar, A., Jam, F. A., & Saeed, M. M. (2016). A time-lagged study of the relationship between big five personality and ethical ideology. Ethics & Behavior, 26(6), 488-506.

[17] P. Jaiswal, "Integrating Educational Technologies to Augment Learners ' Academic Achievements," Int. J. Emerg. Technol. Learn., vol. 15, no. 2, pp. 145–159, 2020, doi: 10.3991/ijet.v15i02.11809.

[18] A. Khan, F. H. Ahmad, and M. M. Malik, "Use of digital game based learning and gamification in secondary school science: The effect on student engagement, learning and gender difference," Educ. Inf. Technol., vol. 22, no. 6, pp. 2767–2804, 2017, doi: 10.1007/s10639-017-9622-1.

[19] K. Welbers, E. A. Konijn, C. Burgers, A. B. de Vaate, A. Eden, and B. C. Brugman, "Gamification as a tool for engaging student learning: A field experiment with a gamified app," E-Learning Digit. Media, vol. 16, no. 2, pp. 92–109, 2019, doi: 10.1177/2042753018818342.

[20] A. Jabbar, R. B. Gasser, and J. Lodge, "Can New Digital Technologies Support Parasitology Teaching and Learning?," Trends Parasitol., vol. 32, no. 7, pp. 522–530, 2016, doi: 10.1016/j.pt.2016.04.004.

[21] T. Nousiainen, M. Kangas, J. Rikala, and M. Vesisenaho, "Teacher competencies in game-based pedagogy," Teach. Teach. Educ., vol. 74, pp. 85–97, 2018, doi: 10.1016/j.tate.2018.04.012.

[22] N. Behnamnia, A. Kamsin, M. A. B. Ismail, and A. Hayati, "The effective components of creativity in digital game-based learning among

young children: A case study," Child. Youth Serv. Rev., vol. 116, pp. 1–13, 2020, doi: 10.1016/j.childyouth.2020.105227.

[23]  B. A. Becker and C. Eube, "Open innovation concept: Integrating universities and business in digital age," J. Open Innov. Technol. Mark. Complex., vol. 4, no. 1, 2018, doi: 10.1186/s40852-018-0091-6.

[24]  W. Winarto, A. Syahid, and F. Saguni, "Effectiveness the Use of Audio Visual Media in Teaching Islamic Religious Education," Int. J. Contemp. Islam. Educ., vol. 2, no. 1, pp. 81–107, 2020, doi: 10.24239/ijcied.vol2.iss1.14.

[25]  M. D. Gall, J. P. Gall, and W. R. Borg, Educational Research: An Introduction, 9Th ed. New York: Pearson, 2016.

[26]  Robert Maribe Branch, Instructional Design : The ADDIE Approach. New York: Springer, 2009.

[27]  M. Alkin and C. Christie, "An Evaluation Theory Tree," Eval. Roots, no. May, pp. 13–65, 2012, doi: 10.4135/9781412984157.n2.

[28]  Jarudin, N. Ibrahim, and S. Muslim, "Develop of Hyperlinks Media to Learn Basic Wushu Techniques," Comput. Theor. Nanosci., vol. 17, no. 2/3, pp. 825–832, 2020, doi: 10.1166/jctn.2019.8725.