



## Digital Based Learning Media Development to Increase Baseball Technique for Grade VI Elementary School Students

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### Abstract

This study aims to produce digital based learning media to improve the Baseball games technique in grade VI Elementary School Students in Palembang city with a total of 40 students by using a limited trial (small group) to 10 students and a vast trial (large group) by using 30 students. Analysing technique in this research is a linear regression model. The results in this study indicate that the implementation of digital media based learning process with Baseball basic technique is used in elementary school. In stage of field test, based on 3 test which examined to the students, that is ball throwing, ball hitting and winning techniques. At the Pre-Test score of 55, 58 and 60 (Quite Good) and in Post-Test getting score of 72, 75 and 79, the criteria increased to Good. The average score of Post-Test is 9.06 with 1.89 as the deviation standard, but on Pre-Test have 1.89 it shows that the assesement on Post-test group is varied more. It can be concluded that digital based learning of media to improve Baseball game technique in grade VI Elementary School Students are valid, practical and feasible to use.

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## INTRODUCTION

Education is an effort to prepare reliable human resources the country development. Education is one of the most important factors in human life (Sumarni et al., 2019; Yusfi et al., 2020). Education is included as human essential despite of the needs for food and clothing (Sumarni, 2016). The leading sector of human resource development, education has a significant contribution to compete in global changing of socio-economic condition. Education development must compatible to modern times and demands of human needs (Handayani & Lestari, 2019; Wahyuddin, 2014). Some experts argue, education development also has to follow industrial revolution because education is degraded which inversed to the world's technological cycle (Egok et al., 2020; Gunawan et al., 2017).

Education institution as the main of responsible for creating competitiveness of humans to face the digital era, must be able to reliable human (Buhari, 2017). Extraordinary education is the most important requirements for education providers to prepare generation Z of humans or known as gen-Z (Arkorful & Abaidoo, 2015; Ojokoh et al., 2013). The Education in 21st century is preparing student to be able to compete in Information and Communication Technology (ICT) era which is developing so fast that is influenced on various aspects of life, including the teaching and learning process (Jannah et al., 2019; Sumarni et al., 2019). The example of Information and Communication Technology advanced has influence on students learning process are given opportunity and required to develop their skills in mastering technology, especially computers, so that students have the ability to apply the technology in learning process (Gjelaj et al., 2020; Islamiyah, 2017; Jaya et al., 2018).

According to Kurniati (2016: 23), the advantages of Baseball are: (1) developing children's social skills by the process of playing; (2) the game allows the students to

have an active participation in learning; (3) containing a competitive value that provide opportunities for students to learn how to compete in achive manner in achieving goals; (4) developing among social skills, motoric and emotional skills in player communication. Learning by playing makes a good experience students, not only to develop muscle skills, movement, coordination, communication and learn to concentrate on finding creative ideas in playing games (Iyakrus, 2019; Novitasari & Mediatati, 2021). At this point, education must be able to adapt the fast developments in technology field by starting to build systems (Maulidina et al., 2018; Pertiwi et al., 2017).

PJOK learning is a complex educational process through physical activity focused on achieving all learning objectives, consisting of cognitive, affective, psychomotor domains and simultaneously being developed a quality learning design (Yunitaningrum & Triansyah, 2016). Problems in PJOK learning until now have never subsided and multidimensional, for example related to the ability of teachers to teach students which is still minimal, the availability of facilities and infrastructure is very limited and the mismatch of qualification of teachers in the field of PJOK, such as there are still many PJOK teachers with educational qualifications. Non-graduated and even some schools, PJOK subject matter is taught by teachers who are not qualified PJOK teachers (Ardhani et al., 2021).

Based on the author observations in State Elementary School 127 Palembang, indicates that students were less interested in learning PJOK because of monotonous learning. Lack of facilities and infrastructure that provided by the school for PJOK teaching and learning process make it doesn't efficient. PJOK teacher are not literate in using media alternatives from digital-based learning processes to teach the techniques sport in PJOK lesson content. As a result, students can not be mastered in PJOK lesson to apply it in real life.

The results of observations in introducing program to teachers and students

about Baseball games. *First*, the researcher find that while learning process in the classroom conducted, teacher only used books as the resources. The teacher use talk and discussion method make students do not active in learning activities and learning objectives are not carried out properly. *Second*, researcher registered the collections of books and than Baseball game modules in library school. The observation result show that minority number of teachers applied digital-based interactive learning. By this research, the teacher agrees if they use digital-based learning media to improve Baseball techniques for Elementary School Students. This media help the teachers in learning process and motivates teachers to be creative and innovative in teaching.

**METHODS**

This study is used development research method, known as R&D (*Research and Development*) from Borg and Gall model which consists of 10 (ten) research steps: (1) Research and Information Collection; (2) Planning; (3) Product Development; (4) Field Trial; (5) Major Product Revisions; (6) Main Field Test; (7) Operational Product Revision; (8) Operational Field Trial; (9) Final Product and (10) Dissemination and Implementation.

This study is used questionnaires to gain the data for analysing, expert evaluation

questionnaire and media test questionnaire for students. The instrumen identification was prepared with the aim of obtaining data on teachers opinions to the media they have used or are currently using, and kind of media they want. The small and large group trial instrument were arranged based on the evaluation concept of the students who had been given media treatment.

Data analysis technique used the scale method as the modification of Likert scale. Likert scale is a psychometric used in the questionnaires, revealing person's attitudes and opinions about a phenomenon. The responses of all respondents in the form of qualitative data were converted showed in answers ranging from strongly disagree to strongly agree. This scale can be simplified into 4 answer scales to make the responses clearer in which position.

The percentage value gained from calculation will interpreted with qualitative sentences based on the table 1 as follows:

**Table 1.** Descriptive Accounting of Percentage

Persentase	Kategori
75.01 < P ≤ 100	Worthy
55.01 < P ≤ 75.00	Enough
40.01 < P ≤ 55.00	Less Worthy
0.00 ≤ P ≤ 40.00	Unworthy

**RESULTS AND DISCUSSION**

**Table 2.** Instument Test of Baseball Technique

Technique	Pre Test				Post Test			
	f	N	P(s)	Criteria	f	N	P(s)	Criteria
Hitting	66	120	55.00	Quite Good	90	120	75	Good
Catching	70	120	58.33	Quite Good	87	120	72.5	Good
Throwing	73	120	60.83	Quite Good	95	120	79.16	Good

Based on 3 questions (hitting, catching and throwing techniques) tested on 30 people in the *Pre-Test* gain the quite good scores and in the *Post-Test* the scores increased in good way.

**Table 3.** Descriptive Data

		Mean	N	Std. Deviation
Pair	<i>Post-Test</i>	9.0667	30	1.89251
1	<i>Pre-Test</i>	6.9667	30	1.82857

The average of 3 questions, the total answers from 30 respondents (Students) for the *Pre-Test* is 6.99 and the total *Post-Test* is 9.06. With standard deviation of *Post-Test* = 1.89 and *Pre-Test* = 1.82. it concluded that the assessment in the *Post-Test* group is more varied than the *Pre-Test* group.

**Table 4.** T Test 2 Sample Dependent

	t	df	Sig. (2-tailed)
Pair 1 Post-Test -Pre-Test	14.324	29	.000

Comparing the average score from total score of the respondents answers (Students) for 3 questions from the *Post-Test* and *Pre-Test* using a 2-sample dependent/paired test, it can be seen that the value of  $t_{Stat} = 14.31 > t_{Table} = 1,96$  and the  $Prob.Sig \text{ Score} = 0.000 < \text{Alpha} = 0.05$ , concluding that there is a difference in the average value between the Post and Pre Test with the *Post-Test* average score is higher than the *Pre-Test*.

**Product Trial**

**Table 5.** Learning Independent Questionnaire Instrument Test Media Assistance

Statement	Small Class			Criteria	Large Class			Kriteria
	f	N	P(s)		f	N	P(s)	
P1	32	40	80	Good	100	120	83.3	Very Good
P2	38	40	95	Very Good	93	120	77.5	Good
P3	30	40	75	Good	95	120	79.2	Good
P4	28	40	70	Good	83	120	69.2	Good
P5	36	40	90	Very Good	84	120	70.0	Good
P6	30	40	75	Good	94	120	78.3	Good
P7	30	40	75	Good	99	120	82.5	Very Good
P8	32	40	80	Good	78	120	65.0	Good
P9	36	40	90	Very Good	94	120	78.3	Good
P10	32	40	80	Good	89	120	74.2	Good
P11	31	40	78	Good	82	120	68.3	Good

Based on 11 questions tested on 10 small group students (Students) and 30 large group students, concluding that all questions

have been categorized as good and very good criteria.

**Tabel 6.** Descriptive Respondents Answers on the Independence Test

Kode	N	Mean	Std. Deviation
Total Nilai			
Kelompok Kecil	10	35.5000	3.80789
Kelompok Besar	30	33.0333	4.31903

The average of 11 questions has the total answers from students (respondents) in the large group was 33 while the total answers for the small group was 35. With a standard deviation of the large group = 4.31 while the small group = 3.80. it means, the assessment of the large group is more varied than the small group.

**Tabel 7.** T Test 2 Sample Independent

t	df	Sig. (2-tailed)
1.607	38	.116

Comparing the average value of the students' total answer answers to 11 questions from Large Groups and Small Groups using

the 2 independent sample test, it is showed that the score of  $t \text{ stat} = 1.607$   $M < t \text{ table} = 1.96$  and the score of Prob .Sig Score = 0.116  $> \text{Alpha} = 0.05$ , it's concluded that there is no difference in the average value between the Large Group and the Small Group.

### **Development Stage**

The developing learning media was suitable used based on validation of material experts, media experts test results by teacher and responses from students. Development research refers to the development model from Borg and Gall (Sugiyono, 2007: 50) which is limited to several stages: *First*, the information collection, *Second*, the planning *Third*, the product development and *Fourth*, the validation. and trials. The following is an explanation of each stage carried out in this research and development:

#### **Stage of Information Collection**

The standard review in this study is the initial stage of collecting information. This stage is carried out by making mapping of Core Competencies and Competency Standards, than will be obtained material that developed in interactive powerpoint-based learning media, the basic techniques of Baseball game. After determining the developing material, than literature study is conducted to collect the material of baseball basic motion.

#### **Planning Stage**

This second stage consists of making a grid instruments in the research as criteria for evaluating interactive learning media. The grid of instruments that have been made is then developed into a research instrument in the form of a validation sheet. Validation sheet is used to determine the advisability of powerpoint-based interactive learning media based on the assessment of material experts and media experts. Material experts provide assessments based on aspects of learning, material and language, while media experts provide assessments based on programming and display aspects. Observation sheets are

used to determine the responses of teachers and students about the using of interactive powerpoint-based learning media in the classroom. The instrument validation was done by elementary school PJOK teachers.

### **Development Stage**

Powerpoint-based interactive learning media product was made in this stage. The steps are making a Storyboard, the aim is to make easier in creating media determining the next stage of development so the parts of learning media can be arranged properly. Storyboards are made by drawing sketches using computer and being used reference for making layouts in all aspects of color and composition. The finished layout is filled materials on techniques and basic Baseball movements. The material in this powerpoint based interactive learning media consists of 3 (three) sub-materials, there are throwing, catching and hitting the ball. After writing the material, the media is filled with pictures and videos that can support the material.

### **Validation and Trial Phase**

The validation and testing stages are done in hoping of the use of interactive learning media developement can be known its advisability based on the assessment of material experts and media experts. The validation of this interactive learning media was done by: Ida Sumarny, S.Pd, Jamaah, M.Pd, and Syamsul Efendi, S.Pd as material experts who are competent in Baseball game technique and basic motion. Heri Purwoko, M.T.I, Faisal, M.T.I and Adi Saputra, M.T.I as competent media experts in interactive powerpoint-based learning media. Media that have been validated will revised in next stage according to the advice of experts during the validation process. The next stage is media test learning process in classroom, by the aim of knowing the responses of teachers and students to the developed based interactive learning media. The trial was conducted in Palembang State Elementary School. Learning process is divided into 2 parts that are large and small groups. During the using

of interactive media in learning, researchers observed the use of these media. Teachers and students were asked for their responses, suggestions and comments the developed interactive learning media has been tested in Grade VI Elementary School students and revised based on suggestions from teachers and students.

### **Development Procedure**

#### **Needs Analysis**

This is the first step in conducting this research, aims to determine a fun Baseball learning model by interactive based media. The researchers made observations at the State Elementary School 127 Palembang during learning process.

#### **Initial Product Creation**

Based on the results of the need analysis, researchers make baseball game technical products. In creating the developed product, researchers make it based on theoretical and evaluations by media and material experts. The subjects of this study were students of class VI Elementary School in Palembang.

#### **Revision I**

Based on advices from material and media experts related to the learning process on interactive media based products that have been tested on small scale groups, researchers can immediately make revisions. Problems and obstacles that arise when this product is tested on students include: 1) Students movement is tend to cluster. 2) Students basic movement skills in throwing the ball is not on target. 3) Students basic movement skills in catching the ball is incorrectly.

#### **Trial I**

Small group trials were conducted as users of the product. At this stage, the product was tested on 10 students divided into 2 groups.

#### **Revision II**

In second stage of revision, the results are improvements of product development in small groups.

#### **Trial II**

Field trial was conducted on the product developed, tested on 30 grade VI elementary school students. Students are divided into several teams, then compete several times to find a good model.

#### **Final Product**

Product trials are intended to collect data that is used as a basis for determining the effectiveness, efficiency and attractiveness of the resulting product. The results of this are: 1) the product model can develop to students cognitive, affective, psychomotor and physical. 2) the data show compatibility to students basic competencies. 3) easy to do by all students. 4) Fun and encourage students to be active. 5) Learners become active in moving.

#### **The Final Product**

The results of this study indicate that the based learning was developed validated and tested are eligible as a proper learning media for students. The interactive learning media in this study produced: 1). Making digital based interactive learning media using Microsoft Powerpoint software. The basic motion baseball was captured by the researcher. 2) This learning media contains the motion of baseball, according to the sub-theme of learning. Images are made attractive, adapting the characteristics of students. 3) There are evaluation questions about the interactive learning media of Baseball games, so that student can measure the level of their understanding about the material. The results of student scores in evaluation can be seen immediately if students feel their scores are unsatisfactory and can repeat the evaluation. 4) There is a video on how to do basic Baseball technique and movements in each explanation to make easier students to practice these movements.

This powerpoint-based interactive learning media is considered feasible because it has the very good category on the assessment indicators. This is because the content of the material presented in the media is very appropriate and easy for elementary school student learning, so that students are able to understand the material that has been delivered. When students see the animate and interactive learning materials, they always remember parts of the material and can practice them well, so that the process of learning basic baseball techniques run smoothly. In addition, after the learning process with media researchers can also measure the level of understanding by working on evaluation questions.

Learners can easily recognize and understand the basic movements of baseball game. Media is a part of learning system and has practical values. Based on the results of the validation and testing, that the development of technical media and the basic motion of this digital-based baseball is in accordance with the objectives of the learning media. Students can also interact directly with the media, so that students become more motivated to learn, especially baseball games. This baseball basic motion technique media can be reused and can be saved as well as presenting learning information consistently and repeated as needed. Basic motion media presents picture of Baseball in the form of animations according to the child's character.

The selection of colors, sizes and forms of media has been adjusted to the characteristics of elementary school student. Students look happy and motivated because they see pictures and colors that are very interesting. This product development stage consists of making storyboards, layouts, writing materials, adding animated sound effects and images. According to Nana Sudjana and Ahmad Rivai (2000: 6), learning media serves as a tool to clarify the lesson material to be delivered, as a tool to raise questions for further study and as a learning resource for children. Primary school. That is, the media contains materials that must be

studied by students. Baseball basic motion learning media is a learning media that is worthy of being used as a learning resource because contains material with sub-themes can increase knowledge for elementary school students in PJOK.

## CONCLUSION

Based on the results of the research that has been carried out by researchers in elementary schools in grade VI students, it can be concluded that the average post-test score is better than the pre-test, means the treatment used is successful. Furthermore, on an average of 11 questions, the total answers from students (respondents) in the large group were 33 while the total answers for the small group was 35. With a standard deviation in the large group = 4.31 while the small group = 3.80. the assessment of the large group is more varied than the small group. comparing the average value of the students' total answers to 11 questions from Large Groups and Small Groups using the 2 independent sample test, it can be seen that the score of  $t \text{ stat} = 1.607 M < t \text{ table} = 1.96$  and the value of Prob .Sig Value = 0.116 > Alpha = 0.05, means that there is no difference in the average score between the Large Group and the Small Group. Baseball basic motion learning media can be further developed into more interesting educational animation, not only as a medium for learning introductions, 3D animation can be added to the media. Further research is needed to determine the level of effectiveness of the media in the media in learning, both for classroom action research and experiments.

## REFERENCES

- Ardhani, A. D., Ilhamdi, M. L., & Istiningsih, S. (2021). Pengembangan Media Pembelajaran Berbasis Permainan Monopoli pada Pelajaran IPA. *Jurnal Pijar Mipa*, 16(2), 170–175.
- Arkorful, V., & Abaidoo, N. (2015). The role of e-learning, advantages and disadvantages of its adoption in higher education.

- International Journal of Instructional Technology and Distance Learning*, 12(1), 29–42.
- Buhari, B. A. (2017). An Improved E-Learning System. *Saudi Journal of Engineering and Technology*, 2(2), 114–118.
- Egok, A. S., Gurmani, G., Pendidikan, P., Sekolah, G., & Selatan, S. L. S. (2020). Development of Etnosains Materials in 5E Cycle Learning Model Based on the Local Culture of Primary School Students. *Journal of Research and Educational Research Evaluation*, 9(1), 22–30.
- Gjelaj, M., Buza, K., Shatri, K., & Zabeli, N. (2020). Digital technologies in early childhood: Attitudes and practices of parents and teachers in Kosovo. *International Journal of Instruction*, 13(1), 165–184.
- Gunawan, A., Darmawan, D., & Maskur, M. (2017). Pemanfaatan Multimedia Interaktif Model Tutorial Dalam Meningkatkan Pemahaman dan Minat Belajar Siswa Pada Mata Pelajaran Pendidikan Jasmani dan Olahraga Kesehatan Bidang Bola Basket di SMAN 27 Garut. *Teknologi Pendidikan dan Pembelajaran*, 2(2), 314–336.
- Handayani, F., & Lestari, W. (2019). Journal of Educational Research and Evaluation Need Analysis in the Development of HOTS-Oriented Study Project Assesment Instrument in Android-Based Science Learning. *Jere*, 8(1), 57–64.
- Islamiyah, T. (2017). Pengembangan Media Pembelajaran Ips Berbasis Permainan Monopoli. *J-PIPS (Jurnal Pendidikan Ilmu Pengetahuan Sosial)*, 4(1), 37–46.
- Iyakrus, I. (2019). Pendidikan Jasmani, Olahraga Dan Prestasi. *Altius : Jurnal Ilmu Olahraga Dan Kesehatan*, 7(2), 168–173.
- Jannah, M., Muam'mar, A., & Fahyuni, E. F., (2019). ASSTECH Aplication Based E-Learning System to Improve the Quality of 21st Century. *Studia Religia Journal*, 3(2), 233–244.
- Jaya, H., Haryoko, S., Saharuddin, Suhaeb, S., Sabran, & Mantasia. (2018). Life Skills Education for Children with Special Needs in order to Facilitate Vocational Skills. *Journal of Physics: Conference Series*, 1028(1). 1–9.
- Maulidina, M., Susilarningsih, S., & Abidin, Z. (2018). Pengembangan Game Based Learning Berbasis Pendekatan Saintifik Pada Siswa Kelas Iv Sekolah Dasar. *JINOTEP: Jurnal Inovasi dan Teknologi Pembelajaran*, 4(2), 113–118.
- Novitasari, E., & Mediatati, N. (2021). *Evaluation of Project Based Learning Model Trough online Settings to Increase Science Learning Outcomes*. 10(1), 1–7.
- Ojokoh, B. A., Doyeni, O. A., Adewale, O. S., & Isinkaye, F. O. (2013). A Mobile-Based E-Learning System. *Journal of Web-Based Learning and Teaching Technologies*, 8(3), 1–17.
- Pertiwi, T. S., Sutisyana, A., & Sihombing, S. (2017). Pelaksanaan Permainan Bola Kasti Dalam Pembelajaran Pendidikan Jasmani Olahraga dan Kesehatan di SD/MIN Kota Bengkulu. *Kinestetik*, 1(1), 57–61.
- Sumarni, S. R. I. (2016). 4-To-5-Year Old Children Speaking Ability Through Constructive Play With Peer Group At Bon Thorif Kindergarten In Palembang. *Proceedings SULE-IC*, 1107–1118.
- Sumarni, S., Ramadhani, R., Sazaki, Y., Astika, R. T., Andika, W. D., & Prasetyo, A. E. (2019). Development of “child friendly ICT” textbooks to improve professional competence of teacher candidates: A case study of early childhood education program students. *Journal for the Education of Gifted Young Scientists*, 7(3), 643–658.
- Wahyuddin. (2014). Implementasi Media Pembelajaran Berbasis Pengembangan Pendidikan dan Karakter Bangsa. *Jurnal PENA*, 1, 21–30.
- Yunitaningrum, W., & Triansyah, A. (2016). Modifikasi Media Pembelajaran Bola Plastik Untuk Meningkatkan Hasil Belajar Bola Kasti. *Jurnal Pendidikan Dan Pembelajaran*, 5(5), 1–10.
- Yusfi, H., Muslimin, & Destiana. (2020). *The Implementation of Underpass Learning Techniques Volleyball for Junior High School*. 422(Icope 2019), 95–99.