



Development of Marbel Sitasya Interactive Learning Media Based on Canva to Improve Science Learning Outcomes

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Abstract: Study This developing learning media interactive based Canva provided term Marble Sitasya To use overcome problem low results study science material solar system in class VI Wonotulus State Elementary School Regency Purworejo. Study This use Research and Development (RnD) method with Borg and Gall stages. The data analysis technique uses a feasibility test product, initial and final data analysis namely the t test and the N-Gain test. Based on results study show that learning media very worthy used. This proven with results evaluation appropriateness products by media experts and expert material obtained percentage by 76% and 90%. This media is also effectiv used in accordance with t test results on both the test stage is the scale test small and test scale great showing results sig value. (2-tailed) is $0.000 < 0.05$, meaning H_0 is rejected and H_a is accepted. Besides Therefore, the N-Gain test results are obtained amounted to 0.51 on the scale test small and fruitful amounted to 0.6082 on the scale test big with criteria currently. based on results study this stated that learning media interactive Marble Sitasya based canva very feasible and effective for increase results study participant educate on science content material solar system in class VI Wonotulus State Elementary School Regency Purworejo.

Keywords: Learning media interactive; Learning outcomes; Science

Introduction

Education is something very thing tightly connection with life man. Education is bridge for increase quality source Power man that is through development pattern thought, development physical, moral self, power, and attitude social through the learning process. Through education here it is will giving birth to generations successor which quality nation will be can support progress nation. Role education in progress continued nation develop moment This, especially in Indonesia is very important Because have share in produce thinkers and energy skilled for follow as well as succeed development national (Darling-Hammond et al., 2020). This matter in line with role important education available increase quality source power man in face development current

technology develop so fast. Therefore that, every child must get education to use increase the potential it has as provisions in face various demands developments over time proceed (Haleem et al., 2022). Progress and sophistication applied digital technology in the world of education give convenience and speed access learning. Development technology this penetrate to all aspect life no exception in aspect education.

Development technology in the digital era is like that fast so that can utilize in development of learning media. Instructional media designed to use fulfil function for facilitate the learning process and achievement objective learning. Instructional media is tools used in the learning process that can be done help students, so meaning message conveyed clear and purposeful learning can achieved with good. Whereas another opinion says that learning media is the media that contains information or message instructional and

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can used in activity learning. Instructional media in matter this can said as tool communication able to learn increase quality from learning. Instructional media is one of factor support success learning, because its function can assist with the delivery process information from teacher to participant educate nor on the contrary. Learning media is also interpreted as something tool made with objective for help the learning process, have function for clarify something the meaning conveyed so that can reach objective learning with effective and efficient (Lipnevich & Panadero, 2021).

Besides that is, the use of media in the learning process is one of effort for create quality learning (Sudarsana et al., 2019). In delivery material to be given to student done through media facilities (Budiarti & Haryanto, 2016). Instructional Media is tool communication in activity learning in form print nor hear so that his position as means learning very important. Instructional media is united parts from whole learning systems and processes, meaning learning media influential in the process of activities learning and constitute important element (Coman et al., 2020). Instructional media used for explanation tool or visualize difficult material understood oral or writing just. So, the learning media become principal main in learning. From several opinion about understanding learning media, can withdraw conclusion that learning media is set tools used in the learning process to use make it easier for teachers convey information material to participant educate in a way effective and efficient so that an activity process is created quality and interactive learning.

Learning media designed by the teacher must be fulfil condition so that can support achievement objective learning. Accuracy and accuracy in media selection will support effectiveness activity learning carried out (Montenegro-Rueda et al., 2023). Practical and innovative learning media be one key success learning. Election the right type of learning media can also be done increase interaction between teacher and participants educate so that arise atmosphere active and giving learning impression fun and can motivating study for participant educate. Use of learning media push participant educate for interested demonstrate learning in a way deep, motivated learn, and be satisfied to learning (Syawaluddin et al., 2020).

Many types of learning media that can be used developed by the teacher. Types of learning media developed must in accordance with conditions, needs, time, costs, and goals desired learning achieved. One of types of learning media that can be used used as an alternative in the activity process learning namely media in nature interactive. Instructional media interactive can defined as all something related to software and

hardware that can used as intermediary for convey fill teaching materials from source study to learner with method learning that can be done give response come back to user from what has been input to that media. Instructional media interactive in its use will push happen communication active two direction between teachers and students. Besides that, participant education is also directed for do interaction direct with current media operate it.

One of the learning Media based technology that can applied for learning at school base namely interactive media based canva. Application canva is free online design tools that can used for make videos anytime, anywhere. Canva delivers convenience for teachers to designing learning Media based technology with various templates, features, themes and animations varied. Teachers can use features application Interesting canva customized with need. One of excess from application canva as means create learning media that is application canva easy for reachable by teachers because can accessed using a cellphone or computer. It's easy access application canva give flexibility for teachers to make learning media design interactive wherever and whenever.

Besides that, canva became very alternative effective in creating fulfilling learning media modern standards (Mulyati et al., 2022). Existence various convenience use features available in the application canva encourage teachers to start active innovate create more modern learning media. Canva doesn't only give freedom in designing material learning, but also providing various convenient features educator in integrate attractive and educational visual elements (Putri & Jumardi, 2023). In context this, Canva does not only become tool design graphic only, but a capable solution overcome a number of challenge in the world of education (Jaleniauskiene & Kasperiuoniene, 2023). Now teachers can active innovate make various modern form of learning media though No own background behind experience design formal graphics. Canva becomes solution to constraint it's complicated learning media design Based technology arrived moment this become the problem of reluctant teachers create learning Media based technology.

Utilization of learning media can support smooth process of activities learning is one of them science content in schools base especially in develop 4C capabilities include skills think critical, thinking critical and problems solving, communication, and collaboration (Partono et al., 2021). This matter in line with step government in face development technology in the world of education which causes exists challenge *21st century skills* among them 4C capabilities which

include creative, critical, productive, independent, collaborative and communicative (Hikmat, 2022).

IPA is rational and objective knowledge about natural universe with all its contents (Zidny et al., 2020). IPA is one of them discipline containing knowledge gathering facts, concepts, and principles about nature, symptoms nature, and everything the contents contained therein. IPA is the knowledge in it contain values, attitudes and processes. In line with matter this, IPA supplies participant educate with knowledge, ideas, and concepts about environment acquired nature through a series of scientific processes, incl investigation, preparation, and ideation (Zamiri & Esmaili, 2024); (Fleury et al., 2021). In the activity process learning at school, science is encouraged participant educate for active find fact about natural through science process skills with based on their knowledge have. This matter because objective exists science learning at school basis for participants educate have mastery to knowledge, attitude scientific and process skills (Keiler, 2018); (Valladares, 2021).

Although the IPA is deep implementation learning with integrated 2013 curriculum with load another lesson, however science learning is expected still can become something vehicle for the participants educate for get information about natural universe and everything activity as well as life in it. Teachers must still can give facility learn science that contains the essence of science for embed soul *scientists* for participant educate. This matter aim so participant educate own mastery to knowledge, attitude scientific, and process skills (Sayekti, 2019). Facility the learning provided by the teacher must be appropriate with need participant education and the conditions that exist within class. One of facility learn what you can give by the teacher, namely learning Media based technology. Science teaching in schools base moment this follow developments over time because good education is education always develop follow changing times (Jannah & Atmojo, 2022).

However, the reality on the ground still lots found constraint in implementation science learning. One of them occurred at Wonotulus State Elementary School, District Purworejo, Regency Purworejo. This matter obtained based on observations and interviews that have been done carried out by researchers at SDN Wonotulus, District Purworejo, Regency Purworejo. Based on results collection information obtained a number of problems that arise obstacle in the science learning process, teachers tend to apply method conventional teaching that is method lecture delivery material book science texts and teaching materials without development so that knowledge participant educate still shallow. In science learning, delivery just material limited sourced from just teaching material not

yet enough facilitate participant educate for get information in the learning process and not yet enough help teachers to convey nature information important as it should be is known participant educate (Komalasari et al., 2019). Besides that's a problem other like activity learning passive only teacher centered, lacking maximum use of learning media especially learning media-based technology.

Look in the mirror from problems application science learning in the field need quick formulated alternative solution problem for make science learning at school base become more meaningful. Condition thereby push researcher for develop a learning medium that can support science learning, especially in the material learning rated solar system enough compound. Instructional media developed interactive namely interactive media with title Marble Sitasya story study participant educate with exists visual media design designed like that appearance so that interesting interest study participant educate. With hope can increase interest participant educate for learn and present atmosphere new in the learning process become more pleasant so that later impact on increasing results study participant educate.

This matter guided by principles that activity process learning carried out at school by educators is base main study for a participant educate (Winangsih & Harahap, 2023). All aspect in the process of activities learning start from method learning, strategies used by teachers in convey learning, and use of learning media influential in achievement objective learning.

Method

Study this use approach descriptive quantitative with type method research and development or R&D (Research and Development). Method research and development (Research and Development) is method research used for produce something product and test level effectiveness from product the (Mufadhhol, 2017). Research used is type study developing development a product in the form of learning media interactive based Canva on science learning material solar system. As for method research developed by researchers use steps development according to Borg and Gall which includes a number of stages study including: potential and problems; data collection; design product; validation design; revision design; trial product; revision product; trial usage.

Data collection techniques use technical test and non- test like questionnaires, interviews, document data, and documentation. Data analysis viz using validity tests which include validity tests, reliability tests, levels difficulty and power different. Then, for analyze results

Study participant educate in pretest and posttest forms analyzed use preliminary data analysis namely the normality test. Next, it is analyzed using parametric statistics namely the t-test and n-gain test for know how much big enhancement results study participant educate in pretest and posttest forms the. Besides that, for testing appropriateness product will done with bringing in experts among them expert existing materials and media experts experienced for evaluate product new form development of learning media interactive.

Results and Discussion

Research result will more focused on developing learning media interactive based canva for increase results study participant educate. Research result This includes: results development product, feasibility product, effectiveness product for increase results study participant educated.

Development Results Product

Development product in study this started from analysis the needs of teachers and students are met with spread questionnaire on site needs study namely SDN Wonotulus. Based on results questionnaire show that in the learning process use of learning media still very minimal so participant educate tend not enough enthusiastic in study. Besides that, they also stated that in the learning process requires learning media as learning aids for they moreover moment learn science content in the material solar system (Sivakumar et al., 2023; Barendsen & Henze, 2019; Grassini, 2023). Participant educate tend want media based learning technology like canva. The same results were also seen in the analysis teacher needs.

Classroom teacher need help contemporary learning media innovations for delivery tool classroom learning especially on payload science lessons. Therefore that is necessary innovation in development of more modern learning media is appropriate with developing times moment this that is based technology (Oke & Fernandes, 2020; Serdyukov, 2017; Serdyukov, 2017). The process of developing learning media that contains material the solar system basically is results development of learning media interactive designed use help canva software (Teräs et al., 2020). Instructional media this served in interactive slideshow form. No only containing review material just but it also contains it quiz that can done directly by participants educate to use measure level understanding participant educate in a way simple. Following appearance results development product in the form of learning media interactive Marble Sitasya based canva:



Figure 1. Learning Media Cover

In section learning media cover there is customized animations with load material in learning media. Besides that is, election colors are also customized with need participant educate age school inclined basis like bright colors like blue. Use bright color can interesting attention participant educate (Khan & Liu, 2020). With So, it is expected participant educate will motivated for study since see appearance early media (Dwivedi et al., 2023; Urhahne & Wijnia, 2023; Dichev & Dicheva, 2017; Sivakumar et al., 2023).



Figure 2. Learning media menu

Instructional media designed to use makes it easier which user in matter this participant students and teachers for the learning process. Development of learning media must notice convenience usage, power attraction, and usability (Chuang, 2023). Therefore that, in learning media interactive Marble Sitasya has to be equipped with aiming menu window for makes it easier user access parts of learning media in accordance with desire they.



Figure 3. Information Knob

Instructional media Marble Sitasya basically nature interactive. User can operationalize learning media use the buttons in it. Should in multimedia learning interactive given various type interactivity, for example: navigation page, menu control, control animation, hypermap, response, feedback, drag&drop, control simulation, game control, etc. (Pradnyawati & Rati, 2023). Therefore that is necessary window information knob to use give understanding to user related with utility existing buttons so that user no feel confusion for operationalize learning media.



Figure 4. Visualization material

Furthermore, that is visualization from material contained in learning media (Akhmad et al., 2018). Material contained in in learning media packed in concise description with easy language understood by participants educate so nature informative and easy understanding participant educate (Getie, 2020). One screen when possibles containing one idea or discussion just with simple sentence. This matter be one consideration important in make design display of learning media interactive so that no burdensome understanding participant educate (Kustyarini et al., 2020).

Eligibility Results Product

Learning media design results developed interactive in accordance with answer questionnaire need participant educate and teacher for then assessed by experts that is media experts and expert material. As for aspects assessed by experts to learning media design interactive covers aspect display and system work by media experts. Whereas for aspect completeness contained material in learning media interactive assessed directly by an expert material. Evaluation to learning media design interactive results development by expert media experts and expert material called with

the validation process design as stages development by Borg and Gall (Norsidi et al., 2024). From the results validation learning media design interactive by media experts and expert material obtained percentage evaluation stated eligibility in the following data:

Based on table 1 shows results evaluation media expert ie by 76% with criteria appropriateness that is very worthy. This matter means learning media design interactive Already very proportional from all aspect of being aspect evaluation learning media design interactive. The same results are also seen in table 1 which shows results evaluation expert material that is by 90% with criteria very worthy. That it means material contained in learning media interactive based canva already complete and concise. Based on results assessment by media experts and expert material shown in table 1 in detail whole show that learning media design interactive Marble Sitasya based canva results from development need participant educate and teacher, already very worthy used in the process of activities classroom learning.

Table 1. Results of Assessment by Media Experts and Material Experts

Validator	Device Validation	Percentage (%)	Criteria
Media Validator	Validation Material	76	Very Worthy
Material Validator	Media Validation	90	Very Worthy

Effectiveness Product for Improving Learning Outcomes Participant Educate

After designing learning media interactive Marble Sitasya based canva finished assessed by experts and stated very worth it, then for next is learning media interactive the must assessed level its effectiveness for increase results study participant educated in the process of activities learning. Learning media testing interactive Marble Sitasya based canva to enhancement results study participant educate through two stages namely the scale test small and test scale big (Triwoelandari et al., 2023). Pretest and posttest are aspects used for measure level effectiveness of learning media interactive Marble Sitasya based canva in form results study participant educate. Pretest and posttest were carried out on both scale test stage small and scale big. Following pretest and posttest scale test results small:

Table 2. Pretest and posttest results of Small scale test

Code Student	Pretest	Completeness	Posttest	Completeness
S1	56	No	70	Complete
S2	66	No	90	Complete
S3	73	No	90	Complete
S4	60	No	76	Complete
S5	60	No	83	Complete
S6	63	No	80	Complete

Table 3. Pretest and posttest results of Large scale test

Code Student	Pretest	Completeness	Posttest	Completeness
S1	50	No	83	Complete
S2	40	No	80	Complete
S3	50	No	76	Complete
S4	56	No	90	Complete
S5	66	No	86	Complete
S6	46	No	76	Complete
S7	56	No	70	Complete
S8	53	No	83	Complete
S9	46	No	73	Complete
S10	43	No	83	Complete
S11	70	No	80	Complete
S12	50	No	80	Complete
S13	46	No	86	Complete
S14	56	No	86	Complete
S15	46	No	80	Complete
S16	43	No	90	Complete

Based on table 2 contains pretest and posttest scale test results small showing exists increase results Study. Seen from information original completion no there is one participant complete education increase become complete in a way whole after using learning media interactive Marble Sitasya based canva. That's how it looks too from table 3 contains pretest and posttest scale test results big show exists increase results Study after using learning media interactive Marble Sitasya based canva. Based on pretest and posttest results on the scale test small and big the need normality test was carried out for see whether the data is normally distributed or not no. Following normality test table scale small and scale big:

Table 4. Small Scale Normality Test

Test	Significance	Criteria
Pretest	0.68	Normal
Posttest	0.60	Normal

In the data normality test it is said distribute normal if sig value > 0.05 and not normally distributed if sig value < 0.05. Based on SPSS output results in the table above obtained results of the pretest and posttest scale test normality tests small with The Shapiro-Wilk SPSS version 25 formula obtained sig = 0.68 for the pretest and a value of sig = 0.60 for the scale test posttest small. Both of them own sig value > 0.05 meaning pretest and posttest scale test data small distribute normal.

Table 5. Large Scale Normality Test

Test	Significance	Criteria
Pretest	0.09	Normal
Posttest	0.62	Normal

Table 5 shows results of the pretest and posttest scale test normality tests big. Obtained the sig value = 0.098 for the pretest means the data is distributed normal and sig = 0.62 for the posttest, which means the data is distributed normal. Based on calculation of the data can concluded that pretest and posttest scores in the scale test small as well as scale tests big distribute normal so that can next next test stage that is t-test via parametric statistics for know, influence use of learning media interactive Marble Sitasya based canva to the average increase results Study participant educate.

Table 6. Small Scale and Large scale T Test

Test type	Mean	Sig (2-tailed)	Information
Small Scale	-18.50	0.000	Ha accepted
Large Scale	-30.31	0.000	Ha accepted

Based on table 6 shows sig (2-tailed) results on the scale test small of 0.000 and the sig value. (2-tailed) scale test big of 0.000. Basically taking decision in the paired sample t-test if sig value. (2-tailed) < 0.05 then Ho is rejected and Ha is accepted. If sig value. (2-tailed) > 0.05 then Ho is accepted and Ha is rejected. Results of

calculating scale test data small and test scale big obtained sig value. (2-tailed) of $0.000 < 0.05$ means that H_0 is rejected and H_a is accepted. Based on this data can said that exists influence use of learning media interactive Marble Sitasya based canva to increase in average yield study participant educate. The data from the t-test results show exists influence use of learning media interactive Marble Sitasya based canva. Therefore that, next will N-Gain test was carried out for know, level effectiveness from use of learning media interactive Marble Sitasya based canva.

Table 7. Small Scale and Large scale N-Gain Test

Test Type	Mean	Information
Small Scale	0.51	Currently
Large Scale	0.60	Currently

Data criteria for the N-Gain test results are: if the average N-Gain > 0.3 means show effectiveness the treatment carried out. Based on Table 7 shows the scale test mean small equal to 0.51 which means use of learning media interactive Marble Sitasya based canva effectived used for increase results study participant educate material solar system with criteria effectiveness currently. Likewise with the results of the N-Gain scale test big namely 0.60 which means use of interactive media effective used for increase results study participant educate with criteria effectiveness currently. By whole development of learning media interactive Marble Sitasya based canva succeed applied as an alternative problem lack of the use of learning media in science learning ends low results study participant educate class VI Wonotulus State Elementary School Regency Purworejo. This matter seen from magnitude normality test values, T test and N-Gain test in all state that use of learning media interactive Marble Sitasya based canva succeed effectives used for increase results study participant educate class VI Wonotulus State Elementary School Regency Purworejo.

Conclusion

Research and development (RnD) of learning media interactive Marble Sitasya based canva for increase results study participant educate class VI Wonotulus State Elementary School Regency Purworejo succeed held for overcome problem low results study participant educate on the load science learning in particular material solar system. This result seen in both testing stage product namely on the scale test small and test scale big. In both tests obtained exists enhancement results study participant visible education through comparison pretest and posttest scores. Based on stated data that learning media interactive Marble Sitasya

based canva very worthy for used in the process of activities learning. Besides that, the result data study participant educate in pretest and posttest forms, both in scale tests small nor scale big, both you're welcome normally distributed. The T-test results also show exists influence use of learning media interactive Marble Sitasya based canva to the average increase results Study participant educate. This means hypothesis in study missed already. Effectiveness level use of learning media interactive Marble Sitasya based canva is within the criteria currently as seen in the N-Gain test results.

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Conceptualization; R. S., F. A.; methodology; R. S; validation; F. A; formal analysis.; R. S., investigation.; F. A.; resources; R. S.; data curation: F. A.; writing—original; R. S. draft preparation; F. A., writing—review and editing; F. A. Visualization; R. S. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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