

# Development of Digital-Based Ludo Game Media Material on How We Live and Grow in the Science Subject for Grade V in Elementary Schools

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**Abstract:** This study aims to develop digital-based Ludo game media as a learning media on the material "How We Live and Grow" in the subject of Natural and Social Sciences (IPAS) for grade V Elementary School students. Media development uses the ADDIE model which includes the stages of analysis, design and development. This digital-based Ludo game media is designed to increase student involvement and understanding through active and enjoyable learning. The validity results from media experts, material experts and language experts show that this media is declared valid and feasible to use. Practicality tests on students show that this media is practical and effective in increasing interest in learning and understanding of the concept of IPAS material. Thus, digital-based Ludo game media can be an alternative innovative learning media and support the active learning process in grade V Elementary School.

**Keywords:** Learning Media, Ludo Game, Science Learning

## Introduction

Learning Media is a tool or intermediary used to channel material or messages and encourage students in certain conditions in carrying out learning activities to achieve learning goals. In addition to being an intermediary tool, learning media is also intended to help teachers stimulate students' interest in learning in the learning process in the classroom. Learning media is a component of learning resources that contain elements of instructions to stimulate students to learn. So that the learning process in the classroom becomes more effective and the goals of learning will be achieved (Diahratri, 2020).

Ludo game is a fun and entertaining type of game to play, this game can be easily created and reproduced. Then, according to Mulyani (2013: 124), Ludo is a game consisting of a piece of paper with a picture of 4 large boxes and 72 small boxes. Meanwhile, according to Sardiman (2016:80-87), Media Ludo is the best-selling board game in the world. In this game, players compete to accumulate wealth through implementing a toy economic system that involves buying, renting and exchanging land using toy money. Players take turns throwing the dice and move around the game board according to the number obtained by

throwing the dice. Ludo is a game that can make students feel as if they are playing so that students' feelings of tension and boredom can be reduced. In this way the learning process at school can run smoothly and optimally. Economic Ludo is an economic media game packaged in a Ludo game.

In line with the history of human civilization, science is increasingly developing and becoming more complex. Science can be divided into two, namely Natural Science and Social Science. In Indonesia, Natural Science and Social Science are known as Science or Natural Sciences (IPA) and Social Sciences (IPS). In the Elementary School / Madrasah Ibtidaiyah curriculum, IPAS (Natural and Social Sciences) is the main subject that must be given to students, which is said according to Langsa (2023). IPAS learning in grade V on the material on how we live and grow must basically be mastered by students. Therefore, the material on how we live and grow is the material that students will experience later.

This study develops a digital-based Ludo game media on the subject of how we live and grow in the subject of science for grade V of elementary school. This Ludo game media is associated with the development of technology and applications. The purpose of this study is to develop a product, namely a digital-based Ludo game learning media to help the learning process in the classroom and increase students' interest in learning to be more active in learning activities in the classroom.

This study produces digital-based Ludo game learning media on the material of how we live and grow in the subject of science for grade V of elementary school from previous researchers have not produced digital-based media. The renewal in this study is to utilize technology that has developed rapidly and which makes it easier for teachers to create learning media. Researchers use the Genially and Canva applications as assistance applications to carry out the editing process so as to produce learning media that attracts students' interest in learning.

Based on the researcher's experience in conducting observations in several elementary schools, the researcher found that several teachers in elementary schools had used learning media in the learning process in the classroom. However, the media used were conventional media which reduced students' interest in learning. So the researcher created a digital-based Ludo game learning media product that had utilized technological developments. In making this media, the researcher raised a cartoon theme which made this media even more interesting.

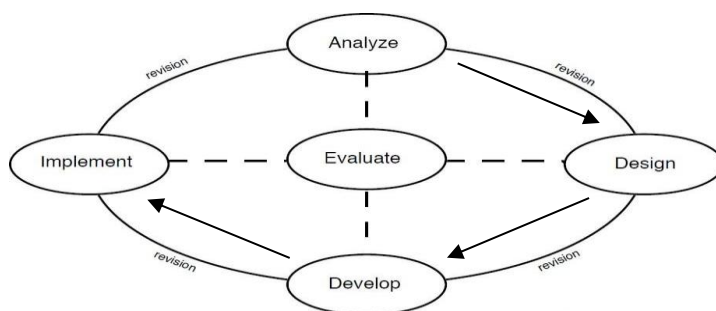
## **Research methods**

This research is a development research using the Research and Development (R&D) method. The research and development (R&D) model is a research process that begins with the process of analyzing problems. The discovery of problems is overcome by developing a product or model. The product or model developed is designed to answer the problem. Before the product or model is implemented, it is first validated, tested and revised. The results of the revision produce a high-quality product or model that is suitable for application to the wider community, as explained by Marinu Waruwu (2024). This study developed a digital-based Ludo game learning media product for the fifth grade science

subject. The research was conducted in two elementary schools, namely SD N 1 Kampung Anyar and SD N 3 Kampung Anyar, Buleleng District, Bali Regency, Bali in 2025. This study involved several students and also fifth grade teachers who were in 2 different elementary schools. The subjects of the study included 5 students of grade 5 of SD N 1 Kampung Anyar and SD N 3 Kampung Anyar, each with 5 students and their homeroom teachers. In addition, the researcher involved experts consisting of media experts, material experts and language experts in this study as validators of the feasibility of the products made.

Researchers use data collection techniques, namely observation, expert validity testing, and product testing. Data on the process of developing digital-based Ludo game learning media was obtained through research and observation at elementary schools. Expert validation sheets are used to obtain maximum assessments so that the feasibility of the media developed is obtained by being given to experts who will be assessed according to their respective experts. The assessments, suggestions and input provided by the experts are certainly useful for researchers in developing this digital-based Ludo game learning media. The product test conducted by this researcher was carried out at a school that was tested by grade V students and also grade V teachers.

The research design uses the ADDIE development model. This model in the product development stage has five stages, namely Analyze, Design, Development, Implementation, and Evaluation (Chuseri et al., 2021). Researchers chose this model because the model is simple, easy to understand, systematic, and there is a validation stage in improving the product to be more perfect.



**Figure 1.**

The first stage is analyze, at this stage the researcher uses three stages, namely needs analysis, student characteristics analysis, and material analysis. This stage aims to determine what is needed by students such as what learning media can attract students' interest in learning based on learning conditions in the classroom.

The second stage of the design, the researcher carried out the process of designing the Ludo game media in the form of digital-based learning media. This learning media is designed digitally through the Genially and Canva applications. The researcher paid attention to what applications were used to facilitate the learning process in the classroom. In addition, the researcher also paid attention to the concept or theme that would be used in this learning media so that it could attract students' interest in learning.

The third stage of development, researchers used two stages, namely media development based on design and expert validity (Pratiwi et al., 2017). The module was developed according to the steps that had been made until it was formed into a digital-based Ludo game learning media. The digital-based Ludo game learning media that had been developed was validated by material experts, media experts and language experts to determine the feasibility of the learning media based on the suggestions obtained as improvements before being tested on students in grade V of elementary school.

The fourth stage of implementation, the digital-based Ludo game media that has been said to be valid and feasible to be tested was then tested on students. The digital-based Ludo learning media was tested on grade 5 students consisting of 10 students from two different elementary schools. Data collection on the effectiveness of digital-based Ludo game learning media to improve students' critical thinking and students' understanding in the use of technology. At this stage, the researcher conducted a practical test on 10 students and 2 teachers to assess whether the digital-based Ludo game product was appropriate or had been declared feasible.

The data obtained after conducting the validity test was analyzed using the Aiken formula. Analysis of practicality data was obtained from the practicality test sheet by students. Product assessment based on the questionnaire sheet that had been filled in by practitioners was analyzed to determine the level of practicality of the digital-based Ludo game product that was developed. The assessment for each indicator uses a Likert scale. The formula used to calculate the average percentage is by dividing the score obtained by the maximum score and then multiplying it by 100%. Furthermore, the data is interpreted in order to be easily understood through Table 1.

**Tabel 1. Kriteria Interpretasi Skor**

Presentase (%)	Kriteria
85%-100%	Very Practical
70%-84%	Practical
55%-69%	Quite Practical
40%-54%	Less Practical

Table 1 is the criteria for the product's practicality score. The score is obtained from the assessment results of practitioners. The product criteria are said to be practical if the level of achievement is in the "Very Practical" category. So that the ludo game media can be used. After the data is obtained, the product validity calculation is carried out using the formula:

Keterangan:

P = Presentase Hasil f = Skor Perolehan

n = Skor Maksimal

$$P = \frac{f}{n} \times 100\%$$

### Result and Discussion

The results of the development, produced a product in the form of digital-based learning media, namely a digital-based Ludo game on the material of how we live and grow

in the subject of science for grade V of elementary school. The Ludo game learning media has gone through a product testing stage by three experts, namely material experts, media experts and language experts, product trials, practicality tests by two grade V teachers and product response tests by grade V students at SD N 1 Kampung Anyar and SD N 3 Kampung Anyar SD. The development of digital-based Ludo game learning media on the material of how we live and grow in the subject of science for grade V of elementary school with the ADDIE development model is obtained as follows.

#### **A. Analysis Stage**

Analysis stage, the results of the needs analysis stage were obtained through observation in determining digital-based learning media. The results of the study showed that students were quite enthusiastic in the learning process and were able to answer questions asked to students. However, in learning, teachers only rely on conventional learning media, so that learning is less interesting and students' interest in learning does not increase. (Aeni, Pratidina, et al., 2022). With these learning activities, students are less active in the learning process in the classroom, the use of learning media does not encourage students' interest in learning and students do not utilize the use of technology in the form of Chromebooks that have been facilitated by the school. Therefore, digital-based learning media are needed that can attract students' interest in learning and also their activeness in the learning process. Furthermore, at the stage of analyzing student characteristics, it is carried out to determine what learning media can attract students' activeness and interest in learning. This analysis was carried out through observation and interviews with the principal and grade V teachers. The results of the study showed that students prefer to learn if teachers use interesting learning media in the learning process. The cause of this is teachers who do not use learning media or who still use conventional learning media. Therefore, it is important to have innovative learning media to create active students in the learning process.

At the stage of analyzing the material obtained from observation, this analysis aims to determine the material that will be included or selected for the content of the learning media. In addition, from the observation it was obtained that the material to be selected was the material "How We Live and Grow" in the subject of science for grade V.

#### **B. Design Stage**

Design stage, product design is made according to the analysis results that need to be developed in designing digital-based Ludo game learning media. There are four stages in designing digital-based Ludo game learning media on the material of how we live and grow in the fifth grade science subject, namely first, the researcher determines and looks for materials that will later be included in the learning media in the teacher's book and student's book. In addition, the researcher also determines a suitable and interesting theme to be applied in the learning media. Second, start compiling the Ludo game learning media using the Genially and Canva applications as assistance applications for designing products. In these two applications, the

researcher first makes a cover on the digital-based Ludo media with. Third, the researcher has started compiling the main design on the learning media that has been adjusted to the characteristics of the students. The researcher pays attention to and matches the design on each page. In this third stage, the researcher has also compiled a concept map for the digital-based Ludo game. Fourth, finishing the learning media that has been designed. This stage is a very important stage in designing. This finishing stage aims to complete the product as well as re-check the product if there are still deficiencies in the product.

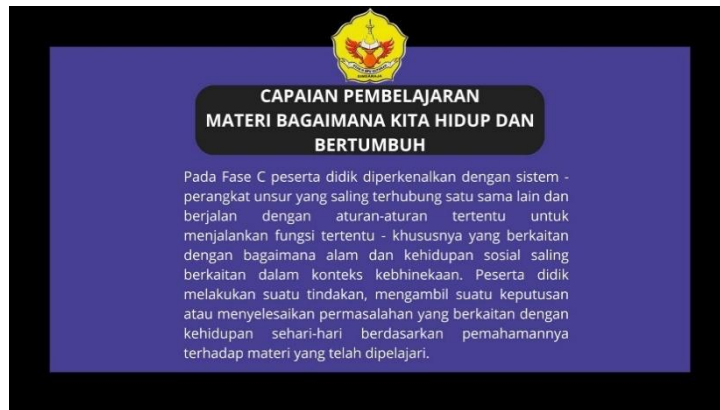
### C. Development Stage

The development stage is carried out through two stages, namely the development of learning media based on design and expert validation. The development of digital-based Ludo game learning media is carried out by creating learning media according to the steps that have been made. The development of digital-based Ludo game learning media in the subject of science is carried out according to the results of the learning media framework design, namely the content/material section and practice questions equipped with pictures or illustrations (Hobri, 2010: 27). The development of digital-based Ludo game media consists of cover, CP, TP, game rules, how to play, materials and practice questions on the main page of the Ludo game. The development of digital-based Ludo game media is carried out simultaneously with revisions from the three experts.

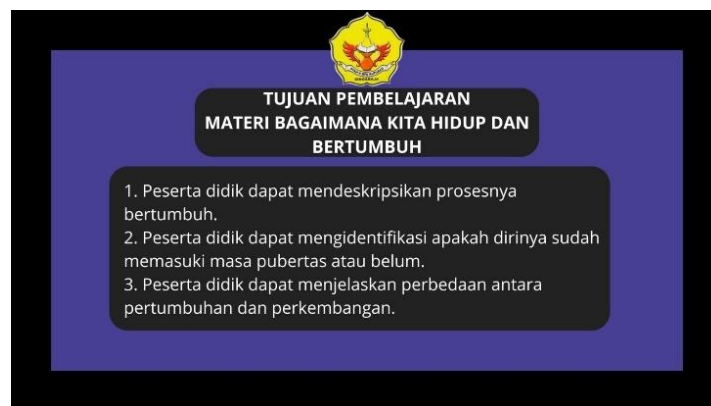
The digital-based Ludo game media is intended to make it easier for students to learn the material on how we live and grow in each question that has been listed on the main page of the Ludo game. Digital-based Ludo game media is presented digitally with the aim of honing the ability to use technology in grade V students. This digital-based Ludo game media has displayed illustrations and themes that are adjusted to the characteristics of students. The materials and practice questions have been presented contextually (Rahmawati, 2020). So, with the existence of this digital-based Ludo game media, it is hoped that it can be a tool in the learning process that makes it easier for teachers and students in the learning process.



Picture 1. Cover



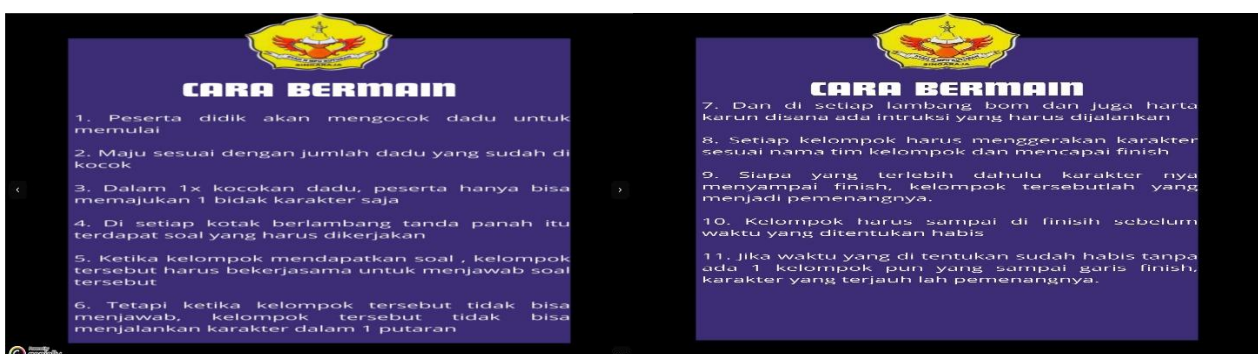
Picture 2. Learning Outcomes



Picture 3. Learning Objectives



Picture 4. Game Rules



Picture 5. How to Play

**Table 2. Media Expert Validity Test Analysis Results**

Item	Appraiser			s <sup>1</sup>	s <sup>2</sup>	s <sup>3</sup>	Σ s	n(c - 1)	v	Information
	1	2	3							
1	4	4	5	3	3	4	10	12	0.83	Very High
2	4	5	5	3	4	4	11	12	0.91	Very High
3	5	4	5	4	3	4	11	12	0.91	Very High
4	5	4	5	4	3	4	11	12	0.91	Very High
5	4	4	4	3	3	3	9	12	0.75	Very High
6	5	4	4	4	3	3	10	12	0.83	Very High
7	5	5	4	4	4	3	11	12	0.91	Very High
8	4	4	5	3	3	4	10	12	0.83	Very High
9	4	4	5	3	3	4	10	12	0.83	Very High
10	4	4	5	3	3	4	10	12	0.83	Very High
<b>Total</b>	<b>48</b>	<b>46</b>	<b>47</b>	<b>38</b>	<b>36</b>	<b>37</b>	<b>111</b>	<b>120</b>	<b>0.85</b>	<b>Very High</b>

The table above shows that the validity value of the media expert on the digital-based ludo game learning media obtained a result of 0.85. If adjusted to the Product Validity Criteria, the score is in the range of 0.8 - 1.0, which indicates a "very high" level of validity. This shows that based on the assessment of the media expert, the learning media developed has met the criteria for good validity from the media aspect.

**Tabel 3. Results of the Analysis of the Validity Test of Material Experts**

Item	Appraiser			s <sup>1</sup>	s <sup>2</sup>	s <sup>3</sup>	Σ s	n(c - 1)	v	Information
	1	2	3							
1	5	5	5	4	4	4	12	12	1.00	Very High
2	5	5	5	4	4	4	12	12	1.00	Very High
3	5	5	5	4	4	4	12	12	1.00	Very High
4	4	4	4	3	3	3	9	12	0.75	Very High
5	4	4	4	3	3	3	9	12	0.75	Very High
6	5	5	5	4	4	4	12	12	1.00	Very High
7	5	5	5	4	4	4	12	12	1.00	Very High
8	4	4	4	3	3	3	9	12	0,75	Very High
9	5	5	5	4	4	4	12	12	1.00	Very High
10	5	5	4	4	4	4	12	12	1.00	Very High
<b>Total</b>	<b>47</b>	<b>47</b>	<b>47</b>	<b>37</b>	<b>37</b>	<b>37</b>	<b>111</b>	<b>120</b>	<b>0.92</b>	<b>Very High</b>

The table above shows that the validity value of the material expert on the ludo game-based learning media obtained a result of 0.92. If adjusted to the Product Validity Criteria, the score is in the range of 0.8 - 1.0, which indicates a "very high" level of validity. Based on the assessment of the material expert, the learning media developed has met the criteria for good validity from the material aspect.

**Table 5. Results of the Language Expert Validity Test**

Item	Appraiser			s <sup>1</sup>	s <sup>2</sup>	s <sup>3</sup>	∑ s	n(c - 1)	v	Information
	1	2	3							
1	5	4	4	4	3	3	10	12	0.83	Very High
2	5	4	5	4	3	4	11	12	0.91	Very High
3	5	4	5	4	3	4	11	12	0.91	Very High
4	5	4	5	4	3	4	11	12	0.91	Very High
5	5	4	5	4	3	4	11	12	0.91	Very High
6	5	4	5	4	3	4	11	12	0.91	Very High
7	4	4	5	3	3	3	9	12	0.75	Very High
8	5	4	4	4	3	3	10	12	0.83	Very High
9	4	4	5	3	3	4	10	12	0.83	Very High
10	5	4	4	4	3	3	10	12	0.83	Very High
<b>Total</b>	<b>48</b>	<b>40</b>	<b>46</b>	<b>38</b>	<b>30</b>	<b>33</b>	<b>104</b>	<b>120</b>	<b>0.86</b>	<b>Very High</b>

The table above shows that the validity value of the linguist on the digital-based ludo game learning media obtained a result of 0.86. If adjusted to the Product Validity Criteria, the score is in the range of 0.8 - 1.0, which indicates a "very high" level of validity. Based on the assessment of the linguist, the developed learning media has met the criteria for good validity from the language aspect.

Based on the test results, it shows that the development of digital-based Ludo game media modules has a good influence on the success of student learning achievements by increasing student interest in learning (Danuri, 2014; Andriani & Izzati, 2020). In addition to referring to the test results that show the development of digital-based Ludo game media, it is also supported by responses from students.

As explained above, the digital-based Ludo game media in the fifth grade science subject that was developed has met the eligibility criteria to obtain "very high", effective, and received a very good response. The existence of this digital-based Ludo game media is expected to be beneficial for students and facilitate students in the learning process in class. The benefits of using media in class are to make students more interested in learning so that this interest can improve learning outcomes (Negara et al., 2019).

The advantages of digital-based Ludo game media on how we live and grow in the subject of science are learning media that are integrated with technological developments, media can make students more active in learning both independently and in groups, media is equipped with practice questions to help students measure their knowledge of the material being raised, and digital-based Ludo game media is equipped with illustrations to support the clarity of the presentation of the material and create its own interest (Jamun, 2018). However, there are disadvantages to the digital-based Ludo game media that are developed, namely that it cannot be accessed offline.

**Conclusion**

Improving students' abilities in the material "How We Live and Grow" and students' creativity in using technology. One of the supporters of the learning process comes from the

learning media used, so digital-based Ludo game learning media was developed in the subject of Social Sciences to support student learning activities at school to be better. Based on the results and discussion of the development of digital-based Ludo game media in the subject of Social Sciences, several conclusions were drawn, including: first, digital-based Ludo game media was declared feasible based on the average percentage value obtained from the three experts. 0.85 from media experts, 0.92 from material experts and 0.89 from language experts, all three of which are included in the "Very High" criteria. Second, digital-based Ludo game media is effective when viewed from the results of the validity test and practicality test in effective learning and increase student activity in the learning process. Based on the conclusion, the researcher provides recommendations, namely that research on the development of digital-based Ludo game media has provided results on improving students' abilities in the material on how we live and grow in class, so for teachers who carry out learning with the same topic so that they can use digital-based Ludo game media in the learning process.

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