



Development of Kinemaster-based Learning Media for High School Biology Class XI

Suhartini^{a*}, Lambang Subagiyo^b, PM Labulan^c

^a*dept. Biology, Mulawarman University, East Kalimantan, Indonesia*

^b*dept. physics, Mulawarman University, East Kalimantan, Indonesia*

^c*dept. mathematics, Mulawarman University, East Kalimantan, Indonesia*

^a*Email: suhartini.101187@gmail.com* , ^b*Email: subagiyo@fkip.unmul.ac.id* , ^c*Email: pm_labulan@yahoo.co.id*

Abstract

This study aims to produce learning media based on the Kinemaster application that is feasible, practical and effective. This research includes the development of the Borg and Gall model with data collection techniques, namely through a team of expert validators namely linguists, material experts and media experts, practicality tests through teacher studies and student responses, and effectiveness tests obtained from assessing student learning outcomes through pretest and posttest. The results of the study concluded that based on the validator's assessment, the expert team obtained an average score of 86.25% in the very feasible category. The value of practicality by the teacher is 95.00% in the very practical category, while from the students a score of 90.24% is obtained in the very practical category. Kinemaster application-based learning media is effective in improving student learning outcomes compared to students who do not use Kinemaster application-based learning media with an average N-gain value of students in the experimental class which is 0.82 while in the control class the average N-gain value is obtained. ie 0.63. So it can be concluded that the kinemaster application-based learning media is very feasible, very practical in learning and effective in improving cognitive learning outcomes in the critical thinking skills of XI high school students.

Keywords: Development; Kinemaster; Learning.

* Corresponding author.

1. Introduction

Visualization in learning really needs to be done by a teacher in the learning process so that students can better understand the material presented in Biology learning. In biology learning, students are actually able to perform scientific skills, namely high curiosity, formulate problems, observe, classify, measure, communicate, ask questions, and conclude [1]. So it requires an innovation in learning to be able to represent all its aims and objectives. With the development and improvement of learning that is always carried out in order to produce quality education. So that in the learning process the roles of teachers and students are very interdependent so that the learning process can run well, the role of the teacher in delivering the material should be able to choose appropriate learning media so that students are interested and have no difficulty in understanding the material presented by the teacher. Where the learning media is a tool used by the teacher as an intermediary in conveying information or material to students. So a teacher is expected to be able to use effective learning media, where effective media is media that can make students interested so that students more easily understand the material. One of the effective media used is video media[2]. Facts in the field show that many students do not understand learning when teachers share material remotely just by sending photos of the material without explanation. With today's progress, teachers are required to be able to create innovative learning that is more interesting and can be understood by students[3]. One of them is by creating or designing video learning media with Kinemaster. Many applications support the creation of learning media, but Kinemaster is an application that can support teachers in making technology-based learning media[4]. Teachers must design technology-based learning media so that learning becomes more fun[5]. Kinemaster is the right choice of application in making learning media, because this application has an artistic style with various interesting features. Besides that, we can also use multi-track video to control the volume precisely and this application can also be used by professionals and amateurs. So that learning will be more interesting and can increase the interest and critical nature of students towards the learning material delivered by the teacher[4].

2. Research methods

2.1 Research subject

Teachers and students of SMA Negeri 8 Samarinda are the subjects of the research. Consists of a Biology teacher and 4 class XI. Where in the small class product trial, the control class is 25 students taken from class XI Social Sciences Cross Interests while the experimental class is class XI MIPA 3. For large class trials, the control class is class XI MIPA 2 and the treatment class is class XI MIPA. 1. The control class is the school teacher with the learning media owned by the teacher which will be used in the experimental class and the researcher using the developed media. Then the product trial results will be compared between the two classes, namely the control class and the treatment class using pretest and posttest. This is done to find out whether the developed product can make learning effective.

2.2 Object of research

The object of research used in this study is the feasibility, practicality and effectiveness of learning media based on the kinemaster application on the human motion system material in Class XI SMA students.

2.3 Types of Research Development

The study used a development model adapted to the development procedure by Borg and Gall. The steps for this development research use the borg and gall type which has 10 research steps[6]and[1]which is shown in the following figure:

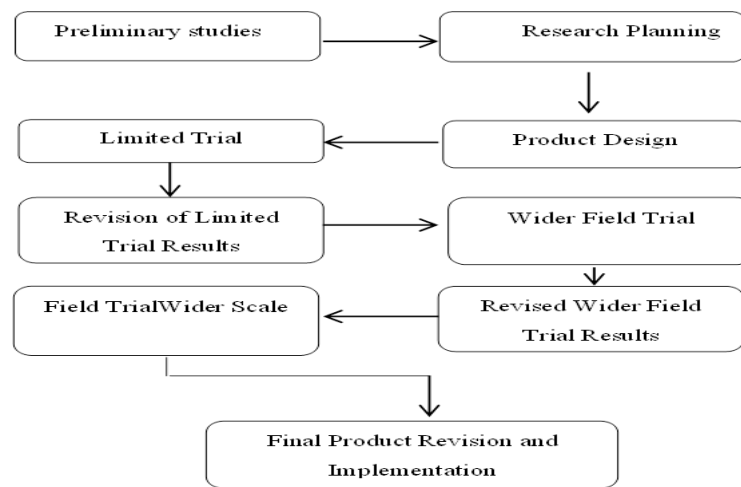


Figure 1 : Research steps.

2.4 Eligibility of kinemaster-based learning media

The feasibility of learning media based on the kinemaster application is obtained from an assessment through the instrument by a team of expert validators by calculating the average total score of each expert validation assessment using[6], The calculation technique in each question uses the formula:

$$P = \frac{F}{N} \times 100\%$$

Information

P = Percentage Figures from questionnaire data

F = Number of respondents' answers

N = Number of Highest Score

Then the results of the media feasibility calculation (%) can then be matched with the percentage range and qualitative criteria for the media feasibility test[7].

Table 1: Percentage Range and Qualitative Criteria for Media Feasibility Test by Expert Team.

Percentage Range	Qualitative criteria
80.01% - 100.00%	Very Eligible (Not Revised)
70.01% - 80.00%	Eligible (Not Revised)
60.01% - 70.00%	Adequate (Revised)
50.01% - 60.00%	Less Eligible (Revised)
<50%	Not Eligible (Revised)

2.5 Practicality of kinemaster application-based learning media

The practicality of learning media based on the kinemaster application was obtained from teacher reviews and student response questionnaires given to students after receiving learning using the developed media. The data obtained were analyzed and then categorized using the formula:

$$P = \frac{F}{N} \times 100\%$$

Information:

P= score percentage

F= Total score obtained

N= Total maximum score

Then the scores obtained become qualitative criteria for media eligibility from student responses with reference to the table as presented as follows:[8]

Table 2 : Percentage Range and Qualitative Criteria for Media Practicality Test by Students.

Percentage Range	Qualitative Criteria
80.01% - 100%	Very Practical
70.01% - 80.00%	Practical
60.01% - 70.00%	Practical enough
50.01% - 60.00%	Less Practical
<50%	Not practical

2.6 The effectiveness of the kinemaster application-based learning media

The effectiveness of learning media based on the kinemaster application is through the N-Gain score test. With the formula that is

$$\langle g \rangle = \frac{S_{post} - S_{pre}}{S_{maks} - S_{pre}}$$

Learning is said to be effective if the gain score is at a medium or high level, if the gain score is at a medium or high level, it means that the learning media has a positive influence on cognitive learning outcomes on students' critical abilities [9].

Table 3 : Category of Learning Media Gain.

Big Percentage	Interpretation
$0.00 < g < 0.30$	Low
$0.30 < g < 0.70$	Currently
$0.70 \leq g \leq 1.00$	Tall

3. Results

In this study, researchers measured feasibility through an assessment by a team of expert validators, practicality by students and effectiveness through pretest and posttest which were then analyzed for the Gain score.

3.1 Eligibility by Expert Validator Team

The expert validator team provides an assessment, until the product is said to be feasible to use. The assessment of the expert validator team is presented in the following table:

Table 4 : Qualitative Value of the Learning Media Expert Team.

Validator	Eligibility Percentage	Qualitative Value
Language	90.00%	Very Worthy
Theory	88.00%	Very Worthy
Media	88.33%	Very Worthy

Based on table 4, the value of validation by a team of experts consisting of linguists is 90.00%, material experts is 88.0%, media experts 88.33% of these results indicate that the kinemaster application-based learning media is very feasible to use in the learning process .

3.2 Practicality of kinemaster application-based learning media

Before getting the final product, the initial product is given in a small class trial, after going through a small class trial it will be re-validated until the product has been declared feasible, at this stage the product can be used in the learning process in large class trials by students, the product can be used either independently or in the classroom.

a. Study Teacher

The data on the results of the teacher's review were obtained from the teacher's review instrument in the small class trial and the large class trial conducted by the Class XI Biology teacher at SMA Negeri 8

Samarinda. In addition to studying the learning media developed by the teacher, the teacher also provides input on the media which is useful for improving and improving the quality of the media. The data on the results of the teacher's review are presented as follows:

Table 5 : Percentage of Teacher's Study on Learning Media.

Development Stage	Teacher Presentation	Study Category
Small class trial	79.00%	Practical
Big class trial	95.00%	Very Practical

From the data table 5 shows that the value of the results of the teacher's study was obtained, namely in the small class trial, which was 79.00% with the practical category and an increase in the value of the teacher's study results in the large class trial, which was 95.00% with the very practical category, so from the data This shows that the teacher gives a positive response to the kinemaster application-based learning media

b. Student Response

Furthermore, the practicality test obtained from the results of the student response questionnaires is carried out which is presented in the table as follows:

Table 6 : Percentage of Student Study of Learning Media.

Stage Development	Response Student (%)	Student Responses for Each Item(%)									
		1	2	3	4	5	6	7	8	9	10
Small Class Trial	78.0	75.2	80.0	76.8	84.0	81.6	78.4	76.8	74.4	71.2	81.6
Large Class Trial	90.3	91.3	90.4	85.6	91.2	90.4	88.0	91.2	93.6	92.0	88.8

From table 6 the student response questionnaire in the small class trial obtained a percentage of 78.0% in the practical category while in the large class trial the score was 90.3% with a very practical category, from these data it shows an increase in the quality of application-based learning media. kinemaster after getting input from students as well as improvements on suggestions from the expert team of validators.

3.3 The effectiveness of Kinemaster application-based learning media

The product development effectiveness test was carried out through product trials in a small class, which was carried out in class XI IPS Lintas Interest as a control class and XI MIPA 3 as an experimental class. the large class, namely class XI MIPA 2 as the control class and class XI MIPA 1 as the experimental class, each class in the trial, both the control class and the experimental class were given pretest and posttest questions so that an N-gain score was obtained, which then the results were analyzed. The value of the N-Gain analysis is presented in the following table:

Table 7: Results of N-Gain score analysis.

Stage	Pretest Average	Posttest Average	Gain Index	Category
Small class trial	45	87.36	0.69	Currently
Big class trial	51.16	90.84	0.82	tall

In table 7 the results of the N-Gain analysis are obtained from the pretest and posttest scores in two classes, namely the control class, namely the teacher from the school who teaches using the media owned, while in the experimental class the researcher teaches using the developed media, namely the kinemaster application-based learning media. The gain score in the limited trial class was 0.69 in the medium category, while in the large test class it was 0.82 in the high category.

4. Discussion

Based on the function of learning media, namely as a communication tool between teachers and students in learning so that the meaning contained in learning can be conveyed properly, besides that the media also acts as an intermediary for teachers in conveying material to students [10]. So the development of media based on the kinemaster application is an alternative in developing innovative learning media. The developed media is then carried out a feasibility test of learning media by a team of experts, a feasibility test by a team of experts is used as a tool to assess the feasibility and quality of the developed media. In determining the feasibility of a media can be determined by the validation of a team of experts. In terms of material, it must be in accordance with the indicators in the learning objectives and in accordance with the development of students, the language used is easy to understand and the display of the media is attractive with appropriate pictures so as to improve critical thinking skills and student learning outcomes [11]. The feasibility assessment from linguists obtained the final validation results of linguists showing a feasibility value of 90.00% with a category that is very feasible. So that it shows the language used is in accordance with the linguistic rules on the media display[12]. For the feasibility value of the material expert, the results obtained final validation of 88.00% with a very decent category. Based on these results, the kinemaster application-based learning media is feasible to use in learning. While the feasibility value of media experts during the final validation, media experts obtained a feasibility value of 88.33% with a very feasible category. Based on this, the kinemaster application-based learning media has a good level of quality so it is very suitable to be used in learning activities. Furthermore, to see the practicality of learning media based on the kinemaster application, a questionnaire was given on the final product obtained from the teacher and each student, respectively, the data obtained from the teacher was 95.00% while from the students it was obtained that was 90.3%. Meanwhile, to find out the effectiveness of the kinemaster application-based learning media obtained from the pretest and posttest results, it is shown that the kinemaster application-based learning media is categorized as effective in improving cognitive learning outcomes on students' critical thinking skills when the final product trial in large classes shows an increase in value compared to when use of initial product trials in small classes. In addition, when testing in small and large classes, it shows a significant value, namely $t \text{ count} < 0.05$ and if $t \text{ count} > 0.05$ where it shows that there is no significant difference between the two test classes, namely small and small class trials.

large class trial. After that, to find out the gain score ($\langle g \rangle$), namely to determine the comparison of treatment and gain score test to show an increase in the results of the pretest and posttest with the final hope that the posttest value is close to or equal to the maximum value. The gain score category consists of three levels, namely: tall ($0.70 \leq g \leq 1.00$), currently ($0.30 < g < 0.70$) and low ($0.00 < g < 0.30$). If the gain score is in the medium or high category then learning can be stated as learning in the effective category and the gain score is in the medium or high category then learning can have a positive influence on cognitive learning outcomes on students' critical thinking abilities. When testing the effectiveness using the media, the gain score was 0.69 in the small class in the medium category, while the gain score in the large class trial was 0.82 in the high category. From small class trials and large class trials, it shows that the kinemaster application-based learning media is proven to be effective in learning and improving students' critical thinking skills. Thus proving that along with the improvement of the expert team, suggestions for improvement of teachers and students also provide an increase in the quality of the media developed, namely learning media based on the kinemaster application. From the results of the research that has been carried out, it is obtained that the kinemaster application-based learning media product developed is very feasible, practical, and effective so that the developed product can be used throughout the school at every grade level.

5. Conclusion

Based on research and data analysis, research on the development of learning media based on the kinemaster application in biology learning for class XI high school students in general can be implemented based on 1. Feasibility test by a validator team of media experts, material experts and language experts with very feasible categories. 2. Assessment of practicality by teachers and students with very practical categories. 3. Test the effectiveness with the gain score category, which is high. So that the kinemaster application-based learning media can be used as a medium in proper, practical and effective learning in learning.

6. Suggestion

Kinemaster application-based learning media is a media that can be developed thoroughly for all subjects and all grade levels so that it can be an alternative in learning.

References

- [1] S. Muyasaroh and M. Fajartia, "Development of Android-Based Learning Media Using Adobe Flash Cs 6 Application in Biology Subjects," *Innov. J. Curric. Educ. Technol.*, vol. 6, no. 1, pp. 79–83, 2017, doi:10.35438/e.v8i1.221.
- [2] L. Pradilasari, A. Gani, and I. Khaldun, "Development of Audio Visual-Based Learning Media on Colloidal Materials to Improve Motivation and Learning Outcomes of High School Students," *J. Educator. Indonesian Science.*, vol. 07, no. 01, pp. 9–15, 2019, doi:10.24815/jpsi.v7i1.13293.
- [3] Ridwan, "Development of Quizstar Assisted Blog Media as Online Learning in Improving Critical Thinking Skills for Class X Vocational High School Students," *J. Ris. technol. and Inov. educator.*, vol. 3, no. 1, pp. 36–49, 2020.

- [4] H. Khaira, "Utilization of the Kinemaster Application as an ICT-based Learning Media," *J. Semin. Nas. PBSI*, pp. 39–44, 2020.
- [5] Darnawati, Irawaty, and WAS Uke, "Training for Making Online Learning Videos Using the Kinemaster Application and Screencast O Matic," *J. Servant. On Masy.*, vol. 12, no. 1, pp. 100–105, 2021.
- [6] L. Rohmaini, Netriwati, Komarudin, F. Nendra, and M. Qiftiyah, "Development of a mathematics learning module based on Wingeom's Assisted Mathematics Ethnoma based on Borg and Gall steps," *J. Theories. and Ris. Matt.*, vol. 5, no. 2, pp. 176–186, 2020.
- [7] Rasyid Hardi Wirasasmita and YK Putra, "Development of interactive tutorial video learning media using Camtasia studio and Macromedia flash applications," *J. Educator. inf.*, vol. 1, pp. 35–43, 2017.
- [8] W. Hapsari, H. Wibawanto, and IM Sudana, "Development of Digital Engineering Mobile Learning for Electrical Engineering Education Students," *J. Vocat. Career Educ.*, vol. 2, no. 1, 2017, doi:10.15294/jvce.v2i1.10979.
- [9] H. Rosdianto and E. Murdani, "Application of the 5E Learning Cycle Model to Improve Students' Critical Thinking Skills in Class VIII Static Fluids," *J. Fis. Flux*, vol. 14, pp. 61–64, 2017.
- [10] NS Alifa, S. Hanafi, and L. Nulhakim, "Development of Kinemaster-Based Animation Learning Video Media to Increase Effectiveness in Science Subjects for Class IV Students of SDN Kedaleman IV," *J. Educator. School Teacher. Base*, vol. 10, no. October, pp. 1554–1564, 2021, doi: <http://dx.doi.org/10.33578/jpkip.v10i6.8395> <https://primary.ejournal.unri.ac.id/index.php/JPFKIP>.
- [11] F. Fitri and Ardipal, "Development of Learning Videos Using the Kinemaster Application in Thematic Learning in Elementary Schools," *J. basicedu*, vol. 5, no. 6, pp. 6330–6338, 2021, doi: <https://doi.org/10.31004/basicedu.v5i6.1387>.
- [12] V. Amelia and Arwin, "Development of Kinemaster Application-Based Learning Media in Integrated Thematic Learning in Class III SD Negeri 36 Koto Panjang," *J. Basic Education. Studs.*, vol. 4, no. 1, pp. 2656–6702, 2021.