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The Collaboration Learning Interactive Multimedia using Traditional Games "Benteng-Bentengan" in Geography Subject for High Schools *

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Abstract. This study aims to develop a collaboration learning with interactive multimedia using traditional games "Benteng-Bentengan" in Geography Subject for high school. The application of the traditional games "Benteng" has been modified and adapted to the characteristics of the material. The design of this study used the Borg and Gall model which was modified into six, namely (1) needs analysis, (2) product development, (3) product revision, (4) product testing, (5) designing and (6) carrying out evaluation. This development research uses the validity test of learning, media and material experts. The study was conducted on 72 students of class XII IPS SMA Wachid Hasyim 2 Taman. The results of the questionnaire showed that the collaboration of interactive multimedia learning and the traditional games "Benteng" gave positive results with 94% or 34 students stating that collaboration is a fun, recreational, educative learning and faster understanding of the material. Based on the results of the competency test in the experimental class, an average of 84 was obtained with a gain score of 19 point. Thus, the collaboration of interactive learning multimedia and traditional games "Benteng-Bentengan", is able to effectively improve the learning outcomes of experimental class students. The results of this development and research are able to create a learning climate for millennial students to become agents of change in the future, especially the development of learning methods in the educational community.

Keywords. *Multimedia; Interactive; Game; Traditional; Geography*

INTRODUCTION

Few schools under UNICEF use integration of traditional games and multimedia for their students to learn. Multimedia learning moves on the cognitive side while traditional games are more directed to the character of students. Traditional games contain positive values for the formation of children's character, for example the value of sportsmanship, honesty, tenacity, patience, and cooperation (Sujarno, et al., 2013); learning skills used to maintain a positive relationship in social interaction (Degeng, 1990); which is obtained through the learning process and aims to get a reward or reinforcement in interpersonal relationships (Seriati and Hayati, 2010). The combination of multimedia learning (Prastiyono, H., & Trisliatanto, D. A., 2018)) and traditional games (Junaedy, et al., 2014) brings positive effects to students. Educational learning media that are natural in nature have actually existed thousands of years ago, which depart from the roots of tradition and nature in a synergistic manner called traditional games.

Betengan or Benteng-bentengan is one of the traditional (children) games of Javanese society. The origins of this game are not known for certain. However, when viewed from the name (term), betengan is an invented word that comes from the root word "beteng" which gets the suffix "an". Beteng itself is a Javanese language which is Indonesianized as a "fortress" (Junaedi and Nugroho, 2014). Based on that thought, it is very possible that this game has existed since the days of the kingdom. Traditional games are all forms of games that have existed since ancient times and are passed down from generation to generation

The geographical information system material taught in high school consists of 4 topics, namely: understanding, components, work stages, and analysis functions in development planning. The four topics are thought to be easier for students to understand if they use the help of multimedia learning. Multimedia makes it easier for students to understand the material (Mayer, 2001). The selection of multimedia and types of traditional games must fulfill the main goal, namely helping students in learning completeness (Prastiyono, et al. 2021).

Materials on Geographic Information Systems in SMA in textbooks tend not to be accompanied by representative learning media and have a fairly low level of digestibility of the material. According to high school textbooks, it only contains many definitions that require memorization (Purwanto, et al., 2000). Because so many concepts are defined, the use of multimedia is a must. The delivery of multimedia along with traditional games is believed to create a fun learning experience.

The greatness of the combination of multimedia learning and traditional games is that it contains student learning experiences (Geovisualization). Learning experiences are obtained through multimedia features such as easy navigation buttons to access all topics (Khoo, 1994). Learning experiences are also obtained through the integration of media such as: audio, video, animation, images, text, and modeling simulations. Memory increases up to 60% with the use of 3-dimensional media such as interactive multimedia (Munir, 2008). In addition to that, traditional educational games contain educational elements in them such as: stimulating various cognitive, affective and psychomotor aspects.

This collaboration of multimedia learning and traditional games has another advantage in learning, namely stimulating students' interest in learning which has a plus. This value grows because learning does not only use textbooks/texts but also uses multimedia technology. The use of multimedia learning and traditional games in the experimental class gave better results than the control group who used textbooks in the learning process (Munir, 2008). Traditional games are an alternative fun learning method so students can easily understand the material (Purwanto, 2013). The combination of multimedia with traditional games will make it easier for students to understand the material. The combination of multimedia learning and traditional games has a strategic role to improve student learning outcomes. Multimedia needs and traditional games on Geographic Information System materials are needed by students to help understand the material.

Research conducted by previous researchers focused on theoretical and practical studies of multimedia learning and traditional games not in collaboration. Thus, this research intends to collaborate multimedia into traditional games for learning. The purpose of this study was to see the results of collaboration between multimedia and traditional games to improve student learning outcomes.

B. MATERIAL & METHODS

This research method uses research and development (R&D) Borg and Gall models which are modified into six stages are simplified, such as: (1) needs analyst, (2) product development, (3) product revision, (4) product testing, (5) carrying out evaluations, and (6) disemination (Sugiono, 2013).

Research Subject

The subjects of this study were students of class XII IPS SMA Wachid Hasyim 2 Taman. The selection of the class was based on the problem of the low learning outcomes of students in the class in the

previous material. The place of this research is at SMA Wachid Hasyim 2 Taman which is located at Jalan Raya Taman No. 86 District Park, Sidoarjo Regency.

Data and Data sources

The data collected in this study consisted of: student activity data, product assessment data, and notes during learning. Student activity process data obtained from activity score data during learning. Data will be combined into the final score to determine student learning outcomes. The data sources in this study were students of SMA Wachid Hasyim 2 Taman class XII IPS, totaling 72 students. While the data source for the implementation of learning is the teacher (researcher).

Instruments and Data Collection Technique

Validity states the validity of an instrument is said to be valid if it is able to measure what is desired and can reveal the data and variables that are examined appropriately. Instruments that have been tested are then analyzed using correlation calculations (Arikunto, 2009).

The instruments used in this research are: (1) individual (student) activity assessment rubric, (2) product assessment rubric, and (3) learning implementation observation sheet. Data collection techniques in this study are as follows.

1. Data on the process of student activity is obtained from the data on individual activity scores carried out by teachers and observers during learning.
2. Data on student product scores were obtained from product assessments carried out by teachers using the rubric of scientific work assessment.
3. Field notes are carried out simultaneously with the implementation of the actions taken by the observer by using the teacher's learning implementation observation sheet. The aim is to find out the implementation of the learning steps taken by the teacher.

Product Trial

This trial is intended to obtain inputs and corrections regarding the product of the collaboration method between multimedia and traditional games developed. After testing and obtaining data, the researcher will revise the product if it is known that there are still deficiencies in the product design. The purpose of the initial field trial is to obtain a qualitative evaluation of the new educational product being developed. Field trials should be carried out in a place where the conditions are the same as where the product is implemented, namely in class XII IPS SMA.

Question Reliability

Reliability is the level of confidence (consistency) of a question. An instrument is said to be reliable if it has a high level of confidence and can provide stable results. The calculation of the reliability of the questions in this study uses the K-R 20 method (Kuder Richardson).

Data analysis technique

Data analysis in this study used statistical methods including descriptive statistics and parametric inferential. Before testing the hypothesis, the normality test and homogeneity test were first carried out. Furthermore, the analysis of the learning outcomes data used the independent sample t-test model (independent sample t-test).

The minimum total percentage that must be obtained for multimedia development in accordance with the Ministry of National Education criteria is 71%. For example: development products get a score of 80%. The percentage results are in the good category (71%-91%) so this product does not need revision and can already be used as a learning tool. The conclusion of the data obtained is determined by the product eligibility criteria in table 2 as follows:

Table 2. Product Validation Level

No	Value	Qualification	Information
1.	91 % - 100 %	Very effective	No revision
2.	71 % - 91 %	Effective	No revision
3.	51 % - 71 %	Effective enough	Revision
4.	< 50 %	Less effective	Revision

Direkorat Pembinaan SMA, (2010).

In addition, the results of the field trial product evaluation test were then concluded by referring to the table of the effect of the method on student learning outcomes.

Data analysis is carried out every time the action ends. This data analysis consists of: 1) analysis of student activity levels, 2) analysis of product quality, and 3) analysis of the quality of student presentations. The data analysis technique in this study used a qualitative analysis of the flow model. This model consists of three components that are carried out sequentially, namely: data reduction activities, data presentation, and drawing conclusions.

1. Student Perspectives on Product Development

Student activity was obtained from individual activity scores using the rubric of student activity assessment. The individual activity of each cycle is expressed by the percentage obtained through the following formula.

$$\text{Total Score} = \frac{\text{Amount Indicator score}}{\text{Total maximum score}} \; x \; 100\%$$

Table 4. Student Questionnaire on Products

Average score (%)	Success rate
85 - 100	Very good
70 - 84	Well
55 - 69	Enough
50 - 54	Not enough
0 - 49	Bad

Sumber: Arikunto, (2001)

Actions can be said to be successful if the activity is achieved with a good or very good level of success.

2. Effectiveness of Learning Outcomes

Product quality is obtained from the product assessment rubric. This product quality analysis consists of two stages, namely: 1) the stage of determining the score of each indicator, and 2) the stage of the percentage of the total score. Determine the percentage of the total value of learning outcomes using the following formula.

$$\text{Total Score} = \frac{\text{Amount Indicator score}}{\text{Total maximum score}} \; x \; 100\%$$

C. RESULT & DISCUSSION

Needs Analyst

The results of the needs analysis of Geographic Information Systems state that students need a combination of multimedia learning and traditional games because it is possible to help understand the material more easily. In addition, it has other reasons, such as: (1) enabling students to think systematically, (2) attracting students' attention, and (3) growing student interest in learning. The results of the material analysis of Geographic Information Systems conducted by researchers can be seen in table 1 below:

Table 1. Results of GIS Material Analysis

Material Analysis	Media	Information
1. The definition of GIS includes: a. Terminology b. The experts 2. GIS components consist of: a. computer system includes: hardware and software b. user (brainware) c. geospatial data	Animation-text-audio-image Picture-audio	These media allegedly help students understand the meaning of GIS The picture clarifies the material so that it is possible for students to understand more easily
3. Stages of GIS work a. Enter Data b. Data Management c. Data analysis d. Data Output 1) Hardcopy 2) Softcopy	Animation-text-audio-image Picture-audio	Animation, audio and video are thought to make it easier for students to understand the process of GIS work stages
4. GIS analysis in development planning	Audio, Flash and Modeling Simulation	Simulations with flash and audio modeling allow students to better understand GIS analysis in development planning

Based on this description, the material for Geographic Information Systems is thought to be more suitable to be presented in the form of multimedia. Multimedia invites students to be more active. The use of multimedia will provide better stimulation by integrating audio and visual media in one software containing learning programs (Munir, 2008). Multimedia is designed simply so that students can be invited to interact directly with the material.

Product Development

After needs analyst, the product has met the appropriate criteria in terms of appearance and substance. The product produced in this development is a multimedia CD learning GIS material. The product aims to make it easier for students to understand the material. Interactive multimedia products are used as a means of delivering learning messages in the classroom. These products can display text, audio, images, videos, and simulations. Teachers and students can use the product by inserting a learning media CD into the CD Room on a computer (PC) or laptop. Learning to use media can be seen in Figure 1-3.

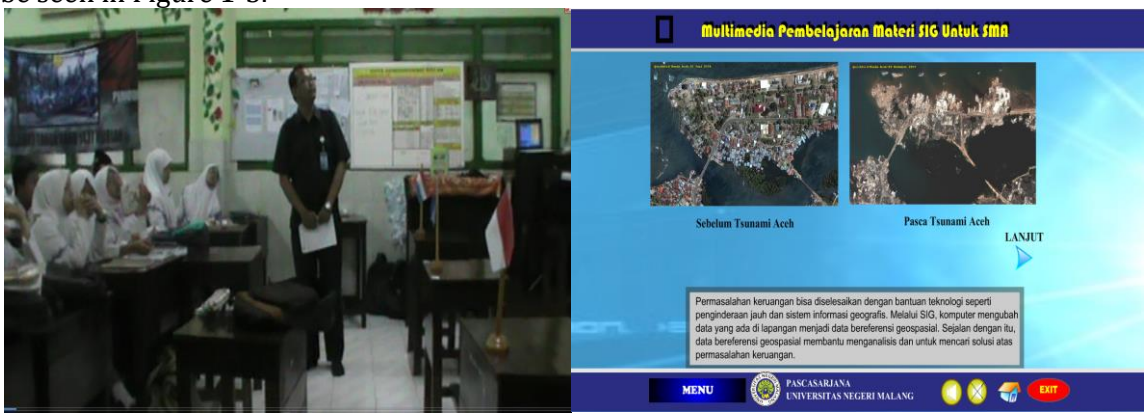

Figure 1. Product material using multimedia

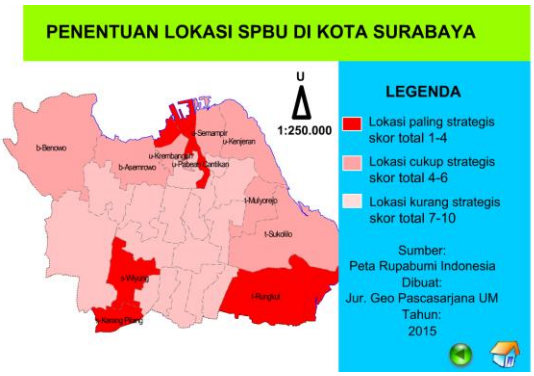

Figure 2. GIS Analysis Function Simulation

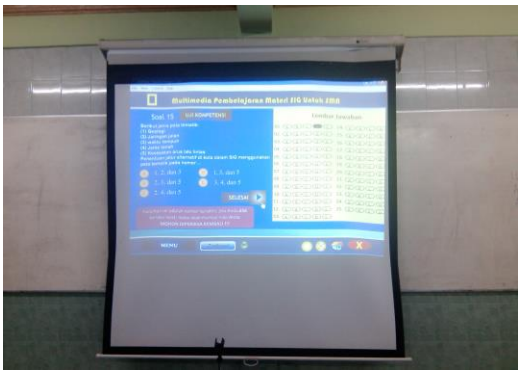

Figure 3. Evaluation page

To get maximum results, the authors collaborated interactive multimedia learning and traditional games "Benteng" on the material of Geographic Information Systems for SMA in the experimental class XII IPS 2 SMA Wachid Hasyim 2 Taman with a total of 36 students which according to the researcher is the class with the lowest understanding in the material. previously. The collaboration of the traditional game "Benteng" which has been modified and adapted to the characteristics of the material. The expected results are not only cognitive aspects, but also affective and psychomotor aspects through game activities.

Product Revision and Testing

After revision and validation of interactive multimedia collaboration with traditional games from the correspondents, the results of the assessment are as follows:

Table 5. Recapitulation of Assessment Results of All Correspondents

Corresponden	Percentage (%)	Category	Conclusion
Media Expert	95,78	Very effective	proper
Material Expert	92,88	Very effective	proper
Integration Expert	94,23	Very effective	proper
Student	93,90	Very effective	proper
Peer Teacher	96,62	Very effective	proper
Average	**94,68**	**Very effective**	**proper**

Based on these data, the results of the assessment of all correspondents on product development obtained 94.68%. Obtaining the score indicates that the correspondent gave a positive response. Field trial data collection tool using a questionnaire and evaluation test. The student response questionnaire focused on 18 question items which were grouped into 5 indicators, namely: game, material, sound, video, and multimedia functions. Student responses recorded in the questionnaire can be seen in table 6.

Table 6. The results of the field trial respondents' questionnaires

No	Indicator	Number of questionnaire items	X	Xi	%	Qualification
1.	Game function	5	417	430	96,9%	very good
2.	Material function	3	228	258	88,4%	Well
3.	sound function	3	227	258	87,9%	Well
4.	Video function	3	253	258	98,1%	very good
5.	Multimedia function	4	253	258	98,1%	very good
	Σ	18	1455	1548	93,9%	very good

Keterangan

X = the total score of respondents for each item
Xi = the maximum number of scores for each item

Based on these data, the assessment of student responses to product development obtained 94%. Obtaining the highest criterion score indicates that students give a positive response to GIS material multimedia products. The level of criteria for achieving qualification is very good. Thus, the multimedia product of GIS material received a very good response from students so that it could be used for real learning.

Student learning outcomes data obtained after doing evaluation tests in multimedia. Then, the data is entered into the student assessment sheet. The results of the recapitulation of learning outcomes data show that in general the students' scores meet the criteria for mastery learning. The indicators of mastery learning are obtained through minimal mastery and classical completeness. The average score is determined by the minimum completeness criteria set by the school of 70. The classical completeness value according to the criteria of the Ministry of National Education High School Development Dikmen is 85%.

Carrying Out Evaluations

Benteng is a game played by two-four groups, each consisting of 4 to 8 people. Each group chooses a place as a base, usually a pillar, stone or flag as a 'fort' (Wikipedia, 2015). The main objective of the game is to attack and take over the opponent's fortress by answering the question from the interactive multimedia. Victory can also be achieved by 'capturing' all members of the opponent. The person closest to the time when it hits the fort has the right to be a 'captain' and can chase and touch an opposing member to make him a prisoner. Prisoners were usually stationed around enemy fortifications. Prisoners can also be released if their comrades can true answering by question. To determine who is entitled to be 'captive' and 'captive' is determined from the last time when the 'captive' or 'captive' answering their respective 'fort'. In this game, usually each member has tasks such as 'attackers', 'spies', 'intruders', and 'fort' guards. This game really requires running thinking and also reliable strategy skills. Process of learning to use collaboration games and media can be seen in Figure 4-5.

Figure 4. Students who are prisoners

Figure 5. Students Answering Questions

The results of the interactive learning multimedia collaboration and the traditional game "Benteng" are presented in the following table:

Table 8. Observations of Interactive Multimedia Collaboration Learning and Traditional Games "Fortresses"

No	Process	Description	Results
1	Random formation of 4 groups, the number of members is the same	Group name can use country or something else	Effective and running

No	Process	Description	Results
2	Students pay attention to learning multimedia, the teacher delivers one sub-chapter then gives turn questions to 4 groups	All group members can answer and get thrown questions so they must be ready.	Effective and running
3	The teacher again conveys the multimedia sub-chapter material then gives turn questions to 4 more groups	The group that gets a turn can answer or be thrown. If you can answer correctly then you can take prisoners from other groups, otherwise if you answer wrong then those who answer will "die" out of the game. If it is thrown, then the group that cannot answer becomes a prisoner of the group that gets a turn, on the other hand when the answer is correct, the initial group becomes a prisoner of the correct answer.	Effective and running
4	The teacher finishes giving the material and counts the remaining group members	The rules of the game are the same as above. In addition, if the group can answer correctly if any of its members are arrested, they can be released.	Effective and running

The combination of interactive learning multimedia and the traditional game “Benteng” brings positive and effective results. The implementation of this learning activity resulted in increased activity, emotional intelligence, showing cooperation, tolerance, being able to express existing emotions, showing empathy, appreciating the advantages of others, and showing persistence (Uzun, F. V., & Keles, O., 2012). These results are shown by almost all students through their attitudes and behavior. Nazir, et al. (2012) explained that "through multimedia, teachers can present information in innovative forms and motivate students to learn faster". DeVoogd and Kritt (in Munir, 2008) say that multimedia does not teach because the one who teaches is still the teacher. That is, teachers and integrated multimedia complement each other. Multimedia development carried out by the teacher itself will be better. Teachers can present information in an innovative way and motivate students to learn faster based on the analysis that has been done. The use of multimedia by teachers will support students to be more active, creative, think critically, and solve problems.

The results of the questionnaire showed that the combination of interactive multimedia learning and the traditional game "Benteng" gave positive results with 92.3% or 36 students choosing learning that was fun, recreational, educational and understood the material faster. In addition, as many as 94.8% or 37 students considered that the choice of the traditional game "Benteng" was appropriate for students to be more actively involved and suitable for understanding the material. Presentation of learning materials with multimedia can make the learning process more interesting. Munir (2008) explains "multimedia has several features that other media do not have, including: providing an interactive process, easy feedback, easy systematic control, and students' freedom to determine learning topics". Ariani and Haryanto (2010) say "multimedia is suitable for individual learning".

The evaluation test was attended by 72 students of class XII IPS with the number of HOTS questions as many as 15 multiple choice items. The experimental class learning outcomes data were obtained from the individual achievements of 36 students who met the KKM as many as 32 students, who did not meet the KKM as many as 4 students. Data on student learning outcomes is presented as follows:

Table 7. Student Learning Outcomes

Class	The average value of learning outcomes		Gain Score
	Pre-Test	Post-Test	
Experimental	63	84	19
Control	65	70	5

Based on the test results, it shows that the experimental class students get an average score of 84 with a gain score of 19. With the achievement of student learning outcomes, it means that

multimedia collaboration and traditional games developed have been able to help students improve understanding of geographic information system material.

The effectiveness of the combination of interactive multimedia learning and the traditional game "Benteng" can be seen from the success of traditional games. Traditional games can improve cognitive, affective, and psychomotor aspects of the experimental group (Seriati and Hayati, 2010). This success can be measured through assessment. The assessment used is by using a questionnaire and a competency test. Prasetya (2014) explains "learning media plays an important role in the learning process of geography". Learning media can increase students' understanding, interest, and attention. Geography learning media must be able to overcome students' difficulties in understanding the material. The results of research by Edward, William, and Roderick (in Munir, 2008) revealed that "the use of multimedia in the experimental group gave better results with a significance level of 0.5 compared to the control group who used textbooks".

The rapid development of technology is currently affecting the lifestyle of people who are changing from traditional life to modern life. This includes high school students who are also experiencing changes in accessing technology (Amin, et al. 2022). The use of flip techniques in learning is still rarely used, especially in high school education (Prastiyono and Trisliaatanto, 2018). Traditional games include flip learning strategies which not only have benefits for developing intellectual intelligence, but also students' emotional intelligence. In fact, it is not often used at the high school level.

Traditional games, often referred to as folk games, are games that grew and developed in the past, especially in rural communities. Traditional games are passed down from one generation to the next (Sujarno et al., 2013). The combination of interactive multimedia learning and the traditional game "Benteng" re-humanizes and realizes that learning is no longer a separate cognitive process, but something that involves exploring the whole body, mind, emotional system and soul as a whole as a synergistic whole. Jean-Jacques Rousseou (1712–1778) stated that children should learn from direct experience as he described in the phrase "..our first teachers are our feet, our hands and our eyes, …to substitute books for all these…is but to teach us to use the reasons of others…"

Traditional games (though not always done outdoors) are very close to natural elements, both in terms of the playground and the game tools used. An important role in bringing humans closer to their natural world and bringing a deeper understanding of the place they live in is ecological knowledge that is not only a science, but also the soul of life (Thorburn, 2017). The natural world of learning requires two-way interaction. Through multimedia and games, interaction will be more intensive so that students feel more involved and active because they require cooperation and strategy.

The combination of interactive multimedia learning and the traditional game "Benteng" material for geographic information systems has advantages, namely:

1. Innovative and effective delivery of topics in helping students understand.
2. Provide easy navigation buttons to access topics more deeply and according to student needs.
3. An attractive display design can increase students to be motivated to learn.
4. A CBT-based test (computer based test) is served so that students can directly evaluate the learning that has been done
5. Students are more actively involved in the process of traditional games in terms of cognitive, affective, and psychomotor.
6. Students are more required not only intellectual intelligence but emotional intelligence

The developed product has limitations in its use. The limitations are: (1) product development is limited to geography subjects while other subjects need to be developed, (2) product trials are limited, with a sample of 76 high school students not reflecting globally applicable field trials by taking an expanded sample. , (3) product development is carried out briefly considering time constraints, preferably multi-year, (4) teachers must be able to organize/manage learning and trip operational costs, (5) teachers are advised to collaborate with other subjects.

D. CONCLUSION

Based on the results of the discussion above, it can be concluded that the collaboration of interactive multimedia learning and traditional games "Benteng-Bentengan" brings positive and effective results. The results of the questionnaire show that the combination of interactive multimedia learning and the traditional game "Benteng" gives positive results with 94% or 34 students choosing learning that is fun, recreational, educational and understands the material faster. In addition, based on the results of the competency test in the experimental class, an average of 84 was obtained with a gain score of 19. Based on these results, the collaboration of interactive multimedia learning and the traditional game "Benteng-Bentengan" was effectively able to improve student learning outcomes in the experimental class. Therefore, this collaboration model can be used in other materials. This research is limited to the geography subject matter of geographic information systems for SMA class XII IPS. Furthermore, further writing on multimedia is suggested: (1) in the form of research and development of other models, emphasizing research results based on the multimedia research roadmap, (2) used in other lesson chapters.

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REFERENCES

Amin, S., Sumarmi, S., Mkumbachi, RL, Prastiyono, H., & Aliman, M. (2022). Development of Mobile Learning Applications Based on the Integration of Islam and Science to Improve Student Learning Outcomes: Array. Journal of Iqra': Studies in Education, 7 (1), 219-235. DOI: https://doi.org/10.25217/ji.v7i1.2317

Ariani, N., and Hariyanto, D. (2010). Multimedia Learning in Schools. Jakarta. Publisher Library Achievements

Arshad, A. (2007). Learning Media. Jakarta: Earth Literacy

Borg, W.R. & Gall, M.D. Gall. (1989). Educational Research: An Introduction, Fifth Edition. New York: Longman.

Crichton, S. & Kopp, G. (2006). Multimedia technologies, multiple intelligences, and teacher professional development in an international education project. Innovative Online journal,

Dale, E. (1969). Audiovisual Methods in Teaching, Third Edition. NY: Dyden Press.

Degeng, I N S. (1990). Learning Design: Theory to Application. Textbook Writing Project. Malang: FPS IKIP Malang.

Ennis, R. H. (1995). Critical Thinking. Illinois: University of Illinois.

Ensiyawatin, A. Z., Sumarmi, & Astina, I. K. (2021). Development of Supplementary Contextual Teaching Materials Based on Ecotourism and Natural Resource Management. IOP Conference Series: Earth and Environmental Science, 747(1), 012007. https://doi.org/10.1088/1755-1315/747/1/012007

Fatchan, A., Soekamto, H., & Utaya, S. (2016). Effect of Learning" Outdoor Study" Ability to Communicate in Writing and Social-Geography Student Learning Outcomes at "Mataraman" East Java-The Republic of Indonesia. Mediterranean Journal of Social Sciences, 7(3), 429. 10.5901/mjss.2016.v7n3p429

Hargreaves, E. (2007). The validity of collaborative assessment for learning. Assessment in Education: Principles, Policy and Practice, 14(2), 185–199. https://doi.org/10.1080/09695940701478594

Junaedi, S and Nugroho, IH. (2014). "Betengan" Traditional Game as Game Method for Early Childhood Kinesthetic Intelligence Development. Nusantara Journal of Research Volume 1 Number 1 May 2014. https://ojs.unpkediri.ac.id/index.php/efektor/article/view/17

Khoo, C. (1994). Interactive multimedia for teaching, learning and presentation. Proceedings of the Second International Symposium on Interactive Multimedia, 230-236. Perth, Western Australia, 23-28 January.

Mayer, R. E. (2001). Multimedia learning. New York: Cambridge University Press.

Munir. (2008). Information and Communication Technology-Based Curriculum. Bandung: Alphabeta

Nazir, M.I.J., Rizvi, A.H., Pujeri, Ramachandra V., (2012). Skill development in Multimedia Based Learning Environment in Higher Education: An Operational Model. International Journal of

Information and Communication Technology Research(Online)Volume 2 No. 11, November 2012 ISSN 2223-4985. DOIi=10.1.1.301.8355
Ohara, Z.Z. (2011). The Effectiveness of Using Interactive CDs in Learning Adjustment Journals to Improve Learning Achievement in Class XII Social Studies Students of SMA Negeri 1 Sukorejo, Kendal Regency. Thesis is not published. Semarang: Postgraduate Semarang State University
Prasetya, S.P. (2014). Geography Learning Media. Yogyakarta: Wave Publisher.
Prastiyono, H., Utaya, S., Sumarmi, S., Astina, IK, Amin, S., & Aliman, M. (2021). Development of e-learning, mobile apps, character building, and outdoor study (emco learning model) to improve geography outcomes in the 21st century. International Journal of Interactive Cellular Technology (IJIM), 15 (7), 107-122. DOI: https://doi.org/10.3991/ijim.v15i07.21553
Prastiyono, H., & Trisliatanto, D. A. (2018). Development of Flipped Learning-Based Interactive Multimedia on Geographic Information System Materials for High School Education. Journal of residues, 1(2), 114-123.
Purwanto, E. (2000). Imaging of High School Geography Teaching Materials Compiled Based on the 1994 Curriculum, Journal of Geography Education (Study, Theory, and Practice in the Field of Geography Education) pp. 1-11. Malang: Faculty of Mathematics and Natural Sciences, State University of Malang.
Purwanto, E. (2013). Learning Strategies for Geography Studies. Malang: UM Press.
Purwantyo, A., & Tomoliyus, T. (2018). Development of an integrated physical education learning model for elementary schools. Indonesian Journal of Physical Education, 14(2), 38–49. https://doi.org/10.21831/jpji.v14i2.21608
Seriati, N.N. & Hayati, N. (2010). Traditional Javanese Movement Games and Songs to Stimulate Early Childhood Social Skills. Unpublished Research Report. FBS Yogyakarta State University.
Stratfold, M.P. (1994). Investigation into the Design of Educational Multimedia: Video, Interactivity, and Narrative. Thesis Ph.D. Milton Keynes: Open University.
Sujarno, G, S., Larasati, T.A. & Isyanti. (2013). Utilization of Traditional Games in Children's Character Building. Yogyakarta: Center for the Preservation of Cultural Values (BPNB) Yogyakarta.
Suseno, H. (2013). Development of Multimedia Teaching Materials With Concept Maps (MMCMaps) for Physics Subjects to Improve Student Achievement at SMAN 2 Madiun. Thesis is not published. Malang: UM Postgraduate Program.
Thorburn, M. (2017). Moral deliberation and environmental awareness: reviewing Deweyan-informed possibilities for contemporary outdoor learning, Journal of Adventure Education and Outdoor Learning. https://doi.org/10.1080/14729679.2017.1322000
Usmeldi, Amini, R., & Trisna, S. (2017). The development of research-based learning model with science, environment, technology, and society approaches to improve critical thinking of students. Indonesian Journal of Science Education, 6(2), 318–325. https://doi.org/10.15294/jpii.v6i2.10680
Uzun, F. V., & Keles, O. (2012). The Effects of Nature Education Project on the Environmental Awareness and Behavior. Procedia - Social and Behavioral Sciences, 46, 2912–2916. https://doi.org/10.1016/j.sbspro.2012.05.588
Wahyudi, A. (2012). Development of Multimedia for Interactive Learning for Geography Subjects for Remote Sensing Materials for SMA/MA Class XII. Thesis is not published. Malang: UM Postgraduate Program.