

# Indonesian Banten Local Food Knowledge for School Students Through Jabanren Games Media

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**Abstract-** Banten's local food knowledge in Indonesia is still low mastered by school students from elementary to high school level. Banten's local food produced is derived from corn, milkfish, and sugar palm, these three food sources have many benefits and can be processed in various forms of food. Thus, learning media for school students is fun, namely through interactive educational games called JABANREN, and comes from the abbreviation of corn, milkfish and sugar palm. This study aims to find out how to increase BANTEN's local food knowledge after being given GAMES JABANREN media. This GAMES media is designed in advance according to the characteristics of school students and has been tested by experts. The research method uses quasi-experimental, which uses a nonequivalent pretest-posttest control group design research design. The instrument used was a multiple choice test. The study population was junior high school students, the sample subjects were selected by cluster random sampling. Data is processed using inferential statistical tests. The results of this study indicate that the administration of JABANREN Educative Games is better at increasing students' local food knowledge in BANTEN Province than those who do not. Thus, it is recommended that this educative GAMES Media be applied in schools as part of strengthening local food knowledge.

**Keywords:** local food, media for school, interactive education, JABANREN, Games

## I. INTRODUCTION

Learning media is one that needs to be given to school students to emphasize understanding of concepts. This media is really needed especially for students who are still in the stage of thinking concretely. School students in Indonesia whose diverse abilities must certainly be facilitated by learning media. School students in Banten province need learning media especially in the knowledge of local food in Banten. This is because based on observations, school students in Banten Province are still low in understanding about Banten's local food.

Learning media that are applied should need to be adapted to the times. The development of the age of the century that has entered the 21st century and facing the industrial revolution 4.0 is an era that in life is always associated with technology and information. Therefore, in the world of education especially facilitating students in learning media must be prepared to face industry revolusi 4.0. In addition, the opinion of the Minister of Ristekdikti Mohamad Nasir revealed "The industrial revolution 4.0 includes the preparation for more innovative learning systems at universities, or adjusting to the existing curriculum related to technological developments that are so rapid, so that, preparation on network systems must be continuously developed continuously," (Rialita, 2018). This supports that during the industrial revolution 4.0 learning innovations that are adapted to technology can be provided through learning media. Appropriate learning media are computer-assisted including interactive GAME media. The GAME media was chosen because this media can match or match the characteristics of school students. School students from elementary school level up to high school students who, on average, aged 7 to 16 years are more fond of GAME. GAME media can increase learning motivation and improve academic performance that is done by (S Nd., et al.) shows that children prefer learning through games rather than through teacher explanations or theories in the book. This opinion is also supported by (Tifani et al., 2016) and Mc. Laren, et al (2017).

Game Media is certainly an educative media that is media that aims to convey messages that have educational value, for example to increase knowledge. Interactive computer-based educational media with games for local food knowledge Banten is expected that students can learn more meaningfully in understanding the concept or knowledge. Related to educational game media for local food, many have been done including Felani (2015) Winda (2015), Sulthony, et al (2017). For example Felani, et al (2015) made an educational game about culinary from the use of mangroves for children aged 8-12 years. Winda (2015) about making Flash Card learning media based on local ethnobotai wisdom. Niam, et al (2017) designed NORICEMAN games as information media on food and nutrition diversification. Sulthony, et al

(2017) about the development of local pagan introduction learning media for grade IV elementary school students. From the tracing of the research results, no one has developed an interactive interactive media game to introduce Banten's local foodstuffs, especially on corn, sugar palm, and milkfish.

Media Games are very well applied to school students, because according to (Niam et al., 2017.) games are one of the media that is familiar for adolescents and community knowledge about technological developments. Games can be utilized when applied also in learning. Due to students learning excellence, motivated because of interesting learning and academic performance increases, one effort that can be applied is to apply the game in learning, Papastergiou, (2009), Zhang, (2015), Mc Laren, et al., (2017). Thus, it is necessary to develop media games for Banten local food and how effective it is in increasing local Banten food knowledge, especially about corn, sugar palm, and milk fish. So it is necessary to develop media games and their effectiveness.

## II. METHODS

This research activity uses quasi-experimental research. The research approach was chosen to see the effectiveness before and after the application of JABANREN Game media was given. JABANREN Media Game is the result of previous developments that have been tested by media and education experts. Mdia Games about local food knowledge of Banten, namely corn, milkfish, and sugar palm or abbreviated. The targeted school students are school students aged 8 to 16 years. The age of these school students is vulnerable students from elementary to secondary school. The Game product design that is applied is as follows:

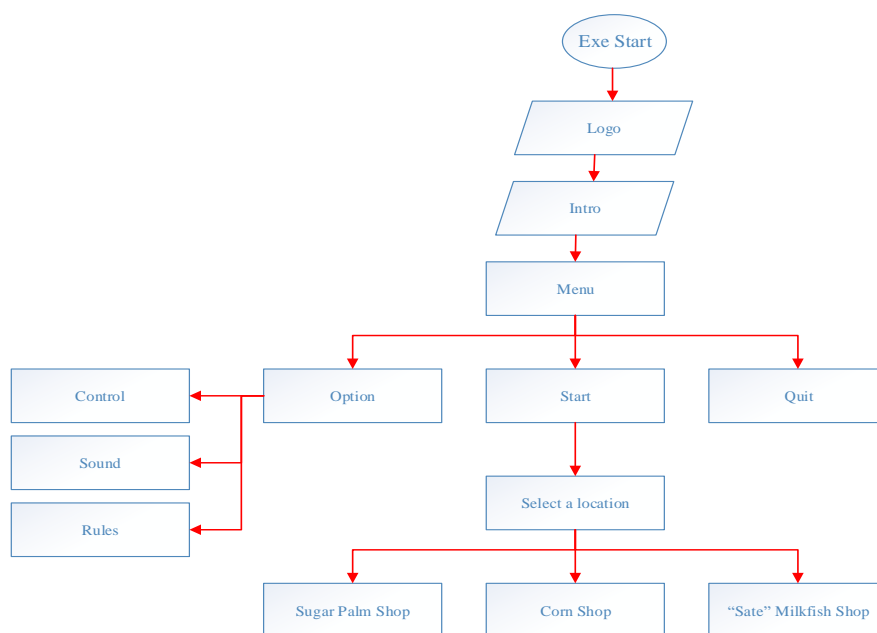


Figure 1. The Games product design flow

## III. RESULTS

The game product developed was named JABANREN. This abbreviation comes from the words Corn, Milkfish and Sugar Palm. The three local food ingredients are typical local food commodities of Banten which have many advantages. To prepare the contents of the GAME, then made materials for the questions along with the answer key. Questions asked about several indicators, including knowledge and utilization, benefits, culinary food produced, vitamins contained. The resulting indicator is based on the results of the discussion group forum (FGD). Below is one indicator and a matter of knowledge from the local milk fish production.

Table 1. Indicators and Problems of Milkfish

No.	Indicators	Multiple Choice questions	Answer Key
1.	Knowledge and utilization of milk fish	Milkfish is a fish that lives on: a) Sea water b) River water	D

		<ul style="list-style-type: none"> <li>c) Waste water</li> <li>d) Brackish water</li> <li>e) Lake water</li> </ul>	
		<p>Milkfish is often also maintained and cultivated in:</p> <ul style="list-style-type: none"> <li>a) River</li> <li>b) The ponds</li> <li>c) Well</li> <li>d) Pool</li> <li>e) Small times</li> </ul>	B
		<p>In addition to being eaten directly milkfish can also be preserved naturally, here are the stages of natural preservation including, except:</p> <ul style="list-style-type: none"> <li>a) Drying</li> <li>b) Salting</li> <li>c) Filtering</li> <li>d) Cooling down</li> <li>e) Sorting</li> </ul>	E
2.	Benefits of Milkfish From the flesh/skin	<p>The following are the benefits of milkfish for health, except:</p> <ul style="list-style-type: none"> <li>a) Reducing cholesterol levels in the body</li> <li>b) Prevents coronary heart disease</li> <li>c) Increase blood sugar and high blood pressure</li> <li>d) Reducing the risk of experiencing high blood pressure or hypertension</li> <li>e) Rich in protein and vitamin content</li> </ul>	C
		<p>In addition to milkfish, part of milkfish that can be utilized are:</p> <ul style="list-style-type: none"> <li>a) Eye</li> <li>b) Skin</li> <li>c) Fin</li> <li>d) Tail</li> <li>e) Gill</li> </ul>	B
		<p>The use of milk fish as food is often constrained by the amount of thorns / bones in the fish, so it is processed into:</p> <ul style="list-style-type: none"> <li>a) Soft Bone Milkfish</li> <li>b) "Pepes" Milkfish</li> <li>c) Fried Milkfish</li> <li>d) "Asap" Milkfish</li> <li>e) Milkfish "Pecak"</li> </ul>	A
3.	Culinary food produced from milk fish	<p>Some culinary foods that can be processed from milkfish include, except:</p> <ul style="list-style-type: none"> <li>a) Milkfish satay</li> <li>b) Milk-brain brains</li> <li>c) "Pepes" Milkfish</li> <li>d) Milkfish "Pecak"</li> <li>e) Milkfish Chips</li> </ul>	E
		<p>In the city of Serang there are culinary preparations of milk fish</p>	A

		that are eaten with rice and sambal which are very popular, including: a) Milkfish "Pecak" b) "Pepes" Milkfish c) Milkfish Chips d) Milkfish stews e) "Pindang" Milkfish	
3	Milkfish vitamin content	What vitamins are contained in milk fish a) Vitamin A b) Omega 3 c) Calcium d) A and B are correct e) A, B and C are correct	E
		One of the ingredients in milkfish is Omega 3, what are the benefits of Omega 3 for the human body: a) Treat heart disease b) Improve vision function c) Helps develop cognitive abilities / brain d) Helps body endurance e) Improve liver function	C

JABANREN game is made with the ms.powerpoin application program combined with the ispring application. Design this game with PowerPoint, for questions created on the Ispring menu in the MC application. Power point. Game is published in the form of web offline. It is intended that the game can be opened on any computer. The game will contain a Folder as below after it has been published.

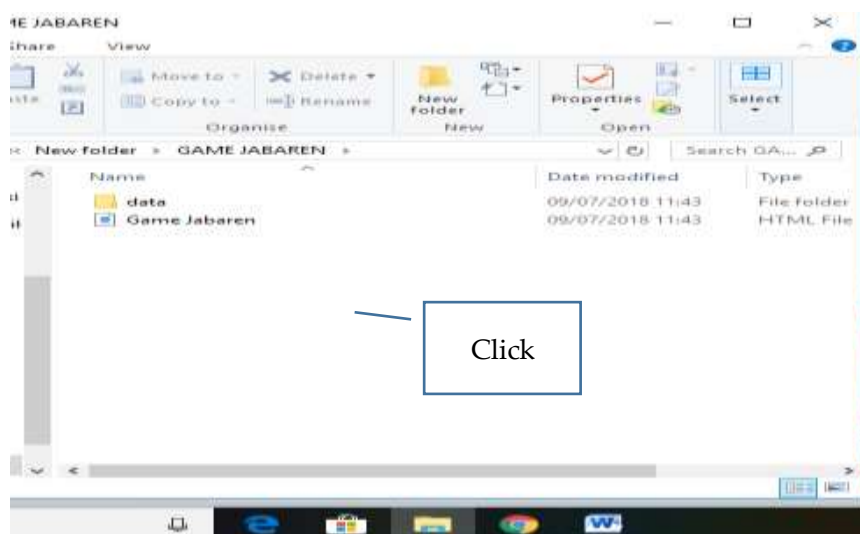


Figure 2. Jabanren folder after publishing

JABANREN game displays include: Opening, Home, starting playing. For more details can be seen in the picture below:



Figure 3. Opening, Jabanren Logo

In the opening section, to be able to open click the Jabanren logo. After that open Home, as shown below:



Figure 4. Home

In the Home load starts playing and about Games. If students want to play right away they can click "start playing", if you want to first how the rules of the game can click "about Game". If start playing. The display will appear as follows:



Figure 5. Select Store Menu

If you have selected the store menu, when clicking on corn for example, the following display will appear:



Figure 6. Corn Menu

To enter the quiz, click on the picture Corn, so it appears:

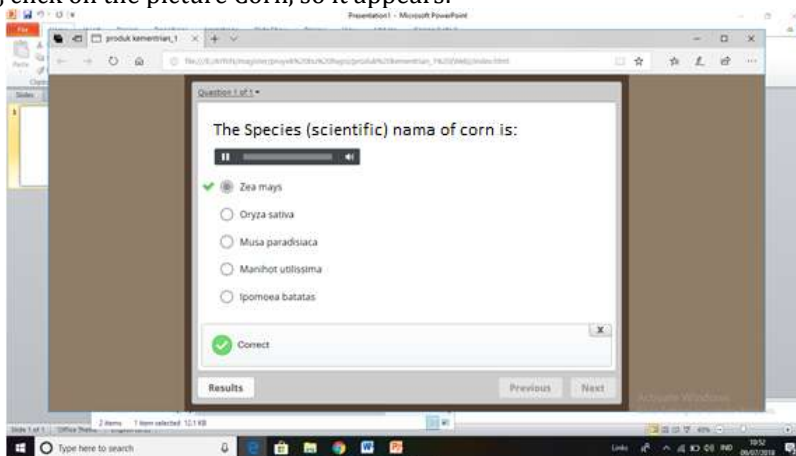


Figure 7. Initial appearance of the quiz

If the answer is correct, the following display will appear:

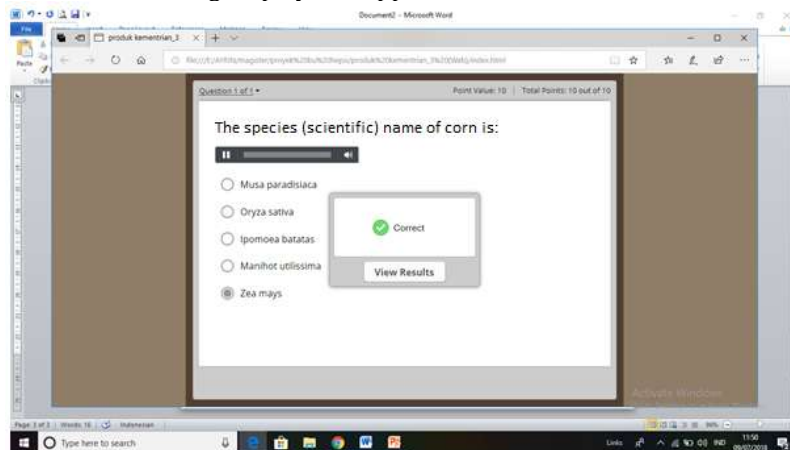


Figure 8. If the answer display is correct

Click view results, the display will appear as follows:

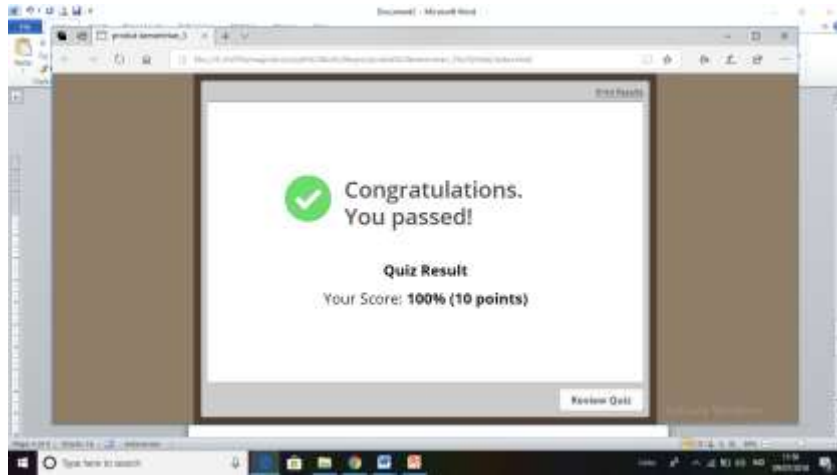


Figure 9. Result view menu

If students click on the rules of the game, a rule will appear:



Figure 10. Main rules menu

The results of the effectiveness test using a sample of 1 class treated 2 treatments before and after using JABANREN game media. Non-parametric U-Mann Whitney test is used to see differences and local food knowledge before or after implementing the JABANREN game. This test is applied because one of the data is not normal. The difference test results can be seen in Table 2 below:

Table 2. Test Results for the Difference in Local Banten Food Knowledge before and after using JABANREN Media Game

Group	Asymp.sig (2 -tailed)
Before and After the Application of the Jabanren Game	0.000

In table 2 the ASymp-sig (2 tailed) value is 0,000. As for the hypothesis proposed by the left party test are;  
 $H_0 : U_1 \geq U_2$  Banten local food knowledge provided before the application of the JABANREN Game is not lower than that of students who have learned after the application of the JABANREN game.

$H_1 : U_1 < U_2$  Banten's local food knowledge given before the application of the JABANREN game is lower compared to students who get learning after the application of the JABANREN game.

From table 2 above shows the ASymp-sig (2 tailed) value of 0,000. Because the test carried out is a left-side test, then the value of P-Value =  $1/2 \times$  Asymp. Sig (2-tailed) =  $1/2 \times 0.000 = 0.000$ . This value is smaller than  $1/2 = 0.025$ . So  $H_0$  is rejected, meaning that at the 95% confidence level the knowledge of local Banten food given before the application of the JABANREN Game is lower than that of the students who get the learning after the application of the JABANREN game. It is also interpreted that the ability of local knowledge is banten after being given the game media JABANREN is better than before.

Banten local food knowledge is better by using media this game is supported by an increase in each number of questions. This increase can be seen in the graphic image below:

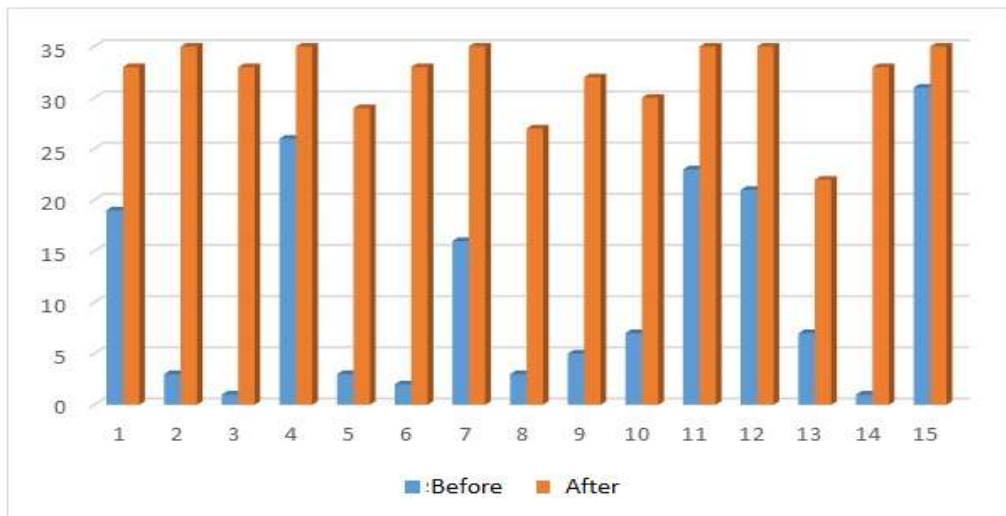


Figure 11. Banten Local Food Knowledge Before and after the Application of the Jabanren Game

In Figure 13 a significant increase is seen in each number of questions. All question numbers have increased. When seen, the number of questions 2 and 3 increased sharply. Problem number 2, 3 and 4. Indicators that increase in height are the use of corn, the area of origin of local food in Banten, and the vitamins contained. The graph below illustrates the results of the increase:

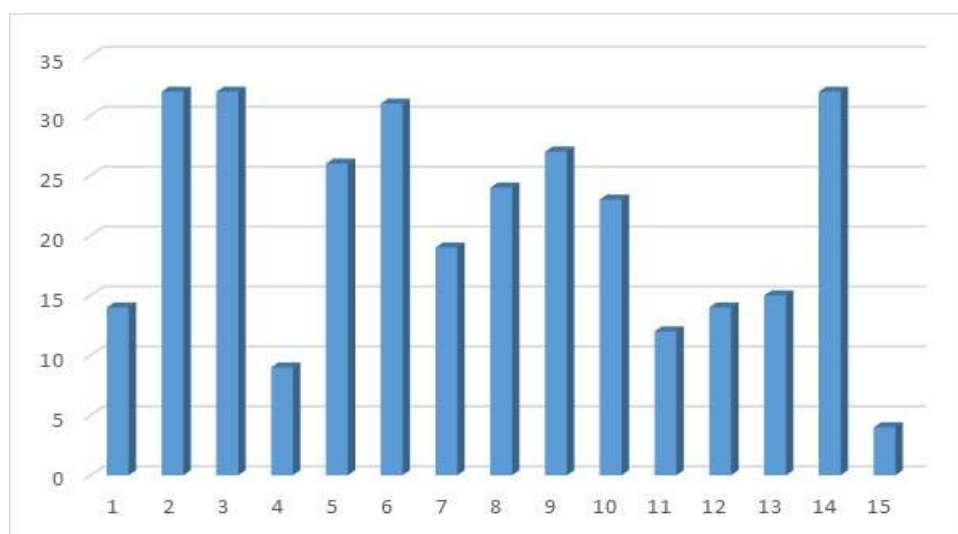


Figure 12. Improvement of Banten Local Food Knowledge

Figure 14 also shows that there is a small increase in number 15 with an indicator of the usefulness of vitamins for the human body in milk fish. This is because the knowledge about this has previously been widely known by students so that after learning with the Jabanren game only a slight increase

#### IV. DISCUSSION

Educational games are one alternative that can be applied to school students at elementary and secondary levels. Especially students at that age are students who are still struggling to play. Learning using interactive media as applied by the Jabanren game has many advantages in increasing understanding of concepts, including those that have been done by (Chuang & Chen, 2007), Ismah & Sarah (2016), and (Sastrakusumah, et al, 2018). The study results (Chuang & Chen, 2007) state that there is an effect of playing digital games on children's cognitive achievement, which is indicated by an increase in children's cognitive achievement. According to Ismah & Sarah (2016) that learning through interactive media understanding mathematical concepts is better than conventional media. Interactive media according to



Ismah & Sarah (2016) can provide a stimulus to the sense of sight and hearing that can be used to improve learning efficiency, because it has the potential or ability to stimulate the learning process. This interactive media is included in the JABANREN game concept, students through this media interact with images, audio, visuals, answer questions, be able to check the right answers, bias in knowing the scores obtained, all of which stimulate the learning process so that it is effective. Whereas (Sastrakusumah, 2018) related to his study with application-assisted Interactive media can improve critical thinking skills. This can show that interactive media supports 21st century skills, namely developing critical thinking skills.

The increase in local knowledge is also inseparable from the support of internal motivation. Games can foster motivation, this is in line with (Paras & Bizzocchi, 2005) and (Habgood, 2010). (Paras & Bizzocchi, 2005) states that games provide opportunities for play that can produce experiences as well as effective learning environments by integrating reflection into the playing process producing learning experiences that are intrinsically motivating. Similarly (Paras & Bizzocchi, 2005), (Habgood, 2010) states that based on games can produce intrinsic motivation.

Student responses in the application of the Jabanren game media were very enjoyable and they were interested in understanding the material or knowledge presented. This developed game is made so that students are not bored and interested. Efforts are made that is by designing games that contain quizzes, interesting pictures, providing opportunities for children to evaluate themselves, feedback and rewards.

This designed JABANREN game qualifies as an educational game. As has been explained (Paras & Bizzocchi, 2005) educational games must introduce challenges, games that can create sensory and cognitive curiosity, students must feel control through feedback and games must use fantasy to strengthen instructional goals and stimulate students' prior interest.

JABANREN game is made to attract the attention and interest of students because it contains interesting images in the selection of buttons. Attention and interest of students, messages can be conveyed easily and quickly. Psychomotor improvement of students through the designed GAME seeks to improve student psychomotor when students click on menu buttons and character formation, including never giving up, curiosity, independence, motivation and so on. As the results of research (Niam et al., 2013) with the game are expected to be easy to convey messages, improve psychomotor, and the formation of character and local food security is realized.

## V. CONCLUSION

Based on the description above it can be concluded that the ability of local Banten food knowledge is better provided by using the Jabanren Game compared to those who do not use it. This means that the Jabanren Game is effective in increasing Banten's local food knowledge. The increase in knowledge of local Banten food occurred in almost all the question numbers, almost 100% in each question number had increased. The highest increase was in the indicator of corn utilization as well as the largest corn production site in Banten and vitamins contained in milkfish. The acquisition of increased knowledge

## Recommendations

JABANREN is a game and effective to use in efforts to improve knowledge of Banten's local food in communities.

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## REFERENCES

1. Chuang, T. Y., & Chen, W. F. (2007). Effect of digital games on children's cognitive achievement. *Journal of Multimedia*, 2(5), 27-30. <https://doi.org/10.4304/jmm.2.5.27-30>
2. Habgood, M. P. J. (2010). *Journal of the Learning Motivating Children to Learn Effectively : Exploring the Value of Intrinsic Integration in Educational Games*. (January 2015), 37-41. <https://doi.org/10.1080/10508406.2010.508029>
3. Ismah & Sarah. (2016). Perbandingan Tingkat Pemahaman Konsep Matematika Siswa melalui Media Interaktif Mischief dan Konvensional. *Jurnal Teknodik* Vol. 20 Nomor 2 Desember 2016.
4. Niam, M., Mulyanto, E., Saputro, G. E., Desain, J., Visual, K., Komputer, F. I., & Nuswantoro, U. D. (n.d.). *PERANCANGAN GAME "NORICEMAN" SEBAGAI MEDIA*. 1-8.
5. Papastergiou, M. (2009). Digital Game-Based Learning in high school Computer Science education:

- Impact on educational effectiveness and student motivation. *Computers & Education*, 52(1), 1-12. <https://doi.org/10.1016/j.compedu.2008.06.004>
6. Paras, B., & Bizzocchi, J. (n.d.). *Game , Motivation , and Effective Learning : An Integrated Model for Educational Game Design*.
  7. S, M. F, Y, E. C., Sn, S., Hum, M., Bambang, M., Sn, S., ... Siwalankerto, J. (n.d.). *Perancangan Media Permainan Edukatif mengenai Kuliner dari Pemanfaatan Mangrove untuk Anak Usia 8-12 Tahun*.
  8. Sastrakusumah, E. N. (2018). *Pengaruh Media Pembelajaran Interaktif Berbantuan Aplikasi Ispring Presenter Terhadap Kemampuan*. 3.
  9. Tifani, O. A., Putra, P. W., Shabrina, S. A., Herlin, E., Nuranisya, A., Rachman, A., ... Pamungkas, A. S. (2016). Teachers ' Readiness in Using Mobile Devices for Mathematics Teaching and Learning : A Case Study in Banten Province , Indonesia. *Mobile Learning, Emerging Learning Design & Learning 2.0*.
  10. Zhang, M. (2015). Understanding the relationships between interest in online math games and academic performance. *Journal of Computer Assisted Learning*, 31(3), 254-267. <https://doi.org/10.1111/jcal.12077>