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The Implementation of Educational Games as a Digital Learning Culture in Elementary School Learning

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Abstract

Every student in every school has the opportunity to learn computer science, just like learning any other subject. This also supports efforts to improve digital literacy while establishing a culture of digital learning in students. Digital transformation is accelerated by expanding access and improving digital infrastructure. Learning with technology content including computer science or informatics is a very crucial topic, but is often constrained by infrastructure, even though it can actually be done unplugged. The research method used in this activity is a qualitative approach with a rural opperaisal. The focus is to analyze the description of the results of academic responses from students to ICT learning and educational games that have been given. The results showed that students really liked the educational games provided because the games were funny, exciting and fun. Educational games become one of the alternative choices to build a more interesting way of learning than just delivering material with the lecture method. In this life, each individual has a problem, educational games using code.org are chosen to train children's thinking in solving problems with the right steps.

Keywords: *educational games; digital learning culture; digital literacy, ICT learning*

1. INTRODUCTION

The Ministry of Communication and Information held a National Digital Literacy Movement Program that focuses on four priorities, namely digital security, digital ethics, digital society and digital culture. In the current context, this means that humans cannot be separated from the digital environment that is available through applications and increasingly wearable devices. Digital transformation is accelerated by expanding access and improving digital infrastructure. And one important thing is to prepare the need of digital talent on human resources. Human resources in the future must be able to adapt not only to technological advancements but also to their social implications. Learning with technology content including computer science or informatics is a very crucial topic, but is often constrained by infrastructure, even though it can actually be done unplugged.

Learning is most effective when it is an ongoing process. A digital learning culture refers to prioritizing collaboration and communication between teachers and staff to ensure successful integration of technology for student learning. As the world becomes more technologically savvy and reliant on digital solutions to solve everyday problems, classrooms must provide students with the technological skills to adapt to the future challenge including the new types of jobs ahead. Thus, teachers, administrative staff and principals must work together to create innovative digital learning opportunities, demonstrate and promote effective technology use and monitor technology use in the classroom. In digital learning culture, the focus is to

provide technology and resources for students to learn. ¹ The ideal educational environment in digital learning culture is classroom that is rich of technology that encourages exploration, collaboration and critical thinking skills in the real life context.

ICT-based learning is learning that integrates ICT in its management. ICT learning is done to equip children with 21st century skills. Considering that 21st century skills are very important to use for the future. ICT-based learning utilizes sophisticated equipment or media in this day and age. ICT learning is needed to optimize the role of computers on the way students think, a stimulus related to computers is needed so that students feel comfortable and interested in interacting with computers as well as being able to train children's motoric and thinking skills.

Digital literacy does not stop at the ability to use tools and applications. The introduction of programming knowledge for primary and secondary school students is needed to improve children's thinking and creativity. Grade V students at Kedungdalem Elementary School prefer to play games compared to learning. Therefore, the emergence of Educational Games using game play in teaching programming is productive and children get different teaching methods. Educational Game is one of the learning media that utilizes today's technology with the aim that users or children can learn special material in a fun way and attractive appearance. To train students in solving problems, material about algorithms can be given. With algorithms, children can understand more about the steps that must be designed and the strategies that must be taken.

This research utilizes web-based computer technology, namely code.org. ³ The research method used in this activity is a qualitative approach with a rural opperaisal. The focus is to analyze the description of the results of academic responses from students to ICT learning and educational games that have been given during the third week of implementation.

⁷ 2. METHODS

The research method used in this activity is a qualitative approach with a rural opperaisal. The focus is on analyzing the description of the results of academic responses from students to ICT learning and educational games that have been given during the third week of implementation.

The subjects in this service included students at SD Negeri Kedungdalem II Class V. The subjects responded by filling out a questionnaire. Furthermore, the subjects responded by filling out a questionnaire online through google forms.

¹⁰ The data collection techniques used in this study are as following

- A. Observation or direct observation, this observation is carried out by researchers by visiting all classes at SD Negeri Kedungdalem II to find out whether ICT learning has been applied at school or not,

conducting research on the environmental conditions of the research object so that a clear picture of the condition of the research object is obtained.

- B. Interviews, after ICT learning activities and educational games are completed, researchers conduct interview sessions to explore in-depth information about the responses and responses of students about ICT learning and educational games that have been delivered.
- C. Questionnaires, questionnaires in the form of online google forms are used to collect students' responses regarding ICT learning and educational games. There are 2 aspects that underlie the focus of data collection through this questionnaire form, they are the response to ICT learning and the response to educational game on code.org.

Data validity is carried out to prove whether the research conducted is truly scientific research as well as to test the data obtained. Data validity tests in qualitative research include credibility, transferability, dependability, and confirmability.

A. Credibility

Increase accuracy or persistence periodically with the aim of ensuring that the data that has been obtained and collected is correct or not. In improving accuracy, researchers read various references and analyze previous research.

B. Transferability

The questions applied in this data collection can be used in different circumstances.

C. Dependability

Performed by determining the problems in the field, determining data sources and data analysis.

D. Confirmability

The data is first confirmed to be the same between the data that has been obtained by researchers and the data that actually occurs in the field.

Data Analysis Technique

A. Reduction Data

Necessary and irrelevant as well as the addition of data that is still not in accordance with the actual conditions.

B. Presenting the Data

The data is presented to facilitate and understand what has happened during the research that took place at SDN Negeri Kedungdalem II.

C. Data Verification

Drawing conclusions obtained from the results of the study. In refining the data, researchers made reductions in data that were considered insufficient.

3. FINDINGS AND DISCUSSION

Through interviews with teachers, Information and Communication Technology is very beneficial for many fields, especially in educational system nowadays. This is because with ICT, education will produce extraordinary benefits and can help educators in implementing effective and efficient learning.

There are two concepts that have different meanings, namely the concept of learning and the concept of teaching, both concepts can be distinguished from one another. Learning is an effort that has a purpose, carried out deliberately and under control so that students can learn and there is a change that can build themselves towards relatively better things. Meanwhile, teaching is an effort made to guide and direct students according to their learning experience and usually takes place formally.

⁹ Information and Communication Technology (ICT) contains technology that is identical to the handling of various information. The handling referred to is the collection, retrieval, storage, processing, presentation and dissemination of information. Technology is a way in which we use knowledge so that it can be used to solve various practical problems.

Learning in a digital environment is very beneficial for both students and teachers as it provides access to a wide range of resources. The introduction of computer devices and their devices is a fundamental material that can be given to students, besides the history of computer development is also very important to understand.

Based on the research that we have conducted on ICT learning through questionnaires in class V at SD Negeri Kedungdalem II, Dringu Subdistrict, we get the following results:

1. There were 18 learners who had previously had an in-depth understanding of ICT lessons, while 12 had never had ICT lessons.
2. Learners who feel that the ICT material that has been delivered by the teacher is very pleasant, while 5 people have not understood learning about ICT.
3. Learners who feel that in just one meeting they are satisfied and understand ICT learning are 16 people, while 14 people feel they are not satisfied and understand ICT learning.
4. Learners who strongly agree if ICT learning is implemented at school amounted to 30 people.
5. Learners who feel interested in studying the field of ICT or Informatics more broadly in the future amounted to 28 people, while 2 people felt they were not interested in studying the field of Informatics.
6. Learners who felt that ICT learning was one of their favorite lessons numbered 25 people, while 5 people felt that ICT lessons were not among their favorite lessons.

For further, from the results that have been obtained, there are still many students who have never received ICT learning, because indeed at the elementary school level there is no special material about informatics, ICT learning provided by teachers is their first experience. Delivering material that has not been obtained before is a challenging because we have to adjust to their way of thinking, but around 60% of students feel unsatisfied with

the ICT learning that has been given, this can mean that most of them still want to get further ICT learning, even all students agree if ICT learning is implemented at school and becomes one of the favorite lessons. According to them, ICT learning is very fun because students can recognize technology both in ancient times and today. Maria and Sedyono (2017) stated that the ICT-based learning management model is considered complete enough to be developed with the aim that the effectiveness of learning management can be maximized.

Observations made in the field show that educational games are one of the learning media that utilize today's technology with the aim that children can learn special material in a fun way and attractive appearance.

Computational thinking in children can be done by providing learning about educational games. Educational games contain a lot of knowledge, it depends on how the game is made. The introduction of educational games can also support the introduction of digital literacy by utilizing technology, without technology, it is certain that the level of learning innovation applied in various types of education is still minimal (Saputri et al, 2020).

The educational game used in this study is a web-based educational game using the site www.code.org. Learners are trained to solve problems according to the commands given. Students are given algorithm and programming material in a different and more interesting way, namely by using the code.org.

Based on the research we have conducted on strengthening digital literacy through educational games in the form of questionnaires in class V of Kedungdalem Subdistrict, we get the following results:

1. There were 13 learners who had played educational games, while 17 had never played educational games. The educational game in question is general, meaning not only on the code.org website.
2. Learners who can understand educational games using code.org web media totaled 20 people, while 10 people did not understand educational games using code.org.
3. Learners who feel that playing educational games using code.org is very exciting, funny and interesting amounted to 15 people.

For further, from the results that have been obtained, students really like the educational games provided because the games are funny, exciting and fun. In previous research, the integration of entertaining content presented in the form of games can create a fun learning process without forgetting the material studied by students.

Learners can understand the purpose of the educational game, which is to learn about algorithms and programming. Learners are very enthusiastic when playing educational games, many of them want to study informatics in the future. Through various arguments from several respondents, it indicates that media that utilize technology can be one of the facilities that support the learning process.

Basically, children who are still in elementary school will get the most basic knowledge, the knowledge gained will become a reference for going to the next level of education. With the existence of ICT learning activities

and educational games, ¹² students are expected to be able to recognize Information and Communication Technology at a young age, thus students are not stuttering technology. At this time almost all fields utilize technology, not least in the field of education.

Fun learning can be done in various ways, depending on how a teacher chooses a method for learning. Educational games are one of the alternative choices to build a more interesting way of learning than just delivering material using the lecture method. In this life, each individual has a problem, educational games using code.org are chosen to train children's thinking in solving problems with the right steps.

Based on classroom observations, the obstacles experienced by ² students in the ICT learning process are the lack of basic understanding because ICT learning has not been deeply understood, besides that students also feel less optimal in participating in ICT learning due to the lack of supporting media such as projectors. In ICT learning delivered in class, using only one laptop, while in one class there are 30 students, they have difficulty in seeing examples of images of the material presented.

Regarding the obstacles of students in playing educational games, it can also be seen during classroom observations when the learning process is carried out. Playing educational games using code.org requires computational thinking, but in code.org the introduction of algorithms and programming is packaged with an attractive appearance and delivery.

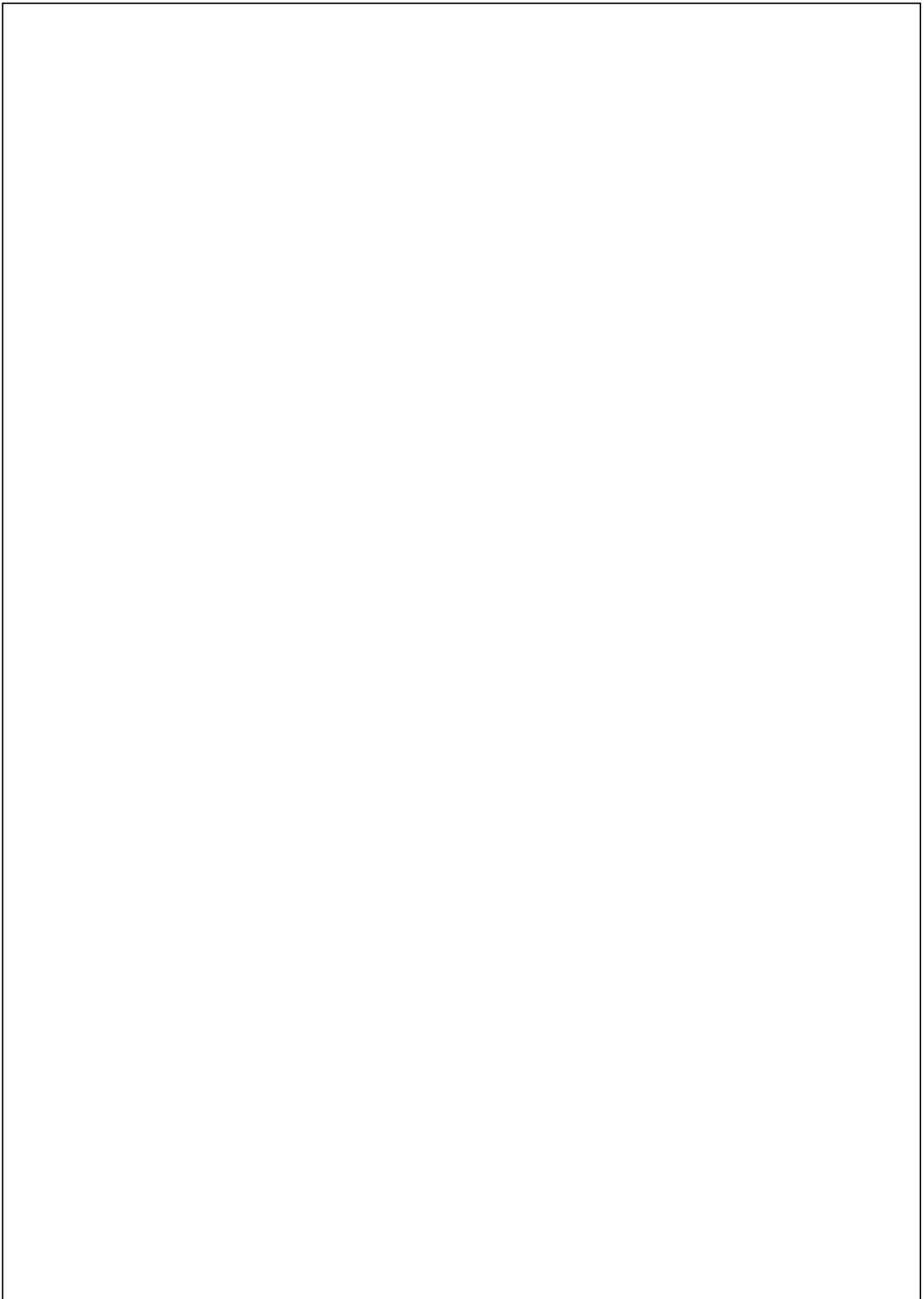
Based on classroom observations, because students have never operated a computer or PC before, when playing educational games there are still some students who have difficulty in directing the mouse to run educational games. Code.org is a website containing learning about algorithms and programming that is packaged with an attractive appearance and provides coding learning games that are differentiated by age level. In this case, the learners still did not really master the game because it requires computational thinking. All 30 students gave very good suggestions regarding the learning they expect for the future, this can be an evaluation material for students to be able to put themselves into competitive teachers.

4. CONCLUSION

Overall, the results of research on the Implementation of ⁵ Educational Games as Digital Learning Culture in elementary school learning, namely on students of SD Negeri Kedungdalem II, especially grade 5, show that students are very enthusiastic in learning informatics to strengthen digital literacy through Digital Learning Culture presented in visual-block programming material (www.code.org). The www.code.org site provides a fun digital learning environment about algorithms and programming packaged through games that can be played with computers and smartphones. ¹¹ The obstacles experienced by students in learning are the limitations in facilities and infrastructure as well as the limitation in internet access.

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