



Snake and Ladder: *A Learning Media Digital*

Puji Ananda Irvan (✉) and Marwan

Universitas Negeri Padang, Padang, Indonesia
pujianandairvan.pai@gmail.com

Abstract. The research aims to develop a ladder snake game that is an online learning medium using QuizWhizzer to increase students' interest in high school. The use of this media is expected to make it easier for teachers to see students' understanding of the lesson. This research and development has five stages, namely analysis, design, development, implementation and evaluation. Media quality is validated using expert assessment, and its application to students is then evaluated. The subject of the study was a high school X-grader. The results showed that the media has high quality in aspects of material, appearance and programming based on expert judgment. Then based on the practicality test, students and teachers determine that the media is very practical to use and the content is appropriate for the student. Independent sample t-test through SPSS 20.0 obtained sig. (2-tailed) is $0.00 \leq 0.05$. This indicates that there is a significant difference between students' learning interests before and after media use. As a result, it can be concluded that the learning media has good quality, and practical so that it is worth using by teachers in doing learning in the classroom.

Keywords: Snake and Ladder · Learning Media · Interest

1 Introduction

The issue of how to improve the quality of education is very much discussed today. At the 9th PICEEBA international conference on the topic 'Leap to the coming coming future: Seizeizing Possibilities in Education, Economics, and Business.' held in 2022 featured a lot of information from research related to the fields of educational science, economics and business. This research is part of the conference because it is related to how the use of game media can increase students' interest in learning.

National Education System No. 20 of 2003, in article 1 paragraph 1, Explain the meaning of education, a conscious and systematic effort to create a learning environment and learning process that students need in a religious spirit, self-control, personality, intelligence, noble personality, and society. Enables students to actively develop their potential to improve abilities that are useful for themselves, society, and the country [1].

National Education System Law No.20 of 2003 states that learning is "the process of interaction of learners with educators and learning resources in a learning environment". Learning is a process built by teachers with the aim of developing creativity so that it can improve students' thinking ability, and also improve the ability to construct new

knowledge as an effort to improve good mastery of the subject matter. There are several factors that affect the learning process, namely, internal factors and external factors. Internal factors one of them is the interest of students in learning [2]. Hidi expresses interest as a unique motivational variable, as well as the psychological state that occurs during interactions between people and objects of their interest, which is characterized by increased attention, concentration, and influence [3].

Psychological have four factors that can affect learning interests, including students having active involvement, ease in learning methods, clarity in the learning process, and the relationship of learning materials to student specifications [4]. To increasing the interest in learning students, there are many things that can be done, one of which is the use of learning media [5]. Every learner is certainly very bored if an educator is only glued to one of the media, there are even educators who still do not use media when carrying out the learning process. Learning activities are designed to provide learning experiences to learners through interaction both physically and mentally [6].

The interaction that occurs involves teachers, learners, the environment and learning resources to achieve learning goals. Teachers as the main drivers of learning, should have innovation and creativity to create more effective learning conditions. For this reason, teachers can utilize learning media, so as to increase the interest of learners to learn. The use of learning media in the teaching and learning process can arouse students' interest or desire in learning [5]. In addition, learning media can also arouse student motivation and stimulate learning activities and provide psychological influence. Miarso in Mahnun [7] stated what teachers should do in the use of effective learning media, namely by finding, finding, and choose a medium that can meet the needs of students and also that can interest students' learning interests.

The use of information and communication technology is one of the principles of learning in high schools in order to improve the efficiency and effectiveness of learning [8]. Curriculum demands in the standard of the educational process state that to improve the quality of higher education, it is necessary to use information and communication technology through an effective and efficient learning process [8]. A teacher can apply information and communication technology in many aspects, for example in designing good and more innovative learning media. Digital education games can be used by teachers as a learning medium in the classroom. The implementation of this digital education game is very important to support the learning success of learners because it can increase interest and learning outcomes [9].

Digital education games are one type and genre of games operated on various digital equipment such as computers, consoles and mobile [10]. Educational games are one form of games that have content and focus more on learning activities developed in education and training programs [11]. Games that contain elements of competition can motivate students to compete in learning [12]. Levie & Lentz (1982) in Arsyad [5] said that game media in the form of visual media has four functions in learning, namely: attention function, affective function, cognitive function, and compensatory function. Games as a medium can involve student activities and maximize the role of peer counselors [13], and can convey a lot of information such as concepts, problem solving, and social skills (Piscurich, 2006) in Herdani, (2015) [14].

Ideally economics is a subject that students are interested in because economics is an important lesson in life. Economic concepts can also be used in solving problems in everyday life. Even economics is one of the subjects that becomes an indicator for graduation. However, the conditions found in the field actually show the low interest in learning students in economics lessons. While learning interest is the main thing that everyone must have before learning because without interest success is difficult to achieve.

Research conducted by Mardhani [15] found that learning using snake ladder game learning media can increase learners' learning motivation. Because with the learning media of snake game ladder learners become more active in the learning process, besides that learning that was originally only centered on teachers with the use of snake learning media ladder learning centered on learners. In the snake game, students are required to master the material in a fun way so that students will grow interest in learning. The difference between this study and the previous one is that this ladder snake game was made into a digital version and played online through the QuizWhizzer web. The game will be done using a smartphone or computer so that it will be more attractive to learners. The advantage of the application used is that it does not need to be downloaded so it is not affected by the capacity of the smartphone.

Based on the background described by the researchers above, the study aims to: 1) develop a digital ladder snake game learning medium for economics lessons, 2) see differences in learners' learning interests after using digital snake game learning media.

2 Method

This research uses a research and development approach that has an orientation on the product developed with the aim of increasing the learner's learning interest. The product to be developed is expected to be one of the alternative learning media that can be used online to facilitate teachers and students in the learning process. The product developed is a digital ladder snake game using the QuizWhizzer application. The development model that will be carried out in this research is the ADDIE development model which is a learning device development model. This model appeared in the 1990s developed by Reiser and Mollenda. According to Sugiyono [16] the 5 stages include a development research model consisting of 5 stages, namely (1) analysis stage, (2) design stage, (3) Development stage, (4) Implementation stage, (5) Evaluation stage. This development activity includes the preparation of questions in the game media that are created and developed based on the core competencies and basic competencies of class X economics subjects with Central Bank materials, Systems and Payment Instruments.

Furthermore, the creation of the ladder snake game using the QuizWhizzer application. Product testing is carried out by involving IT experts, media experts and material experts for product quality validation, then involving students as test subjects to test the practicality of the product. The test subjects in this study were students of class X IPS SMAS Semen Padang in the field of economics which numbered 30 people for experiment class, and 30 people for control class. The data collection technique used consists of two techniques, namely test and non-test techniques. Test techniques are used to test the effectiveness of e-module use by conducting significance tests between students'

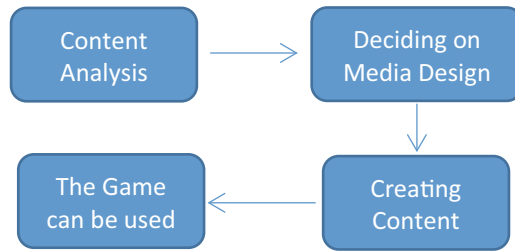


Fig. 1. Application Developmet Flow

learning interests before and after using the media. The significance test uses a different test using SPSS 20 with criteria if the significance level of 0.05 is stated that there is a significant difference in learning interest. While non-test techniques in the form of expert judgement in the framework of product validation from experts in the form of questionnaires using the likert scale and questionnaires response of students and teachers to the practicality of the developed media.

3 Result and Discussion

3.1 Media Development

The result of this study is to produce a game in the QuizWhizzer application that integrates with Google's site to increase the learning interest of High School X students. The product produced in this study is a digital ladder snake game integrated with Google's website that can be used as a medium of economic learning for students at SMAS Semen Padang. To be able to develop a product, the following steps are taken (Fig. 1).

From the picture above, it can be seen that the main activity of media development starts from determining the analysis of materials that will then be included in the game in the form of questions. Furthermore, the game board design is carried out and prepares network hardware and software that will be used for the QuizWhizzer application so that the application can run and can be used with the internet network. The hardware and software set up are servers, WINDOWS 10 OS (Operating System) and network. The hardware that needs to be provided is a set of computers that will build a website that integrates with Google. The next stage is to create content from the ladder snake game in the form of questions and answers. After creating the draft and design, the game can be saved for play. The game can be used by publishing a game link that appears after the game is opened. Game participants can directly use the application without being downloaded first. Here's a look at the developed application (Fig. 2).

3.2 Expert Appraisal

Expert assessment is a logical validation process carried out by experts in their field. Expert validation is done before the trial is conducted and the results will be used to revise the initial product. In this study, three validation activities will be carried out, namely the first validation activity to assess the validity of the material by material experts. The



Fig. 2. Main Page Display

Table 1. Product Validation Result by Material Expert

No	Aspect	Validator		Validity Value	Criteria
		1	2		
1	Content	19	20	97,50%	Very Valid
2	Construct	41	44	94,44%	Very Valid
3	Language	18	19	92,50%	Very Valid
Average				94,81%	Very Valid

second activity is validation of the form of learning tools by media experts. And the third activity is the validation of digital games in QuizWhizzer by IT experts.

3.2.1 Material Expert Appraisal

Validation activities by material expert validators were carried out by two expert validators, namely from lecturers of economic education, Faculty of Economics, State University of Padang, Dr. Dessi Susanti, S.Pd, M.Pd. and representatives of the SMAS Semen Padang, Ratna Dewita, S.Pd., M.M. Based on the assessment of material/content experts, an average validity value of 94.81% was obtained. This value indicates that the product developed is very valid. Validators also concluded that this product is suitable for field testing. The results of the content/material expert validation can be seen in Table 1.

3.2.2 Media Expert Appraisal

Validation activities by media expert validators were carried out by two expert validator, namely from lecturers of economic education, Faculty of Economics, State University of Padang, Dr. Armiaati, S.Pd, M.Pd and lecturers of Adzкия University, Warlan Sukandar, MA. Based on the assessment of media experts, an average validity value of 93,41%. The value indicates that the product developed is very valid. However, there is some advice given by media experts towards the product. Validators concluded that this product is suitable for field testing after being repaired as recommended. The results of media expert validation can be seen in Table 2.

Table 2. Product Validation Result by Media Expert

No	Aspect	Validator		Validity Value	Criteria
		1	2		
1	Construct	42	44	95,55%	Very Valid
2	Grafika	30	35	92,86%	Very Valid
3	Content	43	44	96,67%	Very Valid
4	Language and Readability	28	34	88,57%	Very Valid
Average				93,41%	Very Valid

Table 3. Product Validation Result by IT Expert

No	Aspect	Value		Validity Value	Criteria
		Val 1	Val 2		
1	Apperance	40	42	91,11%	Very Valid
2	Use	27	28	91,67%	Very Valid
Average				91,39%	Very Valid

3.2.3 IT Expert Appraisal

Validation activities by IT expert validators were carried out by two expert validator, namely from a lecturer in Electrical Engineering, Faculty of Engineering, State University of Padang, Dr. Elfizon, S.Pd, M.Pd.T, and from a lecturer in Computer Engineering, UPI YPTK University, Hasri Awal, S.Kom. M.Kom. Based on the assessment of IT experts, an average validity value of 91,39%. The value indicates that the product developed is very valid. However, there is some advice given by IT experts towards the product. Validators concluded that this product is suitable for field testing after being repaired as recommended. The results of media expert validation can be seen in Table 3.

3.3 Product Trial

In the product trial activity, a test of the practice of the snake ladder media application was conducted. Practical analysis is obtained by analyzing student responses given through questionnaires. Questionnaires given to students are questionnaires that contain aspects of display, aspects of presenting materials and aspects of the benefits of the developed media. From the questionnaire results provided to students, the data on student responses to the application are as Table 4.

Based on the table, it can be seen that the students' responses to the developed application is 94,18%. So it can be concluded that the application of the developed economic learning media is "very practical" so that it can be used as teaching material in learning activities in the classroom.

Table 4. Application Practicality Test Results

Practicality Value (R)	Maximum Score (SM)	Obtained Score (P)
1.554	1.650	94,185

3.4 Results of the Significance of Learning Interest

From the results of statistical analysis of Sig values (2-tailed) of $0.00 \leq 0.05$, for the basis of decision making in the independent sample t-test, can be concluded that there is a significant difference between before using media with after use of learning media (Table 5).

From the results of statistical test analysis with SPSS-20, it was obtained that the use of economic learning media using digital ladder snake games is considered effective in learning. Effectiveness can be seen from the increased interest in learning of learners besides that it is also seen from the acquisition of significance tests that state there is a significant difference between control and experiment class.

In terms of language, the learning media has used communicative language, the information conveyed is easy to understand and the terms used do not cause double interpretation. Munir [17] stated that in a medium, the structure of the text is one thing that needs to be considered so that the message conveyed becomes communicative.

Practicality relates to the degree of consistency and stability of the data or findings. Van der Akker [18] said “practicality refers to exams that users for the intervention as appealing and usable in normal” means that practicality refers to the extent to which the use or other experts consider the intervention to be preferable and used under normal conditions. Thus it can be concluded that practicality is the ease and pleasure of users in using the resulting product.

According to Asikin and Cahyo [19] research and development of a product can be said to be effective if the product provides results in accordance with the goals set by the developer. Effectiveness indicates the success rate of achievement of the desired

Table 5. Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Minat Belajar	Equal Variances assumes	3.000	.089	-3.888	58	.000	-8.478	2.180	-12.842	-4.113
	Equal Variances not assumes			-3.792	46.503	.000	-8.478	2.236	-12.977	-3.978

product. Effectivity refers to the extent to which experience and learning outcomes after using a product are consistent with its intended purpose.

4 Conclusion

From the results and discussion of research on the development of economic learning media products using digital ladder snake games for class X IPS SMA, it can be concluded as follows: (1) This digital snakes and ladders learning media can be an alternative learning media to increase students' interest in studying economics. (2) Digital ladder snake learning media has been validated by material experts with a validity value of 94.81% with a very valid category, the validity of media experts with a value of 93,41% with a very valid category, and the validity of IT experts with a value of 91,39% with a very valid category. (3) Product trial results were obtained on average of 94,18%. These results show that the learning media developed is very practically used in learning. (4) The media developed can increase students' learning interest in economics subjects. The results of the independent sample t-test showed a significant difference between before using media with after use of digital ladder snake game learning media.

It is recommended that teachers who will use this medium should adjust the number of questions and the difficulty level of the problem with the time available to do a quiz with this game. Using a more attractive drawing board design so that it can increase the enthusiasm of learners. As well as supervising the activities of students during the use of internet access so as not to use the internet for things outside of learning. To the next researcher to develop a game learning media that is in accordance with the character of learners. Then it should pay attention to whether the game used can achieve the desired learning goals.

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