

PAPER • OPEN ACCESS

Development learning media based traditional games engklek for achievements mastery of the material and tolerance attitude

To cite this article: M G Romanvican *et al* 2020 *J. Phys.: Conf. Ser.* **1440** 012044

View the [article online](#) for updates and enhancements.

You may also like

- [Signal quality in cardiorespiratory monitoring](#)
Gari D Clifford and George B Moody
- [Comparison of learning models based on mathematics logical intelligence in affective domain](#)
Arif Widayanto, Hasih Pratiwi and Mardiyana
- [CO₂ Reduction on Boron-Doped Diamond Electrode in Aqueous Ammonia Solution](#)
Prastika Krisma Jiwanti, Keisuke Natsui, Kazuya Nakata et al.



ECS
The
Electrochemical
Society
Advancing solid state &
electrochemical science & technology

DISCOVER
how sustainability
intersects with
electrochemistry & solid
state science research

Development learning media based traditional games engklek for achievements mastery of the material and tolerance attitude

M G Romanvican¹, Mundilarto¹, Supahar¹ and E Istiyono¹

¹Physics Education, Universitas Negeri Yogyakarta, Sleman, Indonesia

Corresponding author: muhammadgallant.2019@student.uny.ac.id

Abstract. This paper purpose to: (1) Assessing the validity of physics learning media based on traditional games engklek used for learning parabolic motion. (2) Assessing the achievements of tolerance attitudes in physics learning at Senior High School 1 in Prambanan Klaten using learning media based on traditional games engklek. (3) Assessing the mastery of the parabolic motion material in physics learning at Senior High School 1 in Prambanan Klaten using learning media based on traditional games engklek. This research is a development research with 4-D Models consisting of define, design, develop, and disseminate. In this research product is learning media based on traditional engklek games for the achievement of mastery of material and tolerance attitudes at Senior High School 1 in Prambanan Klaten. Students that are suitable for use in parabolic motion. Achievement of students with learning media based on traditional games engklek with the results of gain of 0.74 in the high category. The tolerance attitude of students using learning based on traditional engklek game learning media is achieved, indicated by the results of the analysis of the observation sheet using IJA of 98% or achieved because the value of IJA results is greater than 75%.

Keyword: *learning media, traditional games, tolerance attitude*

1. Introduction

Learning in era 2013 curriculum, teacher have been using the media for learning in the class [1]. Teachers only talk to make use of it causing enthusiasm and liveliness learned students less. Students tending to memorization symbol and equity physics. Relation of the students do not know in learning physics. Teachers and an example should promote the problems in daily life [2]. The teacher less use media learning to help understanding from students. Teachers assess object around or who is easily found. When the teacher explained by the talks, the students do not pay attention to a learning. Students play game in the handphone with friends or talking to myself. Less watching as learning can reduce learning outcomes students [5]. Tuition is expected with the use of the media learning can awaken interest in the learning process. The use of the media learning very helpful liveliness students in the process of learning and facilities for in communicating the message and the contents of the material. The learning media used in the delivery of learning material shall involves activity students.

The media learning have an important role in achieving the purpose of learning [6]. Learning in the era of 2013 curriculum, need to implement media learning able to facilitate learning. Required activity involving students directly in learning. But, there are still many learning dominated by teachers, and students less involved. Through the learning involving students directly students are expected to can work group. Learning by involving students expected the purpose of learning can be achieved with good



[8], [9]. Researchers taking game traditional engklek for the media learning physics to the matter motion a parabola because able to facilitate learning so as to be a learning creative who does boring for learners and the subjects physics matter motion a parabola, when the children throw gacu happened movement a parabola in motion shot gacu so school tuition understand this material that requires understanding and not only a rote [10]. Based on the you related to problems that had occurred has been left the traditional games and are more inclined to play with smartphone, should be done to socialize traditional games in the yogyakarta special and surrounding through learning physics at school. Thus, development learning media of physics based traditional games engklek of the tolerance and their mastery of the material theory senior high school physics students.

2. Related works

The use of the media learning done to facilitate teacher in conveying the purpose of learning. The media learning can achieve the maximum, learning outcomes improve motivation and facilitate the learning process. The learning process can be varied with the learning media [11], [12]. Traditional game-based learning to the students' social skills. There are differences in the average student's social skills are very high level, high enough, and lower in the experimental class, the most significant increase was in the group is very high, that very influenced by the tradisional game activities [13]. Cooperation is a process of working together with others to achieve the desired goals. Collaboration is also a part of social skills between friends, communicating, sharing knowledge, and giving praise to children will make children can communicate with friends and receive other responses [7]. Game learning media could improve students physics material comprehension on preliminary field testing with standard gain 0.68 (medium) and on main field testing with standard gain 0.70 (high).

The quality of education needs to be improved in line the eruption of a timely basis the needs existing. Teachers as a major role in the learning process expected to be able to uses the media pembelajaran yang able to accomplish a purpose of learning which he it is expected that. Learning to promote disorder to be an increase in the of study result of the. Uses the media hands on learning involving is hoped the students could of learning so they are more effective. The variations of learning to promote disorder to expected to improve the quality of participants primary school students. With medium based learning the game of students are expected to interested in the mathematics of the learning process. By learning the game of students became be more active in so that the purpose of learning implementation of new local regulations. Students can reach up to of study result of the to maximum efficiency. The media the game of make the students do not feeling bored of the time of learning to promote disorder to [4], [12].

3. Research method

This research use Research and Development (R&D) and with developed research model is 4D Models. The model consists of Defining, Design, Development, and Dissemination [18]. (1) Defines the media needed to develop learning physics and defines needs in learning. (2) At the design, researchers design the learning process media learning. engklek game will be used. Researchers also making a learning it, lesson plans about, worksheets and cards an instrument to collect data about pretest and posttest, the survey response by the students learning based on traditional games engklek and sheets of observation attitude tolerance students. (3) At develop stage produce a device of learning, the research instruments used in and the learning media based traditional games engklek that have been validated and revised by the people of the validator, and physics teacher, and then can be operational approaches to. (4) Disseminate stage is exposure to the media based learning traditional game engklek have been developed after the test operational.

The research conducted at one of the senior high school 1 on Prambanan Klaten. The research subject is student senior high schools 1 prambanan klaten class X MIPA 1 a total of 6, X MIPA 3 were 32 and X MIPA 4 at 31 taken with clusters of the sampling method of technique. ata analysis using the qualitative and quantitative analysis. Qualitative analysis for revising the device learning based on advice validator trial and data. Quantitative analysis used to determine the validity and reliability

research instruments and learning devices. To validity of RPP (Learning Process Plan), worksheets, physics learning media were analyzed by using SBi.

Validation of the data at thine ass and this analyzed by step as follows, the counting a score of every other component judgment with the formula:

$$\bar{X} = \frac{\sum x}{N} \quad (1)$$

With \bar{X} = Mean Score, $\sum x$ = Total Score and N = Total Validator. Counting range ideal score the assessment criteria in accordance criteria in Table 1.

Table 1. Assessment Sbi criteria.

Formula	Score	Category
$\bar{X} \geq X_i + 1.Sbi$	A	Very good
$\bar{X} + 1.SBx > X \geq \bar{X}$	B	Good
$\bar{X} > X \geq \bar{X} - 1.Sbi$	C	Pretty good
$X < \bar{X} - 1.Sbi$	D	Not good

4. Result and Discussion

In this section will explain the results and discussion of the research.

4.1. Result

4.1.1. Media validation

In the develop stage, the assessment of tradisional learning media developed by the validator in table 2.

Table 2. Media validation result.

Instrument	\bar{X}	Category
Theory	3,75	Very good
Illustration	4	Very good
Quality	3,5	Very good

4.1.2. Learning device validation

In the develop, the assessment of learning device validation in the table 5.

Table 3. Learning device validation result.

Instrument	SBi	Category
LKPD	3,67	Very good
RPP	3,5	Very good
Question Card	3,5	Very good

4.1.3. Data taking instrument validation

Table 4. The validation instrument the data.

Instrument	SBi	Category
Pretest and posttest question	3.6	Very good
Student response questionnaire	3.42	Very good
Attitude observation sheet	3.42	Very good

4.2. Analysis achievement

4.2.1. Mastery of the material

Table 5. their mastery of the material data result.

	Control Class		Eksperiment Class	
	<i>Pretest</i>	<i>Posttest</i>	<i>Pretest</i>	<i>Posttest</i>
Highest Score	30	70	30	85
Lowest Score	10	55	10	60
Mean	20	64,2	20,47	79,69

4.2.2. Tolerance

Table 6. Tolerance data result.

NO	An indicator that observed	Eksperiment	Control
		Mean (%)	Mean (%)
1	Appreciate friends.	100	44
2	Honored friend artifacts were found from different tribes confidently expect to realize, religion, a race, culture, and gender.	100	66
3	Despite the fact that there had been willing to accept agreement was reached between the same now as it was his opinion.	91	47
4	Received a man short other.	100	88
5	Forgive someone else fault.	100	91
6	Honor fellow friend in the game.	97	91
7	Honor the others a companion in turn.	100	47
	Total Mean	98	67

4.3. Discussion

The validation of validator for learning media based traditional games engklek based on the aspects regarded as validation in pieces .The material included, illustration, the quality, and display. Using a scale 1-4 assessment and analyzed using SBi. Based on the assessment of the value of validator and obtained the mean 3.75 are classified as being used so well that. A summary of the findings validation by validator experts and practitioners can be seen in table 2.

The mastery of the material is measured using pretest students and posttest. Based on the results of the analysis posttest average score higher than values pretest. On the operational value pretest school tuition low enough that is having an average value 20,47 posttest had an average value while the 79,69. Tend to be higher and pretest value and posttest analyzed using normalized the gain or standard gains to know these students mastery of the material. Normalized the mastery of the material gains by students is 0.74. Based on the gains in Table 5, normalized and the mastery of the material students are on high category. These mastery of the material is supported by the theory have been written before.

The achievement of tolerance attitude measured participants with the observation by an observer with review of the aspect of observed in sheets of observation attitude tolerance students have been validated. Sheets of observation filled when the observer do monitoring of the learning with medium learning engklek of traditional games. Observations attitude tolerance school tuition analyzed by IJA in each grains an indicator that observed and obtained average score of all the aspects that observed as much as 98 %. This demonstrate the attitude of tolerance school tuition in their experiences with medium learning engklek of traditional games next year can be achieved. The achievement of tolerance attitude students shown in the results of the analysis that the percentage achievement Table 6 more than 75%.

5. Conclusion

The development physics learning media based of traditional games engklek being used to the matter motion a parabola. The attitude tolerance students based learning media by the traditional games engklek was in 98 % an average the value of all indicators observed in all students. The mastery of the material by the students learning media based on traditional games engklek or value of normalized engklek gain 0,74. high in the prologue.

References

- [1] Bespalova A G, Kuznetzova A V 2005 *Interactive Practice-Oriented Techniques in Professional Media Education*. Media Education (Mediaobrazovanie) **58** 11-21 <https://doi/10.13187/me.2018.4.11>
- [2] Evgeny Aleksandrov, Anastasia Levitskaya. (2018). *Technology of Integrated Media Education*. Media Education (Mediaobrazovanie) **58** 3-10 <https://doi/10.13187/me.2018.4.3>
- [3] Nugrahani R 2017 *Media Pembelajaran Berbasis Visual Berbentuk Permainan Ular Tangga Untuk Meningkatkan Kualitas Belajar Mengajar Di Sekolah Dasar* (Jakarta: Lembaran Ilmu Pendidikan) pp 112-159
- [4] Latifah Ratnaningtyas L, Jumadi, Wilujeng I and Kuswanto H 2019 *Journal of Physics*. <https://doi:10.1088/1742-6596/1233/1/012054>
- [5] Frolova E, Ryabova T and Rogach O 2018 *J Media Education* **58** 22-28 <https://doi/10.13187/me.2018.4.22>
- [6] Rima W E 2016 *Ragam Media Pembelajaran*. Jakarta: Kata Pena pp 9
- [7] Rusman 2010 *Model Model Pembelajaran* (Bandung: Rajawali Pers) pp 23-57
- [8] Gok T 2015 *International Journal of Science and Mathematics Education* **9** 12-19 <https://10.1007/s10763-014-9546-9>
- [9] Montolalu 2005 *Bermain dan Permainan Anak* (Jakarta: Universitas) pp 26-48
- [10] Oka G P A 2017 *Media dan multimedia Pembelajaran* (Yogyakarta: Deepublish) pp 126
- [11] Sanjaya W 2006 *Strategi Pembelajaran* (Jakarta: Kencana Prenada Media Group) pp29
- [12] Lestari P I and Prima E 2017 *Journal of Educational Science and Technology* **9** 12-19 <https://10.26858/est.v3i3.4212>
- [13] Nurnawati E 2012 *Unnes Physics Education Journal*
- [14] Thiagarajan S 1974 *Instructional development for training teacher of exceptional children*. (Bromington: Indiana Univer)